MINISTRY OF HEALTH PROTECTION OF UKRAINE
ODESSA NATIONAL MEDICAL UNIVERSITY
FACULTY OF DENTISTRY
DEPARTMENT OF ORTHOPEDIC DENTISTRY

APPROVED
Vice-rector for scientific and pedagogical work
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«___» _____ 2023

METHODOLOGICAL DEVELOPMENT TO PRACTICAL LESSONS FROM EDUCATIONAL DISCIPLINE

Faculty **of dentistry**, course **5**
Educational discipline **Simulation dentistry**

Approved:
Meeting of the Department of Orthopedic Dentistry of ONMedU
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Practical lesson No. 1

Topic:Replacement of defects of hard tissues of teeth with inserts, stump and pin structures. Clinical and laboratory stages of production.

Goal:

1. To teach students to determine the indications for the restoration of damaged teeth with inlays, to draw up a treatment plan, to familiarize them with the main structural materials used in the manufacture of inlays.
2. To acquaint students with different types of prostheses used in case of significant or complete destruction of the tooth crown. Learn pin teeth according to Richmond and Ilyina-Markosyan, as well as simplified designs of pin teeth.

Basic concepts:examination of a dental patient, dental instruments for examination, X-ray diagnostics

Equipment: Computer, phantoms, examination instruments, x-rays

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).
2. Control of the reference level of knowledge:

2.1. requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units);

Know:

— structure of the upper jaw;
— structure of the lower jaw;
— structure of the temporomandibular joint;
— the structure of the mucous membrane of the oral cavity.
— tooth structure

Be able:

— determine the relationship between the upper and lower jaws;
— to examine the patient
— read x-rays
— do not prepare the root of the tooth under the stump tab

2.2. questions (test tasks, tasks, clinical situations) to check basic knowledge on the subject of the lesson.

— Examination. External overview. The degree of reduction of the lower third of the face, the expression of facial skin folds, the degree of mouth opening (free, difficult).
— Examination of the temporomandibular joint.
— Examination of the masticatory muscles.
— Examination of teeth and dentition

3. Formation of professional skills, skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.):

3.1. content of tasks (tasks, clinical situations, etc.);

The teacher checks the presence of students in class, their medical form, and the presence of albums for self-training. Appoints another student. The assistant finds out the difficulties faced by the students while preparing for the lesson and the reasons for their unpreparedness. Checking the availability of visual aids and tools, preparation of workplaces in accordance with safety techniques. The teacher announces the topic of the lesson, the educational goal and outlines the plan for its implementation. Then he conducts an analysis of educational issues by means of an active survey of students, which, in the end, should cover all students. When supplementing the students' answers, the teacher should focus on the amount of knowledge that the students gained during independent study of the relevant textbook material, while listening to lectures and creating an album-notebook on this topic. Tabs are small laboratory-made prostheses that replace defects in the hard tissues of the teeth and restore anatomical form, function and aesthetics.

They are also called microprosthesis. Tabs should restore the anatomical shape of the tooth, lost functions, serve preventive purposes, preventing the recurrence of caries and meet aesthetic requirements. Fixed prostheses are prostheses that are strengthened on natural teeth or roots with the help of cement and can be removed from the oral cavity by a doctor, as a rule, due to a violation of the structure. These include inlays, various types of crowns, pin teeth and bridge-like prostheses. The production of tabs involves the formation of a cavity of a certain geometric shape in the tooth, in which the tab is fixed due to the precise fit of the contact surfaces. When forming cavities for inserts, the following provisions should be used: 1. The exit opening of the cavity should be slightly wider than the bottom, that is, the walls of the cavity should be slightly diverged. 2. The walls of the cavity must be parallel to each other and perpendicular to the bottom of the cavity. 3. The wall above the pulp should be thick enough to protect the pulp from thermal effects from the metal of the insert. 4. Additional fixation elements are created within healthy hard tissues of the tooth in such a way that they prevent the tab from shifting and overturning under the influence of vertical and transverse pressure forces. 5. When forming cavities in hard-to-reach proximal areas, first make a cut, which is called a planar cut. 6. The process of cavity formation should be painless, it depends on the quality of the tools, the accuracy and speed of their rotation, the use of anesthesia and, most importantly, careful techniques during work.

To model the tabs, a special wax is needed, which has the following requirements. It should soften at a temperature of 60-70oC and have good plasticity. After hardening, the wax should be sufficiently strong, not delaminate during work and accurately reproduce the relief of the cavity prepared in the tooth. The time for the wax to change from plastic to solid should be short, and shrinkage with temperature changes should be minimal. When the wax burns out, no slag should remain. In our country, for modeling tabs, metal is cast, wax compositions of two types are produced. One consists of paraffin (33%). beeswax (5%), carnauba wax (15%), synthetic cirezin (2%) and fat dye. The second consists of 70% beeswax, 20% montana beeswax, 10% paraffin and dye. The melting point of this mixture is 60°C, the volume shrinkage for each degree during hardening in the range from 80°C to 20°C is 0.15. To model plastic tabs, you need a wax without dyes, as the remaining

dyes can change the color of the plastic. When working with wax mixtures, it is necessary to observe the temperature regime, that is, take into account changes in their volume and linear dimensions during cooling. The following metals and alloys are mainly used for the manufacture of tabs: gold, platinum, gold-platinum alloys of gold, silver and copper, chrome-nickel steel and some others. Foreign companies produce patented alloys of noble and non-noble metals, which are produced under different names: vizil, vitalium, paladur, "Viron". Gold and gold alloys have a straw-yellow color. Melting point 1064Cº, boiling point 2550Cº. The coefficient of linear expansion of gold is 0.0000144, shrinkage is 1.2%. Gold has good ductility, malleability and greater resistance to the action of acids and alkalis. In its pure form, gold is not used for prosthetics, because it is very soft.

By adding platinum, silver, copper and other metals to it in different proportions, alloys are obtained. Alloys are distinguished by the percentage of gold. Pure gold is marked with the 1000th proof. The most common are gold alloys of the 900th, 750th proof and solder. The composition of gold 900: gold 90%, copper 6%, silver - 4%, has a pleasant yellow color, is resistant to corrosion, has a melting point of about 1000oC. Discs with a diameter of 18, 20, 23 mm and a thickness of 0.23 - 0.3 mm are produced from this alloy, from which crowns are made and intermediate parts of bridge prostheses and inlays are cast. The alloy of 750th sample with platinum has a yellow color less characteristic of gold. Composition of gold 75%, platinum 4.15%, silver 8.35%, copper 12.5%. The presence of platinum and increased compared to the previous alloy of 900th test, the content of copper makes the alloy harder and more elastic. It is used for the manufacture of such parts of dental prostheses made by the casting method, which must have increased elastic qualities: frameworks of fixed prostheses, clasps, pins, tabs. If 5-10% cadmium is added to an alloy of 750th test, its melting point is reduced to 800Cº, which makes it possible to use it as a solder for gold alloys of high tests. For the manufacture of permanent dentures in various countries, a large number of alloys based on silver and palladium are used, which include in percentages by weight: silver - 55-60, palladium - 27-30, gold - 6-8, copper - 2-3, zinc - 0.5. The recipe for steel for the manufacture of dental prostheses was proposed by D.N. Tsytryny in the 1930s. Its use significantly reduced the use of gold and platinum.

Stainless steel used in orthopedic dentistry is a multipurpose alloy. The main component that ensures corrosion resistance of the alloy is chromium. Its content is 17-19%. To increase the plasticity of the alloy, 8-11% nickel is added to it, which makes the alloy more malleable and facilitates its pressure processing. In industry, it is customary to mark types of steel with marks. The components included in the composition of the alloy are indicated by letters: carbon - C, chromium - X, nickel - H, titanium - T. The numbers indicate the percentage of the component in the alloy. The first digit of the brand means the carbon content in tenths of a percent. Stainless steel of the 1XI8H9T brand is the most common in dental prosthetics practice. This alloy consists of 72% iron, 18% chromium, 9% nickel, 0.1% carbon and up to 0.9% titanium. Medium- and low-melting porcelain masses (1090 - 1260Cº, 870 - 1065Cº, ФО-1) are used in the manufacture of inlays. The low-melting porcelain mass consists of two frits: refractory (65%), which includes feldspar (80%), quartz (18%),

kaolin (2%) and light (35%), consisting of feldspar (19 %), spodumene (15%), boric acid (30%), quartz (18%), zinc oxide (7%), strontium oxide (4%) and dolomite (6.6%). Properties of FO-1: self-glazing temperature 860-980Cº, hardness 27-30 MPa, volume shrinkage 10-12%. Low-melting porcelain mass FL-1 is used for the manufacture of tabs on gold foil. Porcelain mass "Gamma" is used for the production of porcelain inlays on platinum foil.

It is a set of finely ground mineral powders, painted in different colors. Its formation is carried out by the method of condensation, kneading in distilled water, heat treatment in vacuum conditions. The final sintering temperature is 1100-1110Cº. The mass set includes ground mass of 6 colors, dentine mass of 12 colors, transparent mass, color scale, ceramic tiger for two crowns (4 pcs), cup for mixing porcelain mass - 1 pc, instructions for use (1 note), table of color combinations in the mass (1 note) When determining the indications for prosthetics in the area of defects of the front teeth, phonetic and aesthetic factors are taken into account, as well as the impact of a violation of the integrity of the dentition on the preservation of articulatory balance. With complete or significant destruction of the tooth crown, when it is impossible to restore it with a tab, crown, pin teeth, stump pin tabs or caps on the root of the tooth are used to support the removable prosthesis. A pin tooth is a fixed prosthesis that completely replaces the crown of a natural tooth and is fixed in the root canal with a pin. The method of prosthetics with pin teeth has a long history and at the same time meets the modern requirements for dental prostheses; restores the anatomical integrity of the dentition, restores the function of speech and chewing, and meets the aesthetic requirements of modernity. There are many different designs of pin teeth, but all of them necessarily have a pin that enters the root canal and is connected to an artificial crown.

Types of pin teeth.

Pin teeth are distinguished depending on their purpose, design, manufacturing method and material from which they are made. Pin teeth can be restorable, i.e. replace the crowns of destroyed teeth, and support, serve as a support for strengthening other structures of fixed prostheses and perform these two functions at the same time. By design, pin teeth are monolithic and composite; according to the manufacturing method - metal and coated.

According to the design and method of attachment to the root, Ilyina-Markosyan divides all types of pin teeth into 3 main types:

1. Simplified.
2. With a tab
3. With an outer ring.

Simplified pin teeth include: a) crowns of Logan, Davis, Shirakva, Parshin; b) a pin tooth with a monolithic crown made of plastic (Ilyina Markosyan) c) a pin tooth with an outer ring according to Parshin. 2. Pin teeth with a tab differ from simplified ones in that when entering the root canal, a cubical cavity with 3-4 mm walls is prepared, in which the tab with a pin is then strengthened: A) a pin tooth according to Ilyina-Markosyan has a cubic-shaped tab, which prevents the prosthesis from rotating, protects the root canal from the penetration of saliva and provides cushioning of lateral shocks, which are the most harmful to the root. B) D. M. Citrin

suggests preparing the cavity for the tab in the form of opposing triangles. 3. Pin tooth with outer ring. Pin tooth according to Richmond consists of a pin, above the root cap (a complete ring with a bottom) and a crown. The root stump is covered with a soldered or stamped cap that fits under the gingival margin by 0.5-1.0 mm. A pin is inserted into the root canal through the hole in the cap, which is connected to it by soldering. On this basis, a porcelain, metal, plastic or combined crown is made. A. Ya. Katz proposed to replace the ring above the root plate in this design with a half ring around the lingual part of the root and crown of the tooth. Indications for the use of pin teeth are the absence of the crown of the front teeth of the upper and lower jaws, as well as the roots of the first premolar of the upper jaw. The following requirements apply to the roots that are subject to pin prosthetics: 1. The root of the tooth must be stable. 2. The root must have strong enough walls not affected by caries. 3. The borders of the root should be at the same level as the gum edge or protrude above its level. 4. The root canal should have good patency and be sealed in the upper third. 5. The ratio of the length of the root to the length of the crown should not be less than 2:1. 6. The root walls must be thick enough to hold the post and withstand the pressure it will experience during chewing.

There should be no pathological changes in the areas of periodontal tissues. Contraindications to prosthetics with pin teeth. 1. curved roots with a bend; 2. short root length; 3. deep bite or deep overlap; 4. the presence of a fistula (fistula) that does not pass after sealing the canal. Before starting prosthetics with pin teeth, it is necessary to conduct a clinical and X-ray examination of the root. Preparation of the root for prosthetics consists in elimination of the focus of inflammation, expansion of the canal, sealing of its apical third, preparation of the canal for insertion of a pin, preparation of the root. Simplified designs of pin teeth. The introduction of plastics made it possible to greatly simplify the method of manufacturing pin teeth. Pin teeth made of plastic can be made directly in the clinic using ready-made self-hardening plastic teeth (Z. P. Shirakova) or in a dental laboratory (S. L. Ilyina-Markosyan). Clinically (according to Shirakova). This design of pin teeth became widespread due to the ease of manufacturing the crown part from an artificial plastic tooth and self-hardening plastic. After preparing the root, a pin is driven in and a ready-made plastic tooth is selected according to the color and size of the neighboring teeth. It is polished to the labial surface and also to the protruding part of the pin, a channel for the pin is created in the artificial tooth. The protruding part of the pin is connected to the artificial tooth with a self-hardening plastic of the appropriate color. After the plastic has hardened, the tooth is removed from the root, the remains of the self-hardening plastic are removed, ground, polished and the finished structure is fixed with cement. A pin tooth can be made from self-hardening plastic in one visit using a celluloid cap. Similarly, in a one-step method, it is possible to make a crown made of plastic according to aesthetic parameters or a temporary one. Laboratory method of manufacturing a pin tooth from plastic (according to Ilyina-Markosyan). After preparing the root, a stainless steel pin is driven in. The pin is installed in the root canal so that part of the pin protrudes above the root in the form of a loop or has a notch and the impression is removed. A crown is modeled from wax on the model, plastered in a cuvette, and the wax is replaced with plastic. After polymerization of

the plastic, the pin tooth is processed, ground, polished and strengthened at the root. Logan and Davis crown. Logan's crown is manufactured industrially in the form of a porcelain crown with a pin. They are standard and fit in the patient's mouth. In a porcelain crown, the pin can be fixed stably or the pin and crown are made separately. In practice, it is more convenient to use crowns with a separate pin (Davis). The crown is adjusted to the root in such a way that it adjoins the outer wall of the root, closes the entrance to the mouth of the canal and does not interfere with the bite. Then a pin is fitted, one end of which enters the channel, and the other - into the channel of the porcelain crown.

The work ends with cementation of the pin and crown. Pin tooth made of plastic with a ring according to S. N. Parshin. The protruding part of the root is polished in such a way that the palatal edge protrudes 1.5-2.0 mm from under the gingival margin, and the labial edge - by 0.5 mm. A ring of the appropriate size, made of a crown sleeve, is selected for the root. The ring is driven 0.5 mm deep into the gum pocket. Notches are made on the free end of the ring, and a pin with a flattened outer end is inserted into the root canal, which should not interfere with the closing of the teeth. A ready-made plastic tooth is selected and polished to the labial surface of the root, as well as the protruding part of the pin. The plastic tooth is temporarily fixed on the root with wax from the palatal side and in this position plaster casts are made to obtain an impression of the labial surface of the plastic tooth and neighboring teeth.

After hardening, the gypsum bed is removed and two holes are made in it with a jigsaw at the level of the proximal surfaces of the plastic tooth from the cutting edge to the neck. The palatal surface of the plastic tooth, pin, and ring are carefully wiped with monomer, after which all parts of the pin tooth are connected to each other with self-hardening plastic from the palatal side using a gypsum bed. The plastic is pressed against the elements of the pin tooth and strengthened under pressure through a gasket made of moistened cellophane, which extends through the slots of the gypsum bed. In this way, the palatal and lateral surfaces of the pin tooth are formed. After the plastic has hardened, the pin tooth is carefully removed, treated, the central and front occlusion is checked and strengthened on the root with cement. Metal crown with plastic lining and pins according to A. A. Akhmedov. This design is convenient when the crown part is preserved. Prosthetics consists of the following stages. Impressions are taken and a full metal stamped crown is made.

At the second stage, it is checked in the oral cavity and at the same time a pin is driven in, for which a hole is drilled from the palatal side of the crown, and a hole is drilled from the vestibular side, as for a combined crown. The crown is filled with melted wax, placed on the tooth and an impression is made. The pin is soldered with the crown, a window is cut out on the vestibular surface of the crown. The model simulates the labial wall of a tooth made of wax, which is replaced by plastic. Possible complications. A positive factor in the treatment of patients with simplified designs of pin teeth is the ease of manufacture (1-2 stages) and a high aesthetic effect. But complications are possible: resorption of cement between the root and pin, crown and pin (according to Logan, Davis), breakage of a porcelain or plastic crown; pin fracture, root fracture, formation of secondary caries. When discussing the issue of

prosthetics with a pin tooth according to Richmond, it is necessary to emphasize the features of this design, namely; the cap is soldered with a pin covering the root. Previously, it was made of gold. Clinical and laboratory stages of production of hip inserts with a pin. The advantages of this type of prostheses are the possibility to replace the artificial crown covering the stump if necessary (change in color, crown defects, etc.). At the same time, it is possible to cover the tooth with a temporary crown during the same visit. When removing an adjacent tooth, the outer crown can be removed and a stump can be used to support a bridge prosthesis. It is possible to impose a bridge-like prosthesis with parallel root canals that are used as a support. It is possible to manufacture a pin that exactly repeats the shape of the prepared root canal, which ensures reliable fixation of the prosthesis. There are wide possibilities in choosing the type of artificial crown. A pin tooth with an artificial stump consists of a pin, an artificial stump rigidly connected to it, and an external crown, which is manufactured separately.

The best results are achieved when making an artificial stump with a metal alloy pin, especially when the ash part of the root is destroyed, and covering it with a porcelain or metal-ceramic crown. When planning this design, as well as when making a pin tooth, the clinical condition should be carefully evaluated. They pay attention to the state of the stump of the destroyed crown of the tooth, the absence of an impression of caries, and check the stability of the root. A thorough x-ray examination of the root is necessary, the root canal must be open and sealed in the periapical third. The general assessment of the condition of the root also involves determining its length, which should be at least the length of the crown, and the walls of the root should be of sufficient thickness. If the root is prepared in advance for prosthetics, then only its periapical third is sealed. After solving the question of the suitability of the root for prosthetics, they proceed to the preparation of the preserved stump.

This part of the crown is prepared so that, together with the artificial stump, it corresponds to the shape of the prepared tooth. After preparing the root, proceed to modeling an artificial stump with a pin. The most widespread was the direct method. The root canal is filled with softened modeling wax (for example, "Lavax"), and a metal pin made of stainless wire is used as reinforcement. A coax pin insert can be modeled from self-hardening plastic, using a plastic rod as a reinforcing element of the pin. Then the stump part is modeled in accordance with the principles of the direct method of modeling a cast pin insert. If the stump is made on many root teeth, then the main pin is inserted into the root canal, which has good patency, and in the hard-to-reach root canal, an additional pin is inserted to a depth of 3-5 mm. At the same time, it is necessary to ensure the parallelism of the pins, since if this condition is not met, their deformation is inevitable when removing the wax reproduction. If it is difficult to pass through the channel and it is not possible to insert a pin, then it is expanded at the mouth. In this case, the channel will be filled first with wax, and then with metal, and there will also be an additional fixative.

After the selection and appropriate processing of the pins, they proceed to modeling the wax composition of the artificial crown of the tooth. A stick of refractory modeling wax is softened and pressed to the root with some effort, trying

not to displace the pins. After the wax has cooled, the remaining wax is removed with a slightly heated iron in such a way that the stump has the shape and diameter of the neck of the tooth, the chewing surface is restored, that is, the shape obtained during the preparation of the tooth for the crown is modeled. After re-cooling, the wax reproduction, together with the pins, is carefully removed from the oral cavity and transferred to the laboratory for metal casting. The following are used for casting: cobalt-chromium alloy, gold-platinum and silver-palladium alloys.

The root canal is closed with a temporary bandage made of artificial dentin. At the patient's next visit, the metal stump of the tooth is fitted with a pin. At the same time, you should strive for a tight fit of the entire cast part to the root and crown surface of the tooth. Fixation of an artificial stump with cement is carried out in the same way as for a pin tooth. The artificial stump created in this way is reliably fixed on the root and can serve as a support not only for a separate crown, but also for other types of prostheses. If the modeling of the stump in the oral cavity is difficult due to clinical conditions, the doctor, after adjusting the pins, receives a reflection of this part of the tooth row. In the laboratory, the impression technician receives a plaster model and models the stump on it, and then transfers it to metal.

Thus, the production of an artificial stump by the direct method consists of the following stages:

1. Preparation of the destroyed part of the tooth.
2. Expansion of the root canal.
3. Introduction of the pin into the channel and modeling over the gingival part of the tab.
4. Castings of stumps.
5. Fitting and fixing the stump pin insert with cement.

The production of a covering crown or a bridge-like prosthesis is carried out according to generally accepted methods. Complications during prosthetics with stump inserts. When using this design, various complications are possible. Some of them arise during the preparation of the teeth, but most of the complications are observed some time after the stump and covering crown are strengthened. During preparation, the most dangerous complication is perforation of the root. To avoid this complication, it is necessary to open and expand the canals carefully and under radiographic control. The most serious complication due to different terms after strengthening the stump is the splitting of the root, the danger of splitting arises with improper design of the tab itself (increased bite due to the covering crown, irrational design of the bridge-like prosthesis resting on the stump tab). Splitting of the root can occur with a prognathic bite with protrusion of the upper front teeth in combination with a deep incisor overlap. With excessive magnitude and abnormal direction of occlusal load. The latter is transmitted not along the longitudinal axis of the tooth, but at an angle. The horizontal component of the force causes tension and breakage of the front wall of the root. If such complications occur, the root must be removed. In addition to root splitting, other complications are also possible, such as: inflammation of the gums around the pin stump and covering its crown, decementation with a loose fit and deep location of the stump insert in functionally overloaded teeth. The reasons

for decementation can be improper preparation of the root, too short a pin, not thoroughly drying the root canals before fixing the stump with cement.

With the correct manufacture of stump pin inserts and roofing structure, taking into account the indications, no complications are observed. After the survey, the teacher assesses students' knowledge and announces grades with comments on the answers. After analyzing the theoretical material of the lesson, the teacher proceeds to the next section of the lesson. The teacher conducts a clinical examination of the thematic patient, demonstrates the method of examination of a patient with damage to the hard tissues of the teeth. Students conduct independent reception of patients with the advisory assistance of the teacher. In the absence of a thematic patient, working out the topic and monitoring the results of its assimilation is carried out by solving problem-situational tasks. After the end of the reception of patients, the teacher checks the correctness of filling out the medical documentation, pays attention to the mistakes made during the independent reception of patients. The teacher evaluates the work of each student, analyzes unclear questions, and sets homework.

3.2. recommendations (instructions) for performing tasks (professional algorithms, orientation maps for the formation of practical skills and abilities, etc.);

3.3. requirements for work results, including registration;

— Conduct an examination.

— Analyze the results of the examination of a dental patient.

— Make a plan for additional examination of the patient.

— Explain the results of clinical and special (additional) research methods.

4. Summary:

— Anamnesis of the patient. Main complaints. Medical history. Dental history.

— Examination. External overview. Reduction of the lower third of the face, expressiveness of nasolabial and chin folds, degree of mouth opening (free, difficult). Temporomandibular joint. Examination of the masticatory muscles.

— Intraoral examination. Assessment of the state of bone and mucous formations affecting the fixation of the prosthesis in the oral cavity.

— Determination of mobility and flexibility of the mucous membrane.

— Diagnosis. Plan and objectives of orthopedic treatment.

4. List of recommended literature (main, additional, electronic information resources):

Main:

- Orthopedic dentistry: textbook / Rozhko M.M., Nespryadko V.P., I.V. Paliychuk and others; under the editorship M.M. Rozhka, V.P. Nespryadka.- K.: Medical University "Medicine"; 2020. - 720 p.

- Rozhko M.M., Nespryadko V.P., Mykhaylenko T.M. and others. Dentoprosthetic technique. K.: Book plus; 2016. 604 p.

- Rozhko M.M., Popovych Z.B., Kuroyedova V.D. Dentistry. Textbook. K.: Medical University "Medicine"; 2018. 872 p.

Additional:

Dentistry: in 2 books. : textbook. Book 2 / M.M. Rozhko, I.I. Kirylenko, O.G. Denisenko and others. ; under the editorship M.M. Horn — 2nd edition. — K.: VSV "Medicine", 2018. — 992 p. ; color kind.

- Material science in dentistry: a study guide / [Korol D.M., Korol M.D., Ojubeiska O.D. etc.]; in general ed. King D.M. – Vinnytsia: New book, 2019. – 400 p.

Electronic information resources:

- State Expert Center of the Ministry of Health of Ukrainehttp://www.dec.gov.ua/index.php/ua/
- National Scientific Medical Library of Ukrainehttp://library.gov.ua/
- National Library of Ukraine named after V.I. Vernadskyihttp://www.nbuv.gov.ua/

Practical lesson No. 2

Topic:Restoration of teeth after endodontic treatment. Designs of standard pins and custom-made pins. Indications for use. Complication.

Goal:

1. To teach students to determine the indications for the restoration of damaged teeth with inlays, to draw up a treatment plan, to familiarize them with the main structural materials used in the manufacture of inlays.
2. To acquaint students with different types of prostheses used in case of significant or complete destruction of the tooth crown. To study pin teeth Richmond and under Art. L. Ilyina-Markosyan, as well as simplified designs of pin teeth.

Basic concepts:examination of a dental patient, dental instruments for examination, x-ray diagnostics, tooth root, tab

Equipment: Computer, phantoms, examination instruments, x-rays

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).
2. Control of the reference level of knowledge:

2.1. requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units);

Know:

— structure of the upper jaw;
— structure of the lower jaw;
— structure of the temporomandibular joint;
— the structure of the mucous membrane of the oral cavity.
— tooth structure

Be able:

— determine the relationship between the upper and lower jaws;

— to examine the patient

— read x-rays

— do not prepare the root of the tooth under the stump tab

2.2. questions (test tasks, tasks, clinical situations) to check basic knowledge on the subject of the lesson.

— Examination. External overview. The degree of reduction of the lower third of the face, the expression of facial skin folds, the degree of mouth opening (free, difficult).

— Examination of the temporomandibular joint.

— Examination of the masticatory muscles.

— Examination of teeth and dentition

3. Formation of professional skills, skills (mastery of skills, conducting curation, determining the treatment scheme, conducting

laboratory research, etc.):

3.1 content of tasks (tasks, clinical situations, etc.);

Tabs should restore the anatomical shape of the tooth, lost functions, serve preventive purposes, preventing the recurrence of caries and meet aesthetic requirements. Fixed prostheses are prostheses that are strengthened on natural teeth or roots with the help of cement and can be removed from the oral cavity by a doctor, as a rule, due to a violation of the structure. These include inlays, various types of crowns, pin teeth and bridge-like prostheses. The production of tabs involves the formation of a cavity of a certain geometric shape in the tooth, in which the tab is fixed due to the precise fit of the contact surfaces.

When forming cavities for inserts, the following provisions should be used: 1. The exit opening of the cavity should be slightly wider than the bottom, that is, the walls of the cavity should be slightly diverged.

The walls of the cavity should be parallel to each other and perpendicular to the bottom of the cavity. 3. The wall above the pulp should be thick enough to protect the pulp from thermal effects from the metal of the insert. 5 4. Additional fixation elements are created within healthy hard tissues of the tooth in such a way that they prevent the tab from shifting and overturning under the influence of vertical and transverse pressure forces. 5. When forming cavities in hard-to-reach proximal areas, first make a cut, which is called a planar cut. 6. The process of forming cavities should be painless, it depends on the quality of the tools, the accuracy and speed of their rotation, the use of anesthesia and, most importantly, careful techniques during work. To model the tabs, a special wax is needed, which has the following requirements.

It should soften at a temperature of 60-70oC and have good plasticity. After hardening, the wax should be sufficiently strong, not delaminate during work and accurately reproduce the relief of the cavity prepared in the tooth. The time for the wax to change from plastic to solid should be short, and shrinkage with temperature changes should be minimal. When the wax burns out, no slag should remain. In our country, for modeling tabs, metal is cast, wax compositions of two types are produced.

One consists of paraffin (33%). beeswax (5%), carnauba wax (15%), synthetic cirezin (2%) and fat dye. The second consists of 70% beeswax, 20% montana beeswax, 10% paraffin and dye. The melting point of this mixture is 60°C, the volume shrinkage for each degree during hardening in the range from 80°C to 20°C is 0.15. To model plastic tabs, you need a wax without dyes, as the remaining dyes can change the color of the plastic. When working with wax mixtures, it is necessary to observe the temperature regime, that is, take into account changes in their volume and linear dimensions during cooling. The following metals and alloys are mainly used for the manufacture of tabs: gold, platinum, gold-platinum alloys of gold, silver and copper, chrome-nickel steel and some others. Foreign companies produce patented alloys of noble and non-noble metals, which are produced under different names: vizil, vitalium, paladur, "Viron". Gold and gold alloys have a straw-yellow color. Melting point 1064Cº, boiling point 2550Cº. The coefficient of linear expansion of gold is 0.0000144, shrinkage is 1.2%. Gold has good ductility, malleability and greater resistance to the action of acids and alkalis. In its pure form, gold is not used for prosthetics, because it is very soft. By adding platinum, silver, copper and other metals to it in different proportions, alloys are obtained. Alloys are distinguished by the percentage of gold. Pure gold is marked with the 1000th proof. The most common are gold alloys of the 900th, 750th proof and solder. The composition of gold 900: gold 90%, copper 6%, silver - 4%, has a pleasant yellow color, is resistant to corrosion, has a melting point of about 1000oC. Discs with a diameter of 18, 20, 23 mm and a thickness of 0.23 - 0.3 mm are produced from this alloy, from which crowns are made and intermediate parts of bridge prostheses and inlays are cast. 6 An alloy of 750th proof with platinum has a yellow color less characteristic of gold. Composition of gold 75%, platinum 4.15%, silver 8.35%, copper 12.5%. The presence of platinum and increased compared to the previous alloy of 900th test, the content of copper makes the alloy harder and more elastic. It is used for the manufacture of such parts of dental prostheses made by the casting method, which must have increased elastic qualities: frameworks of fixed prostheses, clasps, pins, tabs. If 5-10% cadmium is added to an alloy of 750th test, its melting point is reduced to 800Cº, which makes it possible to use it as a solder for gold alloys of high tests. For the manufacture of permanent dentures in various countries, a large number of alloys based on silver and palladium are used, which include in percentages by weight: silver - 55-60, palladium - 27-30, gold - 6-8, copper - 2-3, zinc - 0.5. The recipe for steel for the manufacture of dental prostheses was proposed by D.N. Tsytryny in the 1930s. Its use significantly reduced the use of gold and platinum.

Stainless steel used in orthopedic dentistry is a multipurpose alloy. The main component that ensures corrosion resistance of the alloy is chromium. Its content is 17-19%. To increase the plasticity of the alloy, 8-11% nickel is added to it, which makes the alloy more malleable and facilitates its pressure processing. In industry, it is customary to mark types of steel with marks. The components included in the composition of the alloy are indicated by letters: carbon - C, chromium - X, nickel - H, titanium - T. The numbers indicate the percentage of the component in the alloy. The first digit of the brand means the carbon content in tenths of a percent. Stainless steel of the 1XI8H9T brand is the most common in dental prosthetics practice. This

alloy consists of 72% iron, 18% chromium, 9% nickel, 0.1% carbon and up to 0.9% titanium. Medium- and low-melting porcelain masses (1090 - 1260Cº, 870 - 1065Cº, ФО1) are used in the manufacture of inlays. The low-melting porcelain mass consists of two frits: refractory (65%), which includes feldspar (80%), quartz (18%), kaolin (2%) and light (35%), consisting of feldspar (19 %), spodumene (15%), boric acid (30%), quartz (18%), zinc oxide (7%), strontium oxide (4%) and dolomite (6.6%). Properties of FO-1: self-glazing temperature 860-980Cº, hardness 27-30 MPa, volume shrinkage 10-12%. Low-melting porcelain mass FL-1 is used for the manufacture of tabs on gold foil. Porcelain mass "Gamma" is used for the production of porcelain inlays on platinum foil. It is a set of finely ground mineral powders, painted in different colors. Its formation is carried out by the method of condensation, kneading in distilled water, heat treatment in vacuum conditions. The final sintering temperature is 1100-1110Cº.

The mass set includes ground mass of 6 colors, dentine mass of 12 colors, transparent mass, color scale, ceramic tiger for two crowns (4 pcs), cup for mixing porcelain mass - 1 pc, instructions for use (1 note), table of color combinations in the mass (1 note) When determining the indications for up to 7 prosthetics in the area of defects of the front teeth, phonetic and aesthetic factors are taken into account, as well as the effect of the violation of the integrity of the dentition on the preservation of articulatory balance. With complete or significant destruction of the tooth crown, when it is impossible to restore it with a tab, crown, pin teeth, stump pin tabs or caps on the root of the tooth are used to support the removable prosthesis. A pin tooth is a fixed prosthesis that completely replaces the crown of a natural tooth and is fixed in the root canal with a pin. The method of prosthetics with pin teeth has a long history and at the same time meets the modern requirements for dental prostheses; restores the anatomical integrity of the dentition, restores the function of speech and chewing, and meets the aesthetic requirements of modernity. There are many different designs of pin teeth, but all of them necessarily have a pin that enters the root canal and is connected to an artificial crown. Types of pin teeth. Pin teeth are distinguished depending on their purpose, design, manufacturing method and material from which they are made.

Pin teeth can be restorable, i.e. replace the crowns of destroyed teeth, and support, serve as a support for strengthening other structures of fixed prostheses and perform these two functions at the same time. By design, pin teeth are monolithic and composite; according to the manufacturing method - metal and coated. According to the design and method of attachment to the root, Ilyina-Markosyan divides all types of pin teeth into 3 main types:

1. Simplified.
2. With a tab
3. With an outer ring.

Simplified pin teeth include: a) crowns of Logan, Davis, Shirakva, Parshin; b) a pin tooth with a monolithic crown made of plastic (Ilyina Markosyan) c) a pin tooth with an outer ring according to Parshin. 2. Pin teeth with a tab differ from simplified ones in that when entering the root canal, a cubical cavity with 3-4 mm walls is prepared, in which the tab with a pin is then strengthened: A) a pin tooth according to

Ilyina-Markosyan has a cubic-shaped tab, which prevents the prosthesis from rotating, protects the root canal from the penetration of saliva and provides cushioning of lateral shocks, which are the most harmful to the root. B) D. M. Citrin suggests preparing the cavity for the tab in the form of opposing triangles. 3. Pin tooth with outer ring. 8 Pin tooth according to Richmond consists of a pin, above the root cap (a complete ring with a bottom) and a crown. The root stump is covered with a soldered or stamped cap that fits under the gingival margin by 0.5-1.0 mm. A pin is inserted into the root canal through the hole in the cap, which is connected to it by soldering. On this basis, a porcelain, metal, plastic or combined crown is made. A. Ya. Katz proposed to replace the ring above the root plate in this design with a half ring around the lingual part of the root and crown of the tooth. Indications for the use of pin teeth are the absence of the crown of the front teeth of the upper and lower jaws, as well as the roots of the first premolar of the upper jaw.

The following requirements apply to the roots that are subject to pin prosthetics: 1. The root of the tooth must be stable. 2. The root must have strong enough walls not affected by caries. 3. The borders of the root should be at the same level as the gum edge or protrude above its level. 4. The root canal should have good patency and be sealed in the upper third. 5. The ratio of the length of the root to the length of the crown should not be less than 2:1. 6. The root walls must be thick enough to hold the post and withstand the pressure it will experience during chewing. 7. There should be no pathological changes in the areas of periodontal tissues. Contraindications to prosthetics with pin teeth. 1. curved roots with a bend; 2. short root length; 3. deep bite or deep overlap; 4. the presence of a fistula (fistula) that does not pass after sealing the canal. Before starting prosthetics with pin teeth, it is necessary to conduct a clinical and X-ray examination of the root. Preparation of the root for prosthetics consists in elimination of the focus of inflammation, expansion of the canal, sealing of its apical third, preparation of the canal for insertion of a pin, preparation of the root. Simplified designs of pin teeth. The introduction of plastics made it possible to greatly simplify the method of manufacturing pin teeth. Pin teeth made of plastic can be made directly in the clinic using ready-made self-hardening plastic teeth (Z. P. Shirakova) or in a dental laboratory (S. L. Ilyina-Markosyan). 9 Clinically (according to Shirakova). This design of pin teeth has become widespread due to the ease of manufacturing the crown part from an artificial plastic tooth and self-hardening plastic. After preparing the root, a pin is driven in and a ready-made plastic tooth is selected according to the color and size of the neighboring teeth. It is polished to the labial surface and also to the protruding part of the pin, a channel for the pin is created in the artificial tooth. The protruding part of the pin is connected to the artificial tooth with a self-hardening plastic of the appropriate color.

After the plastic has hardened, the tooth is removed from the root, the remains of the self-hardening plastic are removed, ground, polished and the finished structure is fixed with cement. A pin tooth can be made from self-hardening plastic in one visit using a celluloid cap. Similarly, in a one-step method, it is possible to make a crown made of plastic according to aesthetic parameters or a temporary one. Laboratory method of manufacturing a pin tooth from plastic (according to Ilyina-Markosyan). After preparing the root, a stainless steel pin is driven in. The pin is installed in the

root canal so that part of the pin protrudes above the root in the form of a loop or has a notch and the impression is removed. A crown is modeled from wax on the model, plastered in a cuvette, and the wax is replaced with plastic. After polymerization of the plastic, the pin tooth is processed, ground, polished and strengthened at the root. Logan and Davis crown. Logan's crown is manufactured industrially in the form of a porcelain crown with a pin. They are standard and fit in the patient's mouth. In a porcelain crown, the pin can be fixed stably or the pin and crown are made separately. In practice, it is more convenient to use crowns with a separate pin (Davis). The crown is adjusted to the root in such a way that it adjoins the outer wall of the root, closes the entrance to the mouth of the canal and does not interfere with the bite. Then a pin is fitted, one end of which enters the channel, and the other - into the channel of the porcelain crown. The work ends with cementation of the pin and crown.

Pin tooth made of plastic with a ring according to S. N. Parshin. The protruding part of the root is polished in such a way that the palatal edge protrudes 1.5-2.0 mm from under the gingival margin, and the labial edge - by 0.5 mm. A ring of the appropriate size, made of a crown sleeve, is selected for the root. The ring is driven 0.5 mm deep into the gum pocket. Notches are made on the free end of the ring, and a pin with a flattened outer end is inserted into the root canal, which should not interfere with the closing of the teeth. A ready-made plastic tooth is selected and polished to the labial surface of the root, as well as the protruding part of the pin. The plastic tooth is temporarily fixed on the root with wax from the palatal side and in this position plaster casts are made to obtain an impression of the labial surface of the plastic tooth and neighboring teeth.

After hardening, the gypsum bed is removed and two holes are made in it with a jigsaw at the level of the proximal surfaces of the plastic tooth from the cutting edge to the neck. The palatal surface of the plastic tooth, pin, and ring are carefully wiped with monomer, after which all parts of the pin tooth are connected to each other with self-hardening plastic from the palatal side using a gypsum bed. The plastic is pressed against the elements of the pin tooth and strengthened under pressure through a gasket made of moistened cellophane, which extends through the slots of the gypsum bed. In this way, the palatal and lateral surfaces of the pin tooth are formed. After the plastic has hardened, the pin tooth is carefully removed, treated, the central and front occlusion is checked and strengthened on the root with cement. Metal crown with plastic lining and pins according to A. A. Akhmedov. This design is convenient when the crown part is preserved. Prosthetics consists of the following stages. Impressions are taken and a full metal stamped crown is made. At the second stage, it is checked in the oral cavity and at the same time a pin is driven in, for which a hole is drilled from the palatal side of the crown, and a hole is drilled from the vestibular side, as for a combined crown. The crown is filled with melted wax, placed on the tooth and an impression is made. The pin is soldered with the crown, a window is cut out on the vestibular surface of the crown. The model simulates the labial wall of a tooth made of wax, which is replaced by plastic. Possible complications. A positive factor in the treatment of patients with simplified designs of pin teeth is the ease of manufacture (1-2 stages) and a high aesthetic effect. But complications are possible: resorption of

cement between the root and pin, crown and pin (according to Logan, Davis), breakage of a porcelain or plastic crown; pin fracture, root fracture, formation of secondary caries. When discussing the issue of prosthetics with a pin tooth according to Richmond, it is necessary to emphasize the features of this design, namely; the cap is soldered with a pin covering the root. Previously, it was made of gold. Clinical and laboratory stages of production of hip inserts with a pin. The advantages of this type of prostheses are the possibility to replace the artificial crown covering the stump if necessary (change in color, crown defects, etc.). At the same time, it is possible to cover the tooth with a temporary crown during the same visit.

When removing an adjacent tooth, the outer crown can be removed and a stump can be used to support a bridge prosthesis. It is possible to impose a bridge-like prosthesis with parallel root canals that are used as a support. It is possible to manufacture a pin that exactly repeats the shape of the prepared root canal, which ensures reliable fixation of the prosthesis. There are wide possibilities in choosing the type of artificial crown. A pin tooth with an artificial stump consists of a pin, an artificial stump rigidly connected to it, and an external crown, which is manufactured separately. The best results are achieved when making an artificial stump with a metal alloy pin, especially when the ash part of the root is destroyed, and covering it with a porcelain or metal-ceramic crown.

When planning this design, as well as when making a pin tooth, the clinical condition should be carefully evaluated. They pay attention to the condition of the stump of the destroyed crown of the tooth, the absence of an impression of caries, and check the stability of the root. A thorough x-ray examination of the root is necessary, the root canal must be passable and sealed in the periapical third. The general assessment of the condition of the root also involves determining its length, which should be at least the length of the crown, and the root walls should be of sufficient thickness. If the root is prepared in advance for prosthetics, then only its periapical third is sealed. After solving the question of the suitability of the root for prosthetics, they proceed to the preparation of the preserved stump. This part of the crown is prepared so that, together with the artificial stump, it corresponds to the shape of the prepared tooth. After preparing the root, proceed to modeling an artificial stump with a pin. The most widespread was the direct method. The root canal is filled with softened modeling wax (for example, "Lavax"), and a metal pin made of stainless wire is used as reinforcement. A coax pin insert can be modeled from self-hardening plastic, using a plastic rod as a reinforcing element of the pin. Then the stump part is modeled in accordance with the principles of the direct method of modeling a cast pin insert.

If the stump is made on many root teeth, then the main pin is inserted into the root canal, which has good patency, and in the hard-to-reach root canal, an additional pin is inserted to a depth of 3-5 mm. At the same time, it is necessary to ensure the parallelism of the pins, since if this condition is not met, their deformation is inevitable when removing the wax reproduction. If it is difficult to pass through the channel and it is not possible to insert a pin, then it is expanded at the mouth. In this case, the channel will be filled first with wax, and then with metal, and there will also be an additional fixative. After the selection and appropriate processing of the pins,

they proceed to modeling the wax composition of the artificial crown of the tooth. A stick of refractory modeling wax is softened and pressed to the root with some effort, trying not to displace the pins. After the wax has cooled, the remaining wax is removed with a slightly heated iron in such a way that the stump has the shape and diameter of the neck of the tooth, the chewing surface is restored, that is, the shape obtained during the preparation of the tooth for the crown is modeled. After re-cooling, the wax reproduction, together with the pins, is carefully removed from the oral cavity and transferred to the laboratory for metal casting. The following are used for casting: cobalt-chromium alloy, gold-platinum and silver-palladium alloys. The root canal is closed with a temporary bandage made of artificial dentin. At the patient's next visit, the metal stump of the tooth is fitted with a pin. At the same time, you should strive for a tight fit of the entire cast part to the root and crown surface of the tooth. Fixation of an artificial stump with cement is carried out in the same way as for a pin tooth. The artificial stump created in this way is reliably fixed on the root and can serve as a support not only for a separate crown, but also for other types of prostheses. If the modeling of the stump in the oral cavity is difficult due to clinical conditions, the doctor, after adjusting the pins, receives a reflection of this part of the tooth row. In the laboratory, the impression technician receives a plaster model and models the stump on it, and then transfers it to metal. Thus, the production of an artificial stump by the direct method consists of the following stages:

1. Preparation of the destroyed part of the tooth.
2. Expansion of the root canal.
3. Introduction of the pin into the channel and modeling over the gingival part of the tab.
4. Castings of stumps.
5. Fitting and fixing the stump pin insert with cement.

The production of a covering crown or a bridge-like prosthesis is carried out according to generally accepted methods. Complications during prosthetics with stump inserts. When using this design, various complications are possible. Some of them arise during the preparation of the teeth, but most of the complications are observed some time after the stump and covering crown are strengthened. During preparation, the most dangerous complication is perforation of the root.

To avoid this complication, it is necessary to open and expand the canals carefully and under radiographic control. The most serious complication due to different terms after strengthening the stump is the splitting of the root, the danger of splitting arises with improper design of the tab itself (increased bite due to the covering crown, irrational design of the bridge-like prosthesis resting on the stump tab). Splitting of the root can occur with a prognathic bite with protrusion of the upper front teeth in combination with a deep incisor overlap. With excessive magnitude and abnormal direction of occlusal load. The latter is transmitted not along the longitudinal axis of the tooth, but at an angle. 13 The horizontal component of the force causes tension and breakage of the front wall of the root. If such complications occur, the root must be removed. In addition to root splitting, other complications are also possible, such as: inflammation of the gums around the pin stump and covering its crown, decementation with a loose fit and deep location of the stump insert in

functionally overloaded teeth. The reasons for decementation can be improper preparation of the root, too short a pin, not thoroughly drying the root canals before fixing the stump with cement.

With the correct manufacture of stump pin inserts and roofing structure, taking into account the indications, no complications are observed. After the survey, the teacher assesses students' knowledge and announces grades with comments on the answers. After analyzing the theoretical material of the lesson, the teacher proceeds to the next section of the lesson. The teacher conducts a clinical examination of the thematic patient, demonstrates the method of examination of a patient with damage to the hard tissues of the teeth. Students conduct independent reception of patients with the advisory assistance of the teacher. In the absence of a thematic patient, working out the topic and monitoring the results of its assimilation is carried out by solving problem-situational tasks. After the end of the reception of patients, the teacher checks the correctness of filling out the medical documentation, pays attention to the mistakes made during the independent reception of patients.

3.2. recommendations (instructions) for performing tasks (professional algorithms, orientation maps for the formation of practical skills and abilities, etc.);

3.3. requirements for work results, including registration;

— Conduct an examination.

— Analyze the results of the examination of a dental patient.

— Make a plan for additional examination of the patient.

— Explain the results of clinical and special (additional) research methods.

4. Summary:

— Anamnesis of the patient. Main complaints. Medical history. Dental history.

— Examination. External overview. Reduction of the lower third of the face, expressiveness of nasolabial and chin folds, degree of mouth opening (free, difficult). Temporomandibular joint. Examination of the masticatory muscles.

— Intraoral examination. Assessment of the state of bone and mucous formations affecting the fixation of the prosthesis in the oral cavity.

— Determination of mobility and flexibility of the mucous membrane.

— Diagnosis. Plan and objectives of orthopedic treatment.

5. List of recommended literature (main, additional, electronic information resources):

Main:

- Orthopedic dentistry: textbook / Rozhko M.M., Nespryadko V.P., I.V. Paliychuk and others; under the editorship M.M. Rozhka, V.P. Nespryadka.- K.: Medical University "Medicine"; 2020. - 720 p.

- Rozhko M.M., Nespryadko V.P., Mykhaylenko T.M. and others. Dentoprosthetic technique. K.: Book plus; 2016. 604 p.

- Rozhko M.M., Popovych Z.B., Kuroyedova V.D. Dentistry. Textbook. K.: Medical University "Medicine"; 2018. 872 p.

Additional:

Dentistry: in 2 books. : textbook. Book 2 / M.M. Rozhko, I.I. Kirylenko, O.G. Denisenko and others. ; under the editorship M.M. Horn — 2nd edition. — K.: VSV "Medicine", 2018. — 992 p. ; color kind.

- Material science in dentistry: a study guide / [Korol D.M., Korol M.D., Ojubeiska O.D. etc.]; in general ed. King D.M. – Vinnytsia: New book, 2019. – 400 p.

Electronic information resources:

- State Expert Center of the Ministry of Health of Ukrainehttp://www.dec.gov.ua/index.php/ua/
- National Scientific Medical Library of Ukrainehttp://library.gov.ua/
- National Library of Ukraine named after V.I. Vernadskyihttp://www.nbuv.gov.ua/

Practical lesson No. 3

Topic:Indications for replacement of defects of the crown part of the tooth. Temporary permanent restorations. Indications, production methods. Protection of vital teeth during the manufacture of fixed orthopedic structures.

Goal:

1 To teach students to determine the indications for the restoration of damaged teeth with tabs, to draw up a treatment plan, to familiarize them with the main structural materials used in the manufacture of tabs.

1 To acquaint students with different types of prostheses used in case of significant or complete destruction of the tooth crown. Learn pin teeth according to Richmond and Ilyina-Markosyan, as well as simplified designs of pin teeth.

Basic concepts:examination of a dental patient, dental instruments for examination, X-ray diagnostics

Equipment: Computer, phantoms, examination instruments, x-rays

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).

2. Control of the reference level of knowledge:

2.1. requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units);

Know:

— structure of the upper jaw;
— structure of the lower jaw;
— structure of the temporomandibular joint;
— the structure of the mucous membrane of the oral cavity.
— tooth structure

Be able:

— determine the relationship between the upper and lower jaws;

— to examine the patient

— read x-rays

— do not prepare the root of the tooth under the stump tab

2.2. questions (test tasks, tasks, clinical situations) to check basic knowledge on the subject of the lesson.

— Examination. External overview. The degree of reduction of the lower third of the face, the expression of facial skin folds, the degree of mouth opening (free, difficult).

— Examination of the temporomandibular joint.

— Examination of the masticatory muscles.

— Examination of teeth and dentition

3. Formation of professional skills, skills (mastery of skills, conducting curation, determining the treatment scheme, conducting

laboratory research, etc.):

3.1. content of tasks (tasks, clinical situations, etc.);

Various lesions of the hard tissues of individual or groups of teeth gradually lead to a change in morphology, as a result of which there may be disturbances in the function of the maxillofacial system, the normalization of which is the main goal of dental prosthetics.

The causes of partial defects of the tooth crown can be carious lesions of dental tissues, non-carious lesions and trauma. The carious process disrupts the anatomical shape and structure of the tooth crown due to the formation of a defect in hard tissues. Partial defects of the tooth crown can have different localization, size, shape and depth.

The localization of the pathological process is due to the different resistance to caries of different tooth surfaces. Based on the topography of caries and the patterns of its distribution, Bleck distinguishes five classes of tooth defects. The first class includes cavities that occur in the fissures and natural pits of all teeth. Cavities on the contact surfaces of molars and premolars belong to the second class. The third class includes cavities on the contact surfaces of the front teeth with preservation of the cutting edge and its angle. The fourth class combines cavities on the contact surfaces of the front teeth with a violation of the cutting edge. The fifth class includes cavities in the cervical region of all teeth. However, this classification does not take into account such cases when cavities extend to several surfaces.

V. S. Kurlyandsky distinguishes three types of cavities according to the complexity of tooth preparation for prosthetics. The first type - cavities located on one surface of the tooth. The second type is cavities located on two surfaces of the tooth. The third type is cavities located on three surfaces of the tooth.

V. S. Kurylenko suggested dividing crown defects into depulped teeth (class 1) and teeth with living pulp (class 2). The second class has four subclasses: the first subclass is defects in lateral teeth with capture of the proximal surface; the second subclass-defects of the front teeth, with the absence of an angle of the cutting edge;

the third subclass - defects located on any surface of the tooth, except the proximal one; the fourth subclass is atypical defects that do not belong to the previous three subclasses.

According to the modern international classification, the localization of defects is indicated by the first letters of the names of the surfaces: O - occlusal, B - vestibular, M - medial, D - distal, MO - medial and occlusive, OD - occlusive withtransition to the distal,MOD-medial with transition to occlusal and distal, etc.).

Non-carious lesions of teeth are divided into two main groups:

1) lesions that arose during the follicular development of tooth tissues, i.e. before

2) teething (enamel hypoplasia, fluorosis, abnormalities of development, teething, color, hereditary disorders of tooth development;

3) 2) lesions that occurred after eruption: pigmentation, erosion of teeth, wedge-shaped defect, abrasion of hard tissues, hyperesthesia of teeth, necrosis of hard tissues of teeth, trauma of teeth.

4) Treatment methods vary depending on the size and location of the defect in the crown of the tooth. Dental fillings and direct restorations cannot always solve the problem of restoration of the shape and function of teeth in a high-quality and long-term way, especially in cases of Bleck class 2 and 4 defects. If the crown part of the tooth is not completely destroyed, orthopedic treatment is carried out with the help of tabs and crowns.

5) The index of the destruction of the occlusal surface of the teeth (IROPZ) proposed by V.Yu. Milikevich (1984) can provide some help in choosing a method of restoring a destroyed crown. The entire area of the occlusal surface of the tooth is taken as a unit. The destruction index (cavity or seal surface area) is calculated from a unit, that is, the area of the entire occlusive surface. With an IROPZ equal to 0.55-0.6, tabs are shown, with an index greater than 0.6-0.8 (60-80%) crowns, with an index greater than 0.8 - pin designs.

As a result of the spread of the concept of minimal invasion of teeth, D.N. Citrine coined the term microprosthesis. Microprostheses include tabs and veneers. Microprostheses allow you to restore the shape and function of the tooth taking into account functional occlusion and provide support for bridge and other prostheses.

According to the method of placement in the hard tissues of the tooth, tabs are divided into four groups:

- the first group - placement in the middle of the tooth, (INLAY),
- The second group - cover the occlusal surface of the tooth and at the same time are placed at different depths deep into the hard tissues (ONLAY),
- the third group - cover the outer most part of the crown of the tooth, (OVERLAY),
- the fourth group - all the above prostheses of all three groups, supplemented with pins that strengthen the tab, both in the root canal and in the hard tissues of the tooth (PSNLAY).

Indications for making tabs

1. Frequent loss of fillings.

2. Carious cavities of classes 2, 3, 4, 5, where the edge of the cavity is located in the marginal zone or below the level of the gingival margin.

3. Difficulties with restoration of the contact point during tooth filling.

4. Large cavities in non-pulpized teeth with significant damage to the occlusal surface.

5. Discoloration of the front teeth is an indication for the use of veneers.

6. Roughness of the relief of the occlusal surface of the lateral teeth.

7. Reduction of bite as a result of tooth wear.

8. Restoration of small dentition defects that are limited to intact teeth.

9. The need for a high level of hygiene of restorations.

10. Allergic reactions to filling materials.

With the help of artificial crowns, the anatomical shape of destroyed teeth is restored or a new necessary shape is created taking into account optimal functional and aesthetic requirements, as well as for placing fixing and supporting elements, manufacturing bridge-like prostheses, removable prostheses, orthodontic, maxillofacial apparatus and other structures.

Depending on the function, they are divided into restoring and fixing, temporary and permanent.

According to the design, they are divided into full, jacket, equatorial, telescopic, stump, half-crown, three-quarter.

Depending on the material, they can be metallic (made of precious and non-precious metals), non-metallic (plastic, porcelain) and combined (metallic with plastic, porcelain, etc. lining).

According to the method of production, crowns are divided into cast and stamped, seamed and seamless, as well as obtained by the method of polymerization, firing, etc.

Indications for making crowns

1. With defects of the crown of the tooth due to caries, injuries in which it is not possible to restore the shape of the tooth with a filling or insert (IROPZ 0.6-0.8)

2. With abnormalities in the position of the tooth.

3. With abnormalities of the tooth shape.

4. With tooth color abnormalities.

5. With anomalies of tooth development.

6. For support and fixation of bridge-like prostheses, orthodontic devices, maxillofacial devices.

7. To cover teeth on which clasps are placed.

8. With pathological wear of the tooth (teeth).

9. Aesthetic evidence.

10. The need to raise the bite.

Contraindications to making crowns

Artificial crowns are contraindicated in cases of periodontal disease in the acute stage, with significant mobility of the teeth, in the absence of the crown part of the tooth.

Plastic and porcelain crowns are contraindicated in cases of bruxism, certain bite anomalies, insufficient height of natural teeth.

It is contraindicated to make crowns in case of allergic reactions to materials (plastic, metal), electroplating, etc.

An artificial crown must meet the following requirements:

1. The artificial crown should tightly cover the neck of the tooth.

2. Minimally enter the dento-gingival groove (0.3-0.5 mm) without injuring the periodontal tissue.

3. The artificial crown should restore contact with neighboring teeth and not overbite during occlusion.

4. The artificial crown must completely restore the anatomical shape of the destroyed tooth.

Preparation of the patient for prosthetics

Preparation for prosthetics begins with sanitation of the oral cavity, that is, with general health measures. The latter are a mandatory part of any prosthetics preparation plan. This includes removal of dental deposits, treatment of diseases of the mucous membrane, simple and complicated caries (pulpitis, periodontitis), removal of teeth and roots that cannot be treated. Prosthetics with an unsanitized oral cavity is considered a serious mistake. Thus, all teeth with mobility of the 3rd degree and the roots of teeth that cannot be used for prosthetic purposes are subject to removal. An exception is the teeth, when the atrophy of the socket is up to 1/3, and the pathological mobility of the tooth is a consequence of the inflammatory process in the periodontium or trauma.

Exceptof general health, special preparatory events are also held. They follow the rehabilitation of the oral cavity and, in contrast to it, have a direction determined by the method of prosthetics.

3.2. recommendations (instructions) for performing tasks (professional algorithms, orientation maps for the formation of practical skills and abilities, etc.);

3.3. requirements for work results, including registration;

— Conduct an examination.

— Analyze the results of the examination of a dental patient.

— Make a plan for additional examination of the patient.

— Explain the results of clinical and special (additional) research methods.

4control materials for the final stage of the lesson: tasks, assignments, tests, etc. (if necessary).

5Summary:

— Anamnesis of the patient. Main complaints. Medical history. Dental history.

— Examination. External overview. Reduction of the lower third of the face, expressiveness of nasolabial and chin folds, degree of mouth opening (free, difficult). Temporomandibular joint. Examination of the masticatory muscles.

— Intraoral examination. Assessment of the state of bone and mucous formations affecting the fixation of the prosthesis in the oral cavity.

— Determination of mobility and flexibility of the mucous membrane.

— Diagnosis. Plan and objectives of orthopedic treatment.

6List of recommended literature (main, additional, electronic information resources):

Main:

- Orthopedic dentistry: textbook / Rozhko M.M., Nespryadko V.P., I.V. Paliychuk and others; under the editorship M.M. Rozhka, V.P. Nespryadka.- K.: Medical University "Medicine"; 2020. - 720 p.

- Rozhko M.M., Nespryadko V.P., Mykhaylenko T.M. and others. Dentoprosthetic technique. K.: Book plus; 2016. 604 p.

- Rozhko M.M., Popovych Z.B., Kuroyedova V.D. Dentistry. Textbook. K.: Medical University "Medicine"; 2018. 872 p.

Additional:

Dentistry: in 2 books. : textbook. Book 2 / M.M. Rozhko, I.I. Kirylenko, O.G. Denisenko and others. ; under the editorship M.M. Horn — 2nd edition. — K.: VSV "Medicine", 2018. — 992 p. ; color kind.

- Material science in dentistry: a study guide / [Korol D.M., Korol M.D., Ojubeiska O.D. etc.]; in general ed. King D.M. – Vinnytsia: New book, 2019. – 400 p.

Electronic information resources:

- State Expert Center of the Ministry of Health of Ukrainehttp://www.dec.gov.ua/index.php/ua/

- National Scientific Medical Library of Ukrainehttp://library.gov.ua/

- National Library of Ukraine named after V.I. Vernadskyihttp://www.nbuv.gov.ua/

Practical lesson No. 4

Topic:Indications for replacement of partial dentition defects with fixed prostheses. Temporary permanent restorations. Indications, production methods.

Goal:

To consider the general principles of treatment, rehabilitation, prevention of partial defects of dental rows with fixed dentures; explain the biomechanics of a bridge prosthesis; to explain the clinical and laboratory stage and manufacturing of stamped-soldered, cast bridge-like prostheses); analyze errors and complications of permanent prosthetics; fix the bridge-like prosthesis; to evaluate the prognosis of treatment of partial defects of dentition with fixed dentures.

Basic concepts:examination of a dental patient, dental instruments for examination, x-ray diagnostics, tooth row defect, restoration

Equipment: Computer, phantoms, examination instruments, x-rays

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Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).

2. Control of the reference level of knowledge:

2.1. requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units);

Know:

— structure of the upper jaw;
— structure of the lower jaw;
— structure of the temporomandibular joint;
— the structure of the mucous membrane of the oral cavity.
— tooth structure

Be able:

— determine the relationship between the upper and lower jaws;
— to examine the patient
— read x-rays

2.2. questions (test tasks, tasks, clinical situations) to check basic knowledge on the subject of the lesson.

— Examination. External overview. The degree of reduction of the lower third of the face, the expression of facial skin folds, the degree of mouth opening (free, difficult).
— Examination of the temporomandibular joint.
— Examination of the masticatory muscles.
— Examination of teeth and dentition

3. Formation of professional skills, skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.):

3.1. content of tasks (tasks, clinical situations, etc.);

When considering the issue of the clinic and etiology of partial tooth loss, the teacher notes that the loss of teeth is caused by various reasons: caries, periodontal disease, due to operations for various innovations in the oral cavity, trauma, and others. In the absence of the entire tooth (crown and root), and not only part of the crown or the entire crown, a defect in the dentition occurs.

A partial defect of the dentition is the absence of one to 13 teeth on each of the jaws.

small defects (from one to three teeth)
medium (from 3 to 9)
large (from 9 to 13).

The leading symptoms in the clinic of partial absence of teeth are:

1. violation of the continuity of the tooth row, that is, the formation of a defect;

2. the appearance of two groups of teeth: the one that kept the antagonists (the functioning group) and the one that lost them (the non-functioning group);

3. functional load of individual groups of teeth;

4. deformation of tooth rows;

5. violation of chewing, speech and aesthetic norms;

6. violation of the activity of the temporomandibular joint and masticatory muscles.

The teacher consistently and deeply analyzes these symptoms with the students, paying attention to the knowledge of the classification of dentition defects according to Kennedy and Applegate's rules for its use, knowledge of the classification of deformations of the dentition according to E.V. Gavrylov, forms of deformations according to Ponomariova, theories of equilibrium articulation according to Godon, Kosten syndrome. He discusses with the students the peculiarities of examining a patient with partial tooth loss. When considering the question of the classification of tooth rows, it should be noted that of the previously proposed classifications based on the anatomical-topographical principle, the Kennedy classification is the most acceptable.

The author divides all dentition defects into four main classes:

1. Bilateral toothless areas located behind other teeth.

2. One-sided toothless area located behind other teeth.

3. Lateral toothless areas, limited by the remaining teeth on both sides.

4. An edentulous space located in front of the rest of the teeth and crossing the midline of the jaws.

The main advantage of the Kennedy classification is its logic and simplicity, which makes it possible to immediately imagine the type of defect and the corresponding design of the prosthesis. Each class can have subclasses, which are determined by the number of additional defects of the dentition. Applegate (1954) supplemented Kennedy's classification by proposing 8 rules for its application: 1. Determining the class of the defect should not prevent tooth extraction, as this may change the established class of the defect. 2. If the Third molar is missing and it should not be replaced, then it is not taken into account in the classification. 3. If there is a third molar and it must be used as a supporting tooth, then it is taken into account in the classification. 4. If the second molar is missing, which should not be replaced, then it is not taken into account in the classification. 5. The class of the defect is determined depending on the most distally located edentulous areas. 6. Additional defects are considered as subclasses and are determined by their number. The size of additional defects is not considered and only their number is taken into account, it is determined by the number of the subclass. 8. Class 4 has no subclasses. The toothless areas that lie behind the defect in the area of the front teeth determine the class of the defect.

When considering the issue of justified use of bridge-like prostheses, their positive qualities should be noted in comparison with other types of dental prostheses. It has many positive aspects, due to the fact that it almost completely restores the lost functional value of the maxillofacial system, has ideal fixation, occupies a minimal prosthetic field and does not disturb sensations in the oral cavity.

This explains the quick habituation of the patient to the bridge prosthesis. A bridge-like prosthesis has another advantage over other existing structures: chewing pressure is transmitted to the bone through the periodontium, which is characterized by anatomical and physiological features suitable for the transformation of chewing pressure, which regulate the functional load of the teeth. Bridge-like prostheses are usually made of strong materials and alloys, so they are more durable than other dental prostheses. Thanks to the advent of plastics, the supporting parts of the prosthesis and artificial teeth can be lined with plastic or porcelain. Such bridge-like prostheses are complete in terms of aesthetics, as they can be similar in shape and color to natural teeth.

Bridge-like prostheses are usually used to replace dentition defects in order to restore the dentition, restore the act of chewing and speech; elimination of aesthetic defects, prevention of tooth-alveolar elongation, pathological attrition of teeth, overloading of remaining teeth, and others. However, when evaluating the prosthesis, its effect on the tissues of the oral cavity should also be taken into account. From this point of view, bridge-like prostheses less meet the requirements for prostheses from the point of view of physiology. They often disrupt the viability of the tissues of the oral cavity and cause pathological processes. A rough mechanical injury is inflicted on the abutment tooth during the manufacture of a bridge-like prosthesis. Bridge-like prostheses, especially cantilever ones, can overload the supporting teeth and be the cause of their pathological mobility.

It should be especially noted the violation of the integrity of the tooth - the removal of its natural coating (enamel) and the opening of the dentinal tubules, which opens the way for bacterial flora. In the gingival edge of the crown, food residues sometimes accumulate, which decompose and serve as a rich nutrient medium for numerous pathogenic microflora. Considering all the positive and negative aspects of bridge prostheses, it is necessary to prescribe them only according to medical indications and to make all parts correctly.

3.2. recommendations (instructions) for performing tasks (professional algorithms, orientation maps for the formation of practical skills and abilities, etc.);

3.3. requirements for work results, including registration;

— Conduct an examination.

— Analyze the results of the examination of a dental patient.

— Make a plan for additional examination of the patient.

— Explain the results of clinical and special (additional) research methods.

4Summary:

— Anamnesis of the patient. Main complaints. Medical history. Dental history.

— Examination. External overview. Reduction of the lower third of the face, expressiveness of nasolabial and chin folds, degree of mouth opening (free, difficult). Temporomandibular joint. Examination of the masticatory muscles.

— Intraoral examination. Assessment of the state of bone and mucous formations affecting the fixation of the prosthesis in the oral cavity.

— Determination of mobility and flexibility of the mucous membrane.

— Diagnosis. Plan and objectives of orthopedic treatment.

5List of recommended literature (main, additional, electronic information resources):

Main:

- Orthopedic dentistry: textbook / Rozhko M.M., Nespryadko V.P., I.V. Paliychuk and others; under the editorship M.M. Rozhka, V.P. Nespryadka.- K.: Medical University "Medicine"; 2020. - 720 p.

- Rozhko M.M., Nespryadko V.P., Mykhaylenko T.M. and others. Dentoprosthetic technique. K.: Book plus; 2016. 604 p.

- Rozhko M.M., Popovych Z.B., Kuroyedova V.D. Dentistry. Textbook. K.: Medical University "Medicine"; 2018. 872 p.

Additional:

Dentistry: in 2 books. : textbook. Book 2 / M.M. Rozhko, I.I. Kirylenko, O.G. Denisenko and others. ; under the editorship M.M. Horn — 2nd edition. — K.: VSV "Medicine", 2018. — 992 p. ; color kind.

- Material science in dentistry: a study guide / [Korol D.M., Korol M.D., Ojubeiska O.D. etc.]; in general ed. King D.M. – Vinnytsia: New book, 2019. – 400 p.

Electronic information resources:

- State Expert Center of the Ministry of Health of Ukrainehttp://www.dec.gov.ua/index.php/ua/

- National Scientific Medical Library of Ukrainehttp://library.gov.ua/

- National Library of Ukraine named after V.I. Vernadskyihttp://www.nbuv.gov.ua/

Practical lesson No. 5

Topic:Ceramic veneers - Indications and contraindications for manufacturing. Features of tooth preparation. Manufacturing technologies. Adhesive technique for fixing veneers.

Goal:

to teach students the main tasks of diagnostics in orthopedic dentistry, mastering the practical skills of preparing teeth for ceramic veneers, to teach students indications and contraindications for the manufacture of ceramic veneers, to familiarize them with the laboratory stages of the manufacture of veneers.

Basic concepts:examination of a dental patient, dental instruments for examination, x-ray diagnostics, dentition defect, restoration, veneer, adhesion

Equipment:Computer, phantoms, examination instruments, x-rays

Plan:

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1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).

2. Control of the reference level of knowledge:

2.1. requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units);

Know:

— structure of the upper jaw;
— structure of the lower jaw;
— structure of the temporomandibular joint;
— the structure of the mucous membrane of the oral cavity.
— tooth structure

Be able:

— determine the relationship between the upper and lower jaws;
— to examine the patient
— read x-rays

2.2. questions (test tasks, tasks, clinical situations) to check basic knowledge on the subject of the lesson.

— Examination. External overview. The degree of reduction of the lower third of the face, the expression of facial skin folds, the degree of mouth opening (free, difficult).
— Examination of the temporomandibular joint.
— Examination of the masticatory muscles.
— Examination of teeth and dentition

3. Formation of professional skills, skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.):

3.1. content of tasks (tasks, clinical situations, etc.);

Porcelain is a ceramic product obtained by sintering a porcelain mass made of kaolin, feldspar, and quartz. Feldspar is the main component of dental ceramic masses. According to the chemical composition, there are four main types of feldspar: -potassium (microcline and orthoclase), -sodium (albite), -calcium (anorite), -lithium (spodumene). The greatest importance for dental porcelain is potassium feldspar (orthoclase), which of all natural silicates has the lowest melting point (1000-1300 degrees). The orthoclase melt is characterized by high viscosity and low rate of pyroplastic flow during firing, which is important for maintaining a constant the shape of the baked product. Upon cooling, the feldspar melt solidifies in the form of almost transparent glass. Quartz is anhydrite of silicic acid with a melting point of 1400-1600 degrees. At high temperatures, quartz turns into tridymite and cristobalite. At the same time, its density decreases and its volume increases by 14-15%. Quartz strengthens porcelain masses and reduces their shrinkage during sintering. Kaolin is a silicon-potassium alumina hydrate.

When kaolin is mixed with water, it forms a dough and gives plasticity to the porcelain mass. When sintering, kaolin forms mullite crystals, which give the mass properties - strength and heat resistance. And also reduce the transparency of ceramics. Auxiliary components of porcelain: - fluxes (fluxes) - substances that lower the melting point of the porcelain mass (sodium carbonate, calcium carbonate, etc.). - paints - added to give the mass the color of the tooth. Metal oxides (titanium dioxide, manganese oxide, chromium, cobalt, zinc, etc.) are used as paints. - plasticizer - in porcelain masses that do not contain kaolin, the role of plasticizers is performed by organic substances (dextrin, starch, sugar), which completely burn out during sintering. - aniline paints - they are added to ceramic powders to facilitate tooth modeling. Paints burn out during sintering. Technology of production of porcelain masses. Careful control of the purity of the raw materials is important. Large pieces of feldspar and quartz are crushed into pieces 5-10 cm in size. Next, they are ground to a powdery state using quartz millstones. Mixtures are prepared in the required proportions with various additives of fluxes, etc. The mixture (charge) is placed in fireclay crucibles, or bracketed, and sintering is carried out to obtain a glass mass (frit). By sharp cooling, cracking of the frit is achieved, the particles are crushed and ground in a layer mill to the required powder size.

Fritting ensures mixing of the constituent parts of the mass and lowering the sintering temperature of the porcelain powder. Then coloring components are added. Organic plasticizers and aniline dyes are added to the finished powder. The properties of porcelain depend on many factors. The main ones are: - chemical composition of components, - degree of grinding (dispersity), - sintering temperature, - sintering time. In terms of physical properties, dental porcelains are close to glass, their structure is isotropic. Kaolin and quartz have higher melting points than feldspar. But in the feldspar glass solution, kaolin and quartz interact with the glass. Kaolin forms needle-like crystals of mullite, which permeates the entire mass of porcelain. Quartz particles in the glass solution melt, lose their needle-like shape, and a small amount of them passes into the glass solution.

Microscopic studies have established that the structure of porcelain consists of: 1) vitreous isotropic mass consisting of feldspar glass with varying degrees of saturation with quartz particles and mullite crystals. Pores are an important component of ceramics. The optical properties of porcelain are close to those of natural teeth. The transparent polvospar glass melt is clouded by inclusions of light-refracting crystals of quartz, mullite, alumina, and air bubbles. Volumetric changes during sintering. The main reason for volumetric shrinkage is insufficient condensation of ceramic mass particles. The second reason is the loss of liquid and organic impurities. The direction of volume shrinkage is of practical importance. The greatest shrinkage is in the direction of more heat, in the direction of gravity, and in the direction of more mass. In the first and second cases, the shrinkage is small, because in modern furnaces, even distribution of heat is guaranteed, and the force of gravity is small, because the amount of substance is small. Shrinkage in the direction of larger masses is much higher. The mass in the melt tries to take the form of a drop. At the same time, it is pulled from the peripheral areas to the center to a larger volume of porcelain.

During the manufacture of a porcelain crown, the ceramic mass, decreasing, shifts from the neck of the tooth to the center, while lifting the platinum foil. This will result in a gap between the crown and the ledge on the model. Strength of porcelain. The main indicators of strength are tensile, compressive and bending strength. Dental porcelain has high compressive strength (4600-8000 kg/cm2). Porcelain has a low bending strength (447-625 kg/cm2). The main characteristic of the strength of porcelain is the bending strength. Strength depends on the composition of porcelain, production technology, as well as on the method of manufacturing the prosthesis. The strength of porcelain is affected by the method of mass condensation, drying of the mass, the number of sinterings, the method of vacuum application, the introduction of crystal particles of high strength and elasticity into the porcelain, having the same KTR as porcelain. (Aluminous porcelain). Crystals are potential "cracking brakes". By purpose, porcelain masses are the basic material for: 1) factory production of standard artificial teeth; 2) factory production of standard porcelain crowns and blanks for porcelain inlays, 3) individual production of porcelain crowns in the conditions of a dental laboratory, 4) individual production of inlays in the conditions of a dental laboratory, 5) cladding of one-piece frameworks of metal fixed dental prostheses (crowns, bridge-like prostheses). Modern ceramic masses differ significantly in structure, properties, production and indications for use. Thus, traditional ceramics are the most accessible and widely distributed, structures from which are made by sintering on platinum foil, a fire-resistant model and applied to a metal frame. Such ceramics are called reinforced heterogeneous ceramics. It consists of a glass phase and a crystalline phase - a mixture of alumina porcelain and leucite. (Corum, Vivadent;) Glass ceramics also belong to the category of heterogeneous ceramics. In it, the crystalline phase (mica, silicon dioxide, apatites) is sintered in the glass during heat treatment. (Dicor, Dentsply; Ceraperl, Kyocera). Heterogeneous ceramics, which are produced by the Slip-casting method (In-Ceram, Vita Zahnfabrik) consist of a slag-free spinel matrix (spinelle matrix MgAL2O4) infiltrated with glass.

This method ensures high transparency of the mass. In connection with this, this ceramic needs a surface aesthetic coating. Ceramics, the structures of which are made according to CAD/CAM methods (CEREC, CEREC 2, Siemens) and on a pantographic device (Celay, Mikrona Ceramic MKII, Instrument AB) are homogeneous and without air pores, due to which physical characteristics and polishability have improved. Homogeneous ceramics - low-temperature ceramics are pure hydrothermal glass, on the surface of which a layer of silicon hydroxide forms in the oral cavity when in contact with water, the indicators of which are similar to tooth enamel in terms of abrasiveness. Sintering of such ceramics is carried out at low temperatures (650-680 degrees). (LFC, SYMBIO, Duceragold, Ducera). Methods of manufacturing modern ceramic prostheses. 1. Manufacture of dental prostheses by sintering on platinum foil or on a refractory model. (Ceramic systems Vitadur, Vitadur N, Optec, Screening +EX-3, Flexoceram). The systems for manufacturing one-piece single crowns on platinum foil and on a fire-resistant model were the first to appear. Ceramic mass "Gamma" and sital "Sikor" were well known in our country, from which single crowns on platinum foil were made. Gradually, these materials

were replaced by metal-ceramic structures. Old materials have been replaced by new ones nowadays. The expensive method of making crowns on platinum foil has been replaced by a cheaper, fire-resistant model, and indications for the use of ceramics have expanded significantly. Currently, 3-unit crowns, veneers, inlays and bridges are made on refractory models. For the manufacture of a prosthesis on a refractory model, it is necessary to have a refractory mass, which is close to ceramics in terms of KTR. Therefore, in most cases, a company producing ceramic mass creates a refractory mass or a set of refractory masses. (company Ducera, porcelain LFC, SYMBIO, mass for stamps-DUCERA-LAY-Superfit, company Noritake, porcelain Screening+EX-3, refractory material Nori-Vest). The use of a refractory model reduces the cost and simplifies the production technology of an all-ceramic structure. 2. Production of dental prostheses by casting method (Dicor, CeraPearl, Dentasit systems).

The prosthesis is cast according to the melted wax model. The wax model is molded into a molding compound on a phosphate bond. The structures are almost transparent. You should be careful when choosing the color of the fixing material. The structure can be painted on the surface. 3. Manufacturing dental prostheses using a computer program. Cerec, Procera All Ceram, Duret, DCS President systems. These systems work using high-tech CAD/CAM (computer aided design/computeraided manufacturing) technologies. Computer modeling/computer control of the manufacturing process. 4. Production of dental prostheses by pressing method. Systems IPS-Empress, OPS. These are sets of materials and equipment for the production of all-ceramic prostheses by the method of hot pressing. The surface of the pressed cap is covered with fluorapatite ceramics, which has less abrasiveness in relation to antagonists. 5. The Cerestor system (Johnson & Johnson Dental Products Co. USA) – casting of frameworks from plasticized schlicker with subsequent cladding 6. The In-Ceram system (Vita Zahnfabrik). The prosthesis is a framework made of sintered aluminum oxide or magnesium spinel, saturated with lanthanum glass. Cladding is made with ordinary ceramics. Indications for the manufacture of an all-ceramic crown using the method of sintering on platinum foil (on a refractory model).

1. Significant carious or traumatic damage to the crown part of the front tooth (up to the 4th tooth inclusive) when it is impossible to restore it with a microprosthesis or filling material.

2. Anomalies of tooth development (up to 4 inclusive).

3. Non-carious damage to a significant surface of the tooth (up to 4 inclusive) when it is impossible to restore it with a filling material or a microprosthesis.

4. Aesthetic requirements (only the front group of teeth)

5. The need to replace an unaesthetic old artificial crown (up to 4 teeth inclusive). 6. Physiological forms of bite (excluding direct).

Contraindications to the production of all-ceramic crowns using the method of sintering on platinum foil (on a refractory model). 1. Absolute:

-teeth with living pulp in children and adolescents,

- teeth of the lateral parts of the jaws,

- periodontitis,

- increased wearability,
-small sizes of the crown part of the tooth,
- incisors of the lower jaw of small and medium size,
- deep bite,
-parafunctions of chewing muscles.
2. Relative:
-dental-jaw deformities,
-damage or loss of chewing teeth,
-roots of the frontal group, located at or below the gingival margin,
-complicated caries,
-gingivitis,
- traumatic occlusion.

Clinical stages of manufacturing porcelain crowns: 1. Examination of the patient. It is carried out according to the generally accepted methodology. Examining plaster casts during the examination of a patient for whom porcelain crowns are planned will help clarify the features of the bite, as well as the ratio of the tooth rows. On diagnostic models, preliminary preparation of supporting teeth can be carried out to determine the optimal depth of preparation of each tooth surface, the expediency of tooth depulping. Temporary crowns can be pre-made on plaster models, which after correction are placed on the prepared stump of the tooth. 2. Preparation of the dental and jaw system for prosthetics. There are therapeutic, surgical, orthopedic and orthodontic preparation of the tooth for prosthetics. Therapeutic preparation includes treatment of the tooth and the adjacent mucous membrane, surgical treatment of periapical pathology and the formation of the marginal zone, orthopedic preparation during prosthetics with porcelain crowns consists of ensuring functional occlusion in the lateral areas of the jaws, orthodontic preparation changes the position of the teeth to ensure better prosthetic conditions. 3. Preparation of supporting teeth. Porcelain is a fragile material, therefore, to give the crown strength, it is necessary to provide a significant thickness. The thickness of tooth tissue grinding is 1.5-2 mm. Preparation of a tooth with living pulp should be carried out with water cooling with well-centered and sharp burs, taking into account the safety zones according to N.G. Abolmasov. Finish the preparation of the tooth by forming a wide (0.8-1 mm) ledge above or at the level of the gums. A ledge is formed along the perimeter of the tooth. The form of the ledge is a shoulder, or a trough at an angle of 90-110 degrees to the vertical axis. For teeth in which the color of the root has changed, or if there is a carious cavity in the periodontal area of the tooth or there was already a crown on the tooth, it is necessary to place a ledge in the furrow area. Also, the low height of the crown of the tooth is an indication of the subgingival location of the ledge. To deepen the ledge in the furrow area, it is necessary to carry out retraction according to one of the known methods. Gum retraction is also necessary to obtain a high-quality impression. 4. Obtaining a print. To obtain an impression for the manufacture of a porcelain crown, a combined impression with a copper ring filled with thermoplastic mass or silicone is used. It is possible to use one-stage or two-stage techniques with silicone.

To make even one crown, it is necessary to obtain impressions for working and auxiliary models. The prosthesis must be made in the articulator. 5. Choice of tooth color. It is carried out using the palette of the company Vita, or the palette of mass-producing companies. The color should be determined in daylight, excluding all bright objects from the field of view. The color of the tooth can be affected by the color of the stump. This should be especially taken into account when the stump is dark: made of non-noble alloys, silver alloys, or dark restorative material. Under porcelain crowns, it is desirable to use aesthetic materials for the manufacture of a tooth stump. To fully reproduce the color of the tooth, it is necessary to determine the color from five sides of the tooth, and separate at least 9 color sectors on the surface of the tooth. 5. Trying on the crown on the stump of the tooth. Before trying on the crown, it is necessary to look carefully, to identify all manufacturing defects. After placing on the tooth, the first stage of inspection is the assessment of the ratio of the edge of the crown and the ledge. The edge of the crown should fit tightly to the ledge along the entire perimeter of the abutment tooth. The outer edge of the crown should be in one plane with the hard tissues of the tooth. The occlusal surface of the porcelain root is carefully checked in all phases of articulation. This is followed by the correction of the shape and size of the crown, as well as the matching of the color of the teeth. 6. Handing over the crown. Fixation of the crown. The crown is inspected, external defects are revealed. Detection of defects such as a crack, a hole is a direct indication for a complete reworking of the crown. In most cases, the discrepancy in tooth color is corrected by re-staining or fixing material. Fixation of the crown must be carried out on special materials that ensure adhesion to the tooth and porcelain. In some cases, fixation on glass ionomer, polycarboxylate, or zinc-phosphate cement is possible. Prosthetics of defects of hard tissues of teeth with veneers. Prosthetics of defects of hard tissues of teeth with tabs. Causes of damage to the hard tissues of the tooth. • Trauma is acute and chronic. • Non-carious lesions: hypoplasia, fluorosis, wedge-shaped defects, increased abrasion, congenital hereditary malformations of hard tissues. • Caries. Damage to the crown part of the tooth is directly proportional to the time of its action and can have a different degree of expressiveness. Treatment methods vary depending on the size and location of the defect in the crown of the tooth. Tooth filling and direct restoration cannot always solve the problem of restoration of the shape and function of teeth in a high-quality and long-term way, especially in the case of class II and IV defects according to Black.

This author, taking into account the typical localization of caries and the patterns of its distribution, singled out 5 classes of cavities.

- The first class - cavities located in fissures and pits of molars. They are characterized by preservation of all cavity walls.
- The second class - cavities located on the contact surfaces of molars and premolars, and cavities that transition to chewing surfaces.
- The third class - cavities located on the contact surfaces of the front teeth.
- The fourth class - cavities located in the front teeth and extending to the cutting edge.
- The fifth class - carious cavities located in the cervical area.

For a correct assessment of the state of the tooth crown, information on the state of the pulp is necessary, which is not highlighted in the above-mentioned classification. V.S. Kurylenko proposed a classification, tooth cavities are divided into two classes. The first class includes cavities in depulped teeth. The second class includes all defects in teeth with an intact pulp. The second class has four subclasses: - the first subclass - defects in the lateral teeth, with capture of the proximal surface, - the second subclass - defects of the front teeth, with the absence of an angle of the cutting edge, - up to the third subclass classified defects located on any of the surfaces of the tooth, except for the proximal one, - the fourth subclass includes atypical defects, those that do not belong to the previous three subclasses. According to the method of location in the hard tissues of the tooth, the tabs are divided into four groups: - the first group - located inside the tooth, (inlay)? - the second group - covering the occlusal surface of the tooth and at the same time placed to different depths deep into the hard tissues (onlay), - the third group - covering the outer most part of the crown of the tooth (overlay), - the fourth group - all the above-mentioned prostheses of all three groups, supplemented with pins , which strengthen the tab, both in the root canal and in the hard tissues of the tooth. (pinlay). It is also necessary to note a separate category of microprostheses - veneers. To guide the location of the tab, there is a classification that allows you to orient yourself on which surface the cavity is located. This classification is important for calculating the occlusal forces acting on the microprosthesis. According to the location on the surfaces of the tooth, cavities are classified as: -"O"-occlusal, -"M"-medial, -"D"-distal, -"P"-cervical, -"MO"-cavity on the occlusal surface with a transition to the medial , -"OD"-cavity on the occlusal surface with a transition to the distal, -"MOD"-cavity on the occlusal surface with a transition to the distal and medial, etc. The term "microprosthesis" was introduced by D.N. Lemon in Ukrainian. The need for this arose as a result of the spread of the odonto-preserving trend in dentistry. A microprosthesis allows you to restore the shape and function of the tooth, taking into account the functional occlusion, and provide support for bridge-like and other prostheses. The issue of distribution of occlusal load on tooth tissues and microprostheses deserves special attention. During loads on the tissues of the tooth and the inlay, forces of different magnitude and direction act. These forces cause compressive and tensile stresses in the walls of the cavity and tab. The regularity of the redistribution of chewing pressure forces between the system of microprosthesis-cavity wall allows us to formulate the following pattern of cavity formation: the bottom of the cavity should be perpendicular to the vertically acting pressure forces, but not to the vertical axis of the tooth. In relation to this level, the walls of the trench are formed at an angle of 90 degrees. The pressure from the tab on the tooth walls under the action of occlusal forces depends on the degree of damage to the occlusal surface. As an indicator (index) of damage to the hard tissues of the tooth with 1-2 classes of defects according to Black, Yu.V. Milykevich introduced the concept of IPOPZ (damage index of the occlusal surface of the tooth). It represents the ratio of the dimensions of the "cavity-seal" plane to the chewing surface of the tooth. If the IPOPZ index is 0.55-0.6 (surface damage is more than 55%, tabs are shown, if the index is more than 0.8 – pin structures).

3.2. recommendations (instructions) for performing tasks (professional algorithms, orientation maps for the formation of practical skills and abilities, etc.);

3.3. requirements for work results, including registration;

— Conduct an examination.

— Analyze the results of the examination of a dental patient.

— Make a plan for additional examination of the patient.

— Explain the results of clinical and special (additional) research methods.

4. Summary:

— Anamnesis of the patient. Main complaints. Medical history. Dental history.

— Examination. External overview. Reduction of the lower third of the face, expressiveness of nasolabial and chin folds, degree of mouth opening (free, difficult). Temporomandibular joint. Examination of the masticatory muscles.

— Intraoral examination. Assessment of the state of bone and mucous formations affecting the fixation of the prosthesis in the oral cavity.

— Determination of mobility and flexibility of the mucous membrane.

— Diagnosis. Plan and objectives of orthopedic treatment.

5. List of recommended literature (main, additional, electronic information resources):

Main:

- Orthopedic dentistry: textbook / Rozhko M.M., Nespryadko V.P., I.V. Paliychuk and others; under the editorship M.M. Rozhka, V.P. Nespryadka.- K.: Medical University "Medicine"; 2020. - 720 p.

- Rozhko M.M., Nespryadko V.P., Mykhaylenko T.M. and others. Dentoprosthetic technique. K.: Book plus; 2016. 604 p.

- Rozhko M.M., Popovych Z.B., Kuroyedova V.D. Dentistry. Textbook. K.: Medical University "Medicine"; 2018. 872 p.

Additional:

Dentistry: in 2 books. : textbook. Book 2 / M.M. Rozhko, I.I. Kirylenko, O.G. Denisenko and others. ; under the editorship M.M. Horn — 2nd edition. — K.: VSV "Medicine", 2018. — 992 p. ; color kind.

- Material science in dentistry: a study guide / [Korol D.M., Korol M.D., Ojubeiska O.D. etc.]; in general ed. King D.M. – Vinnytsia: New book, 2019. – 400 p.

Electronic information resources:

- State Expert Center of the Ministry of Health of Ukrainehttp://www.dec.gov.ua/index.php/ua/

- National Scientific Medical Library of Ukrainehttp://library.gov.ua/

- National Library of Ukraine named after V.I. Vernadskyihttp://www.nbuv.gov.ua/

Practical lesson No. 6

Topic:Indications, clinical and laboratory stages of manufacturing aesthetic restorations using metal-free technologies. Errors and complications.

Goal:

to teach students the main tasks of diagnostics in orthopedic dentistry, mastering the practical skills of preparing teeth for ceramic veneers, to teach students indications and contraindications for the manufacture of ceramic veneers, to familiarize them with the laboratory stages of the manufacture of veneers.

Basic concepts:examination of a dental patient, dental instruments for examination, x-ray diagnostics, tooth row defect, restoration.

Equipment:Computer, phantoms, examination instruments, x-rays

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).

2. Control of the reference level of knowledge:

2.1. requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units);

Know:

— structure of the upper jaw;
— structure of the lower jaw;
— structure of the temporomandibular joint;
— the structure of the mucous membrane of the oral cavity.
— tooth structure

Be able:

— determine the relationship between the upper and lower jaws;
— to examine the patient
— read x-rays

2.2. questions (test tasks, tasks, clinical situations) to check basic knowledge on the subject of the lesson.

— Examination. External overview. The degree of reduction of the lower third of the face, the expression of facial skin folds, the degree of mouth opening (free, difficult).
— Examination of the temporomandibular joint.
— Examination of the masticatory muscles.
— Examination of teeth and dentition

3. Formation of professional skills, skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.):

3.1. content of tasks (tasks, clinical situations, etc.);

Orthopedic treatment and the technology of manufacturing metal-free ceramics today are called the most progressive by the world's leading dentists. Based on the name, the designs of such prostheses (crowns, bridge-like prostheses) are made without the content (presence) of metal. Particularly strong ceramics (porcelain) are used as a frame. According to the modern requirements of biocompatibility standards, the use of metal in the oral cavity is still undesirable. Ceramic is a neutral material and does not cause allergic reactions and side effects on the tissues of the prosthetic bed. A very important advantage of metal-free ceramics is aesthetic properties that correspond to the characteristics of natural teeth. Metal-free ceramics are translucent in color and have the same degree of refraction of light as tooth enamel, so the manufactured orthopedic structures do not differ from a living tooth.

Durability and practicality in use are no less important than aesthetics. The latest developments make it possible to use metal-free ceramics not only for a group of front teeth, but also to replace small defects of the dentition in the lateral area.

However, the manufacturing technology and technical support are complex and expensive and require special training of a dental technician. But all these difficulties are compensated by the high quality of the manufactured orthopedic structures.

The production of metal-free ceramics consists of successive clinical and laboratory stages.

After a detailed study of the clinical situation, drawing up a treatment plan and agreeing on all legal issues with the patient, the dentist-orthopedic can start implementing the planned plan.

Мал. 257. **Вигляд відпрепарованого зуба**

The preparation of supporting teeth for metal-free ceramics is carried out according to generally accepted rules (Fig. 257), which are described in detail in the section on the manufacture of metal-ceramic crowns and structures. The responsible stage is the process of taking high-precision full anatomical impressions. As a rule, dentists do not face special difficulties at this stage, because they have a huge set of modern impression materials in their arsenal. Impression spoons with impressions of the upper and lower jaws, a wax base plate or other material used to fix the central ratio of the jaws are sent to the dental laboratory (Fig. 258).

Мал. 258. **Відбитки верхньої та нижньої щелеп**

The production technology of metal-free ceramics involves the production of a particularly accurate collapsible plaster model. After the completion of this responsible stage, the preparation and installation of the collapsible plaster model in the articulator of the manufacturing company, with which the dental laboratory works, is carried out.

The next stage is the determination of the height of the future work and the elimination of blocking points on the plaster dentition.

Next, the dental technician has the right to start modeling the composition of the future structure. It can be modeled from wax or from high-quality photopolymer materials. We will focus on modeling technology using photopolymer materials. To do this, the dental technician first covers the plaster supporting tooth with a stumflak. The modeling procedure involves multiple application of a special gel on the supporting plaster tooth, not reaching 1 mm to the edge of the preparation. Intermediate polymerization of each applied gel layer is carried out.

The dental technician performs the final modeling of the cap, final polymerization, removes the cap from the plaster model, controls the thickness of the walls using a micrometer (caliper). The finished cap should be easily removed from the plaster model of the tooth and also fixed without problems.

The technology of manufacturing metal-free ceramics involves making a cap from zirconium oxide. For this, a special milling machine is used (Fig. 261).

Мал. 261. **Фрезерувальний станок**

The dental technician performs the preparatory steps for the milling step. Places the finished compositions of caps (cap) on the retaining plate, marks the place of future fixation, creates a place for the caps on the fixing plate, fixes the caps with mandatory control of the vertical position. Selects the size of the workpiece for the production of a cap from zirconium oxide and fixing it on the work table of the milling machine, performs the final adjustment for the milling stage. After milling, the finished cap must be prepared, namely: grind the joint of the cap with the workpiece with a dental milling cutter.

The next stage in working with a cap made of zirconium oxide is to give it a certain color. For this, the dental technician dips the caps for 2 minutes in a special gel with plastic tweezers. After removing the remaining moisture, the caps are placed on a special stand with granules and the caps are baked in a special oven. After the sintering is complete, the dental technician fits the finished caps onto the plaster molds. If there are previous contacts, they are polished, the thickness of the walls is controlled using a caliper. Finished caps on plaster models together with the articulator are transferred to the orthopedic dentistry clinic.

Before fitting caps made of zirconium oxide, the orthopedic dentist checks the quality of their manufacture, namely the thickness of the walls, whether there are cracks, the tightness of the neck of the caps to the clinical neck of the tooth, etc. The very stage of fitting zirconium oxide caps is no different from the clinical stages of fitting the frame of a metal-ceramic crown. After the work is completed, the color of the ceramic lining is determined.

The work is transferred to the dental laboratory, where the dental technician carries out the final processing of the cap made of zirconium oxide and begins directly with the technology of manufacturing metal-free ceramics, which, starting from the stage of applying the opaque layer, does not differ from the technology of manufacturing a metal-ceramic crown. Ceramic materials compatible with zirconium oxide are used. After applying the opaque layers and their sintering, the anatomical shape of the metal-ceramic crown is modeled with dentine masses, carrying out sintering after applying each layer. Having completed the stage of modeling the

anatomical shape of the tooth crown, the dental technician returns the work to the orthopedic dentistry clinic for final fitting.

Orthopedic dentist checks the quality of the manufactured crown. The main tasks at this stage are the fitting of the crown, the correspondence of the neck of the crown to the clinical neck of the abutment tooth, checking of occlusal contacts, if such contacts are detected, they are eliminated by grinding with special diamond-shaped heads, it is necessary to check the correspondence of the anatomical structure with the adjacent teeth and the correspondence of the color scheme. When this complex is completed and meets the requirements of the orthopedic dentistry clinic, the work is returned to the dental laboratory for final processing and glazing. If anatomical defects in the shape of the artificial crown were detected during the fitting, the dental technician, on the doctor's instructions, carries out modeling, accordingly sintering, and if necessary, the crown can be tried on again in the oral cavity in the clinic.

After the completion of the laboratory stage, the finished metal-free crown is transferred to the orthopedic dentistry clinic for fixation.

The metal-free crown is fixed according to the generally accepted rules of the clinic of orthopedic dentistry. Then the dentist-orthopedic gives instructions to the patient about the rules for using this structure.

3.2. recommendations (instructions) for performing tasks (professional algorithms, orientation maps for the formation of practical skills and abilities, etc.);

3.3. requirements for work results, including registration;

— Conduct an examination.

— Analyze the results of the examination of a dental patient.

— Make a plan for additional examination of the patient.

— Explain the results of clinical and special (additional) research methods.

4. Summary:

— Anamnesis of the patient. Main complaints. Medical history. Dental history.

— Examination. External overview. Reduction of the lower third of the face, expressiveness of nasolabial and chin folds, degree of mouth opening (free, difficult). Temporomandibular joint. Examination of the masticatory muscles.

— Intraoral examination. Assessment of the state of bone and mucous formations affecting the fixation of the prosthesis in the oral cavity.

— Determination of mobility and flexibility of the mucous membrane.

— Diagnosis. Plan and objectives of orthopedic treatment.

5. List of recommended literature (main, additional, electronic information resources):

Main:

- Orthopedic dentistry: textbook / Rozhko M.M., Nespryadko V.P., I.V. Paliychuk and others; under the editorship M.M. Rozhka, V.P. Nespryadka.- K.: Medical University "Medicine"; 2020. - 720 p.

- Rozhko M.M., Nespryadko V.P., Mykhaylenko T.M. and others. Dentoprosthetic technique. K.: Book plus; 2016. 604 p.

- Rozhko M.M., Popovych Z.B., Kuroyedova V.D. Dentistry. Textbook. K.: Medical University "Medicine"; 2018. 872 p.

Additional:

Dentistry: in 2 books. : textbook. Book 2 / M.M. Rozhko, I.I. Kirylenko, O.G. Denisenko and others. ; under the editorship M.M. Horn — 2nd edition. — K.: VSV "Medicine", 2018. — 992 p. ; color kind.

- Material science in dentistry: a study guide / [Korol D.M., Korol M.D., Ojubeiska O.D. etc.]; in general ed. King D.M. – Vinnytsia: New book, 2019. – 400 p.

Electronic information resources:

- State Expert Center of the Ministry of Health of Ukrainehttp://www.dec.gov.ua/index.php/ua/

- National Scientific Medical Library of Ukrainehttp://library.gov.ua/

- National Library of Ukraine named after V.I. Vernadskyihttp://www.nbuv.gov.ua/

Practical lesson No. 7

Topic:Replacement of partial dentition defects with bridge prostheses. Biomechanics of bridge prostheses.

Goal:

- identify typical clinical signs of partial defects of the dentition; to be able to conduct an examination of a patient with partial defects of the dentition; explain clinical and special (additional) methods of examination of patients with partial defects of dentition; to know the types of preparation of supporting teeth;

- consider the general principles of treatment, rehabilitation, prevention of partial defects of dental rows with fixed dentures; explain the biomechanics of a bridge prosthesis; to explain the clinical and laboratory stage and manufacturing of stamped-soldered, cast bridge-like prostheses); analyze errors and complications of permanent prosthetics; fix the bridge-like prosthesis; to evaluate the prognosis of treatment of partial defects of dentition with fixed dentures.

- **Basic concepts:**examination of a dental patient, dental instruments for examination, X-ray diagnostics, dentition defect, bridge-like prostheses

Equipment:Computer, phantoms, examination instruments, x-rays

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).

2. Control of the reference level of knowledge:

2.1. requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units);

Know:

— structure of the upper jaw;
— structure of the lower jaw;
— structure of the temporomandibular joint;
— the structure of the mucous membrane of the oral cavity.
— tooth structure
— to know the classification of dentition defects

Be able:

— determine the relationship between the upper and lower jaws;
— to examine the patient
— read x-rays

2.2. questions (test tasks, tasks, clinical situations) to check basic knowledge on the subject of the lesson.

— Examination. External overview. The degree of reduction of the lower third of the face, the expression of facial skin folds, the degree of mouth opening (free, difficult).
— Examination of the temporomandibular joint.
— Examination of the masticatory muscles.
— Examination of teeth and dentition

3. Formation of professional skills, skills (mastery of skills, conducting curation, determining the treatment scheme, conducting

laboratory research, etc.):

3.1. content of tasks (tasks, clinical situations, etc.);

When considering the issue of the clinic and etiology of partial tooth loss, the teacher notes that the loss of teeth is caused by various reasons: caries, periodontal disease, due to operations for various innovations in the oral cavity, trauma, and others. In the absence of the entire tooth (crown and root), and not only part of the crown or the entire crown, a defect in the dentition occurs. A partial defect of the dentition is the absence of one to 13 teeth on each of the jaws, and small defects (from one to three teeth), medium (from 3 to 9), and large (from 9 to 13) are distinguished.

The leading symptoms in the clinic of partial absence of teeth are: 1. violation of the continuity of the tooth row, that is, the formation of a defect; 2. the appearance of two groups of teeth: the one that kept the antagonists (the functioning group) and the one that lost them (the non-functioning group); 3. functional load of individual groups of teeth; 4. deformation of tooth rows; 5. violation of chewing, speech and aesthetic norms; 6. violation of the activity of the temporomandibular joint and masticatory muscles. The teacher consistently and deeply analyzes these symptoms with the students, paying attention to the knowledge of the classification of dentition defects according to Kennedy and Applegate's rules for its use, knowledge of the classification of deformations of the dentition according to E.V. Gavrylov, forms of deformations according to Ponomariova, theories of equilibrium articulation according to Godon, Kosten syndrome. He discusses with the students the

peculiarities of examining a patient with partial tooth loss. When considering the question of the classification of tooth rows, it should be noted that of the previously proposed classifications based on the anatomical-topographical principle, the Kennedy classification is the most acceptable.

The author divides all dentition defects into four main classes:

1. Bilateral toothless areas located behind other teeth.
2. One-sided toothless area located behind other teeth.
3. Lateral toothless areas, limited by the remaining teeth on both sides.
4. An edentulous space located in front of the rest of the teeth and crossing the midline of the jaws.

The main advantage of the Kennedy classification is its logic and simplicity, which makes it possible to immediately imagine the type of defect and the corresponding design of the prosthesis. Each class can have subclasses, which are determined by the number of additional defects of the dentition. Applegate (1954) supplemented Kennedy's classification by proposing 8 rules for its application: 1. Determining the class of the defect should not prevent tooth extraction, as this may change the established class of the defect. 2. If the Third molar is missing and it should not be replaced, then it is not taken into account in the classification. 3. If there is a third molar and it must be used as a supporting tooth, then it is taken into account in the classification. 4. If the second molar is missing, which should not be replaced, then it is not taken into account in the classification. 5. The class of the defect is determined depending on the most distally located edentulous areas. 6. Additional defects are considered as subclasses and are determined by their number. 7. The size of additional defects is not considered and only their number is taken into account, determined by the number of the subclass. 8. Class 4 has no subclasses. The toothless areas that lie behind the defect in the area of the front teeth determine the class of the defect. When considering the issue of justified use of bridge-like prostheses, their positive qualities should be noted in comparison with other types of dental prostheses. It has many positive aspects, due to the fact that it almost completely restores the lost functional value of the maxillofacial system, has ideal fixation, occupies a minimal prosthetic field and does not disturb sensations in the oral cavity. This explains the quick habituation of the patient to the bridge prosthesis.

A bridge-like prosthesis has another advantage over other existing structures: chewing pressure is transmitted to the bone through the periodontium, which is characterized by anatomical and physiological features suitable for the transformation of chewing pressure, which regulate the functional load of the teeth. Bridge-like prostheses are usually made of strong materials and alloys, so they are more durable than other dental prostheses. Thanks to the advent of plastics, the supporting parts of the prosthesis and artificial teeth can be lined with plastic or porcelain. Such bridge-like prostheses are complete in terms of aesthetics, as they can be similar in shape and color to natural teeth. Bridge-like prostheses are usually used to replace dentition defects in order to restore the dentition, restore the act of chewing and speech; elimination of aesthetic defects, prevention of tooth-alveolar elongation, pathological attrition of teeth, overloading of remaining teeth, and others. However, when evaluating the prosthesis, its effect on the tissues of the oral cavity should also be

taken into account. From this point of view, bridge-like prostheses less meet the requirements for prostheses from the point of view of physiology. They often disrupt the viability of the tissues of the oral cavity and cause pathological processes. A rough mechanical injury is inflicted on the abutment tooth during the manufacture of a bridge-like prosthesis. Bridge-like prostheses, especially cantilever ones, can overload the supporting teeth and be the cause of their pathological mobility. It should be especially noted the violation of the integrity of the tooth - the removal of its natural coating (enamel) and the opening of the dentinal tubules, which opens the way for bacterial flora. In the gingival edge of the crown, food residues sometimes accumulate, which decompose and serve as a rich nutrient medium for numerous pathogenic microflora. Considering all the positive and negative aspects of bridge prostheses, it is necessary to prescribe them only according to medical indications and to make all parts correctly.

Biomechanics of bridge prostheses.

The nature of the distribution and the amount of chewing pressure, which falls on the intermediate part of the bridge-like prosthesis and is transmitted to the supporting teeth, depends primarily on the program and the direction of the load, the length and width of the intermediate part of the prosthesis. It is important to know not only the reaction of the periodontium to the functional load of the abutment teeth, but also the ways of distribution of elastic stresses both in the bridge-like prostheses and in the periodontal tissues of the abutment teeth. It is necessary to consider different variants of the loading program for the bridge-like prosthesis: 1. load in the middle of the intermediate part of the bridge-like prosthesis, when the entire structure, as well as the periodontium, is loaded evenly and in this connection is found in the most favorable conditions; 2. when the length of the intermediate part increases or the elastic properties of the alloy are insufficiently expressed, the intermediate part of the prosthesis may bend and cause additional functional overload in the form of an opposing, or converging, inclination of the supporting teeth. 3. when a load is applied to one of the support teeth, the displacement of both support teeth takes place, a shift of both supports occurs in a circle, the center of which is the opposite, less stressed support tooth; 4. with a pronounced sagittal occlusal curve or with significant deformation of the occlusal surface of the tooth rows, when part of the vertical load is transformed into a horizontal one. Similar conditions arise when using movable teeth as one of the supports; 5. vertical loads falling on the intermediate part of a bridge-like prosthesis with one-sided support cause the abutment tooth to tilt towards the missing neighboring one. During lateral movements of the lower jaw during chewing, a rotation of the supporting tooth occurs - a torque that increases the functional overload of the periodontium. 6. with one-sided abutment, which consists of two abutment teeth, when the abutment tooth adjacent to the artificial one sinks into the alveoli. The second supporting tooth is under the influence of retraction forces. The distribution of horizontal forces has distinctive features: 1. with a horizontal load applied to the middle part of the body of the bridge-like prosthesis, the supporting teeth experience uniform pressure and transmit the load to the periodontium from the side of the alveolar wall opposite to the applied force; 2. if pressure is applied to one

of the supporting teeth, there is a displacement of this tooth in a circle, the center of which is another supporting tooth with an intact periodontium.

The main principles of the construction of bridge-like prostheses: 1. the supporting elements and the intermediate part of the bridge-like prosthesis should be located on the same line; 2. when constructing a bridge-like prosthesis, abutment teeth with a not very high clinical crown of the abutment tooth should be used; 3. the width of the chewing surface of the intermediate part of the bridge prosthesis should be less than the width of the chewing surfaces of the teeth being replaced. 4. the amount of chewing pressure is inversely proportional to the distance from the point of its application to the supporting tooth. Quite the opposite pattern is observed in the construction of bridge-like prostheses with one-sided support. To reduce the functional load of supporting teeth, it is necessary to increase their number, avoiding the use of bridge-like prostheses with one-sided support and reducing the width of the chewing surface of the intermediate part of the prosthesis; 5. It is necessary to restore the contact points between the supporting elements of the bridge-like prosthesis and the adjacent natural teeth; 6. Competent construction of bridge prostheses from the point of view of normal occlusion; 7. It is necessary to design such bridge-like prostheses that would meet the requirements of aesthetics to the greatest extent. Indications for use in the orthopedic treatment of patients with dentition defects with bridge prostheses and the choice of their design are determined mainly by the following factors: the size of the defect, its topography, the condition of the supporting teeth and antagonist teeth.

All patients who have dentition defects in the area of front or visible lateral teeth (premolars) require their replacement with prostheses (most often bridge-like) for not only functional, but also aesthetic reasons. With defects in the front teeth, the possibility of droplet infection should be taken into account. A defect in the area of front teeth, regardless of its size, is therefore an absolute indication for prosthetics. Missing premolars and molars are replaced by bridge-like prostheses, as a rule, in the presence of bilateral support. In the area of front teeth and premolars, so-called cantilever prostheses with one-sided support are often used to replace one tooth.

3.2. recommendations (instructions) for performing tasks (professional algorithms, orientation maps for the formation of practical skills and abilities, etc.);

3.3. requirements for work results, including registration;

— Conduct an examination.

— Analyze the results of the examination of a dental patient.

— Make a plan for additional examination of the patient.

— Explain the results of clinical and special (additional) research methods.

4. Summary:

— Anamnesis of the patient. Main complaints. Medical history. Dental history.

— Examination. External overview. Reduction of the lower third of the face, expressiveness of nasolabial and chin folds, degree of mouth opening (free, difficult). Temporomandibular joint. Examination of the masticatory muscles.

— Intraoral examination. Assessment of the state of bone and mucous formations affecting the fixation of the prosthesis in the oral cavity.

— Determination of mobility and flexibility of the mucous membrane.

— Diagnosis. Plan and objectives of orthopedic treatment.

5. List of recommended literature (main, additional, electronic information resources):

Main:

- Orthopedic dentistry: textbook / Rozhko M.M., Nespryadko V.P., I.V. Paliychuk and others; under the editorship M.M. Rozhka, V.P. Nespryadka.- K.: Medical University "Medicine"; 2020. - 720 p.

- Rozhko M.M., Nespryadko V.P., Mykhaylenko T.M. and others. Dentoprosthetic technique. K.: Book plus; 2016. 604 p.

- Rozhko M.M., Popovych Z.B., Kuroyedova V.D. Dentistry. Textbook. K.: Medical University "Medicine"; 2018. 872 p.

Additional:

Dentistry: in 2 books. : textbook. Book 2 / M.M. Rozhko, I.I. Kirylenko, O.G. Denisenko and others. ; under the editorship M.M. Horn — 2nd edition. — K.: VSV "Medicine", 2018. — 992 p. ; color kind.

- Material science in dentistry: a study guide / [Korol D.M., Korol M.D., Ojubeiska O.D. etc.]; in general ed. King D.M. – Vinnytsia: New book, 2019. – 400 p.

Electronic information resources:

- State Expert Center of the Ministry of Health of Ukrainehttp://www.dec.gov.ua/index.php/ua/

- National Scientific Medical Library of Ukrainehttp://library.gov.ua/

- National Library of Ukraine named after V.I. Vernadskyihttp://www.nbuv.gov.ua/

Practical lesson No. 8

Topic:Clinical and technological limitations in the planning of bridge prostheses from different materials.

Goal:

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identify typical clinical signs of partial defects of the dentition; to be able to conduct an examination of a patient with partial defects of the dentition; explain clinical and special (additional) methods of examination of patients with partial defects of dentition; to know the types of preparation of supporting teeth;

Basic concepts:examination of a dental patient, dental instruments for examination, X-ray diagnostics, dentition defect, bridge-like prostheses

Equipment:Computer, phantoms, examination instruments, X-rays

Plan:

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1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).

2. Control of the reference level of knowledge:

2.1. requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units);

Know:

— structure of the upper jaw;

— structure of the lower jaw;

— structure of the temporomandibular joint;

— the structure of the mucous membrane of the oral cavity.

— tooth structure

— to know the classification of dentition defects

Be able:

— determine the relationship between the upper and lower jaws;

— to examine the patient

— read x-rays

2.2. questions (test tasks, tasks, clinical situations) to check basic knowledge on the subject of the lesson.

— Examination. External overview. The degree of reduction of the lower third of the face, the expression of facial skin folds, the degree of mouth opening (free, difficult).

— Examination of the temporomandibular joint.

— Examination of the masticatory muscles.

— Examination of teeth and dentition

3. Formation of professional skills, skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.):

3.1. content of tasks (tasks, clinical situations, etc.);

One of the principles of classification of bridge prostheses is the material from which they are made. These can be metal prostheses, plastic and combined. The latter can have a soldered-stamped metal base and solid cast.

Clinical and laboratory stages of manufacturing stamped-soldered bridge-like prostheses.

When considering the specifics of preparing abutment teeth for stamped metal crowns in the manufacture of bridge-like prostheses, in contrast to individual crowns, it should be noted that the main difference is the creation of parallelism of their walls. For this, it is often necessary to remove a larger layer of hard tooth tissue due to the parallelism of the supporting teeth. It is recommended to do this during the first visits; pain sensitivity is considered to increase significantly if it is done during subsequent visits. When preparing teeth for gold crowns, slightly more layers of tissue are removed from the chewing surface, taking into account the layer of solder that fills the inner surface of the crowns to increase its strength. For the production of

abutment crowns, it is necessary to obtain impressions with modern silicone and polysiloxane impression materials, using the two-layer impression method. Obtaining them with gypsum can be considered an anachronism. When making abutment crowns, in all cases, an impression should be taken from 6 of the entire row of teeth of the jaw, prosthetic (main) and auxiliary - from the opposite jaw. If, after obtaining the models of the upper and lower jaws, it is not possible to compare the models in the state of central occlusion, then it should be determined using wax bases with wax rollers, plaster or elastic impression materials designed for this. Making crowns without determining the central occlusion in cases where this clinical stage is indicated is a serious mistake by the doctor.

The clinical stages of manufacturing bridge-like prostheses with facets differ from those with a cast intermediate part, in that at the stage of checking the bridge-like prosthesis, the reliability of the retainers for the future plastic is checked and the color of the plastic is selected with the help of coloring. During the final inspection of the prosthesis, the presence of a gap between the mucous membrane and the facets and their location are monitored. Two main designs of soldered combined bridge prostheses are most often used. In the first, only the intermediate part is covered with the facing material, in the second, in addition to the body of the prosthesis, the facing coating is also applied to the supporting elements, which are stamped combined crowns. The development of combined bridge prostheses is due to the desire to improve the appearance of the dentition. The sequence of prosthetics practically does not differ from that in the manufacture of soldered metal prostheses. After preparing the supporting teeth for stamped crowns, impressions are taken for their manufacture.

After making the crowns, they check their quality in the oral cavity and, without removing them from the supporting teeth, take impressions again. Then the crowns are removed from the supporting teeth, inserted into the corresponding places in the impression and filled approximately one-third with melted wax. They make plaster models, fix them in the articulator and move on to modeling the intermediate part, which will later be covered with plastic. First, the intermediate part is modeled in the same way as when making a metal mold. After that, the wax is cut from the vestibular or vestibular-chewing surface in such a way as to create a bed for the facing material. Wax loops are installed on it for reliable fastening of the cladding. Casting of the body of the prosthesis is made according to standard technology. The accuracy of the casting is checked on a plaster model, and then it is soldered to the supporting crowns. The frame of the prosthesis is whitened, the adhesions are processed, the prosthesis is ground and polished. Beds for plastic lining are covered with a special varnish that masks the color of the metal (EDA, Konalor, etc.), the vestibular or vestibular-chewing surface is modeled from wax, and the wax is replaced with plastic, pre-matched in color to natural teeth.

If supporting crowns are lined together with the intermediate part, this should be taken into account when preparing the supporting teeth. An additional layer of hard fabrics is removed from them to place the facing part on the stamped crown. The creation of a window on the stamped crown significantly weakens the strength of the entire structure of the bridge-like prosthesis. Therefore, bridge-like prostheses, in which only the intermediate part is lined, are better used to replace included defects

in the lateral parts of the tooth rows. The use of stamped combined crowns as a support, which weakens the rigidity of the entire structure, is shown more for defects located in the front parts of the dental arches. The window on the stamped metal crown is created after soldering about the intermediate part of the bridge prosthesis. The technology of preparing the stamped crown for the application of the facing material is described above. The application of the facing coating made of plastic is carried out simultaneously both on the intermediate part of the bridge-like prosthesis and on the supporting crowns. After processing, grinding and polishing, the prosthesis is checked in the oral cavity. Difficulties may be associated primarily with the use of combined stamped crowns, which require additional fitting when placing a prosthesis.

In addition, creating a veneer on the intermediate part can cause excessive pressure on the gums. In the case of individual intolerance to plastics, the intermediate part should be modeled in such a way as to completely exclude the contact of plastics with the mucous membrane. Currently, the number of supporters of the use of soldered bridge prostheses is gradually decreasing. There are several reasons for this. Due to the presence in the oral cavity of metal parts visible when smiling or talking, which grossly violate the requirements of aesthetics. The presence of solder in the prosthesis often leads to a change in its color (darkening) or the appearance of allergic reactions to some metals that oxidize in the environment of the oral cavity. Prosthesis breakage along the adhesion line is also possible. The use of stamped combined crowns, as already mentioned, weakens the structure of the bridge-like prosthesis, makes it less rigid.

This, in turn, can be the reason for plastic peeling on the supporting combined crowns. In addition, stamped combined crowns by themselves have a number of significant disadvantages, noted by us earlier, which prevent their wide application not only in the form of single crowns, but also as supports for bridge-like prostheses. In the course of the search for more perfect designs, a whole series of one-piece prostheses, superior in quality to soldered prostheses, was created. With the development of precision casting technology and the appearance of alloys with low shrinkage, materials for fire-resistant models, the idea of one-piece bridge prostheses received its practical embodiment. 8 The absence of solder adds high strength to the frames of these prostheses. The rigidity of the entire structure strengthens the reliability of the fastening of the facing material, and the possibility of modeling the supporting crowns and the intermediate part of the bridge-like prosthesis at the same time makes them more effective in terms of functionality. Indications for prosthetics with integral bridge prostheses are usual. It is advisable to use them in patients with increased wear and defects of the tooth rows. Prostheses can be made from chromium-cobalt alloys, as well as alloys based on palladium, silver and gold. After a thorough examination, an orthopedic treatment plan is drawn up. An important point in the planning of the construction of an all-cast bridge-like prosthesis.

Clinical and laboratory stages of manufacturing one-piece combined bridge prostheses.

The design of an all-cast combined bridge-like prosthesis is largely determined by the type of supporting elements. Perhaps the production of cast support crowns

will be finished. (Bulanov V.I., 1974). Casting can be done on refractory models, which are obtained directly from the impression or, better, by duplicating a previously prepared plaster model. After making a fire-resistant model, the framework of a bridge-like prosthesis is modeled on it from wax: windowed supporting crowns and an intermediate part with an attachment for plastic lining (at the same time, the relationship with the antagonists must be taken into account). After the block of summers is installed, the frame is cast directly on the refractory model. At present, the method of manufacturing one-piece frames based on removable wax reproductions has become widespread. A special technology aimed at reducing the shrinkage of alloys (covering the abutment teeth with one or two layers of varnish, using low-shrinkage alloys and special types of modeling waxes, designing a sprue system, using special refractory masses and a special mode of casting alloys) makes it possible to obtain fairly accurate castings of the frameworks of bridge-like prostheses. The cast frame is separated from the summers and processed.

The thickness of the crowns over the entire surface is specified with a special caliper. The frame is carefully fitted on the plaster model, ensuring its exact installation in relation to the neck of the tooth and antagonists. After that, the frame is polished and sent to the clinic for testing in the patient's oral cavity. When checking the frame in the clinic, they pay attention, first of all, to the conformity of the plaster model. A correctly made frame is distinguished by the exact location of the supporting crowns in relation to the ledge or the clinical neck of the tooth. Its intermediate part has a washing space of uniform width and a bed structure that ensures reliable fastening of the facing material. Special attention should be paid to the relationship of the occlusal surface of the frame with the opposing teeth. It should be noted that only with careful observance of the technology, the frame is easily placed on the supporting teeth and does not require fitting. In practice, it is often necessary to correct with the help of copy paper or with the use of correction pastes of impression materials. When evaluating the finished frame, it is also necessary to check the presence of a washing space and choose the color of the plastic cladding.

The frame meets the requirements and is sent to the dental laboratory for plastic lining. A special place among solid constructions is occupied by metal-ceramic bridge prostheses. Porcelain coating can be used not only in the manufacture of single crowns, but also bridge-like prostheses. It has an undeniable advantage in terms of aesthetics, does not cause allergic reactions, and is connected to the metal frame chemically (due to the oxide film) in contrast to the mechanical connection of plastic. When planning metal-plastic bridge prostheses, it is necessary to study the possibility of covering the supporting teeth with metal-plastic crowns, and to determine the possibility of lining the intermediate part of the bridge prosthesis with porcelain mass. To do this, it is necessary to estimate the size of the inter-alveolar space in the area of the tooth row defect. It should be sufficient for the construction of artificial metal-plastic teeth with a beautiful anatomical shape and size. Most authors recommend using metal-plastic bridge prostheses for defects that do not exceed 2-3 teeth. It is believed that the increase in the length of the intermediate part of the bridge-like prosthesis may be the cause of minor deformations that lead to chipping of the plastic. In addition, the length of the prosthesis is directly proportional to the

height of the supporting teeth. Contraindications include large dentition defects, low clinical crowns of supporting teeth, parafunction of masticatory muscles. When modeling the intermediate part, each tooth should repeat the anatomical shape of the restoration, but be reduced in size by the thickness of the uniform plastic coating. After modeling, the wax reproduction of the prosthesis is carefully removed from the model and the casting mold and subsequent casting of the frame are started. The cast frame is processed in a sandblasting machine, freed from summers and checked on the model. The frame, fitted on the model and prepared for coating, is sent to the clinic to check the accuracy of manufacture.

When creating a plastic coating on bridge-like prostheses, the technology adopted for single crowns is used. When modeling the intermediate part, there are some differences (separation of interdental spaces with a modeling needle, application of a special separator bed for the same purpose). 10 The finished prosthesis is carefully inspected, the quality of the plastic coating and the polishing of the metal garland are evaluated. The final inspection of the prosthesis consists in clarifying the occlusal relations in different types of articulation, as well as the shape and color of the artificial teeth. The production of the prosthesis ends, if necessary, with the grinding of the plastic coating. In the oral cavity, the prosthesis is strengthened with cement. Combined bridge prostheses (with plastic lining). One of the principles of classification of bridge prostheses is the material from which they are made. These can be metal prostheses, plastic and combined. The latter can have a soldered-stamped metal base and solid cast. Replacement of dentition defects with fixed porcelain bridge prostheses. The indication for the use of a non-removable bridge-like prosthesis made of porcelain is the absence of one front tooth, with the parallel arrangement of the crowns of the supporting teeth, which have sufficient clinical height and a small incisal overlap.

The clinical and laboratory stages of the production of porcelain bridge prostheses are carried out using ceramic beams offered by the Vita company.

The supporting teeth are prepared as for ordinary porcelain crowns, seeking the possibility of their parallelism (the use of an intra-oral parallelometer is desirable). Molds on the ring or double and combined collapsible model are obtained, as in the manufacture of porcelain crowns. Prepared teeth are covered with temporary plastic crowns or caps. Porcelain crowns are made according to a well-known method, firing them to the "biscuit" stage, they are checked on the model taking into account the occlusion and, if necessary, correction is carried out. Then the intermediate part of the prosthesis is formed. For this, a standard, factory-made porcelain beam of round shape, available in the "Vita" set, is installed between the crowns and fits well, attaching it to the supporting crowns with sticky wax. The glued parts of the prosthesis are carefully removed from the model and immersed in a refractory mass, while filling the platinum caps and leaving only the places of gluing free. The model prepared in this way is placed in a furnace (temperature 850°C), where the wax is burned out, dried, and the refractory mass is fired.

After that, the beam is connected to the supporting crowns with porcelain mass, which fills the voids during vibration, created with a fluted spatula, and is baked in the oven. The structure is placed on its bed in the model, having previously removed

the refractory mass, the intermediate part of the bridge-like prosthesis made of porcelain is modeled on the beam and fired. Then 11 corrections of the prosthesis are made on the model, adding porcelain mass if necessary, followed by re-firing. The prosthesis is sent to the clinic for fitting. After that, the final firing (glazing) of the porcelain bridge prosthesis is performed, completing all stages with fixation on the abutment teeth using Visfatcement, if there is no need for temporary fixation. According to another method of manufacturing a porcelain bridge prosthesis is as follows. Clinical and laboratory stages, including obtaining a combined model, are carried out in the manner described above. Then, the stump of the tooth that replaces the tooth row defect is selected according to size, which is prepared in advance from plastic, superplaster or amalgam in the form of several standard sizes and installed in a bed formed on a plaster model between the supporting teeth. Platinum caps are made on the stumps of the abutment teeth and the installed intermediate tooth according to the usual method. The latter are degreased in acetone and placed on ceramic trays in the oven for 8-10 minutes. at 1000 ° C to relieve metal stress. Annealed platinum caps are removed from the trager and re-installed on the model, a pound layer of porcelain mass is applied and firing is done.

The manufactured ceramic structures are carefully fitted to the model, achieving tight contact with them from the proximal sides, polishing if necessary or adding porcelain mass. In the latter case, additional firing is carried out. After fitting, the caps are glued together with sticky wax, removed from the model and installed on a prepared base made of fire-resistant mass. The wax is melted with a jet of hot water and the structure is placed in the furnace with a gradual increase in temperature to 940 ° for 8-10 minutes. They take it out of the furnace and fill the joints from the proximal surfaces with ground porcelain mass to produce a firing. The structure is fitted on the model, after which the next layers of porcelain mass (dentin, enamel, transparent mass) are applied, forming a crown, and firing is performed. The finished prosthesis is again fitted on the model, if necessary, correction is carried out. Then platinum foil is removed from the intermediate cap of the future artificial tooth, and the inner surface of the crown is treated with a spherical diamond head, filled with dentin mass, and dried in a vacuum oven for 5 minutes. and firing is carried out. The design is fitted to the model and glaze. Platinum foil is removed from the supporting crowns of the finished bridge-like prosthesis, the edges of the crowns adjacent to the cervical ledge are smoothed with an elastic circle, selected according to the color of "Visphat-cement" and the prosthesis is fixed on the supporting teeth.

3.2. recommendations (instructions) for performing tasks (professional algorithms, orientation maps for the formation of practical skills and abilities, etc.);

3.3. requirements for work results, including registration;

— Conduct an examination.

— Analyze the results of the examination of a dental patient.

— Make a plan for additional examination of the patient.

— Explain the results of clinical and special (additional) research methods.

4.

Summary:

— Anamnesis of the patient. Main complaints. Medical history. Dental history.

— Examination. External overview. Reduction of the lower third of the face, expressiveness of nasolabial and chin folds, degree of mouth opening (free, difficult). Temporomandibular joint. Examination of the masticatory muscles.

— Intraoral examination. Assessment of the state of bone and mucous formations affecting the fixation of the prosthesis in the oral cavity.

— Determination of mobility and flexibility of the mucous membrane.

— Diagnosis. Plan and objectives of orthopedic treatment.

5. List of recommended literature (main, additional, electronic information resources):

Main:

- Orthopedic dentistry: textbook / Rozhko M.M., Nespryadko V.P., I.V. Paliychuk and others; under the editorship M.M. Rozhka, V.P. Nespryadka.- K.: Medical University "Medicine"; 2020. - 720 p.

- Rozhko M.M., Nespryadko V.P., Mykhaylenko T.M. and others. Dentoprosthetic technique. K.: Book plus; 2016. 604 p.

- Rozhko M.M., Popovych Z.B., Kuroyedova V.D. Dentistry. Textbook. K.: Medical University "Medicine"; 2018. 872 p.

Additional:

Dentistry: in 2 books. : textbook. Book 2 / M.M. Rozhko, I.I. Kirylenko, O.G. Denisenko and others. ; under the editorship M.M. Horn — 2nd edition. — K.: VSV "Medicine", 2018. — 992 p. ; color kind.

- Material science in dentistry: a study guide / [Korol D.M., Korol M.D., Ojubeiska O.D. etc.]; in general ed. King D.M. – Vinnytsia: New book, 2019. – 400 p.

Electronic information resources:

- State Expert Center of the Ministry of Health of Ukrainehttp://www.dec.gov.ua/index.php/ua/

- National Scientific Medical Library of Ukrainehttp://library.gov.ua/

- National Library of Ukraine named after V.I. Vernadskyihttp://www.nbuv.gov.ua/

Practical lesson No. 9

Topic:Replacement of partial dentition defects with removable lamellar prostheses. Choice of design and material. Design features, complications. Clinical and laboratory stages.

Goal:

identify typical clinical signs of partial defects of the dentition; to be able to conduct an examination of a patient with partial defects of the dentition; explain

clinical and special (additional) methods of examination of patients with partial defects of dentition; know the types of preparation of abutment teeth.

Basic concepts:examination of a dental patient, dental instruments for examination, X-ray diagnostics, dentition defect, partial plate prosthesis

Equipment:Computer, phantoms, examination instruments, X-rays

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).

2. Control of the reference level of knowledge:

2.1. requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units);

Know:

— structure of the upper jaw;

— structure of the lower jaw;

— structure of the temporomandibular joint;

— the structure of the mucous membrane of the oral cavity.

— tooth structure

— to know the classification of dentition defects

Be able:

— determine the relationship between the upper and lower jaws;

— to examine the patient

— read x-rays

2.2. questions (test tasks, tasks, clinical situations) to check basic knowledge on the subject of the lesson.

— Examination. External overview. The degree of reduction of the lower third of the face, the expression of facial skin folds, the degree of mouth opening (free, difficult).

— Examination of the temporomandibular joint.

— Examination of the masticatory muscles.

— Examination of teeth and dentition

3. Formation of professional skills, skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.):

3.1. content of tasks (tasks, clinical situations, etc.);

Examination of the patient should reveal the state of the function of the maxillofacial apparatus. For this, it is necessary to resort to functional studies, chewing samples, graphic records of the movements of the lower jaw, research of muscle biocurrents, etc. The etiology of many diseases of the maxillofacial system that require orthopedic treatment is known. However, only one knowledge of the cause is not enough for successful treatment of the patient. Therefore, it is also necessary to know the pathological mechanisms underlying its development. Various factors play a role in the pathogenesis of diseases. The nature of the structure of the

organ, its functions, the age of the patient, and previous diseases are of great importance. Since all this determines the individual characteristics of the body, the examination cannot have a template character.

ANAMNESIS.

Taking an anamnesis is the first stage of examining a patient, who is offered to recall the medical history and life history from memory. The anamnesis consists of the following sequentially presented sections: 1) complaints and subjective condition of the patient (determine heart rate, pulse, its nature, measure blood pressure); 2) anamnesis of this disease (cause, nature and time of tooth loss, does the patient use prostheses; what is their design; terms of use; what diseases of the oral cavity the patient suffered); 3) history of the patient's life (place of birth, place of residence, living conditions and type of food, working conditions at the factory, transferred infectious diseases and diseases of a general somatic nature); 4) family history (heredity). The range of questions the doctor asks the patient depends on the nature of the disease. In some cases, the anamnesis is very short and the doctor does not need to delve too much into the life history, in others the anamnesis should be collected in great detail, especially in that part of it that is of greatest interest for making a diagnosis. Often, patients present complaints that seem to them to be the main ones, but from the doctor's point of view are secondary.

The doctor should detect both secondary and main signs of the disease, focusing on the latter. You can't conduct a survey hastily, limiting yourself to stingy questions and being satisfied with the same answers. The conversation should be expanded and skillfully and carefully clarify the emotional and mental state of the patient, his attitude to health, readiness for long-term treatment and desire to meet the doctor in his effort to help the patient. This will also help to form a certain idea about the type of nervous activity of the patient, which plays a significant role both in carrying out many manipulations related to prosthetics, and in getting used to the prosthesis. Despite the wide development of laboratory and instrumental methods of research, great attention should be paid to the interview and examination of the patient, since these two methods mostly determine the direction of all further research. EXTERNAL PATIENT EXAMINATION All patients should undergo an external facial examination. This is done imperceptibly for the patient during the survey. Attention is drawn to the symmetry of the halves of the face, the height of its lower third, the protrusion of the chin, the line of closing the lips, the prominence of the chin and nasolabial folds, the position of the corners of the mouth, the exposure of the teeth or the alveolar process during a smile or conversation. EXAMINATION OF THE MOUTH CAVITY First of all, the degree of opening of the mouth is determined. At the same time, the degree of opening of the tooth rows is simultaneously established. When studying the degree of mouth opening, one should pay attention to the nature of the movements of the lower jaw: smoothness, discontinuity, deviation to the right or left. Then the condition of the mucous membrane of the oral cavity is determined: gums, transitional fold, hard and soft palate. The pharyngeal tonsils, back wall of the pharynx, tongue (size, mobility, condition of its mucous membrane) are carefully examined. Dental examination. First, it is necessary to find out the type of closing of the teeth (bite). Usually,

determining the type of bite does not cause difficulties, difficulties arise in pathological conditions, in particular, in jaw fractures, especially multi-fragmented ones. Then the shape of the dental arches should be established (ellipsoidal, parabolic, tracery, flattened, etc.).

Examination of periodontal teeth. Data on the condition of the supporting apparatus (periodontium) of the teeth can be obtained using clinical (examination, palpation, probing, etc.) and paraclinical methods. During the clinical examination, it is important to assess the condition of the marginal periodontium. First of all, you should pay attention to the condition of the gums (inflammation, atrophy) and the presence of periodontal pockets (depth, possible pus discharge). An important detail in characterizing the state of the periodontium is the ratio of the extra- and intra-alveolar part of the tooth. With atrophy of the gums, the clinical crown increases, and the extra-alveolar part of the tooth grows with it. This is expressed in the appearance of tooth movements unusual in scope and direction, the so-called pathological mobility. Pathological tooth mobility. Physiological and pathological tooth mobility are distinguished. The first is natural and invisible to the naked eye. Its existence is confirmed by indirect signs in the form of erasure of contact points and the formation of contact pads or special complex devices. Pathological mobility is characterized by noticeable displacement of teeth with minor efforts. By the degree and growth of mobility, it is possible to some extent to form an idea about the state of the supporting apparatus of the teeth, the direction of the development of the pathological process or its exacerbation. Pathological mobility is determined by palpation, with the help of tweezers or special devices, both with the mouth open and with various movements of the lower jaw from one occlusal position to another.

The following degrees of pathological tooth mobility should be distinguished:

The first degree is the displacement of the tooth in one direction (vestibuloral).

II degree - the tooth has visible mobility both in the vestibuloral and sagittal directions.

III degree - a characteristic displacement of the tooth in the vertical direction: when pressed, the tooth sinks into the hole, and then returns to the upward position.

Examination of the edentulous alveolar process. Examination of the edentulous alveolar process, as a part of the prosthetic bed, is first carried out by palpation, and later by studying diagnostic models. First of all, they pay attention to: - humidity and color of the mucous membrane; - integrity; - an excess of the mucous membrane in the form of a cock's comb When examining the alveolar process, the following are determined: - the size and shape of the alveolar process; - the nature of its slopes; - atrophy (absent, weakly expressed, large, uniform, uneven); - the presence of sharp protrusions, exostoses, overhanging edges with undercuts. On the upper jaw, it is important to pay attention to the size of the hump, the thickness of the mucous membrane that covers it, and on the lower jaw - to the mucous hump that appeared after the removal of the third molar and to determine the degree of its density and mobility. The places of attachment of the frenulum of the tongue and lips (at the base or at the top of the alveolar process) and their mobility should always be examined.

Palpation allows you to determine: - the relief of the alveolar process; - flexibility of the mucous membrane and folds that go along the alveolar process or its

slopes, their elasticity. At the same time, it is possible to detect hidden bony protrusions, painful with a slight pressure, which will later cause pain and difficulty in using the prosthesis. Diagnostic models. Information about the closing of the teeth can be obtained directly during the examination of the dental rows. At the same time, this method has disadvantages, as it does not allow to see the closure of the palatal and lingual tubercles. Diagnostic models are convenient for this. They can be used to study the shape of the dental arches, their deformation, the occlusal contacts of the palatal and lingual cusps, the degree of overlapping of the front lower teeth with the upper ones, the nature of the occlusal curve, and the deformation of the occlusal surface of the dental rows. You can also study the position of the teeth that limit the defect, their displacement, inclination. Examination of teeth. Dental examination is carried out in a certain order. They start the examination from the lower jaw and sequentially examine each tooth in the direction from the wisdom tooth of one side to the wisdom tooth of the same name.

When examining each tooth, pay attention to the following:

1) tooth position;

2) form;

3) color;

4) state of hard tissues;

5) stability of the tooth;

6) ratio of extra-alveolar and intra-alveolar parts of the tooth;

7) position relative to the occlusal surface of the tooth row; 8) presence of seals and their condition. X-ray examination methods.

Radiography of the organs of the maxillofacial system is one of the most common research methods. Radiography provides valuable information about the condition of the hard tissues of the crown and root, the dimensions and features of the tooth cavity, root canals, the width and nature of the periodontal fissure, the condition of the compact plate of the alveolar wall and the spongy substance of the alveolar process. It can also be used to study: - teeth with affected periodontium; - hidden carious cavities; - roots covered by a mucous membrane; - teeth with fillings; - teeth that were a support for bridge-like prostheses, clasps covered with crowns; - teeth with pathological wear; - teeth are discolored; - abnormalities in the position of the teeth; - relationship of elements of the temporomandibular joint; - the structure of the jaws and at the same time reveal the presence of pathological processes in areas that are not accessible for external inspection. Methods of X-ray examination: - intra- and extra-oral X-ray; - computer radiography, tomography, teleradiography. In addition to intraoral (sight) images, the pantomography method is widely used, which allows you to obtain overview radiographs of the dentition and jaws. With the help of extraoral X-rays (in various configurations), it is possible to examine the areas of the upper and lower jaws, the temporomandibular joint, and the facial bones.

Design features and stages of manufacturing partial lamellar prostheses

1. Design features of partial lamellar prostheses, their main parts.

2. Clinical and laboratory stages of manufacturing partial lamellar prostheses, their sequence.

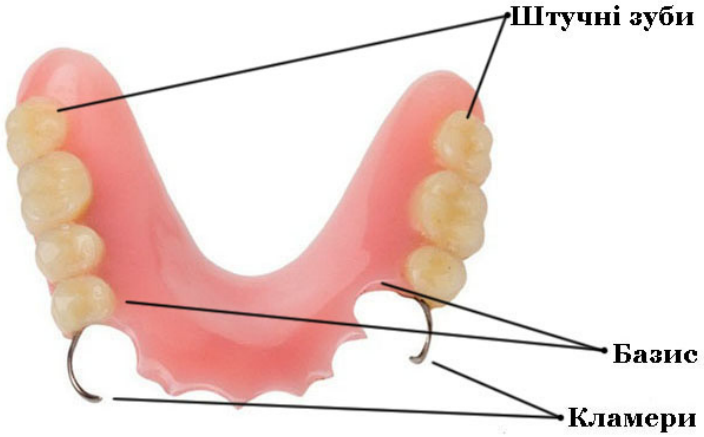
Structural features of partial lamellar prostheses, their main parts. Despite the variety of designs of partial plate prostheses, characteristic parts can be found in all of them.

They include:

basis,

retaining elements (most often clips),

artificial teeth



Clinical and laboratory stages of productionpartial lamellar prostheses

The production of partial lamellar prostheses consists of a number of consecutive clinical and laboratory stages (the stages of manufacturing a partial lamellar prosthesis with an acrylic base are given below).

Clinical:	Laboratory:
• Examination of the patient; • drawing up a treatment plan; • choice of prosthesis design; • taking full anatomical impressions.	Casting of plaster models based on the impressions received;
	• determination of the limits of the prosthesis; • production of wax bases with occlusive rollers.
Determination and fixation of central occlusion.	
	• Plastering of models in an occluder (articulator); • production of paper clips; • placement of artificial teeth on a wax basis; • preliminary modeling of the wax

	base of the prosthesis
Checking the placement of artificial teeth on a wax basis in the oral cavity	
	• Final modeling of the wax base of the prosthesis; • plastering of the wax reproduction of the prosthesis in the cuvette; • wax melting; • preparation of plastic dough; • packaging of plastic dough in a plaster mold; • carrying out the polymerization regime; • release of the prosthesis; • processing, grinding.
Fitting and fixation of the manufactured prosthesis in the oral cavity.	Final polishing of the prosthesis (often carried out together with grinding).
• Instructions to the patient • Correction of the prosthesis.	

3.2. recommendations (instructions) for performing tasks (professional algorithms, orientation maps for the formation of practical skills and abilities, etc.);

3.3. requirements for work results, including registration;

— Conduct an examination.

— Analyze the results of the examination of a dental patient.

— Make a plan for additional examination of the patient.

— Explain the results of clinical and special (additional) research methods.

4. Summary:

— Anamnesis of the patient. Main complaints. Medical history. Dental history.

— Examination. External overview. Reduction of the lower third of the face, expressiveness of nasolabial and chin folds, degree of mouth opening (free, difficult). Temporomandibular joint. Examination of the masticatory muscles.

— Intraoral examination. Assessment of the state of bone and mucous formations affecting the fixation of the prosthesis in the oral cavity.

— Determination of mobility and flexibility of the mucous membrane.

— Diagnosis. Plan and objectives of orthopedic treatment.

5. List of recommended literature (main, additional, electronic information resources):

Main:

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- Rozhko M.M., Nespryadko V.P., Mykhaylenko T.M. and others. Dentoprosthetic technique. K.: Book plus; 2016. 604 p.
- Rozhko M.M., Popovych Z.B., Kuroyedova V.D. Dentistry. Textbook. K.: Medical University "Medicine"; 2018. 872 p.

Additional:

Dentistry: in 2 books. : textbook. Book 2 / M.M. Rozhko, I.I. Kirylenko, O.G. Denisenko and others. ; under the editorship M.M. Horn — 2nd edition. — K.: VSV "Medicine", 2018. — 992 p. ; color kind.

- Material science in dentistry: a study guide / [Korol D.M., Korol M.D., Ojubeiska O.D. etc.]; in general ed. King D.M. – Vinnytsia: New book, 2019. – 400 p.

Electronic information resources:

- State Expert Center of the Ministry of Health of Ukrainehttp://www.dec.gov.ua/index.php/ua/
- National Scientific Medical Library of Ukrainehttp://library.gov.ua/
- National Library of Ukraine named after V.I. Vernadskyihttp://www.nbuv.gov.ua/

Practical lesson No. 10

Topic:Substitution of partial defects of the dentition with fixed prostheses. Fixation systems. Indications and contraindications for replacing defects of the dentition with fixed dentures. Design features, complications Clinical and laboratory stages.

Goal:

To expand, deepen and consolidate knowledge on the peculiarities of the planning of the constructions of brace prostheses, depending on the topographical and anatomical conditions of the dentition defect. Familiarize with the modern designs of brace prostheses and their manufacturing technologies.

Basic concepts:examination of a dental patient, dental instruments for examination, x-ray diagnostics, dentition defect, brace prosthesis

Equipment:Computer, phantoms, examination instruments, X-rays

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).

2. Control of the reference level of knowledge:

2.1. requirements for students' theoretical readiness to perform

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practical classes (knowledge requirements, list of didactic units);

Know:

— structure of the upper jaw;
— structure of the lower jaw;
— structure of the temporomandibular joint;
— the structure of the mucous membrane of the oral cavity.
— tooth structure
— to know the classification of dentition defects

Be able:

— determine the relationship between the upper and lower jaws;
— to examine the patient
— read x-rays

2.2. questions (test tasks, tasks, clinical situations) to check basic knowledge on the subject of the lesson.

— Examination. External overview. The degree of reduction of the lower third of the face, the expression of facial skin folds, the degree of mouth opening (free, difficult).
— Examination of the temporomandibular joint.
— Examination of the masticatory muscles.
— Examination of teeth and dentition

3. Formation of professional skills, skills (mastery of skills, conducting curation, determining the treatment scheme, conducting

laboratory research, etc.):

3.1. content of tasks (tasks, clinical situations, etc.);

Buckle prostheses, main structural elements of buckle prostheses.

Bügel prosthesis consists of a metal frame, on which plastic bases and artificial teeth are fixed. The frame itself has an arch (bugel), means of support and fixation of the prosthesis, saddles (lattice, mesh) and appendages. An arc (byugel) is a metal plate of a certain shape and size.

Arches are used both on the upper and lower jaws. They distribute chewing pressure over a larger area, reduce the tension that occurs when chewing food. On the upper jaw, the location of the arch depends on the nature of the defects of the dentition. Its most characteristic placement is as follows: the border between the middle and back thirds of the palate at a distance of 10-12 mm in front of the "A" line. This placement speeds up adaptation to the bygel prosthesis, has a positive effect on pronunciation, and does not irritate the back of the tongue. If the tooth row defect is located closer to the front part of the tooth row, then the palatal arch is placed in the front position, and when the side teeth are lost - in the back position. If the location of the arch is front, it should be wide and thin, in the form of a metal plate. The optimal dimensions of the arch on the upper jaw: width - 5-10 mm, thickness - 0.8-1.5 mm, distance from the mucous membrane 0.3-0.5 mm. The shape is semi-circular or semi-oval with rounded edges. In the area of the cellular processes at the

level of the first and second molars, the ends of the arch are included in the grid or mesh for attaching the plastic, which should lag behind the mucous membrane by 1.5-2 mm.

Indications and contraindications for the use of a brace prosthesis.

Bügel prostheses are indicated in the case of dentition defects with a sufficient number of natural teeth, which allow effective and rational distribution of chewing pressure between them and the soft tissues of the prosthetic bed. Bügel prostheses are shown to be made in the case of one- and two-sided end defects, combined defects, as well as included defects, when it is impossible to apply bridge-like prostheses.

The following factors must be taken into account when determining the indications for the use of brace prostheses:

1) the number of teeth in the dental row should be at least 6-8.

2) there should be no foci of pathological processes in the area of the periapical tissues of the supporting teeth;

3) the crowns of the supporting teeth should be high, with a well-defined equator;

4) fissures on the abutment teeth should be well defined

5) an obligatory factor that must be taken into account is the nature of the bite;

6) condition and pliability of the mucous membrane of edentulous areas of cellular processes;

7) on the lower jaw — the depth of placement of the floor of the oral cavity;

8) the amount and nature of atrophy of cellular processes or parts;

9) obligatory consideration of the general state of the patient's body.

Contraindicationsto the use of brace prostheses are:

1) high attachment of the frenulum of the tongue on the lower jaw; it should be 1 cm lower than the necks of the teeth, so that there is room for placing the arch;

2) low clinical crowns in the case of impossibility of increasing them artificially;

3) the presence of a deep bite, especially a deep traumatic one;

4) significant atrophy of the collarbone process and part and flat palate.

Fixation of arch prostheses. Types of clasps used in the manufacture of brace prostheses.

Arch prostheses are fixed with the help of clips.

Depending on the number of teeth used for fixation, they are divided into point, linear and planar fixation.

1. . Dotted - 1 stapler is used.
3. Linear - 2 clamps are used.
4. The line connecting the clasps in the prosthesis is called the clasp line. Diagonal, transverse and sagittal staple lines are distinguished.
5. 3. Flat - 3.4 teeth are used,
6. Clamers are divided as follows;

1. By shape - round, semi-round, flat (ribbon)
2. According to the manufacturing method - bent, cast, stamped.
3. By the place of attachment - dental, gingival (pellets) gingival.
4. According to the degree of coverage of a tooth or a group of teeth - on

single-armed, double-armed, ring-shaped (overturned), double multi-link.
5. By function - on retaining, supporting, supporting-retaining.
6. According to the material - metallic, non-metallic, combined.
7. According to the method of connection with the base - rigid or stable, springy or semi-labile, hinged or labile.
Clamps, which are used for the manufacture of brace prostheses, must meet the following requirements:
· Ensure fixation and stabilization of the brace prosthesis in the oral cavity.
During chewing, rationally distribute the pressure between the supporting teeth and the mucous membrane of the alveolar processes.
· The support-holding clasp must transmit pressure during chewing along the axis of the tooth.
· In case of periodontitis, it is necessary to use multi-link clasps with hooking loops for splinting the teeth.
Clamps should not overload the periodontal tissue and loosen the teeth.
· In a state of rest, the clasp should not press on the tooth, otherwise it will act as an orthodontic spring.
These requirements are met by a supporting and holding (combined) clip, which consists of:

- two shoulders
- occlusal lining
- bodies
- appendage (using it, it is connected to the framework of the prosthesis).

Neya's clasp system. Methods of connecting clasps to the frame of the prosthesis

Ney's system includes five types of clasps.

Clamer type 1two-armed with an occlusive pad. It is used in the typical placement of a dividing line.

Clamer type 2consists of an occlusive pad and two T-shaped arms. It is used for unusual placement of the dividing line (medial inclination of the tooth).

Clamer type 3includes, in addition to the occlusive pad, one regular and one T-shaped clasp. It is used for mesial inclination of the tooth or its reversal.

Clamer type 4- one-armed, retroactive. It is used for lingual (palatal or buccal inclination of the supporting teeth).

Clamer type 5- one-armed, circular.

There is a rigid (stable), elastic (semi-labile) and hinged (labile) connection of the clasp with the base of the prosthesis. In the case of a rigid connection, the clasp is connected to the prosthesis immovably, and chewing pressure is transmitted to the abutment teeth through the clasp. This type of connection is most appropriate in the case of a sufficient number of supporting teeth, a well-preserved cellular process and part, as well as a pliable mucous membrane. In the constructions of the brace prosthesis with a rigid type of fastening, the Ney clasp system is used. The flexible connection of the clasp with the prosthesis is recommended in the case of a small number of teeth withaffected periodontal tissues, anddue to the presence of a thinned, less pliable mucous membrane of cellular processes or parts.

Hingeda joint is a connection of two bodies that allows, within certain limits, corresponding adjustable movements of one or two parts.

Attachments, types of lock fastenings. Telescopic and beam fixation system.

One of the types of fixation of the brace prosthesis is the locking system of fixation. There are several types of locking structures (attachmen), which are united by a general principle: the supporting part is connected on the proximal surface with an artificial crown (patrician part), and the retaining, removable, exactly repeats the shape of the inner surface of the latter, is included in it (matrix), having one, vertical, degree.

There are locking and hinged attachments. Attachments are also divided into two classes: intradental and extradental. The first class includes the largest number of attachmen, they are partially located in the crown or root of a natural tooth. The second class, extradental attachments, includes cantilever and stamped devices.

Telescopicfixation systems or telescopic crowns have long proven themselves as a very effective, reliable and highly aesthetic type of fixation of partial removable prostheses. Recently, there are many different telescope systems, from traditional die-cast noble alloy telescopic crowns, base alloy telescopic crowns, galvano telescopes made from metal or ceramic primary parts to telescopic crowns.

The telescopic crown consists of two structural elements: supporting (non-removable) - which is fixed on the tooth, fixing (removable) - connected to the base of the removable prosthesis. Telescopic crowns refer to double crowns. Their main feature is plane-parallel working friction surfaces.

Beam systemfixation is used in the case of prosthetics of included dentition defects, its essence is as follows: crowns are made on the supporting teeth, to which rods are soldered. The named structure consists of a fixed support part in the form of crowns or crown caps, between which there is a rod or a beam (patricia); accordingly, a metal counterbar (matrix) is placed in the base, which exactly repeats the shape of the bar.

It is better to make such a structure solidly cast from a cobalt-chromium alloy. The bar should have a height of at least 3 mm and a width of about 2 mm and be placed at a distance of at least 1 mm from the gums. In the removable prosthesis, the covering part of the rod is fixed, which is a longitudinal plate that fits tightly to the perineal part of the rod and has a vertical gap of 1 mm. Foreign companies produce plastic and metal blanks of telescopic rods (Rumpel-Dolder) with square (Rumpel), elliptical and drop-shaped (Dolder) sections.

Parallelometry. Methods of parallelometry.

Parallelometry is a study of the model in a parallelometer, which makes it possible to determine the direction of insertion and withdrawal of the prosthesis, the boundary line, and the retention zone.

A parallelometer is a device that is used to determine the parallelism of the walls of the abutment teeth, apply a clasp line on them, determine the type and location of the clasp elements, which ensures reliable fixation of the prosthesis, its free insertion and removal from the oral cavity.

Free method of parallelometryit is used in the case of a minimum number of supporting teeth, parallelism of their vertical axes and a simple design of the brace

prosthesis. Its essence boils down to placing the model on the hingeparallelometer table yes,so that the occlusal plane of the tooth row is perpendicular to the analyzing (graphite) rod. Bringing the latter to each supporting tooth, draw the largest perimeter in relation to which the clasp elements are placed. In this case, the part of the crown of the tooth, located above the largest perimeter, is used to place the supporting elements of the clasp, occlusive overlays and parts of the clasp arms, below the perimeter — to place the retention part of the clasp arm. Limitations regarding the use of this method are primarily related to the fact that in the case of partial loss of teeth, the teeth limiting the defect usually lean towards the defect, the degree of inclination in this case is very different. This, in turn, leads to difficulties in choosing the design of clasps of the brace prosthesis, creates obstacles for free insertion and removal of the latter, etc. Therefore, taking into account the above, it is necessary to use other methods of parallelometry.

Novak's method of determining the average inclination of the long axes of the supporting teeth.

Parallelometry according to this method is carried out in two stages.

At the first stage, the parallelometer is not used. For better orientation and convenience in work, the side plane of the model is marked with the number I, and the back plane with the number II. The essence of the method can be demonstrated on the example of studying the way of inserting a brace prosthesis with support on 48, 44, 45 teeth. The direction of the longitudinal axis of each tooth is determined using 20 mm long wire segments. For this purpose, you can also use matches that are fixed with the help of sticky wax in the middle of the cutting edge or in the center of the chewing surface of the tooth. In order for the position of the wire segments (matches) to correspond to the longitudinal axis of the tooth, each of them must be oriented along the crown, looking at it alternately from the posterior and oral sides. A line passing through the middle of the root and crown of the tooth is taken as the longitudinal axis of the tooth. Later, the projection of these axes is applied alternately by hand with a pencil on both previously prepared planes — side and back.

Selection method. The analysis of the position of the line of the largest perimeter, the boundary line of all supporting teeth and their surfaces in most cases shows that some teeth have better conditions for placing the supporting parts of the clasps, while others have the retaining parts. In order for all clasps to perform both supporting and fixing functions equally well and all supporting teeth to participate equally in the redistribution of chewing pressure, it is necessary to find such an inclination of the model for which these zones would be sufficiently pronounced.

Clinical-laboratory stages of the production of a brace prosthesis.

1. Clinical stage: examination of the patient, drawing up a treatment plan.
2. Clinical stage: taking impressions for making a fixed part of the structure.
3. Laboratory stage: manufacture of the fixed part of the structure.
4. Clinical stage: fixation of the fixed part in the patient's oral cavity. 5. Clinical stage: removal of the main and auxiliary full anatomical impressions.
6. Laboratory stage: making a model, carrying out parallelometry, duplicating the model, modeling the frame of the brace prosthesis using the "Formodent" set;

placement of fixing elements; casting of the frame of the brace prosthesis, its processing, polishing. Production of biting rollers.

7. Clinical stage: trying on the framework of the bygel prosthesis in the oral cavity, determining and fixing the central occlusion.

8. Laboratory stage: placement of artificial teeth.

9. Clinical stage: checking the placement of artificial teeth on the frame of the brace prosthesis.

10. Laboratory stage:final simulation,replacing wax with plastic.

11. Clinical stage: fitting and fixation of the brace prosthesis in the oral cavity.

Preparation of working models for duplication and production of a fireproof model.

Two working models and one auxiliary one must be cast for the production of one fixed prosthesis, four working models for the production of two prostheses. The working model, intended for study in a parallelometer and duplicating, is cast from superplaster with the mandatory use of a vibrating table. The height of the model should be at least 4-5 cm. The preparation consists in the fact that all the spaces between the teeth, as well as part of the surface of the teeth between the necks and the boundary line, are filled with refractory wax or sealed with moldin or plaster. On the supporting teeth, niches are filled only on the side of the dentition defect from the neck to the border line.

Modeling of the frame of the brace prosthesis.

The design of the prosthesis is transferred from the plaster model to the refractory model. Then the refractory model is covered with one layer of thin, well-heated bygelwax, pressed, which ensures a tight fit of the wax composition of the frame to the model and its greater strength. To model the frame, select wax blanks that correspond to the size of the teeth, the shape of the clasp, the size of the defect and the tooth row. The necessary parts from the "Formodent" set are softened until they become plastic and cover the surface of the model well. All elements are modeled, giving them the shape of a finished part. Ready-made wax parts obtained from the matrix are immediately placed on the model and pressed according to the pattern of the frame until it is plastic. First of all, they begin to model supporting and holding clamps. In addition to existing blanks, wax threads with a diameter of 0.8-1 mm can be used. The part of the clasp that rests on the supporting part of the tooth should be thick and have a semicircular cross-section. The appendages of the clasps are directed towards the base mesh or arch. Then, an arc of semi-oval shaped wax 4-5 mm wide is placed on the model. It is gradually expanded, modeling the wax to the required dimensions, according to the border of the arc pattern. The base grids must have a ledge for connection to the arc. Wax parts are joined together with melted wax.

Production of sprue system.

Cross-shaped, winged, and single-channel pouring systems are used for casting brace prostheses on refractory models. The cross-shaped shower system is used for the manufacture of complex structures of brace prostheses.

To build a shower system, take rectangular showers in the form of strips of wax with a width of 3-4 mm and a length of 0.8-1.5 mm. One end is attached in the area

where the arc joins the mesh, the other end is attached to the wax nozzle, which is fixed in the hole of the base of the model.

Other sprinklers are attached at one end to the middle of the arc of a multi-link clasp and other parts of the frame. The second end of the sprinklers is connected to the main sprinkler, which passes through the base of the model. The winged sprinkler system consists of arc-shaped curved sprinklers with a diameter of 3-4 mm, which connect the sprinkler at the base of the model with the elements of the prosthesis frame. The number of showers also depends on the complexity of the prosthesis design. The bend of the spigots makes it possible to fill the shape without sudden changes in the movement of the metal and to reduce the stress in the alloy during its cooling. The single-channel sprinkler system is formed by a 5-6 mm long sprinkler, which is attached to the cone by its thick end. Its second end is thinned to 3-4 mm, attached to the frame of the prosthesis on one side. On the opposite side of the frame, a wax thread 1 mm long is attached to the cone - for the release of gases. The sprue is attached in the direction of rotation of the model during the pouring of the alloy.

Packing models in a cuvette, casting and finishing the frame.

It is necessary to form a model with a frame of a brace prosthesis in the oventake the same refractory mass, withof which a fire-resistant model was made. The wax reproduction of the frame and the shower system are covered with a liquid packaging molding compound, it is advisable to mix it in small portions (10-15 g) and apply it to the frame with a brush, holding it above the model and touching the vibrating table with your hand.

After the mass dries, the model is fixed on a special stand or cone and the appropriate size of the fire is selected. From the middle, it is lined with sheets of wax or asbestos. The stone is fixed on a stand or cone and poured with wax so that the molding mass does not leak out. Using the instructions, prepare the molding mass and pour it into the furnace placed on the vibrating table. After solidification of the molding mass, the stove is heated, the stand or cone is removed, the wax is melted and heat treatment is carried out.

Marshallite mixed with hydrolyzed tetraethylsilicate can also be used to apply a refractory layer to the prosthesis frame and shower system. This mixture is used to cover the frame of the brace prosthesis, applying it with a brush or pouring it from a spoon. After applying a layer of mass, the frame is sprinkled with dry quartz sand. The model with a refractory layer applied to the frame is dried for 30 minutes in air, and then placed in a desiccator for 10 minutes to dry in ammonia vapors.

After drying the refractory layer in a desiccator, the model is ventilated for 10 minutes, and then a second layer of refractory mass is applied, which should be slightly thinner than the first layer. After that, the fire is picked up, its inner surface is lined with asbestos paper and placed on a stand or in a cone. Formation of the burn is carried out with dry quartz sand with two wet plugs.

The wax is dried in the air for 10-15 minutes, and then the wax is melted by heating it in a muffle furnace. When the wax is completely melted and burned out, the burn is transferred to the second muffle furnacewithsoftware control,already heated to 200°C.

High-frequency and electroslag installations give the best casting results. The model with a frame and a shower system is fixed on a special cone covered with a thin layer of wax. After melting the wax, a deep pouring bowl and a conical main riser remain in the refractory mass. The furnace is heated to 800-900 °C and kept at this temperature for 20-30 minutes.

Then it is removed from the muffle furnace and during the melting of the metal, the main riser is closed with a special valve with a spring made of nichrome, so that slag does not get into the channels. The surface of the slag bath in the shower bowl has a temperature of more than 1000 °C, so a large amount of steam appears in the steam generator and a pressure of 10-12 atm is created.

The pressure is transferred to the liquid slag contained above the molten metal, which in turn presses on the valve and causes it to move sharply to its extreme position in the riser. Molten metal fills the riser and the entire mold through the channels. 3-4 minutes after pouring the metal, the furnace is immersed in cold water and the castings are gradually cleaned of refractory mass.

Final production of the brace prosthesis.

Two methods are used to clean the castings of the frameworks of braced prostheses from refractory mass:

1) mechanical (castings are cleaned of refractory mass on a sandblasting machine);

2) chemical (potassium or sodium hydroxide is used).

The spigots are separated from the framework of the bygel prosthesis with a special cutting disk, which is fixed on the grinding motor. The processing of the frame of the brace prosthesis is carried out with abrasive wheels, heads, and burs. They remove the remains of showerheads, smooth out irregularities, and blunt the sharp edges of the frame. After such processing, the frame of the brace prosthesis is tried on and adjusted on a working model made of superplaster. The tried-on and adjusted frame on the model is sent to the clinic for checking the design, fitting it in the patient's mouth. After that, final grinding and polishing is carried out using felts, rough brushes and GOI paste on a grinding motor.

At the next stage, artificial teeth are installed on wax rollers.

Then the resulting wax structure is placed in a plaster mold, the wax is melted and removed from there, and acrylic plastic is poured in its place. In this way, the metal and plastic parts of the brace prosthesis are connected.

At the final stage, the finished prosthesis is transferred for installation in the patient's oral cavity.

3.2. recommendations (instructions) for performing tasks (professional algorithms, orientation maps for the formation of practical skills and abilities, etc.);

3.3. requirements for work results, including registration;

— Conduct an examination.

— Analyze the results of the examination of a dental patient.

— Make a plan for additional examination of the patient.

— Explain the results of clinical and special (additional) research methods.

4. Summary:

— Anamnesis of the patient. Main complaints. Medical history. Dental history.

— Examination. External overview. Reduction of the lower third of the face, expressiveness of nasolabial and chin folds, degree of mouth opening (free, difficult). Temporomandibular joint. Examination of the masticatory muscles.

— Intraoral examination. Assessment of the state of bone and mucous formations affecting the fixation of the prosthesis in the oral cavity.

— Determination of mobility and flexibility of the mucous membrane.

— Diagnosis. Plan and objectives of orthopedic treatment.

5. List of recommended literature (main, additional, electronic information resources):

Main:

- Orthopedic dentistry: textbook / Rozhko M.M., Nespryadko V.P., I.V. Paliychuk and others; under the editorship M.M. Rozhka, V.P. Nespryadka.- K.: Medical University "Medicine"; 2020. - 720 p.

- Rozhko M.M., Nespryadko V.P., Mykhaylenko T.M. and others. Dentoprosthetic technique. K.: Book plus; 2016. 604 p.

- Rozhko M.M., Popovych Z.B., Kuroyedova V.D. Dentistry. Textbook. K.: Medical University "Medicine"; 2018. 872 p.

Additional:

Dentistry: in 2 books. : textbook. Book 2 / M.M. Rozhko, I.I. Kirylenko, O.G. Denisenko and others. ; under the editorship M.M. Horn — 2nd edition. — K.: VSV "Medicine", 2018. — 992 p. ; color kind.

- Material science in dentistry: a study guide / [Korol D.M., Korol M.D., Ojubeiska O.D. etc.]; in general ed. King D.M. – Vinnytsia: New book, 2019. – 400 p.

Electronic information resources:

- State Expert Center of the Ministry of Health of Ukrainehttp://www.dec.gov.ua/index.php/ua/

- National Scientific Medical Library of Ukrainehttp://library.gov.ua/

- National Library of Ukraine named after V.I. Vernadskyihttp://www.nbuv.gov.ua/

Practical lesson No. 11

Topic:Complete removable prosthetics. Clinical stages of production.

Goal:

To expand, deepen and consolidate knowledge on the peculiarities of planning the constructions of complete removable prostheses. Familiarize yourself with modern designs of complete removable prostheses and their manufacturing technologies.

Basic concepts:examination of a dental patient with complete absence of teeth, dental instruments for examination, x-ray diagnostics, complete removable prosthesis

Equipment:Computer, phantoms, examination instruments, X-rays

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).

2. Control of the reference level of knowledge:

2.1. requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units);

Know:

— structure of the upper jaw;
— structure of the lower jaw;
— structure of the temporomandibular joint;
— the structure of the mucous membrane of the oral cavity.
— tooth structure
— to know the classification of dentition defects

Be able:

— determine the relationship between the upper and lower jaws;
— to examine the patient
— read x-rays

2.2. questions (test tasks, tasks, clinical situations) to check basic knowledge on the subject of the lesson.

— Examination. External overview. The degree of reduction of the lower third of the face, the expression of facial skin folds, the degree of mouth opening (free, difficult).
— Examination of the temporomandibular joint.
— Examination of the masticatory muscles.
— Examination of teeth and dentition

3. Formation of professional skills, skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.):

3.1. content of tasks (tasks, clinical situations, etc.);

Complete absence of teeth is a common dental disease, the frequency of which increases with age. So, if at the age of 40-49 it is observed in 1% of cases, then at the age of 50-59 - in 5.5%, and in people over 60 - in 25%. At the same time, in patients with complete loss of teeth, a high-quality clinical examination takes on special importance in view of the need to adequately assess the conditions of prosthetics, in particular the expressiveness of anatomical retention points, the condition of the mucous membrane of the oral cavity, as well as the general condition of the body. Only a careful analysis of the obtained results will allow the doctor to choose a rational design of complete removable lamellar prostheses.

*Subjective examination.*Patients with a complete absence of teeth complain of aesthetic inconsistency, inability to chew, as well as impaired diction. People who apply repeatedly have complaints about poor fixation of the prosthesis, or a violation of their appearance.

To find out the history of the current disease, it is important to determine the cause and age of tooth loss, the term and success of previous prosthetics. If prostheses were previously made, but the patient did not use them, it is important to establish the reason by examining them. In general, during the clinical assessment of complete removable prostheses, their stability and functional adequacy are taken into account. Defects that require elimination include poor fixation, balancing of prostheses, lack of occlusal contact of the tooth rows, violation of the integrity of the base, etc.

Regarding the history of the patient's life (medical history), it is necessary to clarify the presence of:

1) infectious diseases;
2) general somatic pathology;
3) allergic reactions.

*Objective examination*it is worth starting with an external examination of the patient. Thus, the "aging appearance of the face" characterizes the loss of fixed bite height. It is necessary to determine the symmetry and proportionality of the face, the nature of the violation of its relief. In parallel with the external examination, a palpatory examination of the masticatory muscles and temporomandibular joints is performed. The degree of mouth opening is determined, whether it is difficult and whether it is fully open. At the same time, it is important to establish the nature of the movements of the articular heads. Normally, smooth, painless, symmetrical movements of the heads along the tubercles in the right and left temporomandibular joints are observed during palpation in the area of the ear tufts.

When examining the oral cavity, attention should be paid to the nature of the ratio of the jaws (orthognathic, progenic, prognathic), because it determines the features of placing artificial teeth on prostheses.

The alveolar process can be well expressed, moderately expressed, unexpressed or sharply atrophied. Atrophy, in turn, can be uniform and uneven. Alveolar processes differ in shape: they are semi-oval, rectangular, triangular-pointed, truncated-conical, flattened and pear-shaped. The most favorable for prosthetics are semi-oval and truncated cone-shaped alveolar processes, the least - triangular-pointed. The pear-shaped shape of the alveolar process requires the placement of teeth in a removable prosthesis "at the point", i.e. without artificial gums, to prevent the formation of an undercut. The shape of the vestibular slope of the alveolar process can be different: gentle, steep, with a canopy. A low shape is the most beneficial for prosthetics, because the fixation of the prosthesis deteriorates when it is steep, and with an overhang it becomes difficult to put the prosthesis on the jaw.

The alveolar processes should not only be examined, but also palpated in order to study the relief of the bone bed (presence of exostoses, the nature of the surface of the alveolar process (flat, hilly)). Another bony formation is subject to palpation - an

exostosis, located in the middle of the hard palate. The latter significantly worsens the fixation of a complete removable prosthesis on the upper jaw, because it prevents the formation of a closing valve (a space with negative pressure under the prosthesis).

The depth and shape of the hard palate are of great importance for prosthetics. A flat palate with a pronounced torus is the most unfavorable conditions for prosthetics, while a deep palate contributes to a positive outcome of treatment. On the lower jaw, the depth of the floor of the oral cavity should be taken into account. As a rule, sharp atrophy of the lower alveolar process is associated with a shallow bottom and sharpening of the maxillo-hyoid lines.

In addition to bone formations that affect the results of prosthetics, it is necessary to pay attention to the formation of the mucous membrane. First of all, the frenums of the lips, tongue and buccal ridges, the low location of which on the upper jaw and, conversely, the high one on the lower jaw, interfere with prosthetics. A similar dependence is observed for transitional folds.

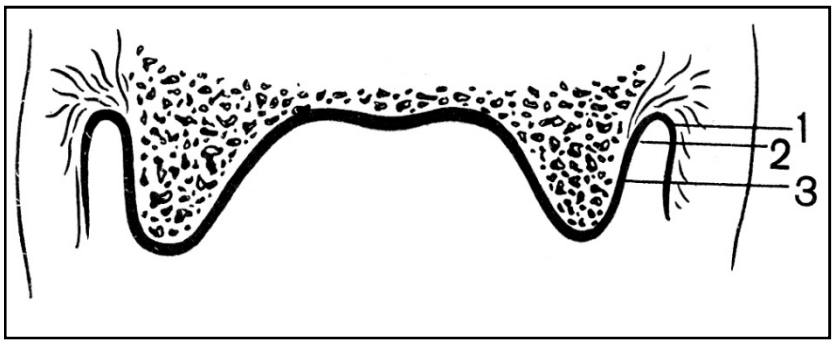
The pterygoid fold is determined when the mouth is wide open, it should not overlap with the base of the prosthesis.

On the lower jaw, the retromolar, retroalveolar zones and sublingual space are important for prosthetics. In the retromolar area there is a mandibular tubercle, which overlaps with the base of the prosthesis. The use of the retroalveolar zone, where there is a muscleless area, is of great importance for fixing the prosthesis. A reliable area for retention of the prosthesis is the sublingual space between the sublingual ridge and the inner surface of the lower jaw from the location of the central incisor to the first molar.

During an intraoral examination, it is necessary to trace the topography of the neutral zone located between the mobile and immobile mucous membrane (Fig. 1). In the area of the palate, the neutral zone coincides with the "A" line, the border between the soft and hard palate. It is in the neutral zone that the border of complete removable prostheses passes.

Fig. 1. Transition fold with complete absence of teeth:

1 – active and mobile mucous membrane; 2 – passively mobile mucous membrane (neutral zone); 3 – immobile mucous membrane



To systematize the conditions for complete removable prosthetics, a number of classifications of edentulous jaws were proposed.

Schroeder’s classification of edentulous upper jaws includes three types (Fig. 2):

Type I - well-defined alveolar processes and maxillary ridges, deep palate, high transitional fold;

II type – average atrophy of the alveolar process, humps are moderately pronounced, average depth of the palatine vault and the border of the oral cavity;

Type III - significant atrophy of alveolar processes and humps, flat palatal vault and low location of the transitional fold.

Accordingly, Koehler identified four types of lower toothless jaws (Fig. 3):

Type I - alveolar parts are slightly and uniformly atrophied;

II type - alveolar parts are uniformly atrophied, muscle attachment sites are located almost at the level of the alveolar ridge;

Type III - pronounced atrophy of alveolar processes in the lateral parts with relative preservation in the front part;

IV type - pronounced atrophy of the alveolar part in the anterior part.

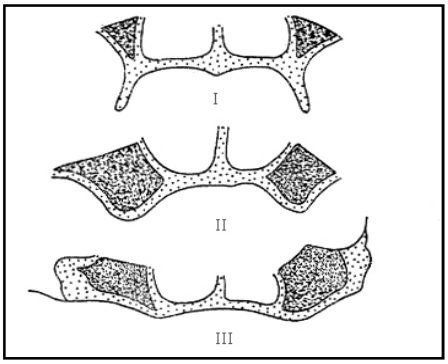


Fig. 2. Schroeder's classification of edentulous upper jaws

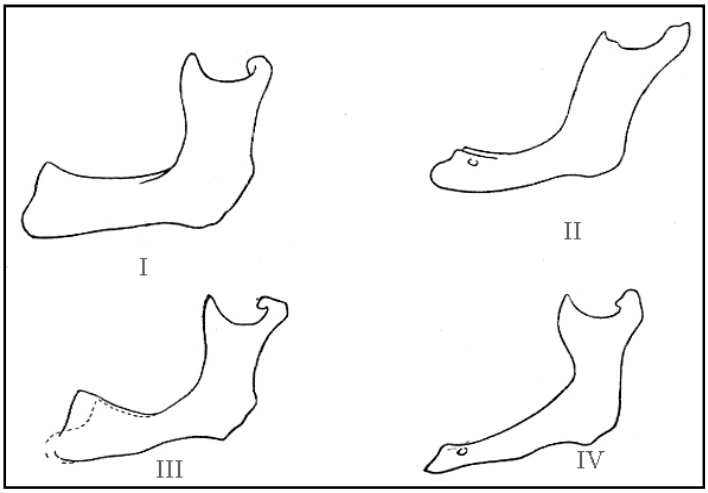


Fig. 3. Classification of lower edentulous jaws according to Koehler

Oxman proposed a unified classification of toothless jaws (Fig. 4).

In type I, there is a high alveolar process, high maxillary ridges, a pronounced vault and a high location of the transitional fold and places of attachment of frenulums and buccal cords. For the lower jaw, there is a high alveolar process with a low transitional fold.

Type II is characterized by moderate atrophy of the alveolar process and humps of the upper jaw, a less deep palate and low attachment of the mobile

mucous membrane. Type II of the lower jaw is characterized by moderate atrophy of the alveolar process.

Type III is characterized by sharp but uniform atrophy of the alveolar process, flattening of the palatine vault, and attachment of the mucous membrane at the level of the apex of the alveolar process. The absence of the alveolar part, or a very weak expression, is characteristic of type III of the lower jaw.

Type IV is characterized by uneven atrophy of the alveolar process of both the upper and lower jaws.

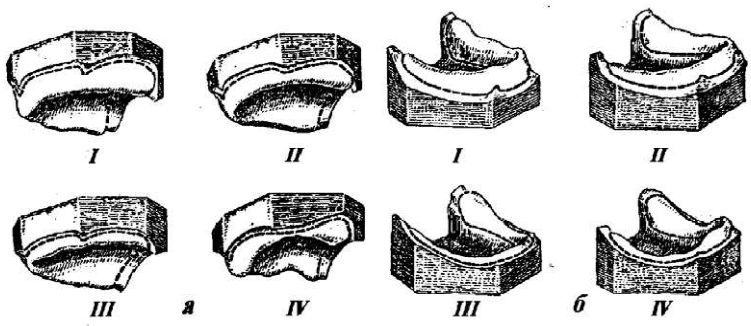


Fig. 4. Classification of edentulous jaws according to Oxman

In turn, a careful study of the features of the mucous membrane of the prosthetic bed is of great importance for the choice of the method of prosthetics, the method of obtaining a functional impression and achieving a positive outcome of orthopedic treatment, because it prevents the harmful effects of the prosthesis.

Suple distinguished four classes of the mucous membrane:

I class – normal compliance;

II class - atrophied, inflexible;

III class – hypertrophied, loose;

Class IV – mobile mucous membranes.

Based on the different degree of compliance of the mucous membrane, Lund distinguished four zones on the hard palate: 1) the area of the sagittal seam, the medial (middle) fibrous zone with minimal compliance; 2) zone of the alveolar process, peripheral (lateral) fibrous zone; 3) fatty zone with a mucous membrane of medium degree of compliance; 4) glandular zone - the back third of the hard palate, covered with soft, elastic in the vertical direction, the most pliable mucous membrane (Fig. 5). Knowing the zones of pliability is important for prosthetics: in places of inflexible mucosa, the base should not fit tightly, while in well-pliable it should sink, forming a valve.

Usually, basic methods (examination and palpation) are enough to examine a patient with complete absence of teeth. In addition, according to the indications, other types of research are conducted. As a rule, these are x-rays of the alveolar process, allergy tests, additional methods of examining the joints and masticatory muscles.

The result of the patient's examination is the establishment of a diagnosis that reflects both morphological and functional disorders. The diagnosis should consist of 3 parts: 1) the main disease, 2) its complications; 3) concomitant diseases. In

addition, the diagnosis must specify the causes of the main disease, as well as functional disorders caused by it.

Causes of tooth loss include periodontal disease; complicated caries; trauma; non-carious lesions of teeth; primary adentia. Among the complications is the loss of a fixed interalveolar height with full dentition in the absence of timely prosthetics, which will probably lead to disorders of the temporomandibular joint and the muscular system (arthritis, arthrosis, arthrosis, Kosten's syndrome). Associated diseases: dental, not related to the main disease, and general somatic diseases that threaten the emergence of an emergency in the clinic, or those that affect the choice of indications and the results of prosthetics (cardiovascular pathology, diseases of the gastrointestinal tract, endocrine diseases, lesions nervous system, etc.). The complete absence of teeth causes a violation of the functions of the maxillofacial area, namely the inability to chew, diction disorders, a cosmetic defect, as well as changes in the tone of the masticatory and facial muscles.

Clinical stages of manufacturing complete removable prostheses

- Examination of the patient, drawing up a treatment plan.
- Removal of full anatomical impressions with standard impression spoons.
- Fitting of individual spoons, removal of functional impressions.
- Determination and fixation of the central ratio of the jaws.
- Checking the placement of artificial teeth on a wax basis in the oral cavity.
- Fitting and fixation of a complete removable lamellar prosthesis in the oral cavity.
- Instructions to the patient.
- Correction of the prosthesis.

3.2. recommendations (instructions) for performing tasks (professional algorithms, orientation maps for the formation of practical skills and abilities, etc.);

3.3. requirements for work results, including registration;

— Conduct an examination.

— Analyze the results of the examination of a dental patient.

— Make a plan for additional examination of the patient.

— Explain the results of clinical and special (additional) research methods.

4. Summary:

— Anamnesis of the patient. Main complaints. Medical history. Dental history.

— Examination. External overview. Reduction of the lower third of the face, expressiveness of nasolabial and chin folds, degree of mouth opening (free, difficult). Temporomandibular joint. Examination of the masticatory muscles.

— Intraoral examination. Assessment of the state of bone and mucous formations affecting the fixation of the prosthesis in the oral cavity.

— Determination of mobility and flexibility of the mucous membrane.

— Diagnosis. Plan and objectives of orthopedic treatment.

5. List of recommended literature (main, additional, electronic information resources):

Main:

- Orthopedic dentistry: textbook / Rozhko M.M., Nespryadko V.P., I.V. Paliychuk and others; under the editorship M.M. Rozhka, V.P. Nespryadka.- K.: Medical University "Medicine"; 2020. - 720 p.
- Rozhko M.M., Nespryadko V.P., Mykhaylenko T.M. and others. Dentoprosthetic technique. K.: Book plus; 2016. 604 p.
- Rozhko M.M., Popovych Z.B., Kuroyedova V.D. Dentistry. Textbook. K.: Medical University "Medicine"; 2018. 872 p.

Additional:

Dentistry: in 2 books. : textbook. Book 2 / M.M. Rozhko, I.I. Kirylenko, O.G. Denisenko and others. ; under the editorship M.M. Horn — 2nd edition. — K.: VSV "Medicine", 2018. — 992 p. ; color kind.

- Material science in dentistry: a study guide / [Korol D.M., Korol M.D., Ojubeiska O.D. etc.]; in general ed. King D.M. – Vinnytsia: New book, 2019. – 400 p.

Electronic information resources:

- State Expert Center of the Ministry of Health of Ukrainehttp://www.dec.gov.ua/index.php/ua/
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- National Library of Ukraine named after V.I. Vernadskyihttp://www.nbuv.gov.ua/

Practical lesson No. 12

Topic:Complete removable prosthetics. Laboratory stages of production.

Goal:

To expand, deepen and consolidate knowledge on the peculiarities of planning the constructions of complete removable prostheses. Familiarize yourself with modern designs of complete removable prostheses and their manufacturing technologies.

Basic concepts:examination of a dental patient with complete absence of teeth, dental instruments for examination, x-ray diagnostics, complete removable prosthesis

Equipment:Computer, phantoms, examination instruments, X-rays

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).
2. Control of the reference level of knowledge:

2.1. requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units);

Know:

— structure of the upper jaw;
— structure of the lower jaw;
— structure of the temporomandibular joint;
— the structure of the mucous membrane of the oral cavity.
— tooth structure
— to know the classification of dentition defects

Be able:

— determine the relationship between the upper and lower jaws;
— to examine the patient
— read x-rays

2.2. questions (test tasks, tasks, clinical situations) to check basic knowledge on the subject of the lesson.

— Examination. External overview. The degree of reduction of the lower third of the face, the expression of facial skin folds, the degree of mouth opening (free, difficult).

— Examination of the temporomandibular joint.
— Examination of the masticatory muscles.
— Examination of teeth and dentition

3. Formation of professional skills, skills (mastery of skills, conducting curation, determining the treatment scheme, conducting
laboratory research, etc.):

3.1 content of tasks (tasks, clinical situations, etc.);

Complete absence of teeth is a common dental disease, the frequency of which increases with age. So, if at the age of 40-49 it is observed in 1% of cases, then at the age of 50-59 - in 5.5%, and in people over 60 - in 25%. At the same time, in patients with complete loss of teeth, a high-quality clinical examination takes on special importance in view of the need to adequately assess the conditions of prosthetics, in particular the expressiveness of anatomical retention points, the condition of the mucous membrane of the oral cavity, as well as the general condition of the body. Only a careful analysis of the obtained results will allow the doctor to choose a rational design of complete removable lamellar prostheses.

*Subjective examination.*Patients with a complete absence of teeth complain of aesthetic inconsistency, inability to chew, as well as impaired diction. People who apply repeatedly have complaints about poor fixation of the prosthesis, or a violation of their appearance.

To find out the history of the current disease, it is important to determine the cause and age of tooth loss, the term and success of previous prosthetics. If prostheses were previously made, but the patient did not use them, it is important to establish the reason by examining them. In general, during the clinical assessment of complete removable prostheses, their stability and functional adequacy are taken into account. Defects that require elimination include poor fixation, balancing of

prostheses, lack of occlusal contact of the tooth rows, violation of the integrity of the base, etc.

Regarding the history of the patient's life (medical history), it is necessary to clarify the presence of:

1) infectious diseases;

2) general somatic pathology;

3) allergic reactions.

*Objective examination*it is worth starting with an external examination of the patient. Thus, the "aging appearance of the face" characterizes the loss of fixed bite height. It is necessary to determine the symmetry and proportionality of the face, the nature of the violation of its relief. In parallel with the external examination, a palpatory examination of the masticatory muscles and temporomandibular joints is performed. The degree of mouth opening is determined, whether it is difficult and whether it is fully open. At the same time, it is important to establish the nature of the movements of the articular heads. Normally, smooth, painless, symmetrical movements of the heads along the tubercles in the right and left temporomandibular joints are observed during palpation in the area of the ear tufts.

When examining the oral cavity, attention should be paid to the nature of the ratio of the jaws (orthognathic, progenic, prognathic), because it determines the features of placing artificial teeth on prostheses.

The alveolar process can be well expressed, moderately expressed, unexpressed or sharply atrophied. Atrophy, in turn, can be uniform and uneven. Alveolar processes differ in shape: they are semi-oval, rectangular, triangular-pointed, truncated-conical, flattened and pear-shaped. The most favorable for prosthetics are semi-oval and truncated cone-shaped alveolar processes, the least - triangular-pointed. The pear-shaped shape of the alveolar process requires the placement of teeth in a removable prosthesis "at the point", i.e. without artificial gums, to prevent the formation of an undercut. The shape of the vestibular slope of the alveolar process can be different: gentle, steep, with a canopy. A low shape is the most beneficial for prosthetics, because the fixation of the prosthesis deteriorates when it is steep, and with an overhang it becomes difficult to put the prosthesis on the jaw.

The alveolar processes should not only be examined, but also palpated in order to study the relief of the bone bed (presence of exostoses, the nature of the surface of the alveolar process (flat, hilly)). Another bony formation is subject to palpation - an exostosis, located in the middle of the hard palate. The latter significantly worsens the fixation of a complete removable prosthesis on the upper jaw, because it prevents the formation of a closing valve (a space with negative pressure under the prosthesis).

The depth and shape of the hard palate are of great importance for prosthetics. A flat palate with a pronounced torus is the most unfavorable conditions for prosthetics, while a deep palate contributes to a positive outcome of treatment. On the lower jaw, the depth of the floor of the oral cavity should be taken into account. As a rule, sharp atrophy of the lower alveolar process is associated with a shallow bottom and sharpening of the maxillo-hyoid lines.

In addition to bone formations that affect the results of prosthetics, it is necessary to pay attention to the formation of the mucous membrane. First of all, the frenums of the lips, tongue and buccal ridges, the low location of which on the upper jaw and, conversely, the high one on the lower jaw, interfere with prosthetics. A similar dependence is observed for transitional folds.

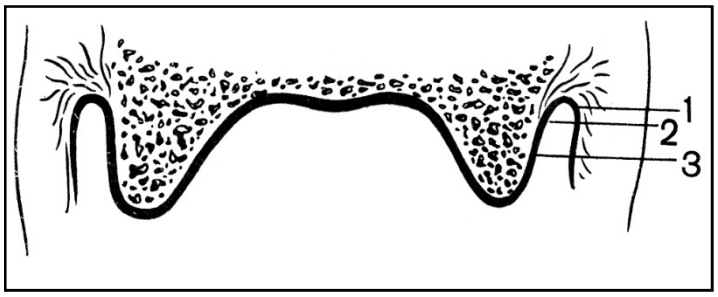
The pterygoid fold is determined when the mouth is wide open, it should not overlap with the base of the prosthesis.

On the lower jaw, the retromolar, retroalveolar zones and sublingual space are important for prosthetics. In the retromolar area there is a mandibular tubercle, which overlaps with the base of the prosthesis. The use of the retroalveolar zone, where there is a muscleless area, is of great importance for fixing the prosthesis. A reliable area for retention of the prosthesis is the sublingual space between the sublingual ridge and the inner surface of the lower jaw from the location of the central incisor to the first molar.

During an intraoral examination, it is necessary to trace the topography of the neutral zone located between the mobile and immobile mucous membrane (Fig. 1). In the area of the palate, the neutral zone coincides with the "A" line, the border between the soft and hard palate. It is in the neutral zone that the border of complete removable prostheses passes.

Fig. 1. Transition fold with complete absence of teeth:

1 – active and mobile mucous membrane; 2 – passively mobile mucous membrane (neutral zone); 3 – immobile mucous membrane



To systematize the conditions for complete removable prosthetics, a number of classifications of edentulous jaws were proposed.

Schroeder's classification of edentulous upper jaws includes three types (Fig. 2):

Type I - well-defined alveolar processes and maxillary ridges, deep palate, high transitional fold;

II type – average atrophy of the alveolar process, humps are moderately pronounced, average depth of the palatine vault and the border of the oral cavity;

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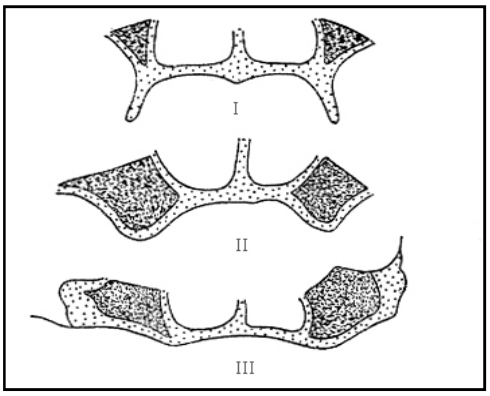

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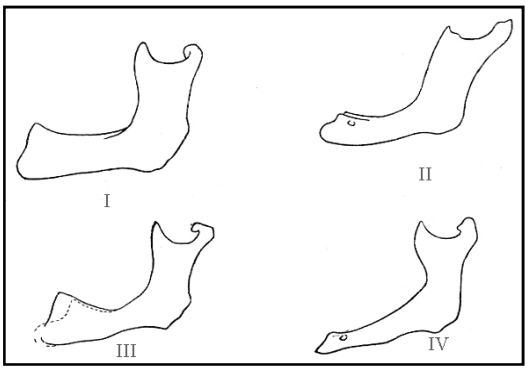

Fig. 3. Classification of lower edentulous jaws according to Koehler

Oxman proposed a unified classification of toothless jaws (Fig. 4).

In type I, there is a high alveolar process, high maxillary ridges, a pronounced vault and a high location of the transitional fold and places of attachment of frenulums and buccal cords. For the lower jaw, there is a high alveolar process with a low transitional fold.

Type II is characterized by moderate atrophy of the alveolar process and humps of the upper jaw, a less deep palate and low attachment of the mobile mucous membrane. Type II of the lower jaw is characterized by moderate atrophy of the alveolar process.

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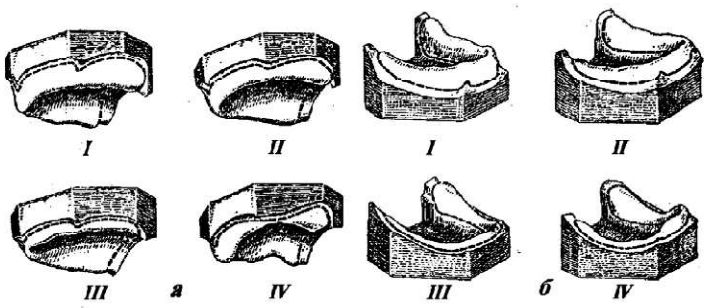

Fig. 4. Classification of edentulous jaws according to Oxman

In turn, a careful study of the features of the mucous membrane of the prosthetic bed is of great importance for the choice of the method of prosthetics, the method of obtaining a functional impression and achieving a positive outcome of orthopedic treatment, because it prevents the harmful effects of the prosthesis.

Suple distinguished four classes of the mucous membrane:

I class – normal compliance;

II class - atrophied, inflexible;

III class – hypertrophied, loose;

Class IV – mobile mucous membranes.

Based on the different degree of compliance of the mucous membrane, Lund distinguished four zones on the hard palate: 1) the area of the sagittal seam, the medial (middle) fibrous zone with minimal compliance; 2) zone of the alveolar process, peripheral (lateral) fibrous zone; 3) fatty zone with a mucous membrane of medium degree of compliance; 4) glandular zone - the back third of the hard palate, covered with soft, elastic in the vertical direction, the most pliable mucous membrane (Fig. 5). Knowing the zones of pliability is important for prosthetics: in places of inflexible mucosa, the base should not fit tightly, while in well-pliable it should sink, forming a valve.

Usually, basic methods (examination and palpation) are enough to examine a patient with complete absence of teeth. In addition, according to the indications, other types of research are conducted. As a rule, these are x-rays of the alveolar process, allergy tests, additional methods of examining the joints and masticatory muscles.

The result of the patient's examination is the establishment of a diagnosis that reflects both morphological and functional disorders. The diagnosis should consist of 3 parts: 1) the main disease, 2) its complications; 3) concomitant diseases. In addition, the diagnosis must specify the causes of the main disease, as well as functional disorders caused by it.

Causes of tooth loss include periodontal disease; complicated caries; trauma; non-carious lesions of teeth; primary adentia. Among the complications is the loss of a fixed interalveolar height with full dentition in the absence of timely prosthetics, which will probably lead to disorders of the temporomandibular joint and the muscular system (arthritis, arthrosis, arthrosis, Kosten's syndrome). Associated diseases: dental, not related to the main disease, and general somatic diseases that threaten the emergence of an emergency in the clinic, or those that affect the choice

of indications and the results of prosthetics (cardiovascular pathology, diseases of the gastrointestinal tract, endocrine diseases, lesions nervous system, etc.). The complete absence of teeth causes a violation of the functions of the maxillofacial area, namely the inability to chew, diction disorders, a cosmetic defect, as well as changes in the tone of the masticatory and facial muscles.

Laboratory stages of manufacturing complete removable prostheses

- Casting plaster models and making individual spoons.
- Casting of working plaster models, determination of the limits of the prosthesis base, production of wax bases with occlusion rollers.
- Plastering of models in an occluder (articulator).
- Selection and placement of artificial teeth on a wax basis.
- Preliminary modeling of the wax base of the prosthesis.
- Final modeling of the wax base of the prosthesis.
- Replacing the wax base of the prosthesis with plastic or thermoplastic material.
- Processing and polishing of the prosthesis.
- Final polishing of the prosthesis.

3.2. recommendations (instructions) for performing tasks (professional algorithms, orientation maps for the formation of practical skills and abilities, etc.);

3.3. requirements for work results, including registration;

— Conduct an examination.

— Analyze the results of the examination of a dental patient.

— Make a plan for additional examination of the patient.

— Explain the results of clinical and special (additional) research methods.

4. Summary:

— Anamnesis of the patient. Main complaints. Medical history. Dental history.

— Examination. External overview. Reduction of the lower third of the face, expressiveness of nasolabial and chin folds, degree of mouth opening (free, difficult). Temporomandibular joint. Examination of the masticatory muscles.

— Intraoral examination. Assessment of the state of bone and mucous formations affecting the fixation of the prosthesis in the oral cavity.

— Determination of mobility and flexibility of the mucous membrane.

— Diagnosis. Plan and objectives of orthopedic treatment.

5. List of recommended literature (main, additional, electronic information resources):

Main:

- Orthopedic dentistry: textbook / Rozhko M.M., Nespryadko V.P., I.V. Paliychuk and others; under the editorship M.M. Rozhka, V.P. Nespryadka.- K.: Medical University "Medicine"; 2020. - 720 p.

- Rozhko M.M., Nespryadko V.P., Mykhaylenko T.M. and others. Dentoprosthetic technique. K.: Book plus; 2016. 604 p.

- Rozhko M.M., Popovych Z.B., Kuroyedova V.D. Dentistry. Textbook. K.: Medical University "Medicine"; 2018. 872 p.

Additional:

Dentistry: in 2 books. : textbook. Book 2 / M.M. Rozhko, I.I. Kirylenko, O.G. Denisenko and others. ; under the editorship M.M. Horn — 2nd edition. — K.: VSV "Medicine", 2018. — 992 p. ; color kind.

- Material science in dentistry: a study guide / [Korol D.M., Korol M.D., Ojubeiska O.D. etc.]; in general ed. King D.M. – Vinnytsia: New book, 2019. – 400 p.

Electronic information resources:

- State Expert Center of the Ministry of Health of Ukrainehttp://www.dec.gov.ua/index.php/ua/

- National Scientific Medical Library of Ukrainehttp://library.gov.ua/

- National Library of Ukraine named after V.I. Vernadskyihttp://www.nbuv.gov.ua/

Practical lesson No. 13

Topic:Implantation, indications, examination of the patient. Planning. Component parts of the implant. Methods of connecting the abutment to the implant. Abutments, types, indications for use.

Goal:to acquaint students with the general concepts of dental implantation and the main trends in implantology.

Basic concepts:examination of a dental patient, dental instruments for examination, X-ray diagnostics, implant

Equipment:Computer, phantoms, examination instruments, X-rays

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).

2. Control of the reference level of knowledge:

2.1. requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units);

Know:

— structure of the upper jaw;

— structure of the lower jaw;

— structure of the temporomandibular joint;

— the structure of the mucous membrane of the oral cavity.

— tooth structure
— to know the classification of dentition defects

Be able:
— determine the relationship between the upper and lower jaws;
— to examine the patient
— read x-rays

2.2. questions (test tasks, tasks, clinical situations) to check basic knowledge on the subject of the lesson.

— Examination. External overview. The degree of reduction of the lower third of the face, the expression of facial skin folds, the degree of mouth opening (free, difficult).
— Examination of the temporomandibular joint.
— Examination of the masticatory muscles.
— Examination of teeth and dentition

3. Formation of professional skills, skills (mastery of skills, conducting curation, determining the treatment scheme, conducting
laboratory research, etc.):

3.1. content of tasks (tasks, clinical situations, etc.);

Attempts to replace lost teeth with intraosseous implants can be traced back to the ancient civilizations of Egypt and South America. These examples are described in ancient manuscript sources and found in skeletal remains discovered by archaeologists. So, in the skull, which dates back to the time of the discovery of America by Columbus and is now in the museum of Harvard University, an artificial tooth was found, carved from dark stone and replacing the lower left lateral incisor. The museum's curators now believe that this implant was made after death, according to the custom of the South American Indians of that time. In this regard, according to M. Block, numerous references to this skull in the literature on dental implantation should be corrected.

An Inca skull with 32 teeth - implants made of quartz and amethyst - is kept in one of the museums of Peru. This operation was performed in the 800s of our era.

Dental implantation is a relatively new branch of dentistry that solves the problems of restoring the anatomical shape and function of various areas of the dental-jaw system by introducing alloplastic materials into the tissue. With the help of various implants, it is possible to restore the continuity of the jaws, TMJ, facial contours (maxillofacial implantology), or dental arches and individual teeth (odontoimplantology).

An implant is a structure made of material of non-biological origin, which is introduced into the tissues of a macroorganism for the purpose of prosthetics, or the formation of a support for fixing a prosthesis.

Dental implantation received a rapid development with the introduction of titanium and its alloys into practice. For the first time, titanium was used in medicine for osteosynthesis in fractures of long tubular bones in 1951 by O. Levanthol.

For the first time, a national school of dental implantation was formed on the American continent, the founder of which was L. Linkow. In 1967, he proposed a blade-went implant and a one-stage implantation technique.

Titanium was introduced into dental practice in Europe by the Swedish scientist R. Branemark, who discovered the phenomenon of osseointegration. R. Branemark for the first time industrially began the production of screw implants, developed a two-stage method of their implantation.

Today, the main condition for implantation is the use of inert materials for the manufacture of a dental implant that do not cause immunological reactions. In modern dentistry, titanium, gold, nickel-chromium-vanadium alloys are used. In addition, modern dentistry uses implants with a porous powder coating, which is bioactive, i.e., due to the porosity, bone tissue grows inside the implant faster, and implantation becomes more reliable. A porous composition made of titanium powder and then bioactive ceramics is applied to the titanium workpiece using plasma spraying.

It is also becoming popular to use implants with a plasma hydroxyapatite or tricalcium phosphate coating. These inorganic components of bone tissue tend to dissolve over time, actively stimulating bone formation. The survivability of such implants is much higher and stabilization is more reliable than any other.


Fig. 2. Screw implant (R. Branemark)


Fig. 1. Plate implant (L. Linkow)

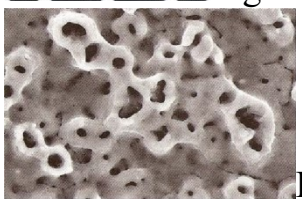
Fig. 3. The outer surface of the dental intraosseous implant, plasma coatings.

Types of dental (intraosseous) implants:

On the surface of the intraosseous part: smooth, texturing, with a bioactive coating.

By material: metal, ceramic.

According to the method of application: one-stage, two-stage.

Mechanism of osteogenesis during implantation

The concept of biocompatibility is generalized and covers both the influence of the body's biological environment and the direct reaction of local tissues to the

implant, as well as the effect of the implant's constant influence on the surrounding tissues and the body as a whole.

There are three main options for tissue organization at the implant + bone interface:

1. Direct contact of bone tissue with the surface of the implant - bone integration or osteointegration.

2. Mediated contact, when a layer of connective tissue is formed between the actual bone tissue and the surface of the implant, consisting mainly of collagen fibers and coarse fibrous bone tissue, fibro-osseous integration.

3. Formation of fibrous connective tissue on the surface of the implant (connective tissue integration)

The first two options are the functional response of the bone tissue to the introduction and operation of the implant. The third variant is normal for the connections of soft tissue, for example, the mucous membrane or the stroma of the tissues of the bone marrow spaces.

The mechanism for achieving bone integration is contact osteogenesis, which is based on the processes of osteoinduction and osteoconduction directly on the surface of the implant, as well as the ability of the bone to heal according to the type of primary tension.

Fibro-osseous integration is the result of distant osteogenesis, which is based on the same processes. However, osteoinduction and osteoconduction does not occur on the surface of the implant, but on the surface of the bone. In its biological essence, distant osteogenesis is the healing of the bone by the type of secondary tension.

Contact and distant osteogenesis occurs in the following cases:

1. If there are no impurities of foreign materials on the surface of the implant made of biocompatible material (no contamination) and the integrity of the oxide film or coating is preserved.

2. If the bone tissue perceives the bed has not lost the ability to regenerate. The viability of the bone tissue adjacent to the surface of the implant is primarily determined by the absence of significant blood supply disturbances and gross damage to the structural units of the bone.

After atraumatic preparation of the bed, the depth of necrosis of the bone tissue adjacent to the implant is up to 500 μm. Moreover, the death of all osteocytes is observed only along the edge of the bed at a depth of 100 μm, while in the border zone with necrosis during the other 400 μm, part of the osteocytes remain alive.

3. If there is a tight contact between the surface of the implant and the bone tissue.

The processes of contact and distant osteogenesis will occur in the presence of direct contact between the structural units of the bone and the surface of the implant to the adjacent trabeculae or osteon is about 100 microns.

A condition for osteoconduction is the organization of a solid attachment of a blood clot to the surface of the implant and the formation of a bridge of fibrin fibers between the surface of the implant and the viable one, which has preserved the osteoinductive properties of bone tissue.

Damage to bone capillaries during dissection of the receiving bed causes bleeding. After installing the implant in the bleeding bone bed, a certain amount of blood enters the surrounding tissues and onto its surface, on which a protein film is formed. Proteins and microelements of blood plasma participate in the formation of the film: fibrinogen, prothrombin, thromboplastin, glycoproteins, PDGF and IGF-protein, calcium ions, as well as cells platelets, erythrocytes, leukocytes. Aggregation of platelets causes clot formation and thrombosis of bleeding vessels. Part of the platelets adheres to the collagen fibers of bone tissue and the surface of the implant. Simultaneously with the aggregation of platelets with the help of thromboplastin, prothrombin turns into thrombin, which in turn provokes the polymerization of fibrinogen into fibrin fibers. As a result, a large network of thin fibrin fibers is formed, which are attached to the collagen fibers of the bone and capillary walls on the one hand, and to the surface of the implant on the other.

Immediately after the organization of the clot, its retraction occurs. By shortening, the clot reaches 10% of its initial volume. This is a fundamental point for osteoconduction, because the stronger the attachment of blood plasma proteins and fibrin fibers to the surface of the implant, the less the number of the latter will detach from the surface of the implant and the more its surface area will be covered by a matrix on which the proliferation and differentiation of osteogenic cells can occur.

Stages of contact osteogenesis:

1. Osteoconduction. Proliferation of osteogenic cells along the course of fibrin fibers and differentiation of these cells into osteoblasts.

2. De novo bone formation. Secretion of osteopoietin, osteonectin and collagen by osteoblasts.

3. Formation of the line of cement formation. Formation of crystals of calcium-phosphate compounds.

The histological connection between the surface of the implant and the mucous membrane of the gums is similar to the tooth-gingival connection, but differs in the organization of collagen fibers and blood vessels.

Indications and contraindications for implantation are established on the basis of general medical history and examination, assessment of psycho-emotional state and dental status of the patient.

Indications for dental implantation are:

1. Single defects of the dentition, when carrying out implantation will avoid the preparation of teeth located next to the defect.

2. Defects of the dentition are included, when with the help of implantation it is possible to avoid preparation, limit the defect of the teeth and removable prosthetics.

3. Final defects of the tooth rows in which implantation allows for permanent prosthetics.

4. Complete dentition, when with the help of implantation it is possible to carry out permanent prosthetics or provide more reliable fixation of complete removable dentures.

There are a number of diseases in which implantation, like any other planned operation, is contraindicated.

These include:

1. Chronic diseases in the stage of compensation.
2. Violation of coagulation and homeostasis.
3. HIV and any other seropositive infection.
4. Mental illnesses.

There are also diseases, physiological and functional conditions, in which only during a certain period of time the performance of any operation can harm the health of the patient, or during this period the state of the body will not allow to achieve positive results of surgical intervention. These include:

1. Acute inflammatory diseases and acute viral infections.
2. Chronic infectious diseases (tuberculosis, actinomycosis, etc.)
3. Exacerbation of chronic diseases.
4. High degree of risk of bacteremia (patients with prosthetic heart valves and suffered from bacterial endocarditis, rheumatism).
5. Have recently suffered a heart attack or stroke.
6. Pregnancy or lactation.
7. Treatment with drugs that impair tissue regeneration.
8. Endocrinopathology.

Osteopathies (primary and secondary osteoporosis, osteomalacia, etc.) should be considered as contraindications to dental implantation.

3.2. recommendations (instructions) for performing tasks (professional algorithms, orientation maps for the formation of practical skills and abilities, etc.);

3.3. requirements for work results, including registration;

— Conduct an examination.
— Analyze the results of the examination of a dental patient.
— Make a plan for additional examination of the patient.
— Explain the results of clinical and special (additional) research methods.

4. Summary:

— Anamnesis of the patient. Main complaints. Medical history. Dental history.
— Examination. External overview. Reduction of the lower third of the face, expressiveness of nasolabial and chin folds, degree of mouth opening (free, difficult). Temporomandibular joint. Examination of the masticatory muscles.
— Intraoral examination. Assessment of the state of bone and mucous formations affecting the fixation of the prosthesis in the oral cavity.
— Determination of mobility and flexibility of the mucous membrane.
— Diagnosis. Plan and objectives of orthopedic treatment.

5. List of recommended literature (main, additional, electronic information resources):

Main:

- Orthopedic dentistry: textbook / Rozhko M.M., Nespryadko V.P., I.V. Paliychuk and others; under the editorship M.M. Rozhka, V.P. Nespryadka.- K.: Medical University "Medicine"; 2020. - 720 p.

- Rozhko M.M., Nespryadko V.P., Mykhaylenko T.M. and others. Dentoprosthetic technique. K.: Book plus; 2016. 604 p.

- Rozhko M.M., Popovych Z.B., Kuroyedova V.D. Dentistry. Textbook. K.: Medical University "Medicine"; 2018. 872 p.

Additional:

Dentistry: in 2 books. : textbook. Book 2 / M.M. Rozhko, I.I. Kirylenko, O.G. Denisenko and others. ; under the editorship M.M. Horn — 2nd edition. — K.: VSV "Medicine", 2018. — 992 p. ; color kind.

- Material science in dentistry: a study guide / [Korol D.M., Korol M.D., Ojubeiska O.D. etc.]; in general ed. King D.M. – Vinnytsia: New book, 2019. – 400 p.

Electronic information resources:

- State Expert Center of the Ministry of Health of Ukrainehttp://www.dec.gov.ua/index.php/ua/

- National Scientific Medical Library of Ukrainehttp://library.gov.ua/

- National Library of Ukraine named after V.I. Vernadskyihttp://www.nbuv.gov.ua/

Practical lesson No. 14

Topic:Peculiarities of prosthetics using dental implants. Permanent prosthetics supported by implants. Clinical and laboratory stages of production.

Goal:to acquaint students with the general concepts of dental implantation and the main trends in implantology.

Basic concepts:examination of a dental patient, dental instruments for examination, X-ray diagnostics, implant

Equipment:Computer, phantoms, examination instruments, X-rays

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).

2. Control of the reference level of knowledge:

2.1. requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units);

Know:

— structure of the upper jaw;
— structure of the lower jaw;
— structure of the temporomandibular joint;
— the structure of the mucous membrane of the oral cavity.
— tooth structure
— to know the classification of dentition defects

Be able:

— determine the relationship between the upper and lower jaws;

— to examine the patient

— read x-rays

2.2. questions (test tasks, tasks, clinical situations) to check basic knowledge on the subject of the lesson.

— Examination. External overview. The degree of reduction of the lower third of the face, the expression of facial skin folds, the degree of mouth opening (free, difficult).

— Examination of the temporomandibular joint.

— Examination of the masticatory muscles.

— Examination of teeth and dentition

3. Formation of professional skills, skills (mastery of skills, conducting curation, determining the treatment scheme, conducting

laboratory research, etc.):

3.1. content of tasks (tasks, clinical situations, etc.);

It's no secret that dental implantation is the most progressive method of restoring completely lost teeth. According to international statistics, the effectiveness and, most importantly, the durability of structures after treatment by the implantation method exceeds those of classical methods of prosthetics used in orthopedic dentistry. But there is another side of the coin. Modern dentistry claims: dental implantation is necessary only in the presence of strictly certain conditions (evidence). The current Russian treatment protocol for partial tooth loss says: "In the absence of strict specific indications for prosthetics using dental implants, this type of treatment can be used only at the patient's insistence on the basis of a relevant contract." This means that medicine does not make exceptions: if there are no indications for treatment, especially against the background of contraindications, then it is desirable to refrain from it due to a sufficiently large risk or a shorter durability of the structure.

What are the indications for dental implantation?

There are several of them:

The most important indication for the use of dental (dental) implants is a single included defect of the tooth row with intact, i.e., healthy adjacent teeth. This means that the main prerequisite for the use of single dental implants is the presence of healthy adjacent teeth and the desire to preserve them, for example, not to grind them under the crowns of bridge prostheses and other types of structures.

Another indication is the limited included dentition defects. That is, if a person is missing 2-3 teeth in a row, they can be restored by the method of dental implantation. In this case, several execution options are possible, which give freedom of creativity for the dentist and the possibility of choice for the patient.

The next indication: terminal defects of the tooth row, that is, when there are no last teeth in the row. This type of defects caused and continues to cause difficulties in other types of prosthetics, because for a classic prosthesis there is only one point of

support in the form of a previous tooth. In the case of tooth implantation, this issue is removed - the implant is almost indifferent to the presence of teeth in its surroundings.

Complete absence of teeth, especially when the height of the alveolar process decreases. This type of adentia is an indication for both implantation and removable prosthetics. But if a person is not morally ready to take the prosthesis out of the mouth at night, that is, put the teeth on the shelf, then as an alternative method of treatment, you can use dental implantation.

Intolerance of removable prostheses due to increased sensitivity to acrylate (the main component of removable prostheses) or with a pronounced vomiting reflex. Everything is clear here: if a person cannot wear a removable prosthesis, then often the only alternative is dental implantation.

Absence of functional occlusion (closing of teeth) and as a result - the occurrence of pain syndrome.

What to do in case of indications?

The first thing is to exclude the presence of contraindications. But even if they do exist, the doctor can often recommend methods of getting rid of them, because not all contraindications are absolute and unchanging. Another important point is the desire and capabilities of the patient. It's no secret that the installation of a single tooth using a root implant is estimated at about a thousand dollars. Therefore, the installation of several implants can result in a significant amount. But if the patient has both the desire and the ability, then modern medicine can create a small miracle - restore the dentition and give the patient the joy of a healthy life with a beautiful smile.

Indications for the clinical use of dental (dental) implants are:

1) toothless jaws (especially the lower) with a high degree of atrophy of the cellular part or cellular process;.

2) a single defect of the dentition, provided that the adjacent teeth are intact;

3) the presence of a distally unrestricted defect (I and II classes according to Kennedy);

4) the presence of a large, distally limited defect (Kennedy class III).

5) the presence of a large defect in the frontal area (Kennedy class IV).

In each mentioned case, it is necessary to deeply analyze the patient's motivations, find out the reasons for refusing removable structures and carefully evaluate the possibility of using implants. Theoretically, any part of the jaw can be restored with the help of a dental implant, with the mandatory consideration of contraindications to its use.

For the successful use of implants, the following basic requirements must be taken into account:

1. The width of the bone tissue in the maxillo-lingual department should not be less than6 mm.

2. The distance between the roots of adjacent teeth is not less than8 mm.

3. Bone thickness above the mandibular canal and below the maxillary sinus — 10 mm(or special operational training is required).

4. For the manufacture of a superstructure with a support on implants, the distance between the dental arches should be5 mm.

Contraindications to implantation.

In implantology, it is customary to divide contraindications into absolute (general and local) and temporary.

Common contraindications include:

— any, from the patient's words, reasons for refusing surgical intervention;.

— any contraindications to local anesthesia;

— diseases that can be negatively affected by implantation (diseases of the cardiovascular system, blood, liver, kidneys, organ transplantation, rheumatic diseases);

— forms of therapy that can negatively affect the implantation and preservation of the implant, as well as its bed (for example, immunosuppressants, antidepressants, anticoagulants, cytostatics);

— diseases of neuropsychological origin;.

— situations associated with heavy psychological or physical stress;.

— insufficient desire of the patient, as well as cachexia, old age, insufficient level of general hygiene. However, the state of general hygiene is not an absolute contraindication to the use of dental implants.

Local contraindications:

— insufficient level of oral hygiene;.

— limitation of manual abilities, in particular motor activity;.

— pain syndrome in the maxillofacial area of unknown genesis;.

— dysfunctions of the temporomandibular joint, which cannot be corrected and can cause an excessive load on the implant;

— generalized marginal gingivitis that cannot be treated;

— lobular fibromas, fibromas of the prosthetic edge;

— insufficient amount of bone tissue, inappropriate structure of bone tissue, loss of more than a third of the mass of cellular tissue (for direct implantation).

— an unfavorable distance to the nervus alveolaris inferior, to the maxillary and nasal sinuses.

Contraindications of a temporary nature:

— acute forms of diseases;

— stages of rehabilitation and recovery;

— pregnancy;

- drug addiction;.

— state after irradiation for 1 year.

Retained teeth, cysts, tumors of bone tissues and inflammatory processes in the area of the jaw bones are also contraindications to implantation.

The final decision to carry out dental implantation depends on the agreement of all involved specialists: a detailed examination of the patient is recommended together with the implant surgeon to choose the place and number of implants, the participation of a dental technician is desirable when choosing an orthopedic structure.

Stages of dental implantation

The stages of dental implantation take place sequentially and sometimes require a long time, which depends on the complexity of the performed interventions and the individual characteristics of the body.

The type of adentia (tooth loss), the method of prosthetics, the amount and structure of the bone tissue at the implantation site play a decisive role in planning the implantation. Depending on the type of adentia, not only the shape, design and method of installing the implant, but even its dimensions are selected. There are 4 main types of dentition defects: single, including two or more teeth, terminal defects and complete adentia. In preparation for implantation, concomitant diseases of both the oral cavity and the body as a whole are treated, as they can directly or indirectly affect the process of implantation. The starting point for treatment planning should be the factors that determine the method of prosthetics and the type of implants. The amount of available bone can be considered a secondary factor.

When conducting an operation, the principle of atraumatic technique of conducting the operation is of primary importance. Any surgical wound can heal with primary tension only if asepsis is observed and surgical intervention is performed with the least possible traumatization of tissues.

Traumatic surgical technique is the implementation of a number of measures that involve the correct choice of operative access, strict adherence to the rules of bone bed preparation, implant installation and closure of the surgical wound.

Installation of the abutment is carried out after complete and reliable implantation of the implant. It is performed as soon as the dental implants fuse with the bone. This is a simpler procedure in which the surgeon removes the cap screws needed to protect the implants during the healing process. The abutment (the connecting link between the dental implant and the overlying bridge-like prosthesis) is then screwed into the implant. Now the tooth implantation operation is completely completed and no other surgical intervention is required. Healing takes place within about one week, after which you can proceed to the next stage - prosthetics.

The purpose of prosthetics on implants is the manufacture of a dental prosthesis that ensures the restoration of the anatomical integrity of the tooth rows, adequate distribution of the load on the surrounding implants and bone tissue, and the cosmetic effect of the treatment. According to the principle of fixation, prosthetics can be divided into fixed, conditionally removable, combined and removable. In relation to the restored anatomical part of the tissues of the oral cavity, it is possible to single out simple dental prostheses and dental prostheses with a gingival mask, that is, prostheses containing not only teeth, but also an additional part that imitates the mucous membrane of the alveolar process. A necessary condition for adequate distribution of mechanical stress in the surrounding bone tissue implant is high-quality, rationally planned orthopedic treatment.

Different types of structures can be installed on implants:

Permanent prosthetics on implants is carried out with the help of: single dental crowns, which are relevant when correcting minor defects of the dentition; bridge-like prostheses, used in prosthetics of the jaw area with several empty holes. If single crowns are designed to be worn directly on the implant, their number always matches

the number of implants. When several teeth are missing, it may be too expensive or problematic (due to the lack of bone tissue) to insert several implants next to each other. In such cases, implants most often play the role of supporting dental units for a bridge-like prosthesis. Usually, two implants are implanted, and a "bridge" is stretched between them. But the larger the dentition defect, the more implants are needed to eliminate it.

The standard duration of operation of "bridges" is from ten to fifteen years. After this period, the prosthesis must be replaced, but not the implant, which is installed in the patient throughout his life.

3.2. recommendations (instructions) for performing tasks (professional algorithms, orientation maps for the formation of practical skills and abilities, etc.);

3.3. requirements for work results, including registration;

— Conduct an examination.

— Analyze the results of the examination of a dental patient.

— Make a plan for additional examination of the patient.

— Explain the results of clinical and special (additional) research methods.

4. Summary:

— Anamnesis of the patient. Main complaints. Medical history. Dental history.

— Examination. External overview. Reduction of the lower third of the face, expressiveness of nasolabial and chin folds, degree of mouth opening (free, difficult). Temporomandibular joint. Examination of the masticatory muscles.

— Intraoral examination. Assessment of the state of bone and mucous formations affecting the fixation of the prosthesis in the oral cavity.

— Determination of mobility and flexibility of the mucous membrane.

— Diagnosis. Plan and objectives of orthopedic treatment.

5. List of recommended literature (main, additional, electronic information resources):

Main:

- Orthopedic dentistry: textbook / Rozhko M.M., Nespryadko V.P., I.V. Paliychuk and others; under the editorship M.M. Rozhka, V.P. Nespryadka.- K.: Medical University "Medicine"; 2020. - 720 p.

- Rozhko M.M., Nespryadko V.P., Mykhaylenko T.M. and others. Dentoprosthetic technique. K.: Book plus; 2016. 604 p.

- Rozhko M.M., Popovych Z.B., Kuroyedova V.D. Dentistry. Textbook. K.: Medical University "Medicine"; 2018. 872 p.

Additional:

Dentistry: in 2 books. : textbook. Book 2 / M.M. Rozhko, I.I. Kirylenko, O.G. Denisenko and others. ; under the editorship M.M. Horn — 2nd edition. — K.: VSV "Medicine", 2018. — 992 p. ; color kind.

- Material science in dentistry: a study guide / [Korol D.M., Korol M.D., Ojubeiska O.D. etc.]; in general ed. King D.M. – Vinnytsia: New book, 2019. – 400 p.

Electronic information resources:

- State Expert Center of the Ministry of Health of Ukrainehttp://www.dec.gov.ua/index.php/ua/

- National Scientific Medical Library of Ukrainehttp://library.gov.ua/

- National Library of Ukraine named after V.I. Vernadskyihttp://www.nbuv.gov.ua/

Practical lesson No. 15

Topic:Removable and conditionally removable prostheses with support on implants. Clinical and laboratory stages of production.

Goal:to acquaint students with the general concepts of dental implantation and the main trends in implantology.

Basic concepts:examination of a dental patient, dental instruments for examination, X-ray diagnostics, implant

Equipment:Computer, phantoms, examination instruments, X-rays

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).

2. Control of the reference level of knowledge:

2.1. requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units);

Know:

— structure of the upper jaw;

— structure of the lower jaw;

— structure of the temporomandibular joint;

— the structure of the mucous membrane of the oral cavity.
— tooth structure
— to know the classification of dentition defects

Be able:
— determine the relationship between the upper and lower jaws;
— to examine the patient
— read x-rays

2.2. questions (test tasks, tasks, clinical situations) to check basic knowledge on the subject of the lesson.

— Examination. External overview. The degree of reduction of the lower third of the face, the expression of facial skin folds, the degree of mouth opening (free, difficult).
— Examination of the temporomandibular joint.
— Examination of the masticatory muscles.
— Examination of teeth and dentition

3. Formation of professional skills, skills (mastery of skills, conducting curation, determining the treatment scheme, conducting
laboratory research, etc.):

3.1. content of tasks (tasks, clinical situations, etc.);

Dental implantation is the most progressive method of restoration of completely lost teeth. According to international statistics, the effectiveness and, most importantly, the durability of structures after treatment by the implantation method exceeds those of classical methods of prosthetics used in orthopedic dentistry. But there is another side of the coin. Modern dentistry claims: dental implantation is necessary only in the presence of strictly certain conditions (evidence). The current Russian treatment protocol for partial tooth loss says: "In the absence of strict specific indications for prosthetics using dental implants, this type of treatment can be used only at the patient's insistence on the basis of a relevant contract." This means that medicine does not make exceptions: if there are no indications for treatment, especially against the background of contraindications, then it is desirable to refrain from it due to a sufficiently large risk or a shorter durability of the structure.

What are the indications for dental implantation? There are several of them:

The most important indication for the use of dental (dental) implants is a single included defect of the tooth row with intact, i.e., healthy adjacent teeth. This means that the main prerequisite for the use of single dental implants is the presence of healthy adjacent teeth and the desire to preserve them, for example, not to grind them under the crowns of bridge prostheses and other types of structures.

Another indication is the limited included dentition defects. That is, if a person is missing 2-3 teeth in a row, they can be restored by the method of dental implantation. In this case, several execution options are possible, which give freedom of creativity for the dentist and the possibility of choice for the patient.

The next indication: terminal defects of the tooth row, that is, when there are no last teeth in the row. This type of defects caused and continues to cause difficulties in

other types of prosthetics, because for a classic prosthesis there is only one point of support in the form of a previous tooth. In the case of tooth implantation, this issue is removed - the implant is almost indifferent to the presence of teeth in its surroundings. Complete absence of teeth, especially when the height of the alveolar process decreases. This type of adentia is an indication for both implantation and removable prosthetics. But if a person is not morally ready to take the prosthesis out of the mouth at night, that is, put the teeth on the shelf, then as an alternative method of treatment, you can use dental implantation.

Intolerance of removable prostheses due to increased sensitivity to acrylate (the main component of removable prostheses) or with a pronounced vomiting reflex. Everything is clear here: if a person cannot wear a removable prosthesis, then often the only alternative is dental implantation.

Absence of functional occlusion (closing of teeth) and as a result - the occurrence of pain syndrome.

What to do in case of indications?

The first thing is to exclude the presence of contraindications. But even if they do exist, the doctor can often recommend methods of getting rid of them, because not all contraindications are absolute and unchanging. Another important point is the desire and capabilities of the patient. It's no secret that the installation of a single tooth using a root implant is estimated at about a thousand dollars. Therefore, the installation of several implants can result in a significant amount. But if the patient has both the desire and the ability, then modern medicine can create a small miracle - restore the dentition and give the patient the joy of a healthy life with a beautiful smile.

Indications for the clinical use of dental (dental) implants are:

1) toothless jaws (especially the lower) with a high degree of atrophy of the cellular part or cellular process;.

2) a single defect of the dentition, provided that the adjacent teeth are intact;

3) the presence of a distally unrestricted defect (I and II classes according to Kennedy);

4) the presence of a large, distally limited defect (Kennedy class III).

5) the presence of a large defect in the frontal area (Kennedy class IV).

In each mentioned case, it is necessary to deeply analyze the patient's motivations, find out the reasons for refusing removable structures and carefully evaluate the possibility of using implants. Theoretically, any part of the jaw can be restored with the help of a dental implant, with the mandatory consideration of contraindications to its use.

For the successful use of implants, the following basic requirements must be taken into account:

1. The width of the bone tissue in the maxillo-lingual department should not be less than6 mm.

2. The distance between the roots of adjacent teeth is not less than8 mm.

3. Bone thickness above the mandibular canal and below the maxillary sinus — 10 mm(or special operational training is required).

4. For the manufacture of a superstructure with a support on implants, the distance between the dental arches should be5 mm.

Contraindications to implantation.

In implantology, it is customary to divide contraindications into absolute (general and local) and temporary.

Common contraindications include:

— any, from the patient's words, reasons for refusing surgical intervention;.

— any contraindications to local anesthesia;

— diseases that can be negatively affected by implantation (diseases of the cardiovascular system, blood, liver, kidneys, organ transplantation, rheumatic diseases);

— forms of therapy that can negatively affect the implantation and preservation of the implant, as well as its bed (for example, immunosuppressants, antidepressants, anticoagulants, cytostatics);

— diseases of neuropsychological origin;.

— situations associated with heavy psychological or physical stress;.

— insufficient desire of the patient, as well as cachexia, old age, insufficient level of general hygiene. However, the state of general hygiene is not an absolute contraindication to the use of dental implants.

Local contraindications:

— insufficient level of oral hygiene;.

— limitation of manual abilities, in particular motor activity;.

— pain syndrome in the maxillofacial area of unknown genesis;.

— dysfunctions of the temporomandibular joint, which cannot be corrected and can cause an excessive load on the implant;

— generalized marginal gingivitis that cannot be treated;

— lobular fibromas, fibromas of the prosthetic edge;

— insufficient amount of bone tissue, inappropriate structure of bone tissue, loss of more than a third of the mass of cellular tissue (for direct implantation).

— an unfavorable distance to the nervus alveolaris inferior, to the maxillary and nasal sinuses.

Contraindications of a temporary nature:

— acute forms of diseases;

— stages of rehabilitation and recovery;

— pregnancy;

- drug addiction;.

— state after irradiation for 1 year.

Retained teeth, cysts, tumors of bone tissues and inflammatory processes in the area of the jaw bones are also contraindications to implantation.

The final decision to carry out dental implantation depends on the agreement of all involved specialists: a detailed examination of the patient is recommended together with the implant surgeon to choose the place and number of implants, the participation of a dental technician is desirable when choosing an orthopedic structure.

Stages of dental implantation

The stages of dental implantation take place sequentially and sometimes require a long time, which depends on the complexity of the performed interventions and the individual characteristics of the body.

The type of adentia (tooth loss), the method of prosthetics, the amount and structure of the bone tissue at the implantation site play a decisive role in planning the implantation. Depending on the type of adentia, not only the shape, design and method of installing the implant, but even its dimensions are selected. There are 4 main types of dentition defects: single, including two or more teeth, terminal defects and complete adentia. In preparation for implantation, concomitant diseases of both the oral cavity and the body as a whole are treated, as they can directly or indirectly affect the process of implantation. The starting point for treatment planning should be the factors that determine the method of prosthetics and the type of implants. The amount of available bone can be considered a secondary factor.

When conducting an operation, the principle of atraumatic technique of conducting the operation is of primary importance. Any surgical wound can heal with primary tension only if asepsis is observed and surgical intervention is performed with the least possible traumatization of tissues.

Traumatic surgical technique is the implementation of a number of measures that involve the correct choice of operative access, strict adherence to the rules of bone bed preparation, implant installation and closure of the surgical wound.

Installation of the abutment is carried out after complete and reliable implantation of the implant. It is performed as soon as the dental implants fuse with the bone. This is a simpler procedure in which the surgeon removes the cap screws needed to protect the implants during the healing process. The abutment (the connecting link between the dental implant and the overlying bridge-like prosthesis) is then screwed into the implant. Now the tooth implantation operation is completely completed and no other surgical intervention is required. Healing takes place within about one week, after which you can proceed to the next stage - prosthetics.

The purpose of prosthetics on implants is the manufacture of a dental prosthesis that ensures the restoration of the anatomical integrity of the tooth rows, adequate distribution of the load on the surrounding implants and bone tissue, and the cosmetic effect of the treatment. According to the principle of fixation, prosthetics can be divided into fixed, conditionally removable, combined and removable. In relation to the restored anatomical part of the tissues of the oral cavity, it is possible to single out simple dental prostheses and dental prostheses with a gingival mask, that is, prostheses containing not only teeth, but also an additional part that imitates the mucous membrane of the alveolar process. A necessary condition for adequate distribution of mechanical stress in the surrounding bone tissue implant is high-quality, rationally planned orthopedic treatment.

Different types of structures can be installed on implants:

Removable prostheses. Removable prosthetics on implants is a classic option for restoring completely empty jaws. Removable prostheses installed without the involvement of implants cannot guarantee a strong fixation of the structure, and removable prostheses on implants always hold very firmly. On several implanted implants, the removable prosthesis is fixed due to special fasteners that the patient

can control - the orthopedic structure is easy to wear and remove. Removable prosthesis on implants ensures comfortable chewing of food, preservation of diction and absence of gag reflex. It is necessary to replace the prosthesis once every five to ten years.

The standard duration of operation of "bridges" is from ten to fifteen years. After this period, the prosthesis must be replaced, but not the implant, which is installed in the patient throughout his life.

Conditionally removable prosthetics on implants resembles the previous version of prosthetics with the only difference that the patient cannot remove the prosthesis on his own - for this, he must contact a dentist. In contrast to removable prostheses, which are held on implants with the help of locks or buttons, conditionally removable prosthetics involves fastening the orthopedic structure with the help of screws - they are unscrewed so that the prosthesis can be removed. In most cases, such prosthetics is performed with complete edentination - several implants are installed in the patient's jaw, to which the prosthesis is attached. If the patient is not able to carry out hygienic procedures with high quality, but wants to install permanent prostheses, the dentist can also offer conditionally removable prostheses (if the patient is not able to clean the prosthesis well, the dentist can periodically remove the structure and clean it himself).

3.2. recommendations (instructions) for performing tasks (professional algorithms, orientation maps for the formation of practical skills and abilities, etc.);

3.3. requirements for work results, including registration;

— Conduct an examination.
— Analyze the results of the examination of a dental patient.
— Make a plan for additional examination of the patient.
— Explain the results of clinical and special (additional) research methods.

4. Summary:

— Anamnesis of the patient. Main complaints. Medical history. Dental history.

— Examination. External overview. Reduction of the lower third of the face, expressiveness of nasolabial and chin folds, degree of mouth opening (free, difficult). Temporomandibular joint. Examination of the masticatory muscles.

— Intraoral examination. Assessment of the state of bone and mucous formations affecting the fixation of the prosthesis in the oral cavity.

— Determination of mobility and flexibility of the mucous membrane.

— Diagnosis. Plan and objectives of orthopedic treatment.

5. List of recommended literature (main, additional, electronic information resources):

Main:

- Orthopedic dentistry: textbook / Rozhko M.M., Nespryadko V.P., I.V. Paliychuk and others; under the editorship M.M. Rozhka, V.P. Nespryadka.- K.: Medical University "Medicine"; 2020. - 720 p.

- Rozhko M.M., Nespryadko V.P., Mykhaylenko T.M. and others. Dentoprosthetic technique. K.: Book plus; 2016. 604 p.

- Rozhko M.M., Popovych Z.B., Kuroyedova V.D. Dentistry. Textbook. K.: Medical University "Medicine"; 2018. 872 p.

Additional:

Dentistry: in 2 books. : textbook. Book 2 / M.M. Rozhko, I.I. Kirylenko, O.G. Denisenko and others. ; under the editorship M.M. Horn — 2nd edition. — K.: VSV "Medicine", 2018. — 992 p. ; color kind.

- Material science in dentistry: a study guide / [Korol D.M., Korol M.D., Ojubeiska O.D. etc.]; in general ed. King D.M. – Vinnytsia: New book, 2019. – 400 p.

Electronic information resources:

- State Expert Center of the Ministry of Health of Ukrainehttp://www.dec.gov.ua/index.php/ua/
- National Scientific Medical Library of Ukrainehttp://library.gov.ua/
- National Library of Ukraine named after V.I. Vernadskyihttp://www.nbuv.gov.ua/

Practical lesson No. 16

Topic:Excessive abrasion of the hard tissues of the teeth. Etiology, pathogenesis, clinical forms. Orthopedic methods of treatment and prevention.

Goal:to acquaint students with the general concepts of pathological and physiological attrition of teeth.

Basic concepts:examination of a dental patient, dental instruments for examination, x-ray diagnostics, tooth extraction

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Equipment:Computer, phantoms, examination instruments, X-rays

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).

2. Control of the reference level of knowledge:

2.1. requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units);

Know:

— structure of the upper jaw;
— structure of the lower jaw;
— structure of the temporomandibular joint;
— the structure of the mucous membrane of the oral cavity.
— tooth structure
— to know the classification of dentition defects

Be able:

— determine the relationship between the upper and lower jaws;
— to examine the patient
— read x-rays

2.2. questions (test tasks, tasks, clinical situations) to check basic knowledge on the subject of the lesson.

— Examination. External overview. The degree of reduction of the lower third of the face, the expression of facial skin folds, the degree of mouth opening (free, difficult).
— Examination of the temporomandibular joint.
— Examination of the masticatory muscles.
— Examination of teeth and dentition

3. Formation of professional skills, skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.):

3.1. content of tasks (tasks, clinical situations, etc.);

Pathological abrasion of the hard tissues of the teeth is a relatively fast-moving process, which is accompanied by changes in the dental and peri-dental tissues, damage to the function of the masticatory muscles and the temporomandibular joint. At the same time, atypical areas are formed on the teeth, surrounded by sharp edges of preserved enamel, the teeth lose their anatomical shape. Pathological attrition of

teeth plays a major role in the general pathology of teeth and is not at all indifferent to the state of the whole organism (Abdulov I.I., 1991).

According to various authors, the prevalence of the disease varies from 4% to 57% at a young age and reaches 91% at an older age (Robb ND, Smith BG, 1990, Milosevic A. et al., 1994, Smith BG, Robb ND, 1996, Bartlett DW et al., 1998).

Recently, among the reasons for the development of pathological wear, the combined effect of several etiological factors has become more and more important, among which the structural inferiority of enamel and dentin and increased occlusal load on the teeth are the most important. The first factor can be due to the genetic features of the structure of these tissues, metabolic disorders, diseases of the gastrointestinal tract, neurodystrophic and endocrine disorders accompanied by insufficient calcification of the hard tissues of the teeth, the second - occlusion pathology, loss of many teeth, peculiarities of the function of the masticatory muscles , for example, a parafunction (Kalamkarov H.A., 1995; Moldavanov A.G., 1996, Dobrovolskyi O.V., 2000; Gallien GS, 1995).

Diagnosis of this pathology, as a rule, does not cause difficulties. At the same time, such an auxiliary method as electromyography allows to establish the level of functional disorders, about which there is no relevant data in the literature, and to choose medical tactics. In the case of pathological tooth wear, treatment presents significant difficulties. They are due to the multiformity of the disease and the fact that its pathogenesis has not been fully elucidated. Therefore, there are still no conservative methods of pathogenetic therapy, which would allow stopping the process of further erosion of the hard tissues of the teeth. In recent years, the two-stage treatment method has remained the most common, which involves preliminary preparation for prosthetics with separation of the bite and reconstruction of the reflexes of the masticatory system in order to create a new functional level. But still various aspects of such treatment remain unclear.

Thus, the general principles of treatment of pathological attrition are not sufficiently covered in the sources of literature, as well as the indications, features of use and construction of modern types of dental prostheses for the preparatory period and rational prosthetics are not defined.

It is known that enamel and dentin wear down throughout a person's life. Under normal conditions, this process has a physiological nature and begins immediately after the teeth come into contact with each other, the physiological abrasion of the hard tissues of the teeth occurs in two planes - horizontal and vertical. Abrasion in the horizontal plane is observed along the cutting edge of the incisors and canines. tubercles of molars and premolars. Such a decrease in bite height can be explained as an adaptive reaction of the body. In the case of vertical abrasion, abrasion of the hard tissues of the foreskin occurs on the contact surfaces, which over time leads to the formation from contact points to contact pads. Physiological weariness is expressed differently in different people. In some patients under the age of 50, clinical attrition is difficult to determine. Pathological attrition of the hard tissues of the teeth is characterized by a rapid and progressive decrease in the size of natural teeth. This process, if it has already started, practically does not stop. and is constantly progressing.

Attrition of teeth occurs under the influence of various local and general factors. Endogenous and exogenous etiological factors have a significant influence on the development of pathological wear of teeth: disorders of metabolism and histogenesis, defective structure of hard tooth tissues. genetic predisposition, violation of the process of mineralization of the hard tissues of the tooth and the function of the glands of internal secretion. Local factors include: functional overload of teeth due to loss of chewing teeth, action of acids, etc.

Manifestations of pathological attrition depend on the features of the bite and incisor overlap. loss of lateral teeth, concentration of chewing pressure, irrational prosthetics, disorders of the nervous system, presence of maxillofacial anomalies, exposure to occupational hazards, stomach diseases, etc. It has been observed that in people of certain professions (shoemakers, coal mine workers, pneumatic boilermen, smokers) tooth wear is caused by harmful professional and household habits: holding nails, needles, mouthpieces in the teeth, biting threads. In the latter case, aniline dyes and picric acid contained in the threads also affect the wear of the teeth.

Pathological grinding of teeth is observed in the case of bruxism and bruxomania. Bruxism - unconscious (more often at night) clenching of the jaws or habitual automatic movements of the lower jaw, accompanied by teeth grinding. The causes of bruxism are not sufficiently understood. They consider that oruxism is a manifestation of a neurotic syndrome, it is also observed during excessive nervous tension. Bruxism belongs to narafunkiip. that is, to the group of distorted functions. One of the reasons for the occurrence and development of generalized pathological wear of teeth. Treatment is not developed enough. Patients need a comprehensive examination by a dentist, a neurologist and a psychiatrist. From orthopedic means, occlusion mouthpieces are used for the entire tooth row made of hard or soft plastic, base plates with reversible wire clasps are shown for prosthetics even in the case of small defects of the tooth rows.

The outflow of endocrine glands on the process of formation, growth and mineralization of tooth tissues is of great importance in the development of pathological wear of teeth. It is known that the hormones of internal secretion glands have the ability to perform peripheral regulation of the functions of mineral metabolism (calcium-potassium balance).

Thyroid hormones, estrogens, particularly androgens, have a pronounced anabolic effect. These hormones stimulate the activity of osteoblasts, inhibiting resorptive processes. Suppression of collagen formation is characteristic of parathyroid hormone and progesterone. Parotin, produced by the parotid salivary glands, stimulates growth. development of teeth and skeleton, actively contributes to the proliferation of the elastic framework of all mesenchymal tissues.

In formed teeth, the outflow of causative factors is limited by the change in the degree of mineralization. more often its decrease, the clinical manifestation of which is a decrease in the mechanical properties of the tooth, as a result of which pathological wear develops in the process of chewing.

Violation of the process of mineralization of hard tissues and pathological wear of teeth are also observed in the presence of other endocrine diseases: hypoparathyroidism, hypogonadism, early menopause, pathology of the function of

the adrenal glands (itsenko-Cushing syndrome and disease, diencephalic syndrome, tumor and chronic insufficiency of the adrenal cortex, Edison's disease). , violation of internal and external secretion of the pancreas.

One of the causes of pathological wear of teeth is their acid necrosis. It is observed in chemical industry workers who have contact with hydrochloric, nitric and other acids. In the event that acids hit the teeth with a stream of air in the form of steam and with the subsequent dissolution in saliva, the enamel decalcification occurs, first of all, of the front teeth, and then - by erasing the enamel of their chewed edge. The direct destructive effect of acid on the tooth is primarily reflected in the organic substance.

In the case of vertical abrasion, abrasion of the hard tissues of the teeth occurs on the contact surfaces, which over time leads to the formation from contact points to contact pads. Physiological weariness is expressed differently in different people. In some patients under the age of 50, clinical atrophy is difficult to determine.

Pathological abrasion of the hard tissues of the teeth is characterized by a rapid and progressive decrease in the size of natural teeth. This process, if it has already started, practically does not stop, but constantly progresses.

Pathological wear of teeth has a polyetiological form of the disease. Both endo- and exogenous factors are involved in the occurrence of this disease. The role of mineral metabolism disorder, which is concomitant to the main somatic disease, is also not excluded. Factors such as the action of chemical agents, especially prolonged in time, are also of great importance. Pathological wear of teeth develops from mechanical overloads, which are usually the result of tooth loss.

According to A.S. Shcherbakov (1984), the causes of pathological wear of teeth are the functional insufficiency of hard tissues caused by their morphological inferiority, namely:

 Congenital — as a result of impaired amelo- and dentinogenesis in the presence of diseases in the mother and child;

 hereditary (Capdepon disease);

 acquired - as a result of neurodystrophic processes, disorders of the circulatory system and endocrine apparatus, metabolic disorders of various etiologies.

CLASSIFICATIONS OF PATHOLOGICAL WEARING OF TEETH

Classification of pathological wear of teeth according to M. G. Butan.This classification includes various clinical aspects of a functional and morphological nature: stage of development, depth, extent, area of damage and functional disorders.

Depending on the stage of development, the following are distinguished:

1) physiological wear - within enamel;

2) transitional stage of development - within enamel and. partially, dentine:

3) pathological stage of development - within the dentin (with and without a decrease in occlusal height).

Depending on the severity and depth:

The first degree - up to 1/3 of the height of the crown;

II degree - from 1/3 to 2/3 of the height of the crown:

III degree - from 2/3 of the height of the crown to the gums.

Depending on the duration of the lesion:
1) limited pathological wear;
2) generalized pathological weariness.
Depending on the change in dentine sensitivity:
1) within the norm;
2) with hyperesthesia.

Classification of pathological attrition according to E.I. Havrylovnm.E. I. Gavrilov distinguishes between two forms of generalized wear of teeth: compensated and decompensated.

The first group (compensated form) includes patients in whom the generalized attrition covers all teeth, but the decrease in the height of the lower third of the face does not occur due to the compensatory increase of the cellular process and parts that become massive and increase in volume. There are no changes in the temporomandibular joint in such patients.

The second group (decompensated form) includes patients whose generalized form of pathological attrition is not compensated by the growth and increase in the volume of the cellular process or part. In this case, a marked decrease in the lower third of the face is observed. Clinically, patients have a shortening of the upper lip, nasolabial and chin folds are sharply expressed, the corners of the mouth are lowered. The face acquires an aged appearance. There are changes in the position of the heads of the lower jaw in the articular cavities and they are shifted backwards and downwards. which causes deformable arthrosis. Clinically, this is manifested by such symptoms as noise and congestion in the ears, hearing loss, dry mouth. In patients of the second group, there is also a decrease in chewing efficiency as a result of a decrease in the distance between the attachment points of the chewing muscles.

Classification of pathological wear of teeth according to A. A. Grozovsky.

1. Vertical form of pathological wear of teeth.In the case of a vertical form of pathological attrition of the teeth, the palatal surface of the upper incisors and the vestibular surfaces of the lower incisors are polished, as a result of which the vestibulo-oral size of the teeth decreases. The vertical form of pathological wear of the teeth is characterized by the expansion of the periodontal gap and the atrophy of the edge of the cell. In the case of intact dentition, the height of the occlusion does not decrease. In the absence of chewing teeth or in the case of their wear, the depth of the incisal overlap increases. The lower front teeth can injure the mucous membrane of the palate, and the upper ones - the gums and even the transitional fold. Thus, a deep "traumatic" bite occurs, during which the relationship of the elements and the function of the temporomandibular joints are disturbed.

2. Horizontal form of pathological wear of teeth.Characteristicsigns of horizontal pathological wear of teeth are shortening of crowns, formation of facets, various reliefs, patterns on the surface of teeth closure. In the case of II and III degrees of erosion, the root canals are obliterated, there is an increased sensitivity of the dentine, and an increase in the electrical excitability of the pulp. Voluntary movements of the lower jaw, characteristic of bruxism, may even occur.

3. Mixed form of pathological wear of teethespecially characteristic of an orthognathic bite. Somewhat less often, a horizontal form of erasure is observed with

it. In the case of an orthognathic bite, the occurrence of one or another form of wear of the frontal teeth most often depends on the degree of incisor overlap. As for the lateral teeth, the horizontal form is more common with a slight incisal overlap - from 1 to2 mm. The mixed form occurs mainly under the condition of pronounced frontal overlap and is characterized by more intense abrasion of the buccal tubercles of the chewing teeth of the upper jaw.

The formation of two forms of abrasion on the lateral teeth in the case of an orthognathic bite confirms the existence of the interrelationship of the articulating elements, the direction of the uniform force of the masticatory muscles and the phases of chewing. At the moment of returning to the starting position, the lower jaw on the working side moves inward and slightly back, which corresponds to the direction of the uniform force of the masticatory muscles. As a result, the tubercles of the chewing teeth are loaded unevenly. According to the direction of movement of the lower jaw, the grinding force of the food lump is also directed from the bottom to the top and from the outside to the inside, which creates a concentrated functional overload of the cusps of the lateral teeth of the lower jaw and the palatal cusps of the upper jaw. In the case of an inferior structure of the hard tissues of the teeth or in the presence of other etiological factors, the concentration of the functional load on individual tubercles can cause a violation of the integrity of the tissues of the teeth in the corresponding area and contribute to the emergence of pathological wear.

Clinically, there are three degrees of pathological wear of the hard tissues of the teeth.

 the first stage — the bumps and cutting edges of the teeth are subject to abrasion,

 the second — crowns to contact pads,

 third degree - the hard tissues of the teeth are worn down to the gums.

AL. Grozovskyi (1946) divides pathological wear of teeth into vertical, horizontal and mixed forms.

In the case of a vertical form of pathological attrition under normal occlusal conditions, the attrition of the hard tissues of the teeth is manifested on the palatal surface of the frontal and labial surfaces of the lower teeth of the same name. At other occlusion ratios, the wear surfaces change accordingly. The horizontal form of pathological attrition is characterized by a decrease in the hard tissues of the teeth in the horizontal plane. Clinically, it manifests itself on cutting and chewing surfaces with abrasion facets. Horizontal pathological wear is characterized by simultaneous wear of the upper and lower rows of teeth. In the case of a mixed form of pathological attrition, its distribution is observed in both vertical and horizontal planes.

Pathological wear of teeth and tooth rows can be local, limited or widespread, generalized. In the case of local pathological wear, groups of teeth or individual teeth are involved in the process, for example, incisors of the upper and lower jaws, molars and premolars.

In the presence of pathological attrition of teeth, not only the length of the crowns decreases, but also the shape and size of the cellular processes. Thus, limited pathological wear of the incisors leads to a decrease in the intercellular height, the

incisors are in contact with antagonists due to the growth and increase in the volume of cellular processes (vacant hypertrophy), a similar picture is observed in the case of a localized form of wear of the chewing group of teeth; the decrease in the height of the lower third of the face does not occur for the same reasons as in the case of wear of the frontal part of the dentition.

A different clinical picture is observed in the case of a generalized form of pathological wear of the teeth. Patients with this form of attrition are divided into two groups. The first group includes patients in whom generalized attrition covers all teeth, but the decrease in the height of the lower third of the face does not occur due to the compensatory increase of the cellular process and the cellular part, which become massive and increase in volume. The position of the head of the lower jaw in the articular cavity does not change either.

The second group includes patients whose generalized form of pathological atrophy is not compensated by the growth and increase in the volume of the cellular processes and parts, as a result of which there is a pronounced decrease in the lower third of the face. Lowering of the lower third of the face is characterized by shortening of the upper lip, nasolabial and chin folds are sharply expressed, the corners of the mouth are lowered, the face of such patients acquires a specific senile appearance.

Due to the fact that under this pathology the position of the lower jaw changes in relation to the upper one, as well as the position of the heads of the lower jaw to the articular cavities, they shift backwards and downwards. Such placement of the heads of the lower jaw leads to functional redistribution and overloading of the joint, which can be the cause of deforming arthrosis and associated pathological symptoms (ringing in the ears, hearing loss, congestion in the ears, dry mouth, etc.).

Due to the decrease in the height of the lower third of the face, the distance between the attachment points of the chewing muscles also decreases, which negatively affects their activity and ultimately leads to a decrease in chewing efficiency.

Pathological attrition of teeth is often combined with partial loss of teeth, secondary deformations, distal displacement of the lower jaw, which is manifested by a more complex clinical picture.

Clinical manifestations of pathological wear of hard tissues of teeth.

Complaints of patients with pathological wear of the hard tissues of the teeth are reduced to the appearance of hypersensitivity of the teeth, aesthetic defects of the crown part of the teeth. When pathological abrasion of hard tissues occurs due to significant dentition and overloaded teeth, which remained in the bite, complaints of pain and inflammation occur in the periodontium. However, the main and most common pathology in the case of pathological wear of the hard tissues of the teeth is dysfunction of the temporomandibular joint, in the clinical picture of which several typical symptoms can be distinguished: pain and crunch in the joint, facial, headache and neuralgic pains, fatigue of the masticatory muscles, muscle pain, displacement of the lower jaw to the side, a feeling of congestion in the ears, hearing loss, dizziness.

Sometimes glossalgia, glossadenia, paraesthesia, secretory disorders (xerostomia) may also be present.

ORTHOPEDIC TREATMENT IN THE CASE OF PATHOLOGICAL WETNESS OF THE HARD TISSUES OF THE TEETH

Before drawing up a plan for orthopedic treatment of a patient with pathological attrition of teeth, he should be examined in detail. During the examination, it is necessary to determine the most likely etiological factor of the pathological wear, its form and degree (localized, generalized, compensated, decompensated), the clinical and radiological condition of the crowns and periodontal tissues of the teeth, the condition of the pulp in them, possible changes in the appearance of the patient, the condition of the temporomandibular joint

In the process of collecting anamnesis, it is necessary to find out whether there was a similar pathology in close relatives. Elderly people are asked whether their children have this pathology. Particular attention should be paid to clarifying working conditions.

Having data on etiological factors, it is possible to effectively treat patients, possibly up to a change of profession, if this pathology is caused by the action of acid evaporation (confectionery, etc.). In case of functional overload, the restoration of the anatomical shape of the tooth crown should be done by means of prosthetics, which eliminates the traumatic occlusion. If the height of the lower third of the face is preserved, orthopedic treatment is of a preventive nature, and in case of its decrease, orthopedic measures are carried out aimed at its normalization by increasing the intercellular height. Clinical and X-ray examination of tissues of the oral cavity facilitates drawing up a treatment plan and choosing the optimal method.

Preparation of patients for orthopedic treatment necessarily includes rehabilitation of the oral cavity. Tooth extraction is carried out after a detailed study of the condition of the bone tissue and periodontal tissues, including the examination of the electrical excitability of the pulp, which is usually reduced in this pathology. Teeth with changes in near-apical tissues, with blocked canals, teeth that have no functional value, for which it is impossible to make stump inserts are subject to removal.

When drawing up a preliminary treatment plan, it is necessary to carry out a differential diagnosis of occlusal disorders that arose as a result of tooth-cell elongation, with deformations that have a different pathogenesis. In the case of loss of the chewing group of teeth, the frontal group performs a mixed function, which leads to the shortening of their clinical crowns due to the erosion of enamel and dentin.

A decrease in the intercellular height and the progression of the Godon-Popov phenomenon lead to pronounced deformations of the occlusal surface. If the teeth were removed at a young age, in addition to the pronounced Godon-Popov phenomenon, and in connection with the decrease in the intercellular height, a true tooth-molar elongation is also observed. So, depending on the clinical picture, in the first case, the deformation can be eliminated by increasing the intercellular height, in

the second case, this is not enough, and it will be necessary to reconstruct the occlusal relations by other methods.

Orthopedic treatment in the case of pathological wear of teeth has both a curative and preventive purpose. The first is the improvement of chewing function and the appearance of the patient, the second is the prevention of abrasion of the hard tissues of the teeth and the prevention of diseases of the temporomandibular joint. Solving specific tasks in the process of orthopedic treatment of a particular patient depends on the specifics of the clinical picture.

Before drawing up a plan for the orthopedic treatment of a patient with pathological attrition of the teeth, it is necessary to analyze the clinical situation, determine how the intercellular height can be restored, taking into account the data of the study of the height of the lower third of the face in a state of physiological rest and the central ratio of the jaws.

It is necessary to pay attention to the data of the radiological examination of the temporomandibular joint.

In the case of localized and generalized forms of atrophy without changing the height of the lower third of the face, the following most common methods of orthopedic care can be used. If pathological wear has caused changes in the aesthetic aspect, then it is necessary to include prosthetics of the hard tissues of the teeth with stump inserts and one-piece structures lined with modern materials in the plan of orthopedic measures, depending on the conditions of prosthetics.

In severe cases, when the process has started, in addition to preventing further progression of the disease, it is necessary to restore the patient's appearance by restoring the anatomical shape of the crowns. In this case, it is necessary to increase the intercellular height in the front part or along the entire length of the tooth rows. In the first clinical case, removable plate or metal mouthguards are made on the front group of teeth, opening the bite in the lateral parts, which leads to the reverse development of the cellular process and the part in the front part. This approach is effective in younger patients; in old age, the reconstruction of the cellular process and part may not take place, then it is necessary to increase the intercellular height, if this allows the condition of the temporomandibular joint. Increasing the intercellular height is not necessarycan be carried out with the reconstruction of myostatic reflexes in several stages. In the extreme case, when all applied methods are ineffective, it is necessary to remove the frontal group of teeth, if their stumps are located at the level of the gingival margin.

In the presence of pathological wear, which is accompanied by a decrease in the lower third of the face, the tasks of prosthetics are significantly complicated. In this case, it is necessary not only to improve the chewing function, but also to prevent further wear of the teeth. At the same time, it is necessary to increase the intercellular height, which will allow to change the appearance of the patient and normalize the position of the head of the lower jaw in the joint fossa.

Increasing the intercellular height is achieved by restoring the shape and height of worn crowns of natural teeth, for which it is necessary to use solid constructions, since all others are ineffective and short-lived under this pathology.

Orthopedic treatment is carried out in the following order. First, stump tabs are made, and they are used quite often, and teeth are prepared taking into account the type and design of the future dentures. After that, the intercellular height or the physiological resting state of the lower jaw is determined. Fixation of the determined intercellular height is carried out by one of the methods (rollers made of wax, thermoplastic or silicone masses, etc.). The occlusal height of the lower third of the face in this case should be less than 2-3 mmfrom the height of peace. X-ray examination of elements of the temporomandibular joint can be used to confirm the correctness of the determination of the central ratio and fixation of the jaws. If correctly defined, the joint gap will be the same width both in the front and back sections. After that, double impressions are removed from the tooth rows with silicone masses, and removable models are cast after them. Using the bite rolls, the dental technician assembles them and carries out plastering in the position of central occlusion with the help of an articulator, after which he begins modeling the specified orthopedic structure.

In the presence of a large difference in the height of the lower third of the face during closing of the teeth and in a resting position (6 mm) without distal displacement of the lower jaw, the intercellular height can be increased simultaneously. First, the height is restored with a temporary removable mouthpiece, and if there are no complications from the muscular system and the temporomandibular joint within 2-3 weeks, the final prosthesis is carried out in the previously described manner.

An increase in the intercellular height by8 mmand more, in order to prevent negative reactions from the muscles and joints, it is necessary to carry out in stages, using bite plates for this. Increasing the intercellular height in patients with distal displacement of the lower jaw requires special preparation with the help of a therapeutic bite plate with an inclined plane. The forward movement of the lower jaw should be carried out under radiological control of the position of the head of the lower jaw. Restoring the shape of teeth in case of pathological wear with full metal stamped crownskami is unacceptable from both an aesthetic and a functional point of view. Designs of combined stamped-soldered crowns and bridge-like prostheses are also ineffective.

The most advanced designs of dental prostheses in the case of treatment of patients with pathological attrition of teeth are solid-cast designs with lining of modern materials (photopolymer plastics, ceramic masses).

Partial loss of teeth can occur against the background of already existing pathological wear of teeth. On the other hand, the loss of molars and premolars can lead to pathological wear of the front group of teeth from the mixed function they have to perform. The clinical picture in this case is complex, because the clinic of partial loss of teeth is added to the pathological wear. The problems of replacing partial defects of teeth are added to the tasks that must be solved during prosthetics in the case of pathological wear of teeth. Orthopedic designs of dental prostheses, which are used to solve the last task, are conditioned by a specific clinical picture. In the case of included defects without reducing the lower third of the face, fixed cast prostheses can be used. Provided that the lower third of the face of the prosthesis is

reduced, it ensures the restoration of dentition defects and the mandatory increase of the intercellular height on all preserved teeth. This can be fully achieved if one-piece bridge prostheses are used.

In the presence of terminal defects, both unilateral and bilateral, the use of different designs of removable dental prostheses is shown.

The plan of orthopedic treatment of patients with pathological attrition of teeth depends on the degree and form of attrition of teeth:

The treatment of initial forms of erosion without TMJ pathologies is to prevent the further development of the pathology. This can be done with the help of metal tabs or cast metal crowns on the antagonist teeth in the chewing areas on both sides. At the same time, it is not necessary to raise the height of the bite, but only to stop the process of grinding the teeth and reduce the bite. When hyperesthesia occurs, desensitizing substances, pastes containing fluorine, electrophoresis of 10% CaCl solution, calcium gluconate are used.

Treatment of pathological attrition of the 1st degree without dentition defects The absolute indication for two-stage treatment is TMJ dysfunction. In the first stage, mouthguards are used to gradually raise the interalveolar height, the second stage consists in adequate prosthetics with crowns, semi-crowns or inlays.

In the absence of pathologies on the side of the TMJ, treatment is carried out in one stage with raising the bite by 2-3 mm.

Treatment of pathological attrition of the 1st degree with the presence of dental row defects. Included defects of the dentition are usually prosthetics with bridge prostheses with metal occlusal overlays on the teeth of the antagonists, followed by aesthetic prosthetics in the frontal group of teeth. In the presence of unlimited defects of dental rows, prosthetics is carried out using removable structures.

Treatment of II-III degree pathological abrasion must be carried out in two stages:

 normalization of the interalveolar height, correct placement of the lower jaw in the sagittal, transversal and vertical directions, as well as improvement of the masticatory muscle functions,

 rational dental prosthetics.

Attempts at prosthetics without prior preparation often lead to various complications and a significant deterioration of the clinical picture.

ORTHOPEDIC TREATMENT IN THE CASE OF PATHOLOGICAL WETNESS OF THE HARD TISSUES OF THE TEETH

Medicinal and orthopedic methods of treatment of patients with pathological wear of teeth are distinguished.

Drug treatment is effective only in the initial stages of the development of the pathological process. The main medical means of E-methods of analgesia in the case of dentin hyperesthesia are: electrophoresis, vacuum electrophoresis. Drugs used: 1%

solution of sodium fluoride. 5% solution of vitamin B fluoride paste, calcium glycerophosphate.

Before drawing up a plan for the orthopedic treatment of a patient with pathological attrition of teeth, he should be weighed in detail. During the examination, it is necessary to determine the most likely etiological factor of pathological wear, its form and degree (localized, generalized, compensated, decompensated), the clinical and radiological condition of the crowns and periodontal tissues of the teeth, the state of the pulp in them. possible changes in the patient's appearance, the state of the temporomandibular joint.

PREVENTION OF PATHOLOGICAL WEARING OF TEETH

The problems of prevention of pathological wear of teeth are necessary and relevant in the clinic of orthopedic dentistry, but, unfortunately, they are not always taken into account. There is practically no system of preventive measures against pathological wear of teeth until now.

The main preventive measures are:

- timely replacement of defects of the occlusal surface of teeth, defects of tooth rows and creation of multiple contacts between them;
- treatment of maxillofacial anomalies in children;
- timely detection of the transitional stage of tooth wear and the implementation of appropriate treatment measures;
- fight against harmful professional habits that cause a violation of the integrity of the crown part of the tooth;
- treatment of diseases of organs and systems that are pathogenetically associated with increased tooth wear (bruxism, pathology of internal secretion glands, disturbance of phosphorus-calcium metabolism in the body).

A promising direction is the use of vacuum electrophoresis for the purpose of prophylactic introduction of calcium, phosphorus and fluorine ions to normalize metabolic processes in tooth tissues and create conditions. that counteract the development of pathological wear of teeth.

In order to prevent the development of pathological wear of teeth caused by acid necrosis, it is necessary to apply measures to protect tooth tissues from the harmful effects of acids. Sanitary, hygienic and general health measures are important. Among them are the reduction of gas pollution in work spaces, the use of modern means of combating air pollution, the strengthening of exhaust ventilation, and a full, balanced diet. As individual preventive measures for acid necrosis of the teeth and diseases of the respiratory organs, filtering and insulating protective devices are used.

In order to neutralize the acid reaction of saliva, it is recommended to rinse the mouth with alkaline solutions: 1% solution of sodium tetraborate, 2-3% solution of baking soda, etc. These agents significantly increase the resistance of the hard tissues of the teeth to the action of acids and reduce the leaching of microelements from them.

3.2. recommendations (instructions) for performing tasks (professional algorithms, orientation maps for the formation of practical skills and abilities, etc.);

3.3. requirements for work results, including registration;

— Conduct an examination.

— Analyze the results of the examination of a dental patient.

— Make a plan for additional examination of the patient.

— Explain the results of clinical and special (additional) research methods.

4. Summary:

— Anamnesis of the patient. Main complaints. Medical history. Dental history.

— Examination. External overview. Reduction of the lower third of the face, expressiveness of nasolabial and chin folds, degree of mouth opening (free, difficult). Temporomandibular joint. Examination of the masticatory muscles.

— Intraoral examination. Assessment of the state of bone and mucous formations affecting the fixation of the prosthesis in the oral cavity.

— Determination of mobility and flexibility of the mucous membrane.

— Diagnosis. Plan and objectives of orthopedic treatment.

5. List of recommended literature (main, additional, electronic information resources):

Main:

- Orthopedic dentistry: textbook / Rozhko M.M., Nespryadko V.P., I.V. Paliychuk and others; under the editorship M.M. Rozhka, V.P. Nespryadka.- K.: Medical University "Medicine"; 2020. - 720 p.

- Rozhko M.M., Nespryadko V.P., Mykhaylenko T.M. and others. Dentoprosthetic technique. K.: Book plus; 2016. 604 p.

- Rozhko M.M., Popovych Z.B., Kuroyedova V.D. Dentistry. Textbook. K.: Medical University "Medicine"; 2018. 872 p.

Additional:

Dentistry: in 2 books. : textbook. Book 2 / M.M. Rozhko, I.I. Kirylenko, O.G. Denisenko and others. ; under the editorship M.M. Horn — 2nd edition. — K.: VSV "Medicine", 2018. — 992 p. ; color kind.

- Material science in dentistry: a study guide / [Korol D.M., Korol M.D., Ojubeiska O.D. etc.]; in general ed. King D.M. – Vinnytsia: New book, 2019. – 400 p.

Electronic information resources:

- State Expert Center of the Ministry of Health of Ukrainehttp://www.dec.gov.ua/index.php/ua/

- National Scientific Medical Library of Ukrainehttp://library.gov.ua/

- National Library of Ukraine named after V.I. Vernadskyihttp://www.nbuv.gov.ua/

Practical lesson No. 17

Topic:Traumatic occlusion. Etiology, pathogenesis. Diagnostic methods. Treatment and prevention.

Goal:to acquaint students with general concepts of traumatic occlusion of teeth, periodontal disease.

Basic concepts:examination of a dental patient, dental instruments for examination, X-ray diagnostics, occlusion, traumatic occlusion, periodontism.

Equipment:Computer, phantoms, examination instruments, X-rays

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).

2. Control of the reference level of knowledge:

2.1. requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units);

Know:

— structure of the upper jaw;
— structure of the lower jaw;
— structure of the temporomandibular joint;
— the structure of the mucous membrane of the oral cavity.
— tooth structure
— to know the classification of dentition defects

Be able:

— determine the relationship between the upper and lower jaws;
— to examine the patient
— read x-rays

2.2. questions (test tasks, tasks, clinical situations) to check basic knowledge on the subject of the lesson.

— Examination. External overview. The degree of reduction of the lower third of the face, the expression of facial skin folds, the degree of mouth opening (free, difficult).
— Examination of the temporomandibular joint.
— Examination of the masticatory muscles.
— Examination of teeth and dentition

3. Formation of professional skills, skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.):

3.1. content of tasks (tasks, clinical situations, etc.);

Orthopedic treatment for periodontal diseases is carried out in order to prevent, eliminate or weaken the functional overload of the periodontium, which at a certain stage of the disease is one of the main pathogenetic factors determining the course of

the disease. Elimination or reduction of functional overload puts the periodontium in new conditions in which dystrophy or inflammation develops more slowly. Thanks to this, traumatic measures become more effective.

In order to reduce functional overload and make it easier for the periodontium to perform its function, it is necessary to: 1) return the lost unity to the dental system and transform the teeth from separately acting elements into an inseparable whole; 2) to take measures for the correct distribution of chewing pressure and relieve the teeth with the most affected periodontium at the expense of the teeth in which it is better preserved; 3) protect the teeth from the injurious action of horizontal overload; 4) in case of partial loss of teeth, in addition, prosthetics is necessary.

Treatment is carried out comprehensively with the use of general and local medical measures. Local treatment measures are therapeutic, surgical and orthopedic in nature. Orthopedic treatment, thus, is part of this complex and does not exclude, but on the contrary, suggests other types of measures, especially therapeutic ones (curettage of gum pockets, physiotherapy, etc.). Orthopedic treatment should be started at the same time as therapeutic treatment, but after the necessary remedial procedures have been carried out (removal of dental deposits, removal of destroyed teeth and roots, removal of inflammatory layers).

Etiology, pathogenesis, classification of periodontal diseases.

Periodontal diseases can develop under the influence of both local causes and the combined effect of local and general (endogenous) factors against the background of altered body reactivity.

Local reasons.

Over the past 25 years, an increasing number of researchers consider local causes to be the leading factors in the etiology and pathogenesis of periodontal diseases. A concept was formed, according to which the oral cavity is considered as a balanced biological system, and periodontal disease - in most cases, as a result of an imbalance between bacterial symbiosis and tissues of the oral cavity.

Most foreign researchers (Bouysson M., Orsos F., etc.) explain the development of inflammatory changes in the periodontium with the influence of dental plaque. It contains a large number of microbes: from 100 to 300 million in 1 mg of dental plaque.

Dental plaque, advancing as it grows under the gingival margin, causes tissue irritation due to microorganisms and their toxins, which further leads to damage to the epithelium of the gingival pocket and inflammation of adjacent tissues.

Gingivitis is a typical reaction of inflammation of the connective tissue in response to the activity of plaque microflora, which leads to irreversible damage to the gingival epithelium. If treatment is not carried out, gingivitis as a primary disease with a progressive course turns into periodontitis, which is crucial for tooth loss.

With gingivitis and generalized progressive periodontitis, the majority of foreign authors (Simon J. et al., Page R., Schroeder H., Loe H., etc.), as noted by Khazanov V.V. and Zemska E.A. (1975), Loe H. (1984), consider periodontal plaque as the cause of inflammatory and destructive changes in periodontal tissues.

Since many authors consider dental deposits to be one of the main causes of periodontal diseases, poor oral hygiene is one of the leading etiological factors.

Saliva is of particular importance in the etiology of periodontal diseases (its composition and properties, the speed of secretion, which affects the accumulation of dental plaque, its chemical composition). In addition, it is known that saliva dissolves the constituent parts of food and carries out their enzymatic cleavage. According to one of the theories of tartar formation, plaque microorganisms are capable (in places of its stagnation) of ammonia, as a result of which the environment becomes alkaline, and the tartar component precipitates.

Immunological aspects of inflammation.

Long-term contact between dental plaque microbes and tissues is fraught with the occurrence of autoimmune processes that can cause a chain reaction, accompanied by progressive alternative changes in periodontal tissues. In connection with these, the microbial flora of the periodontal pockets, the possibility of microbial allergy of the body and the development of autoimmune reactions are widely studied.

Local traumatic (iatrogenic) causes include prosthetic defects (a crown deeply pushed under the gums, the base of a removable prosthesis that squeezes the gingival papillae, etc.), defects in dental treatment (excess of amalgam or cement and impact of arsenic paste in the interdental space, influence of monomer fillings and prostheses), the harmful effects of improperly designed orthodontic appliances.

Overloading periodontal tissues, as experiments and clinical observations show, cause a complex of pathological changes in periodontal tissues with a predominance of inflammatory and dystrophic phenomena (Kurlyandsky V.Yu., Kalamkarov H.A. and others). Destructive inflammatory processes due to overloading of the periodontium can be observed with abnormalities of the bite (deep bite, deep incisal overlap, open, prognathic, progenic bite, etc.), abnormality of the position of the teeth (crowdedness), early loss of molars and premolars, after removal of a large number of teeth (post-extraction tooth movement), with incorrect determination of the indications for bridge prosthesis, improperly formed vestibule of the oral cavity, after cheiloplasty and uranoplasty, with bruxism (teeth grinding in sleep), etc.

Characteristically, periodontal tissues (ligament apparatus, bone) tolerate vertical overload relatively well and horizontal overload much worse. Exceeding the adaptation capabilities of the periodontium can lead to disruption of its blood supply and further bone tissue resorption.

Functional insufficiency can be the cause of periodontal disease. The insufficiency of the masticatory function is a product of modern civilization. Thoroughly processed, soft food deprives the periodontal tissue of a full load, as a result of which atrophic processes may develop. In addition, such food contributes to the formation of dental deposits, which is often the only cause of inflammation of the marginal periodontium. At the same time, individual susceptibility to periodontal disease is of significant importance. Another variant of functional insufficiency is local, for example, in the absence of antagonists, with an open bite, etc. The lack of function of the chewing apparatus reduces the resistance of periodontal tissues to external influences (microbes, injuries) and at the same time contributes to the

deposition of tartar. In connection with this, inflammatory changes in periodontal tissues often develop with functional insufficiency.

Underloading of a group of teeth or teeth affects the periodontium. According to Kurlyandsky's theory of functional pathology of the dento-jaw system, as a result of partial adentity of the periodontium there are separate non-functioning links (functioning center, traumatic node and non-functioning link). Destructive processes develop in the periodontium of dysfunctional, including underloaded, teeth.

It is appropriate to remind that the division into general and local factors is artificial, because although local factors can act as organizers of the pathological process, the appropriate reaction of the organism is always determined by general factors.

Common factors:

1. the effect of deficiency of vitamins C, B1, A, E;
2. the impact of atherosclerotic vascular damage;
3. dystrophic^-dystrophic-nervous-dystrophic process;
4. decrease in body reactivity;
5. endocrine disorders;
6. diseases of the gastrointestinal tract;
7. diseases of the blood and hematopoietic system;
8. psychosomatic factors.

Classification of periodontal diseases (PIZ)

1. Gingivitis is an inflammation of the gums caused by the adverse effects of local and general factors and attachment, which occurs without violating the integrity of the periodontium.

Form: catarrhal, hypertrophic, ulcerative.

Course: acute, chronic, aggravated, remission.

Process weight: light, medium, heavy.

Prevalence of the process: localized, generalized.

2. Periodontitis - inflammation of periodontal tissues characterized by progressive destruction of the periodontium and bone.

Course: acute, chronic, aggravated (including abscessing), remission.

Process weight: light, medium, heavy.

Prevalence of the process: localized, generalized.

3. Periodontitis is a dystrophic lesion of the periodontium.

Course: chronic, remission.

Process weight: light, medium, heavy.

Prevalence of the process: generalized.

4. Idiopathic periodontal diseases with progressive tissue lysis.
5. Periodontomas - tumors and tumor-like processes in the periodontium.

Traumatic occlusion. Plan and tasks of orthopedic treatment. Selective grinding.

All periodontal diseases are divided into diffuse (generalized) and focal. Periodontitis and generalized periodontitis are classified as spilled. Focal (local) diseases of the periodontium are periodontitis of individual teeth and the so-called

primary traumatic syndrome that develops with primary traumatic occlusion. Clinically expressed generalized periodontal disease (periodontitis, periodontitis) is accompanied by resorption of the alveolar ridge, the formation of a pathological gingival pocket, purulent discharge from it, gingivitis and functional overload of the periodontal teeth (traumatic syndrome).

Traumatic occlusion in periodontal diseases is one of the symptoms of the disease, secondary, primary periodontal dystrophy of teeth of various etiologies occurs. For this reason, traumatic occlusion with damage to the supporting apparatus of the teeth is called a secondary traumatic syndrome (Lumskoi, Boyanov). Atrophy of the socket, changes in blood vessels, and destruction of the periodontium play a role in the mechanism of development of the secondary traumatic syndrome.

As you know, from a biomechanical point of view, the tooth is considered as a lever of the first kind with a fulcrum located in the middle third of the root. The shoulder of the load during chewing and swallowing is its extra-alveolar part. With a normal crown-to-root ratio, the latter receives a load that does not go beyond adequate limits. As the alveolus atrophies, the external lever increases, and in connection with this, the pressure on the remaining periodontium increases, causing its functional overload.

Thus, a change in the ratio of the extra- and intra-alveolar part of the tooth is one of the pathological mechanisms in the development of traumatic occlusion.

The vertical load, in contrast to the lateral load, is always more favorable, because the force vector acts in the most beneficial direction for the tooth, that is, along the axis of the root. In this, the pressure is perceived by the entire vascular system and all obliquely located fibers of the periodontium. However, with atrophy of the cavity, the volume of the periodontium decreases, and, therefore, the functional properties of this tissue decrease, and are already weakened due to changes in the vascular network. In the established circumstances, the usual load turns into its opposite and, as the periodontium is destroyed, becomes a traumatizing factor.

At the same time as the height of the hole decreases, the expansion of the periodontal gap and the formation of pathological bone pockets are observed. All this leads to a violation of the statics of the tooth, as a result of which its pathological mobility appears. An increase in the amplitude of tooth oscillations in the mesiodistal and vestibuloral directions worsens the already impaired vital activity of periodontal tissues, increasing the phenomena of dystrophy. A closed circle emerges: periodontal dystrophy generates functional overload, and the latter in turn increases the destruction of the periodontium.

Pathological mobility is often accompanied by the movement of teeth: they protrude from the socket, move in oral or vestibular directions. A typical manifestation of movement in periodontal diseases is a fan-like divergence of the upper front teeth. The movement of teeth leads to the loss of interdental contacts and, therefore, to the violation of the unity of the dental rows.

Traumatic occlusion in systemic periodontal diseases does not appear immediately, but gradually. In the initial stages of the disease, the periodontium, adapting to the changed conditions, copes with the functional load and the latter does not manifest its harmful effects until now. As periodontal dystrophy develops, the

stability of the teeth is lost and a typical picture of the secondary traumatic syndrome develops. At a certain stage, functional overload becomes one of the leading factors in the pathogenesis of periodontal diseases.

The time of manifestation of the traumatic syndrome, its expressiveness depend on the form of the disease, the presence of dental arch defects, the nature of occlusal relationships. In case of periodontitis, traumatic layering is revealed later, in case of periodontitis - earlier. In the period of exacerbation of the process, violations of the statics of the teeth are most pronounced, and when it subsides, the mobility of the teeth decreases. Functional overload is more pronounced and observed earlier with partial loss of teeth.

A generalized disease that affects the periodontium of all teeth does not exclude the uneven manifestation of atrophy of the socket in different areas of the tooth rows, and, therefore, a different degree of expressiveness of functional overload. Usually, the traumatic syndrome first manifests itself in the front area, eventually affecting the entire dentition.

The impact of traumatic occlusion on the course of the disease is especially visible on the example of teeth deprived of antagonists and excluded from function. As a rule, they are more stable compared to teeth in occlusion, have a more preserved hole. In teeth that are in occlusion, atrophy of the alveolar part, pathological mobility, backward pockets are more pronounced.

In order to reduce functional overload and make it easier for the periodontium to perform its function, it is necessary to: 1) return the lost unity to the dental system and transform the teeth from separately acting elements into an inseparable whole; 2) to take measures for the correct distribution of chewing pressure and relieve the teeth with the most affected periodontium at the expense of the teeth in which it is better preserved; 3) protect the teeth from the injurious action of horizontal overload; 4) in case of partial loss of teeth, in addition, prosthetics is necessary.

Treatment is carried out comprehensively with the use of general and local medical measures. Local treatment measures are therapeutic, surgical and orthopedic in nature. Orthopedic treatment, thus, is part of this complex and does not exclude, but on the contrary, suggests other types of measures, especially therapeutic ones (curettage of gum pockets, physiotherapy, etc.). Orthopedic treatment should be started at the same time as therapeutic treatment, but after the necessary rehabilitation procedures have been carried out (removal of dental deposits, removal of destroyed teeth and roots, removal of inflammatory layers).

Selective grinding of teeth and elimination of premature occlusal contacts are very important in normalizing the load on the periodontium and stabilizing the pathological process in periodontitis.

Grinding teeth must be carried out according to a certain method and in a clear sequence. Arbitrary grinding of bumps gives only a short-term effect. After some time, the teeth excluded from the bite protrude from the sockets. As a result, an even smaller part of the root remains in the alveolar process, and its extra-alveolar part increases accordingly. This leads to overloading of the periodontium and loosening of the teeth.

Improper grinding increases the area of the chewing and cutting surface of the teeth and increases the load on the periodontium. If the grinding is correct, then the area of the chewing surface does not increase, and the contact with the antagonists is maintained.

Several methods of selective grinding of teeth are described in the literature. In the presence of premature contacts, it is impossible to close the rows of teeth in central occlusion. If you place a thin plate of wax, covered with foil on the lower surface, between the rows of teeth, you can determine premature contacts. Under the control of the doctor, directed closing of the tooth rows in the central occlusion is produced. Tooth impressions remain on the wax, and the areas of premature contact with the wax are pushed deeper. For a more accurate determination of grinding, the same is done with the lower row of teeth. The pressed place is marked with an ink pencil. Having marked the points of premature contacts with central occlusion, they are polished. For these purposes, there are special abrasives, diamond and carborundum shaped heads, diamond discs. Grinding is best done with a turbine or conventional drill. Premature contacts on the lower molars, premolars and upper front teeth are polished. In the case of pain, these teeth are polished by their antagonists. Sanded surfaces are carefully smoothed using paper disks and rubber polishers. After elimination of central and premature contacts, the patient can close the rows of teeth in the position of central occlusion, immediately experiencing relief, convenience and more dense contact between all teeth. Removing contacts relieves toothache.

Then you can start normalizing the articulation ratios of the tooth rows. Simple shortening and switching off from the occlusion of the front teeth is unacceptable. Grinding of the front teeth can be considered complete only if there is uniform contact between all the front teeth at their edge closure and correct sliding along the entire length of the sagittal path.

The analysis of the correction of the ratio of lateral excursions of the lower jaw begins with the right and left transverse occlusions. Applying a thin wax plate or copy paper to the lower tooth row, the patient is suggested to slowly alternately mix the lower jaw to the right and to the left. Then selective grinding is done. The internal slopes of the upper teeth, which are guiding inclined planes for the lateral movements of the lower jaw, are ground. In case of pain, teeth are grinded by antagonists. Selective grinding is considered optimal, in which there is a bump contact of the same name on the working side, and on the balancing side - a contact of different names or no contact. After grinding, the teeth should be covered with fluoride varnish.

Selective grinding of teeth begins simultaneously with therapeutic treatment, but after elimination of acute inflammatory phenomena in periodontal tissues. It should precede surgical intervention, splinting and prosthetics of tooth row defects.

Classification of tires. Requirements proposed for tires.

Indications for the inclusion of teeth in a tire. The main types of splinting.

Classification of tires.

A large number of tires proposed by various authors can be divided into the following groups:

1. Unremovable:

a) extraradial (extradental)

b) intra-root (intradental)

2. Removable:

a) multi-link all-cast clamps and devices

b) prostheses with splinting devices.

All tires can be classified according to other features:

1. medical purpose: fixing (strips) fixing-restorative (strips-prostheses)
2. constructions: crown, half-crown, ring, half-ring, cap, beam, splint devices for removable prostheses, etc.
3. the degree of overlap of the teeth: which do not overlap, partially overlap and completely overlap the cutting edge and chewing surfaces of the teeth.
4. manufacturing method: cast, stamped. Tires are made directly in the oral cavity (one-moment) and laboratory way (two-moment).
5. material: plastic, metal and combined.
6. period of use: temporary and permanent.

Requirements proposed for tires.

The effectiveness of the splinting device depends on how it was manufactured. Does it meet the requirements proposed for it?

The following tire requirements are proposed:

1. the tire should fix the teeth as much as possible, that is, eliminate the pathological mobility of the teeth in the horizontal and vertical directions. This elimination of pathological mobility of teeth is possible in the manufacture of splints reliably fixed on supporting and mobile teeth. At the same time, the movement of splinted teeth in the vertical direction is limited by the physiological mobility of the supporting teeth;
2. the tire should not interfere with medical treatment;
3. the tire should neither chemically nor mechanically affect the tissues adjacent to it;
4. the tire should not have retention points for food retention, i.e. fit tightly to the movable teeth;
5. the tire should be as easy to manufacture as possible;
6. the tire must be cosmetically satisfactory;

Indications for the inclusion of teeth in a tire.

Indications for the inclusion of teeth in a splint depend on the amount of atrophy of the dental alveolus and the form of periodontal disease. Teeth with mobility of the 3rd degree are subject to removal. It is also necessary to remove teeth with mobility of the 2nd degree, if there is atrophy of more than 2/3 of the socket. Teeth with mobility of the 1st degree with atrophy of the socket are more painful than half of

them are removed with periodontitis, and with periodontitis they need to be included in a splint. With chronic periapical changes, teeth with 1st degree mobility and well-sealed root canals should be splinted. With poor obturation of the root canal, the tooth can be included in the splint only in the absence of changes in the apical periodontium and a calm clinical course (absence of the patient before treatment and 3-4 weeks after it). In cases of exacerbation of chronic periodontitis, when sealing of the canal to the apex or behind it failed, the tooth should not be included in the splint block. Teeth with 2nd degree mobility and chronic foci near the apex, even if their canals are well sealed, cannot be splinted. Particular caution should be exercised when including teeth with chronic granulating periodontitis, which is difficult to treat and has frequent exacerbations, which has a tendency to. The presence of a fistula course is also a contraindication to the inclusion of a tooth in a splint block, even if the canal is well sealed.

The main types of splinting.

The direction of pathological mobility of any tooth is always distinct and enviable from its location in the dental arch. For some teeth (molars and premolars), the lines of their mobility lie in almost parallel planes, for others (incisors, canines) - in planes located at an angle to each other. The best result in splinting is obtained if the splint combines teeth, lines, the mobility of which lie in intersecting areas. For the front group of teeth, good stability of the splint block is achieved if the splint combines incisors and canines. Such immobilization of teeth is called front. It is convenient because, firstly, the periodontium of the canines is less affected and takes part of the pressure, relieving the weakened periodontium of the incisors; secondly, the unity of a group of teeth having the same function is restored; thirdly, the teeth are arranged in an arc, and accordingly the tire acquires greater stability.

Immobilization of the teeth, in which the tire is located in the anteroposterior direction, is called lateral (sagittal). This is understood as the stabilization of small and larger angular teeth that have the same function.

Lateral immobilization allows you to create a block of teeth resistant to forces that develop in the vertical, transverse and anteroposterior directions. With a certain degree of atrophy of the holes, this is enough to significantly reduce the functional load and obtain a therapeutic effect.

With the continuity of the dental arch, lateral immobilization can be strengthened by including the front teeth in the splint. In this case, the tire takes an arc-shaped shape, which greatly increases its resistance to side impacts. However, with increased stability, difficulties arise when applying non-removable tires. Only if the teeth are strictly parallel, the device can be monolithic, even if it is assembled from tires of different designs. Otherwise, use tires consisting of 2 or more links, connected to each other by two-armed or support-retaining staples. The latter are located on the border of the front and side groups of teeth. For this purpose, the crowns on the premolars are soldered to the clamper with their shoulders on the canines.

multi-link tiresin terms of their fixing properties, they are inferior to solid (monolithic) splinting devices. The staple connection makes the tire more resistant to

lateral forces that occur during chewing, at the same time it does not prevent a separate link of the tire from making independent vertical excursions. This is not excluded even in the case when the articulation of the links is carried out with the help of supporting and holding clamps. It is better to use circular removable tires in such conditions.

In the dental arch with included defects in the lateral parts, its sagittal stabilization can be strengthened by transverse, that is, running perpendicular to the palatal suture. Usually, similar stabilization is achieved by an arch prosthesis, that is, by combining fixed devices with a removable splint prosthesis. With this method of splinting, the lateral load that occurs on one side is partially spread to the opposite side, which helps to relieve the small and large angular teeth of the working side. With vertical effort, the working side acts independently, without receiving support from a symmetrically located block of teeth.

In addition to the described, there is another known method of splinting, which was called circular. It consists in the fact that all the teeth are combined into a block of a continuous or multi-link bus. As noted, the monolithic non-removable tire, along with conveniences, also has disadvantages that limit its use. In the absence of parallelism of the teeth, it is difficult to apply the tire. In case of complications of the disease and removal of teeth in connection with this, it is more convenient to replace one link than to remove and make a monolithic circular tire again. For this reason, preference should be given to a single removable splint for the entire tooth row.

Temporary tires.

Temporary splinting of teeth is considered as an auxiliary orthopedic intervention for the period of medical or surgical treatment of a patient with periodontitis. Indications for the use of temporary splinting are established on the basis of data on the clinical course of the pathological process. It is often indicated when the disease tends to worsen, in which loosening of the teeth and the formation of a traumatic occlusion are possible.

Ligatures, permanent and removable splints made of plastic or metal are used for temporary fixation of teeth.

The simplest method of temporary fixation of teeth with periodontitis is ligature binding of them with the help of wire, silk or polyamide ligatures.

Moriv M.R. (1958) proposed a combined method of temporary fixation of mobile teeth with the help of fishing line and fast-hardening plastics, the latter in the form of a roller is applied from the side of the vestibule of the oral cavity to the ligature and after hardening it is treated with carborundum stones and emery paper.

Napadov M.A. (1962), Lepyokhin K.F. (1962) and others. developed and described methods of manufacturing non-removable splints for fixation of frontal teeth from fast-hardening plastics.

The procedure for manufacturing tires according to these methods is as follows:

1. preparation of teeth, which consists in removing plaque and tartar;
2. modeling of a wax splint in the mouth directly on the teeth. For this purpose, a plate of wax is heated, applied and pressed on the teeth. Then the tire is modeled with a spatula in the form of equatorial crowns connected to each other;

3. removal of a demountable plaster impression (stamp), consisting of the oral and vestibular parts;

4. removal of the wax impression of the tire and application of plastic to the teeth. The plastic applied to the teeth is pressed against the teeth with parts of the obtained plaster impression, obtaining, in such a way, that it corresponds to the shape of the tire. Before the plastic hardens completely, parts of the plaster impression are removed, and excess plastic in the area of the gingival papillae and the edge of the gums is removed with a spatula. After that, the plaster mold is placed on the tire again and wait for the plastic to harden completely;

5. extraction of parts of the impression (stamp) from the oral cavity and treatment of the tire. The tire is treated with burs, carborundum stones and polished to a shine. During treatment, the splint should be fitted so that it is comfortable for the patient and does not interfere with local therapeutic treatment.

Khotsyanovsky A.N. (1969) recommends a method of two-moment manufacturing of tires from fast-hardening plastics. It consists of the following stages:

1. Partial preparation of teeth along the cutting edge to the thickness of the plastic layer and proximal surfaces from the distal side in the form of ledges. A splint with this preparation does not increase the bite and does not affect the gums, which makes it possible to carry out medical, surgical and physiotherapeutic interventions.

2. Obtaining a collapsible impression and casting of the model.

3. Modeling of a wax reproduction of a tire and obtaining a removable impression from the models.

4. Removing the wax reproduction of the tire from the model, applying fast-hardening plastic to the teeth.

5. Applying the vestibular and oral parts of a demountable plaster cast to plastic. At the same time, the parts of the impression are tightly compressed and fixed with the help of rubber rings or a clamp.

6. After polymerizing the plastic, the tire is removed from the teeth and pre-treated. Then the tire is finally fitted in the mouth. After polishing, the splint is fixed on the teeth with phosphate cement. Strengthening the tire with the help of phosphate cement prevents the possible destruction of dentin and other complications.

The advantages of this method include the simplicity of its implementation in the manufacture of a tire. Such a tire is quite satisfactory cosmetically and functionally. The tire proposed by the author can be temporary or permanent.

Pashkovskaya L.A. (1966) used elastic removable splints made of plasticized polymethyl methacrylate for temporary splinting of teeth in patients with periodontitis.

Temporary plastic tire along Novotno. The proposed tire is made of fast-hardening plastic. Previously, wax is pressed into the interdental spaces, which isolates the interdental papillae from the future plastic. Ready-to-use plastic is introduced from the lingual side into the interdental spaces and applied in a layer 1-1.5 mm thick from the cutting edge to the tooth tubercle so that the plastic is exposed

on the vestibular side. After its hardening, the wax is removed, the tire is processed and polished.

Permanent (fixed, removable) tires

Permanent splints are used as medical devices to immobilize teeth for a long time. The patient uses such tires constantly. They can be removable or non-removable.

Non-removable tires.

From the point of view of therapeutic properties, fixed splints have all the advantages over removable splints, because they provide reliable strengthening of mobile teeth, forming a block from them that can resist as a whole the horizontal and vertical forces that develop during chewing. They hardly disturb the speech, and patients quickly get used to them.

The disadvantages of these tires include the need to grind the teeth, which is sometimes associated with very complex manipulations. No matter how well-made the tire is, retention points will always form in the rear, where squeaking is delayed and the development of caries is possible. The technique of preparing teeth for prosthetics with fixed splints is sometimes quite complicated and requires not only skill, but also a special tool. As the instrumentation improves, these difficulties are overcome every year, and non-removable splints become valuable splinting devices in the treatment of periodontal diseases.

Splints for front teeth.

Various splints are used to immobilize mobile front teeth: annular, semi-annular, insert, crown, cap, semi-crown, etc.

Ring tireis a system of soldered rings and covers the teeth from the vestibular side to the equator, and from the lingual or palatal side it goes behind the tooth tubercle. The cutting edge of the tooth remains free. Tooth preparation consists only in separation of contact surfaces. This is done to create a space the thickness of two rings, each about 0.2-0.25mm thick. Ring tires do not cover the cutting edges of the crowns, which is why isolated movements of the teeth in the vertical direction are possible. This leads to the absorption of cement and weakening of the tire. The ring tire is also inconvenient in terms of aesthetics.

Cap tireis a system of soldered caps covering the cutting edge, the surface of the tooth, and on the lingual surface reaching the equator. The amount of coverage of the cutting edge from the vestibular side depends on the degree of tooth mobility: the more pronounced it is, the greater the coverage should be. For better stability, the splint is bonded with full crowns covering canines or premolars. Tooth preparation consists in grinding the cutting edge of the vestibular surface to the amount of overlap (preferably with a stop) and separation of the contact surfaces at the cutting edge. Then the impression is removed with alginate mass, the model is cast, the caps are accurately stamped in the usual way and they are united after checking in the mouth. The tire is strengthened with cement. A cap splint is easy to manufacture and provides good fixation. On the upper jaw, a tire made of stamped caps often breaks

along the line of adhesion. Therefore, for the upper front teeth, the intermediate part of the tire is cast entirely from metal.

Semi-crown tireshave the form of a block of semi-crowns soldered together. Such a tire provides reliable immobilization and a good aesthetic effect. Its disadvantages include the difficulty of preparing teeth for semi-crowns and the difficulty of manufacturing. Certain conditions are also necessary for its use, namely the parallelism of the supporting teeth.

A tire that is reinforced on root pins. The Mamlok tire belongs to such tires. It consists of a cast metal plate fitted to the oral surface and the cutting edge of the front teeth. The plate is fixed on pins inserted into the root canals. The tire provides good immobilization and is aesthetically pleasing. Its disadvantage is the need for tooth depulping.

When splinting the front teeth, blocks from salvaged full metal stamped crowns can be used. They provide the best splinting effect of all currently known splints and do not require complex manipulations in the oral cavity. The edges of the crowns should not be inserted into the gum pocket, which will leave it free for drug therapy. However, splinting devices, in the form of a block of full crowns, are aesthetically inconvenient, and for this reason, most patients, especially young ones, always object. Metal-ceramic or most common crowns are more convenient in this regard.

Tires for side teeth.

The best fixation of the lateral teeth is achieved with a block of full crowns. Having good fixing properties, they are at the same time not comfortable in an aesthetic sense, and, adhering to the gums, burden its condition and interfere with carrying out therapy of the gum pocket. Therefore, full crowns for splinting chewing teeth are used provided that their edges do not touch the gums, and the surface is covered with porcelain or plastic.

With normal ratios of the extra- and intra-alveolar part of the lateral teeth and especially with their violation due to gum atrophy, splints made of equatorial crowns soldered together are more convenient. They create immobilization in three mutually perpendicular planes, leaving at the same time a gum pocket for surgical and conservative therapy.

Non-removable tire according to Kogan. First, stamped half-crowns are made to the equator of the tooth. The teeth are not treated at all. The chewing surface of the crowns is filed taking into account the contact points of the antagonists. You can use the same half-crowns in the manufacture of bridge prostheses, reinforcing the system with the legs of staplers covering the teeth from the side of the missing intermediate teeth.

Shinning crowns are stamped strictly on the teeth without their modeling. The chewing surface of the crowns is filed in the points of contact with the antagonists by the doctor directly in the oral cavity. The finished prosthesis is cemented in the usual way.

Inlay splints can be used for splinting the lateral teeth.

Long-term observations have shown that teeth with periodontitis are less likely to be surprised by caries. Therefore, when preparing cavities for tabs on the masticatory surface of the molars, prophylactic expansion is not done. Thanks to this,

the tab takes the form of a beam. Insert tires, in addition to being difficult to manufacture, have another drawback. Providing immobilization of the teeth in the anteroposterior and transverse directions, they allow the teeth to make independent vertical movements, which leads to a violation of the connection of the tab with the tooth and the subsequent dissolution of the cement. Therefore, some tires of this type are reinforced with pins.

Removable tires.

The splinting properties of removable splints are provided mainly by various combinations of continuous support-retaining and overturning staples, as well as various forms of occlusive pads. Their spread was facilitated by the development of parallelometry techniques, precision casting on hot models, the use of chromium-cobalt alloys and alloys of precious metals.

Removable splints can be used for splinting one group of teeth or the entire tooth row. When immobilizing the front teeth, it is desirable to bring the splint to the premolars, and when splinting the lateral teeth - to the canines.

Removable tires can be included in the design of the arch prosthesis as its component part. In this case, they are talking about prosthetic tires. Here it is worth considering three types of tires, namely: 1) tire of the continuous clamper type; 2) shinu-kappa; 3) a single tire for the entire tooth row.

Removable splint for frontal teeth, which combines movable teeth into a single block, is made of KHS and gold-platinum alloys. A multi-jointed clasper, with slightly expanded orally located links, covers the teeth with processes departing from it labially, which pass into the interdental spaces in the form of claw-like branches. Such a tire should be cast using a ceramic model.

Removable splinting prosthesis with cast cap. Such a prosthesis relieves movable teeth from vertical load. It can consist of a brace prosthesis and stamped or, better, cast caps of the frontal area. The most accurate manufacturing method is a ceramic model, in which you can cast the mouthpiece and the frame together with one block.

Removable splint according to Elbrecht. The splint consists of vestibular and oral multi-link staplers in combination with elements of a flip-up stapler, occlusal overlays and vestibular processes. This type of tires reliably keeps them from shifting due to forces acting at an angle or horizontally. Tires must be made using a ceramic model with KHS.

An indispensable condition for good functional qualities of removable splints is the accuracy of all clinical and technical procedures related to its manufacture. The use of high-quality alginate and silicone impression materials, the study of models in a parallelometer, casting on refractory models allows you to achieve an exact fit of the tire to its bed and avoid violations of occlusal contacts, which is always dangerous even for a healthy periodontium, and especially for a patient.

3.2. recommendations (instructions) for performing tasks (professional algorithms, orientation maps for the formation of practical skills and abilities, etc.);

3.3. requirements for work results, including registration;

— Conduct an examination.

— Analyze the results of the examination of a dental patient.

— Make a plan for additional examination of the patient.

— Explain the results of clinical and special (additional) research methods.

4. Summary:

— Anamnesis of the patient. Main complaints. Medical history. Dental history.

— Examination. External overview. Reduction of the lower third of the face, expressiveness of nasolabial and chin folds, degree of mouth opening (free, difficult). Temporomandibular joint. Examination of the masticatory muscles.

— Intraoral examination. Assessment of the state of bone and mucous formations affecting the fixation of the prosthesis in the oral cavity.

— Determination of mobility and flexibility of the mucous membrane.

— Diagnosis. Plan and objectives of orthopedic treatment.

5. List of recommended literature (main, additional, electronic information resources):

Main:

- Orthopedic dentistry: textbook / Rozhko M.M., Nespryadko V.P., I.V. Paliychuk and others; under the editorship M.M. Rozhka, V.P. Nespryadka.- K.: Medical University "Medicine"; 2020. - 720 p.

- Rozhko M.M., Nespryadko V.P., Mykhaylenko T.M. and others. Dentoprosthetic technique. K.: Book plus; 2016. 604 p.

- Rozhko M.M., Popovych Z.B., Kuroyedova V.D. Dentistry. Textbook. K.: Medical University "Medicine"; 2018. 872 p.

Additional:

Dentistry: in 2 books. : textbook. Book 2 / M.M. Rozhko, I.I. Kirylenko, O.G. Denisenko and others. ; under the editorship M.M. Horn — 2nd edition. — K.: VSV "Medicine", 2018. — 992 p. ; color kind.

- Material science in dentistry: a study guide / [Korol D.M., Korol M.D., Ojubeiska O.D. etc.]; in general ed. King D.M. – Vinnytsia: New book, 2019. – 400 p.

Electronic information resources:

- State Expert Center of the Ministry of Health of Ukrainehttp://www.dec.gov.ua/index.php/ua/

- National Scientific Medical Library of Ukrainehttp://library.gov.ua/

- National Library of Ukraine named after V.I. Vernadskyihttp://www.nbuv.gov.ua/

Practical lesson No. 18

Topic:Examination of patients with periodontal tissue diseases. Analysis of the odonto-periodontogram. Diagnostic methods. Tasks and planning of orthopedic interventions in the complex treatment and prevention of periodontal diseases.

Goal:to acquaint students with general concepts of traumatic occlusion of teeth, periodontal disease.

Basic concepts:examination of a dental patient, dental instruments for examination, X-ray diagnostics, occlusion, traumatic occlusion, periodontism.

Equipment:Computer, phantoms, examination instruments, X-rays

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Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).

2. Control of the reference level of knowledge:

2.1. requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units);

Know:

— structure of the upper jaw;
— structure of the lower jaw;
— structure of the temporomandibular joint;
— the structure of the mucous membrane of the oral cavity.
— tooth structure
— to know the classification of dentition defects

Be able:

— determine the relationship between the upper and lower jaws;
— to examine the patient
— read x-rays

2.2. questions (test tasks, tasks, clinical situations) to check basic knowledge on the subject of the lesson.

— Examination. External overview. The degree of reduction of the lower third of the face, the expression of facial skin folds, the degree of mouth opening (free, difficult).
— Examination of the temporomandibular joint.
— Examination of the masticatory muscles.
— Examination of teeth and dentition

3. Formation of professional skills, skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.):

3.1. content of tasks (tasks, clinical situations, etc.);

Recently, diseases of periodontal tissues have become widespread in various regions of Ukraine and cover from 40 to 70% of the population, which is about 35 years old. The authors note the growing trend of periodontitis among young people and associate it with functional overload of the chewing apparatus. The following diagnostic signs are characteristic of periodontitis: - presence of bleeding gums in the

anamnesis for several years; - inflammation of the gums with a preference for catarrhal, ulcerative or proliferative inflammation; - the presence of a gingival or periodontal pocket; - destructive changes in the bone tissue of the interdental partitions, which are determined on the radiograph and the absence of violations in the deep departments; - the presence of various clinical symptoms caused by the severity of inflammatory destruction of bone tissue and periodontium, as well as the clinicomorphological picture of inflammation of the gums (looseness of teeth, their displacement, pain, impaired function, etc.). - a significant amount of dental deposits (tartar, microbial plaque, food residues, etc.). Mild periodontitis is characterized by the following signs: the depth of the periodontal pocket is up to 3.5 mm, mainly in the area of the 6th interdental space, the degree of destruction of the interdental septa is initial I (up to 1/3), the teeth are immobile and do not shift, the general condition of the patients is not disturbed. A moderate degree of periodontitis is characterized by the further development of pathological changes, the depth of the periodontal pocket up to 5 mm, the destruction of bone tissue of the II degree - a decrease in the height of the interdental partitions to ½ their height, foci of osteoporosis, pathological mobility of the teeth, mostly of the I degree, less often of the II degree.

Possible displacement of teeth. A severe degree of periodontitis is characterized by the presence of a periodontal pocket with a depth of more than 5-6 mm, destruction of the bone tissue of the interdental partitions by more than ½ or complete absence of bone tissue, tooth mobility of the II-III degree. The teeth are displaced, traumatic occlusion is pronounced. All the symptoms described above refer to periodontitis in the active stage. On the X-ray: I degree - the resorption of the compact plate on the tops of the interdental septums, a violation of the clarity of the structure of the tops of the interdental septums due to the destruction of bone tissue is determined. Atrophy or a decrease in the height of the partitions to 1/3. II degree - average periodontitis, destruction of bone tissue of interdental partitions up to ½, foci of osteoporosis, expansion of the periodontal gap in the cervical region. III degree - (severe periodontitis) - destruction of bone tissue I-III degree, foci of osteoporosis, bone pockets. Periodontitis - damage to periodontal tissues is primarily dystrophic in nature.

The following diagnostic signs are characteristic of periodontitis: - absence of inflammation, pale colored gums; - gum retraction and exposure of the neck, and then the root of the tooth; - microbial plaque, soft plaque are not characteristic; - absence of gingival and periodontal pockets; - frequent combination with tooth pathology of non-carious origin (enamel erosion, wedge-shaped defect, hyperesthesia, etc.); - stability of teeth even with II-III degree of reduction in the height of the interdental partitions, because it is synchronous with the retraction of the gums; - lack of signs of inflammatory destruction of bone tissue of interdental septa on X-rays; their contours are clear, but there is a decrease in the height of the partitions without foci of osteoporosis, the expansion of the periodontal gap. In the deep parts of the alveolar process and body of the jaw, there are signs of disharmonious reconstruction of bone tissue (alternating foci of osteoporosis and osteosclerosis), possible changes in other bones of the skeleton; - diseases of the cardiovascular system, endocrine, metabolic disorders. Traumatic occlusion and its clinical signs In periodontitis and

periodontosis, the resistance of periodontal tissues decreases. As a result of the weakening of the periodontium, the usual occlusal load begins to exceed the tolerance of its structures and turns from a factor that stimulates development into a factor that injures and disrupts the trophism of the periodontium. Traumatic occlusion occurs, leading to overloading of periodontal tissues, as a result of its weakening, which in turn leads to violation of force dissociations of functionally oriented groups of teeth with subsequent destruction and resorption of periodontal tissues.

The term "traumatic occlusion" was proposed by Stillman in 1919. Traumatic occlusion (synonymous with "functional load") is an inadequate load falling on the periodontium of the teeth: unusual in magnitude, direction or duration of action. With the general diversity of the clinical picture, signs of periodontal injury common to all types of dento-jaw anomalies can be identified. Clinical signs of traumatic occlusion are: a) inflammatory, stagnant phenomena of the gums; b) traumatic crescent; c) retraction of the gingival margin; d) bleeding from the gums; e) deepening of the periodontal pocket; f) pathological mobility of teeth; g) lack of interdental contacts and disappearance of the interdental ligament, which leads to a violation of the unity of the dental rows. According to the mechanism of development, three types of traumatic occlusion are distinguished: primary, secondary and combined. Primary traumatic occlusion develops against the background of unaffected (intact) periodontium. This type of overload is observed as a result of the action of excessive magnitude or abnormal direction of the occlusal load. In the clinic, overloading of teeth (in magnitude and direction) is observed when the bite on fillings, inlays, bridge-like prostheses or single crowns increases, with partial loss of teeth, when the number of antagonizing pairs of teeth is reduced, improper design of prostheses or selection of the number of supporting teeth, irrational location and construction of clasps, especially supporting elements in brace prostheses. A feature of primary traumatic occlusion is the limitation of the affected area of the tooth row. Pathology of periodontal tissues occurs only in the area of a limited number of teeth that are overloaded in central or lateral occlusions.

Overloading of teeth occurs with non-rational (forced) orthodontic treatment. Maxillofacial abnormalities are one of the most frequent causes of periodontal overload; functional traumatic overload of the periodontium is possible with the loss of many teeth and pathological wear of the hard tissues of the teeth. With dentition defects, the remaining teeth are forced to accept an additional load, which becomes excessive under certain conditions. 8 With a deep bite, pathological changes are localized in the area of the front teeth, because they are overloaded with front and side occlusions. More often, pathological changes occur in the area of the lower incisors. Traumatic tooth overload is observed with a progenic ratio of the front teeth or a palatal inclination of individual upper incisors, with a deep frontal overlap. Antagonists of these teeth perceive an occlusal load that is excessive in magnitude and abnormal in direction. On the R-gram - widening of the periodontal gap, resorption of interdental partitions and osteoporosis.

Under certain conditions, the pathological wear of molars and premolars leads to overloading of the front teeth. In the occurrence and course of pathological processes in periodontal tissues, parafunction and bruxism play a role. The pathogenesis of

secondary traumatic occlusion is based on dystrophic changes in periodontal tissues. Resorption of the bone tissue of the sockets leads to a violation of the normal biological regularities of the structure and function of the periodontium; there are changes in force dissociations between functionally oriented groups of teeth. The necks are exposed and the extra-alveolar part of the teeth increases. In this connection, the remaining periodontium is subjected to an even greater load, which increases the injury and accelerates resorption. That is, chewing pressure became traumatic not because it changed in direction or magnitude, but because periodontal dystrophy made it impossible for it to perform normal functions. Therefore, traumatic occlusion in periodontitis can be called a secondary traumatic syndrome. At the same time, local treatment is not enough - general treatment is also necessary. Depending on the topography of the occlusive traumatic factor, traumatic nodes appear - areas with the most pronounced manifestations of the disease, where the reserve forces of an individual tooth, group of teeth or periodontium have completely disappeared. In the area of the traumatic node, inflammatory phenomena are observed, the stability of the teeth is disturbed, and the processes of bone tissue resorption are sharply expressed. The sensory function of the periodontium is disturbed and distorted. VI Gavrilov called this type of traumatic occlusion primary traumatic syndrome. Treatment consists in removing the functional overload by correct prosthetics or splinting. The development of insufficiency in the supporting apparatus of a tooth or groups of teeth under the influence of the direct impact of articulatory masticatory load on a given group of teeth is called a direct traumatic node.

The reflected traumatic node is the occurrence of insufficient supporting apparatus of the teeth in the area of the dental row, where there is an impression of the supporting apparatus that arose as a result of a change in the anatomical situation in other parts of the dental row (for example, traumatic overload of the front teeth when the bite is reduced, due to the loss of chewing teeth). The task of orthopedic care in periodontitis Orthopedic treatment occupies a special place in the complex therapy of periodontal pathology, in which morphological and functional changes occur 9 not only (and not so much) in the supporting and retaining apparatus of the tooth, but also in the entire maxillofacial system. These changes are manifested in uneven distribution of chewing pressure, loss of functional unity of the tooth-jaw system, overloading of the remaining teeth. The goal of orthopedic treatment is to restore the physiological balance in the system: periodontium - occlusal surface - masticatory muscles - jaw joint. It is possible to achieve this goal by solving the following tasks: Elimination of traumatic occlusion and articulation. Restoration of bite height and physiological rest. Elimination of functional insufficiency of teeth. Increasing the resistance of periodontal tissues to chewing pressure. Orthopedic treatment of periodontal diseases consists of: - special training; - splinting and prosthetics of the oral cavity; Special orthopedic preparation of the oral cavity includes: - selective grinding of teeth; - elimination of secondary deformations of tooth rows; - orthopedic treatment of maxillofacial anomalies; - restoration of bite height or reduction of the latter; - elimination of parafunctions of masticatory muscles and tongue. Choosing the time for splinting the teeth. The question of choosing the time when it is necessary to start splinting teeth in the complex treatment of

periodontitis is quite significant. A timely and correct solution to this issue can prevent the further development of the disease and give a positive therapeutic effect.

V. Yu. Kurlyandskyi (1956) recommends using the data of the odontoperiodontogram to clarify the question of the time and volume of orthopedic interventions. An odontoparodontogram is a diagram - a drawing in which data about each tooth and its supporting apparatus are entered. The data are presented in the form of conditional marks obtained as a result of clinical examinations, X-ray studies and gnathodynamometry. These designations include: N - without pathological changes; 0 - no tooth; ¼ - atrophy of the 1st degree ½ - atrophy of the II degree ¾ - atrophy of the III degree - atrophy more than ¾ - up to the IV degree, in which the tooth is retained in soft tissues and must be removed. The endurance of periodontal supporting tissues is indicated by conditional coefficients compiled on the basis of proportional ratios of the endurance of teeth to pressure in people who do not suffer from periodontitis. The latter is determined by gnathodynamometry of individual groups of teeth. Depending on the degree of atrophy and the degree of mobility of the teeth, the coefficient of endurance of the supporting tissues to the loads arising during the maximum processing of food decreases, respectively.

Each tooth, the author notes, has reserve forces that are not spent when crushing food. These forces are generally considered to be equal to half of the possible load that the periodontium can bear normally. The residual capacity of the periodontium refers to its ability to maintain functional endurance in a pathological condition (resorption of the alveolar walls, formation of periodontal pockets, reduction of the periodontal area). (Normally, the supporting tissues of the tooth can withstand a load 2 times greater than it reaches during chewing food.) In periodontitis, these forces change depending on the degree of damage to the supporting tissues of the periodontium. Normally, the endurance factor of 16 teeth is 3, and its reserve strength is equal to 1.5 units. As the degree of atrophy increases, reserve forces decrease. Thus, with atrophy of the pits of the first degree, the reserve strength of tooth 16 is equal to 0.75 units, with the second degree - 0, and with the third degree, functional insufficiency occurs, which is equal to 1.5 units. After receiving the relevant data, fill in the diagram-drawing of the future odontoparodontogram, which consists of 5 rows of cells located parallel to each other (Fig. 1). In the middle of the drawing there is a row of cells with the designation of the dental formula, and above and below this row there are cells in which data about the condition of the teeth and bone tissue of the periodontium (norm, degree of atrophy, absence of teeth) are entered. Then there is a series of cells in which the data of the reserve (residual) forces of the supporting tissues, expressed in conventional coefficients, are displayed. After filling in the drawing scheme, the coefficients of the upper and lower jaws are added with conventional marks, and the resulting scheme is placed on the right half of the odontoparodontogram. On the basis of aggregated data, the power relations between the tooth rows of the jaws are determined.

Treatment of periodontal diseases In periodontology, the leading principle in diagnosis and treatment is syndromic and nosological. This approach allows you to identify the main symptoms of the disease, characterize the severity of the patient's condition and determine the volume of interventions depending on the leading

syndrome. A condition for successful treatment is a complete examination of the patient. The complexity of the treatment involves not only the performance of a certain amount of therapeutic and preventive manipulations by the doctor, but also active cooperation on the part of the patient: the implementation of rational oral hygiene, recommendations for a healthy diet and lifestyle. Treatment plans are made individually for each patient based on the principle of complex therapy, which combines local periodontal treatment with a general effect on the body. It is very important to observe the general principles of treatment: - finding out the cause (or causes) of the disease; 12 - establishing the sequence of interventions; - determination of indications and contraindications for treatment; - prediction of side effects and possible complications; - drawing up a treatment plan; - control over the correct implementation of the treatment plan. Tasks of therapeutic and surgical methods of treatment Therapeutic intervention includes a combination of local and general therapy for patients with periodontal tissue diseases. Local treatment is aimed at eliminating inflammatory phenomena and improving blood and lymph formation in the periodontal tissues by sanitizing the oral cavity, prescribing various medications, and physiotherapy. General treatment is aimed at normalizing the general state of the body through rational nutrition, treatment of diseases of internal organs, disorders of the central nervous system, etc. Surgical intervention Classification of BC Ivanova (1989:) 1. Surgical methods of treatment of alveolar pockets: 1.1. curettage 1.2. cryosurgery 1.3. gingivotomy 1.4. gingivectomy 1.5. electrosurgical treatment 2. Patch operations: 2.1. flap operations that correct the edge of the gums 2.2. flap operations with the use of agents that stimulate reparative processes in the periodontium 3. Formation of the oral cavity and movement of the frenulum

ORTHOPEDIC TREATMENT OF PERIODONTAL DISEASES

Purpose and tasks of orthopedic treatment of periodontal diseases Orthopedic treatment does not eliminate periodontal diseases, since its target is the syndrome of periodontitis and periodontitis - traumatic occlusion. Therefore, orthopedic treatment has a syndromic focus. In this regard, the goal of orthopedic treatment for periodontal diseases is to prevent, eliminate, or alleviate the functional overload of the periodontium, which at a certain stage of the pathological process is one of the main pathogenetic factors, and in some cases – an independent periodontal disease (traumatic occlusion). Elimination or reduction of functional overload puts the periodontium in new conditions in which dystrophy or inflammation develop more slowly. Thanks to this, therapeutic measures aimed at treating periodontal diseases become more effective. To fulfill this goal, the following tasks must be solved: 1) return the lost unity to the tooth row and transform the teeth from separately acting elements into an inseparable whole; 13 2) correctly distribute the chewing pressure on the remaining teeth and relieve the teeth with the most affected periodontium at the expense of those teeth in which it is better preserved; 3) protect the teeth from the traumatic effect of horizontal overload; 4) carry out prosthetics of the oral cavity. The main orthopedic methods of prevention and elimination or weakening of the functional overload of the periodontium are: 1) selective grinding of teeth; 2) orthodontic correction of the deformation of the dental rows (fan-shaped divergence of the front teeth); 3) splinting of teeth; 4) prosthetics of the oral cavity. Selective

grinding of the teeth Selective grinding of the teeth is performed to align the occlusal surfaces of the tooth rows in case of premature contacts or blockage of the movements of the lower jaw, which, as a rule, take place in the case of generalized periodontal disease.

Alignment of occlusal surfaces is carried out by selective grinding of the cutting edges and cusps of the teeth. Grinding the surface of the crown of a tooth that is in premature contact is aimed at changing the slope of the ridges and shortening the crown part of the tooth to reduce the load on the periodontium, but this procedure is effective only in the early stages of the disease. When pathological mobility of the teeth occurs, the therapeutic effect of grinding is short-lived, since the tooth can again protrude from the alveolus, falling under the influence of an ever-increasing functional overload. The method of selective grinding of teeth can be used: 1) for the prevention of periodontal diseases in people with delayed natural wear of enamel and dentin; 2) as a special preparatory measure before splinting, prosthetics or treatment of parafunctions of masticatory muscles. Thus, the purpose of selective grinding of teeth is: 1) elimination of premature occlusal contacts, which increase the functional overload of the periodontium; 2) elimination of blocking moments that interfere with the movements of the lower jaw. At the same time, the articulation of the teeth becomes smoother, multiple interdental contacts are formed during articulation; 3) elimination of deformation of the occlusal surface of the tooth rows. The ultimate goal of this procedure is the uniform distribution of chewing pressure across the tooth row or group of teeth. There are various methods of grinding teeth, but the most popular methods are Jenkelson and Schuller. According to this technique, occlusion correction is carried out both in the back and in the central, front and side occlusions.

Selective grinding is preceded by the removal of teeth with a high degree of pathological mobility, as well as teeth that cause a pronounced deformation of the dentition. Then the planning of grinding is carried out, for which first visually, and then with the help of a strip of softened wax or copy paper, those bumps or slopes of the bumps that are to be ground are specified. Selective grinding is carried out with the help of high-speed machines and centered shaped heads with a diamond coating. In the case of a radical intervention, grinding of the hard tissues of the tooth is preceded by local anesthesia, and if necessary, premedication. Additional control is carried out after 10-14 days, and thereafter every 2-3 months. With inaccurate selective grinding, individual teeth may change their position, and the marginal periodontium may show signs of inflammation. After selective grinding of the teeth, in order to consolidate the achieved results, it is necessary to splint them. Splinting of teeth Splinting is the joining of several or all teeth into a single block with the aim of their immobilization (immobilization), or jaw fragments after their fractures. Splints in periodontology are structures and devices used to immobilize teeth that have pathological mobility due to traumatic occlusion or other causes of periodontal pathology.

Immobilization is the creation of immobility of any part of the body, for example, due to the application of bandages and splints in case of fractures, dislocations, elimination of pathological mobility of teeth and other diseases. Thus, splinting is aimed at solving the main problems of orthopedic treatment of

periodontal diseases. In this regard, the following requirements are imposed on splints: 1) creation of a strong block of teeth with restriction of their movement in three directions - vestibuloral, mesiodistal, vertical; 2) the presence of a rigid and strong fixation on the teeth; 3) no need for radical tooth preparation; 4) elimination of irritating effects on the marginal periodontium and interference with manipulations in gum pockets; 5) lack of blocking of lower jaw movements and phonetic disorders; 6) exclusion of retention points for food retention, as well as violations of the aesthetics of the patient's appearance. According to E.I. Gavrilova, in order to achieve the therapeutic effect of splinting, the following biomechanical principles must be followed when planning a splinting structure:

1) restriction of tooth mobility due to the stiffness of the splint, which has a beneficial effect on the periodontium;

2) relief of the periodontium due to the normalization of the distribution of masticatory pressure;

3) unloading of the periodontium of the teeth with the greatest impression due to more permanent teeth;

4) the splint construction, which is located along the arc, is the most rigid due to the arch shape and the mutual intersection of the mobility vectors of the teeth included in the splint;

5) with a linear arrangement of tires in the side sections, on the right and on the left, they must be connected transversely with the help of an arch prosthesis.

The first signs of pathological mobility of the teeth, indicating the decompensated state of the periodontium, are a signal for the beginning of their splinting. Splinting can be carried out in the later stages of the disease, but the best therapeutic effect is noted for signs of functional overload of the periodontium. Splinting can be temporary (1 day - 1 month of using the structure), permanent (more than 1 year) to semi-permanent (1 month - 1 year). Types of stabilization of movable teeth There are 5 types of stabilization of groups of teeth: 1. Frontal. 2. Sagittal. 3. Fronto-sagittal. 4. Parasagittal. 5. Stabilization along the arc. Frontal - immobilize the teeth of the front part of the dentition (non-removable splints are used). Sagittal - performed in the anterior-posterior direction of a lateral group of teeth that perform the same function (at the expense of non-removable, sometimes removable splints). Fronto-sagittal stabilization – binding of a group of chewing teeth of one side and frontal teeth into a single system (it is carried out by monolithic non-removable splints that are fixed on 3 or more crowns or consist of 2 splints that are connected to each other with a cast clasp. It is possible use a removable structure that will cover the above two groups of teeth). Parasagittal stabilization - splinting of the chewing group of teeth on both sides of one jaw, while the chewing pressure is distributed to both groups of chewing teeth of the same jaw. The side teeth are pre-fixed with non-removable splints, tied into a single block with a fixed prosthesis.

Arch stabilization – splinting of the entire dentition of one jaw. It is carried out by non-removable tires consisting of several blocks, removable tires in the form of multi-link ring clamps, cap tires, emergency tires with tire devices. The most rational type of stabilization, which ensures an even distribution of pressure throughout the dental arch, is arch stabilization. Temporary splinting of teeth is considered as an

auxiliary orthopedic intervention for the period of medical or surgical treatment of a patient with periodontitis. It is often indicated when the disease tends to worsen, in which loosening of the teeth and the occurrence of traumatic occlusion are possible. with tooth mobility. 16 In the complex treatment of periodontal diseases, temporary splinting allows [L.P. Ilyina, 1984]: - to speed up the effect of conservative and surgical treatment and preserve it for the longest period; - carry out elements of orthodontic treatment with splinting; - positively influence the psycho-emotional state of the patient, set him up for successful treatment; - to contribute to the fuller manifestation of the reserve capabilities of the periodontium; - to reasonably solve the issue of removing mobile teeth. The duration of temporary splinting is on average 5-6 days. up to 2-3 months Depending on the terms, temporary splints are made of wire (steel, bronze-aluminum - 0.2 mm), plastic (noracryl, acrylic oxide, protacryl, duracryl composites) or their combination. The least complicated method of temporary fixation of teeth in case of periodontitis is their ligature binding with the help of a wire ligature, silk or polyamide threads. M.R. Murray (1958) proposed a combined method of temporary fixation of mobile teeth using fishing line and fast-setting plastic. The latter in the form of a roller is applied from the side of the oral cavity to the ligature, and after polymerization, it is treated with the help of carborundum stones. MA. Napadov (1962), Lepyokhin (1962) developed and described methods of manufacturing non-removable splints for fixation of frontal teeth from fast-hardening plastics. The procedure for manufacturing tires according to these methods is as follows:

1) preparation of teeth, which consists in removing plaque and tartar;

2) modeling of a wax splint in the mouth directly on the teeth. For this purpose, a plate of wax is heated, applied along the cutting edge and clamped on the teeth. Then, with a spatula, the tire is modeled in the form of equatorial crowns connected to each other;

3) removal of a demountable plaster impression, which consists of an oral and a vestibular part;

4) removal of the impression of the wax reproduction of the tire and application of plastic to the teeth. The plastic applied to the teeth is pressed against the teeth with parts of the obtained plaster impression, thus forming the appropriate shape of the tire. Before the plastic completely hardens, parts of the plaster impression are removed and the remains of the plastic in the area of the gingival papillae and the gingival margin are removed with a spatula. After that, the plaster mold is placed on the tire again and wait until the plastic hardens completely;

5) removal of parts of the impression from the oral cavity and treatment of the tire. The tire is treated with burs, carborundum stones and polished to a shine. During treatment, the splint should be fitted so that it is comfortable for the patient and does not interfere with local therapeutic treatment. L.Ya. Chornyi (1964) proposed a more improved method of one-moment manufacturing of tires from fast-hardening plastics. It consists of the following stages: modeling the tire from wax, removing the collapsible 17 impression, removing the wax reproduction, applying plastic to the impression, installing it on the teeth and processing the tire. To remove the impression, the author offers special impression plates, and to hold parts of the

impression with plastic - a clamp. The removal of the impression is as follows: first, the lingual part of the impression is obtained. For this purpose, the oral plate is installed so that it is at some distance from the teeth and forms a gap. Then the gap is filled with gypsum and after its crystallization, a vestibular plate is also installed at some distance from the teeth. The gap formed at the same time is filled with plaster, thereby obtaining the vestibular part of the impression. After crystallization of the gypsum, the impression is taken from the oral cavity in parts, processed and its internal surfaces are lubricated with insulating varnish or silicate glue. The plastic is mixed and applied to the inner surface of the impression parts, introduced into the oral cavity and installed on the teeth. At the same time, the oral and then the vestibular parts of the impression are first installed. Until the plastic hardens, the impressions are held with a clamp. After the plastic hardens, the impression is separated from the tire. The tire is fitted to the bite, processed and polished. As the author notes, such a tire, being in the mouth for 3-6 months, gives a positive therapeutic effect in the complex treatment of patients with periodontitis. A.M. Khotsyanovskyi (1969) recommends a method of two-moment manufacturing of tires from fast-hardening plastics. It consists of the following stages:

1) Partial preparation of teeth along the cutting edge to the thickness of the plastic layer and proximal surfaces from the distal side in the form of ledges. The splint with this preparation of the teeth does not increase the bite and does not touch the gums, which makes it possible to carry out medical, surgical and physiotherapeutic interventions.

2) Obtaining a collapsible impression and casting models.

3) Modeling a wax reproduction of a tire and obtaining a removable impression from the model.

4) Removal of the wax reproduction of the tire from the teeth and application of fast-hardening plastic.

5) Superimposition on plastic from the vestibular and oral parts of a demountable plaster impression. At the same time, a part of the impression is tightly pressed and fixed with the help of rubber rings or a clamp.

6) After polymerization of the plastic, the tire is removed from the teeth and processed in advance.

Then the tire is finally fitted in the mouth. After polishing, the tire is fixed on the teeth with phosphate cement. Fixation of the splint with the help of phosphate cement prevents the possible destruction of dentine and other complications. In addition, the advantages of this technique include the ease of implementation and tire manufacturing. Such a tire is quite satisfactory from a cosmetic and functional point of view. The tire proposed by the author, 18 can be temporary or permanent. The appearance of modern materials, which are based on the application of adhesive technology, allows solving the problems of splinting areas of the dentition in compliance with modern aesthetic requirements and directly during the reception of the patient, without the involvement of a long laboratory stage. In some cases, new systems allow solving the problem of replacing single defects. 2 types of materials are used depending on their chemical composition: - based on inorganic matrix GlasSpan (USA) and Fiber Splint (Switzerland). - on the basis of the organic matrix

of polyethylene Ribbond (USA) and Connect (USA), which are made of many of the thinnest fibers d = 3-5 microns, which are woven together. It is quite difficult to unequivocally answer which of the fittings is better. There is data that polyethylene tires have better adhesion due to special plasma treatment - activation and are better permeated by the composite, which is important because it allows the composite to create a stronger single unit with the tape; they have better biocompatibility with the tissues of the human body because they are made of bioinert glass and not plates. The advantage is that their modification is produced in the form of a hollow flagellum, which significantly expands the scope of application: the flagellum is optimal for splinting lateral teeth using the technique of creating a groove, for restoring a single defect of the dentition or as an alternative to intra-root pins. Application of the "Fiber-Splint" system in the treatment of periodontal diseases and the replacement of single defects of the dentition. The basis of the "Fiber-Splint" system is a 4 mm wide, 0.06 mm thick microfiber quartz tape and light-curing unfilled "Fiber-bond" bonding. Due to the microfiber structure, "Fiber-Splint", which is impregnated with light-curing bonding, after being illuminated with a halogen lamp for polymerization, forms a strong structure with an internal spatial framework. In patients with periodontal diseases, at the first stage, all supragingival and subgingival deposits were removed, followed by polishing of the tooth surfaces and the use of drug therapy.

On the second to third day, a splint made of "Fiber Splint" was applied from the oral surface, and sometimes from the vestibular surface. Technology of applying a splint: 1. Preliminary abrasive treatment of the surface of the teeth to create retention points. 2. Etching of the tooth surface. 3. Applying the bond to the surface of the teeth. 4. Step-by-step application of the tape to the tooth row with insertion into the interdental space and illumination of the surface. At the end, the tire is covered with a thin layer of composite followed by polishing. When making a splint, for hygienic reasons, it is necessary to leave the gaps between the teeth open during brushing. When replacing single defects, it is possible to make a tooth from a photocomposite, which is fixed on a splint between adjacent teeth. With this type of work 19, it is necessary to make tires so that the part that can withstand the main load is pushed forward and passes through the thickness of the artificial tooth. It is recommended to strengthen the middle part of the tire with additional layers of "Fiber Splint". In the course of splinting, a number of conclusions were made that can be recommended to all doctors: - splinting of mobile teeth with 1 degree of mobility does not require the creation of a special groove (puncture), and with 2-3 degrees - it does. - periodontal splinting is not recommended for patients with a low level of compliance with the rules of personal hygiene.

Observations show that when the patient has high values of hygiene indices, the probability of the splint's short life increases significantly, since the design will already be an additional retention factor for dental plaque; - it is important to check that the splint leaves the interdental spaces open so that the patient can maintain full oral hygiene. A special point in the further hygienic care of the tire is the use of superfloss or yorshiki. Upon completion, an X-ray evaluation of the results before splinting and 6 months after it is performed. The effect of splinting is clearly visible

at the level of bone tissue in relation to the root of the tooth. If it is planned to prepare teeth that are splinted, then a wire splint, which is made of ligature or staple wire, can serve as an effective alternative to non-metallic reinforcement. A good effect is given by the additional fixation of the wire splint to the hard tissues of the teeth with the help of parapulpary pins.

There is a Splint-lock System kit, which includes a braided wire splint with holes for parapulpal pins, a set of pins. Another promising and highly effective temporary structure is a splint made on vacuum-forming machines, a Biostar or Mini Star splint made of rigid transparent polycarboxylate material Imprelon S. It is removable, easily manufactured and fitted in the oral cavity, provides reliable fixation both in horizontal , and vertical planes, has a satisfactory appearance, can restore end and included defects of the dentition. Sometimes, at the stage of preliminary orthopedic treatment, it is possible to use complex biogenic splinting prostheses, when the process is generalized and has a uniform character, and the bone destruction does not exceed 1/2 of the length of the tooth roots. The final orthopedic interventions are carried out when the reparative processes in the periodontium after surgical intervention are completed. In the case of an unfavorable forecast, long-term structures with a service life of 2-3 years are made (temporary ones - for 2-6 months). In recent years, semi-permanent (according to the American Academy of Periodontology – these are splints whose term of use is planned for an interval of one month to one year) reinforcement splinting, which does not require significant preparation of the abutment teeth, and which consists of reinforcement, began to be used as a basic method of periodontal splinting and composite material. The following requirements apply to such structures:

1) accuracy and reliability of reproduction of the surface relief of the teeth, especially in contact areas;

2) good adhesion to the tooth surface;

3) fixation on the lingual/palatal surface of splinted teeth;

4) obtaining a rigid frame that redistributes functional loads due to the fact that the bending strength of the reinforcement is supplemented by the high compressive strength of the composite material;

5) high aesthetics;

6) making a tire in one visit.

According to the chemical composition, tire reinforcement materials can be divided into three groups:

1) based on an organic matrix - polyethylene (main representatives of this group: RIBBOND (RIBBOND, USA), CONNECT (SDS/KERR, USA).

2) based on an inorganic matrix of fiberglass or ceramic fibers: SPLINT-IT (QENERIC/PENTRON, USA), STICK TECH (STICK TECH, Finland), GLAS SPAN (GLAS SPAN, USA), FIBER SPLINT (POLYDENTIA, Switzerland).

3) on a metal base: SPLINTMAT – FINE (PULPDENT, USA), SPLINTLOCK (COLTENE/WHALEDENT, Switzerland).

Indications for the use of these materials are: 1) splinting of mobile (I, II, III degrees) teeth with primary and secondary traumatic occlusion in the complex treatment of periodontal diseases; 2) use as a retainer to consolidate the results of

orthodontic treatment; 3) direct prosthetics in case of removal of one of the front teeth, in particular, using its crown part; 4) immobilization of a tooth in case of traumatic dislocation or subluxation. Timing of semi-permanent splinting: - With tooth mobility (III degree) - before periodontal surgery. - With tooth mobility (I-II degrees) - after periodontal surgery. Two main techniques are used in the manufacture of reinforcing splinting structures, depending on the degree of pathological mobility of the teeth: without creating a groove (cut) on the surface of the teeth - in case of minor mobility (more often I and II degrees) and with the creation of a groove (cut) - in case of significant mobility. The advantages of the indirect method of creating an adhesive splint include: - ease and good access to the surface of the teeth on the working model of the jaw; - possibility of more thorough and accurate performance of all operations, including polymerization and polishing; - reducing the dentist's working time due to the creation of a tire by his assistant or dental technician in the laboratory. For splinting the lateral groups of teeth, the technique of making a groove on the chewing surfaces is almost always used. It is considered optimal 21 in this clinical situation to use GlasSpan - in the "tourniquet" modification, which is also optimal for the restoration of a single defect in the manufacture of an adhesive reinforcing bridge ("pontic"). Contraindications to semi-permanent splinting: - Tooth mobility of more than III degree. - Makes it impossible for the patient to observe specific rules of oral hygiene. - Bite anomalies. Direct prosthetics (immediate prostheses) Direct prosthetics are distinguished, when the prosthesis is made before the tooth extraction operation and applied immediately after the end, but no later than 24 hours. Early or approximate prosthetics - manufacturing and applying prostheses during the wound healing period, in the first two weeks after surgery. Late or remote prosthetics - after wound healing, but not earlier than 1.5-2 months after surgery.

Direct prosthetics is an intermediate stage of orthopedic treatment, which ends with permanent prosthetics. Indications for the manufacture of immediate prostheses: 1) removal of front teeth, 2) removal of the last pair of antagonizing teeth and, thus, the fixed interalveolar height is lost, 3) removal of the Nth number of teeth, can lead to functional overload of the teeth. remaining ones, 4) removal of lateral teeth in case of deep bite, 5) systemic periodontal disease, 6) removal of teeth in case of diseases (or their signs) of the temporomandibular joint, resection of the alveolar process and jaws. The most appropriate primary prosthesis is a removable lamellar prosthesis with retaining or support-retaining clasps.

3.2. recommendations (instructions) for performing tasks (professional algorithms, orientation maps for the formation of practical skills and abilities, etc.);

3.3. requirements for work results, including registration;

— Conduct an examination.

— Analyze the results of the examination of a dental patient.

— Make a plan for additional examination of the patient.

— Explain the results of clinical and special (additional) research methods.

4. Summary:

— Anamnesis of the patient. Main complaints. Medical history. Dental history.

— Examination. External overview. Reduction of the lower third of the face, expressiveness of nasolabial and chin folds, degree of mouth opening (free, difficult). Temporomandibular joint. Examination of the masticatory muscles.

— Intraoral examination. Assessment of the state of bone and mucous formations affecting the fixation of the prosthesis in the oral cavity.

— Determination of mobility and flexibility of the mucous membrane.

— Diagnosis. Plan and objectives of orthopedic treatment.

5. List of recommended literature (main, additional, electronic information resources):

Main:

- Orthopedic dentistry: textbook / Rozhko M.M., Nespryadko V.P., I.V. Paliychuk and others; under the editorship M.M. Rozhka, V.P. Nespryadka.- K.: Medical University "Medicine"; 2020. - 720 p.

- Rozhko M.M., Nespryadko V.P., Mykhaylenko T.M. and others. Dentoprosthetic technique. K.: Book plus; 2016. 604 p.

- Rozhko M.M., Popovych Z.B., Kuroyedova V.D. Dentistry. Textbook. K.: Medical University "Medicine"; 2018. 872 p.

Additional:

Dentistry: in 2 books. : textbook. Book 2 / M.M. Rozhko, I.I. Kirylenko, O.G. Denisenko and others. ; under the editorship M.M. Horn — 2nd edition. — K.: VSV "Medicine", 2018. — 992 p. ; color kind.

- Material science in dentistry: a study guide / [Korol D.M., Korol M.D., Ojubeiska O.D. etc.]; in general ed. King D.M. – Vinnytsia: New book, 2019. – 400 p.

Electronic information resources:

- State Expert Center of the Ministry of Health of Ukrainehttp://www.dec.gov.ua/index.php/ua/

- National Scientific Medical Library of Ukrainehttp://library.gov.ua/

- National Library of Ukraine named after V.I. Vernadskyihttp://www.nbuv.gov.ua/

Practical lesson No. 19

Topic:Tires and prosthetic tires, classification. Removal of traumatic occlusion, temporary and permanent splinting; designs of removable and non-removable tires and prosthetic tires. Indication.

Goal:to study the classification of inflammatory periodontal diseases. Learn the clinical manifestations of periodontal tissue diseases and be able to distinguish between them. Carry out differential diagnosis of traumatic occlusions. The use of splints in the treatment of periodontal tissue diseases.

Basic concepts:examination of a dental patient, dental instruments for examination, X-ray diagnostics, occlusion, traumatic occlusion, periodontism.

Equipment:Computer, phantoms, examination instruments, X-rays

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Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).

2. Control of the reference level of knowledge:

2.1. requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units);

Know:

— structure of the upper jaw;
— structure of the lower jaw;
— structure of the temporomandibular joint;
— the structure of the mucous membrane of the oral cavity.
— tooth structure
— to know the classification of dentition defects

Be able:

— determine the relationship between the upper and lower jaws;
— to examine the patient
— read x-rays

2.2. questions (test tasks, tasks, clinical situations) to check basic knowledge on the subject of the lesson.

— Examination. External overview. The degree of reduction of the lower third of the face, the expression of facial skin folds, the degree of mouth opening (free, difficult).
— Examination of the temporomandibular joint.
— Examination of the masticatory muscles.
— Examination of teeth and dentition

3. Formation of professional skills, skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.):

3.1. content of tasks (tasks, clinical situations, etc.);

To perform their primary function of chewing food, the teeth must be firmly anchored in the jaw bone. This is provided by a whole complex of different tissues: bone (cellular process of the jaw), connective apparatus of the periodontium, gums covering the bone tissue of the cellular (alveolar) process. Normally, such a complex reliably holds the teeth in the bone tissue of the jaws, and the gums protect it from injury by solid food particles and the penetration of microorganisms. The term periodontium unites a complex of anatomical formations: gums, periodontium, bone

tissue of the cell and cementum of the root of the tooth, which have common sources of innervation and blood supply and form a single entity. The generalized concept of the periodontium testifies to the genetic and functional unity of the tissues that surround the tooth. Periodontal tissues have mesenchymal (periodontium, bone of the cellular process, cementum, dentin, pulp of the tooth) and ectodermal (tooth enamel, cuticle) origin. The periodontium performs a number of important functions: 1) support and cushioning — keeps the tooth in the cell, distributes the chewing load and regulates the pressure during chewing; 2) barrier - forms a barrier that prevents the penetration of microorganisms and harmful substances into the root area. ; trophic — provides cement nutrition; 4) reflex - due to the presence of a large number of sensitive nerve endings in the periodontium. According to the classification of periodontal diseases ICD-10 K05 K05.2 Acute periodontitis K05.3 Chronic periodontitis WHO classification According to the prevalence of the process: 1. Localized 2. Generalized According to the degree of severity: 1. Mild degree 2. Medium degree of severity 3. Severe degree According to the course: 1. Acute 2. Chronic: a. period of exacerbation b. period of remission According to the stage of the disease 1. Initial 2. Progressive Such conditions, in which the periodontium is subjected to loads that exceed its reserve compensatory capabilities and lead to its damage, were named "Functional traumatic overload", "occlusal injury", "injury in as a result of occlusion", "traumatic occlusion", etc.

Various causes and mechanisms of development of traumatic occlusion are possible. If excessive damaging chewing pressure acts on teeth with a healthy periodontium unaffected by the pathological process, then such a traumatic occlusion is defined as primary. It can occur in the case of traumatic overloading of the teeth as a result of overbite (filling, crown, mouth guard, orthodontic apparatus, etc.), anomalies of the bite and individual teeth, loss of many teeth, pathological wear, etc. Quite often, primary traumatic occlusion occurs as a result of parafunctions: bruxism, tonic reflexes of masticatory muscles; with shifts of the lower jaw due to loss of teeth, incorrect prosthetics. Thus, primary traumatic occlusion occurs as a result of an excessive (compared to normal, physiological) chewing load on the teeth or a change in its direction. It should be noted that primary traumatic occlusion is a reversible pathological process. On the other hand, against the background of the pathological process in the periodontal tissues, the usual normal chewing load begins to exceed the reserve forces of the periodontium. As a result of resorption of alveolar bone and periodontal fibers, the tooth cannot resist the usual chewing pressure that it could bear with an intact periodontium. This usual occlusal load begins to exceed the tolerance of its structures and turns from a physiological load into a factor that injures and destroys periodontal tissues.

In addition, in these cases, the ratio between the height of the clinical crown and the length of the root changes. The increased height of the clinical crown, under horizontal load, working as a lever, causes a significant overload of the bone walls of the alveolus. This leads to a significant increase in overloads that destroy the periodontium, intensifies the existing occlusive trauma and accelerates the resorption of the bone tissue of the sockets. Such a traumatic occlusion is defined as secondary. It is most often found in generalized periodontitis and largely determines the further

progression of this disease. A closed circle of pathological changes is formed: traumatic occlusion occurs against the background of changes in the periodontium, and in the future, it contributes to the further progression of the destruction of the alveolar bone and other periodontal tissues. Usually, with secondary traumatic occlusion, resorption of periodontal tissues (periodontium, bone of the alveolar process) and hard tissues of the teeth (cementum, dentine) occurs. In contrast to primary traumatic occlusion, damage and death of the pulp with subsequent development of periodontal inflammation occurs quite rarely. Secondary traumatic occlusion occurs against the background of developed pathological changes in periodontal tissues. Their first manifestations initially lead to swelling of periodontal tissues (gums, periodontium). This causes teeth to protrude from the alveoli in the affected area of the tooth row.

Therefore, such teeth are the first to come into contact with antagonistic teeth of the opposite jaw, which causes their additional overload. At the same time, during swelling, periodontal fibers are stretched, and in such teeth, an increase in the degree of their mobility is observed (compared to normal physiological). This leads to a condition in which the teeth, even in a slightly affected part of the dentition, begin to evade the physiological chewing load and normal abrasion of their hard tissues does not occur. The development of this pathological situation leads to further overloading of the teeth in the area with the affected periodontium, and the pathological cycle is closed. As a result of pathological changes in the periodontal tissues, the degree of their mobility increases, as a result of which their chewing humps do not wear out. This leads to horizontal overloading of such teeth during lateral chewing movements of the lower jaw. Such a change in the direction of the load creates an even more traumatic effect on the periodontium. Under the influence of horizontal overload, there is a shift and inclination of the teeth in different directions: in the lingual, vestibular directions, rotation of the teeth around the vertical axis, their protrusion from the dental row, etc. And in this way, with the further development of traumatic occlusion, various disorders of the position of the teeth appear. As a result, these teeth find themselves in even more unfavorable conditions for the perception of the chewing load, and the pathological situation intensifies and progresses. In general, it is necessary to note the more destructive effect of the horizontal component of traumatic occlusion on periodontal tissues. The final result of this action is the complete destruction of the periodontal tissues, which is combined with atrophy of the cementum and dentine of the tooth roots. The adverse effect of traumatic occlusion intensifies when teeth are removed. The teeth within the dental row function as a single anatomical formation, while the chewing load is evenly distributed over the entire dental row. This happens through the contact of individual teeth with each other. When teeth are lost or removed, the resistance from the neighboring teeth disappears, which compensates for a certain horizontal component of the chewing load.

Such teeth begin to perceive the load in isolation, and the tooth rows cease to act as a single system. The resulting overload of such teeth leads to their inclination towards the defect of the dentition. At the same time, the contact of the tooth with the neighboring teeth disappears and the pathological situation worsens even more. All

this is aggravated by significant atrophy of the bone of the alveolar process at the place of application of excessive masticatory pressure. Bite anomalies and the position of individual teeth create a significant damaging effect on the periodontal tissue. In these areas, there is a significant accumulation of food residues, microorganisms, the formation of dental plaque and tartar. This entire complex acts on the periodontal tissues with the help of various factors: mechanical, chemical, biochemical; creates a sensitizing effect, etc.

In addition, significant functional overload of periodontal tissues occurs in these areas, which is characterized by the development of traumatic occlusion in this area. Occurring occlusal trauma further increases the damaging effect of dental deposits in the place of anomalous location of teeth. Pronounced changes develop with a deep bite in the frontal part of the tooth row, since these areas are overloaded with vertical and horizontal movements of the lower jaw. With a distal bite, this is exacerbated by the resulting significant horizontal overload of the teeth, which later manifests itself in the fan-shaped divergence of the upper front teeth. With medial, on the contrary, their shift occurs in the palatal direction. In the frontal area of the lower jaw, there is a shift of the teeth and their crowding. Among the general factors that reduce the resistance of the body and create prerequisites for the occurrence of periodontal diseases, it should be noted endocrine (diabetes, disorders of the hormonal function of the reproductive system, etc.), neurosomatic diseases (rheumatism, metabolic disorders, etc.), blood diseases, disorders nutrition (hypovitaminosis C, B, A and others), diseases of the gastrointestinal tract, decreased body reactivity. Inflammatory diseases of the periodontium can be considered as the result of an imbalance between the bacterial symbiosis and the tissues of the oral cavity.

THE ROLE AND PLACE OF ORTHOPEDIC TREATMENT IN THE COMPLEX THERAPY OF PERIODONTAL TISSUE DISEASES

Orthopedic treatment occupies a prominent place in the complex therapy of periodontal tissue diseases. It is carried out with the aim of prevention, elimination or reduction of functional overload of periodontal tissues, which at a certain stage of the disease is one of the main pathological factors determining the course of the disease. Elimination or reduction of functional overload of periodontal tissues with the help of orthopedic structures creates new conditions under which dystrophic processes and inflammation develop much more slowly. In order to reduce functional overload and facilitate the periodontium's performance of its functions, it is necessary to: 1) restore lost unity to the dentition and transform it into an inseparable whole; 2) correctly distribute chewing pressure, relieve teeth with affected periodontium; 3) prevent the traumatic effect of horizontal tooth overload; 4) in case of partial loss of teeth, it is necessary to carry out prosthetics, including direct ones. When planning and carrying out treatment, it is necessary to take into account clinical and X-ray data indicating the condition of the gums, changes in the bone base, the location and depth of the pockets, pathological mobility of the teeth. The causes of periodontal tissue diseases are very diverse, because always at a certain stage of the development of the disease there is a functional overload of the supporting apparatus and a traumatic occlusion, which cannot be eliminated either by therapeutic or surgical methods. In this case, only orthopedic treatment can provide a positive result in the complex therapy of

periodontal tissue diseases. Treatment is carried out comprehensively, with the use of general and local means. Local treatment measures are therapeutic, surgical and orthopedic in nature. Orthopedic treatment must be started at the same time as therapeutic treatment, but after the necessary remedial procedures have been carried out (tartar removal, tooth root removal, removal of inflammatory processes). Special methods have been developed for the treatment of periodontal tissue diseases in the orthopedic dentistry clinic: 1) selective grinding; 2) temporary splinting; 3) orthodontic treatment; 4) use of permanent structures of splints and prostheses; 5) direct prosthetics. Effective use of orthopedic methods of treatment of diseases of periodontal tissues is possible only with deep knowledge of the laws of biomechanics. Splinting of teeth is based on the following biomechanical principles: 1. The splint, which is fixed on the teeth, due to its rigidity limits the degree of their mobility. Teeth can move. only together with the tire and in the same direction as it. Usually, the amplitude of oscillations of the tire is much smaller than the amplitude of oscillations of individual teeth. Reducing the pathological mobility of teeth has a beneficial effect on the diseased periodontium. 2. The splinting structure, which unites the frontal and chewing groups of teeth into a block, relieves their periodontium during biting or chewing food. This effect increases due to the increase in the number of teeth that are splinted. Fig. visible that when biting off food, pressure falls on the two upper and two lower front teeth. After splinting, this pressure is distributed over the entire group of front teeth, whose periodontium, even according to the roughest calculation, has 2-3 times more opportunities to absorb chewing pressure. 3. The load in the splint block is primarily perceived by teeth that have less pathological mobility, which, in turn, leads to a decrease in the load on teeth with affected periodontal tissues. From the above, a very valuable practical recommendation follows, according to which both more and less mobile teeth should be included in the tire-shaft block. In the front part of the dentition, such teeth are most often canines. 4. If the teeth are placed along an arch, the curvature of which is most pronounced in the frontal part, then their movements in the buccal-lingual direction are carried out in intersecting planes, and the splint unit that unites them turns into a rigid system. 5. Splint construction placed along an arc is more resistant to the action of external forces, lower splint placed linearly. 6. In the case of linear placement of the tire, when all teeth have mobility of the I-II degree, oscillation is possible during lateral efforts. To neutralize transverse vibrations, the tire must be connected to a similar one, but placed on the opposite side. This can be done with the help of a brace prosthesis.

For the successful use of splints in a clinic of orthopedic dentistry, they must meet strict requirements:

1) create a strong block from a group of teeth, limiting their movements in three directions - vertical, posterior, perioral-oral and mediodistal;

2) be rigid and firmly fixed on the teeth;

3) be rigid and firmly fixed on the teeth;

4) not to interfere with medical and surgical treatment of gum pockets;

5) not to create retention points for delaying leftover food;

6) not to create blocking moments for the movements of the lower jaw with its occlusal surface;

7) not to disturb the patient's speech;

8) not to cause gross violations of the patient's appearance;

9) the manufacture of a splint should not be associated with the removal of a significant amount of hard tooth tissue;

A splint is a device for immobilization (complete immobility or significantly reduced mobility) of a group of teeth or the entire tooth row. The requirements for splints: 1. to create a strong block from a group of teeth, limiting their movements in three directions: vertical, vestibulo-oral, medio-lateral (for front) and anteroposterior (for lateral); 2. be hard and firmly fixed on the teeth; 4. not to interfere with medical and surgical therapy of the gum pocket; 5. do not have retention points for delaying food 6. not to create blocking moments of the movement of the lower jaw with its occlusal surface 7. not to disturb the patient's speech; 8. not to cause gross violations of the patient's appearance; 9. the manufacture of a splint should not be associated with the removal of a large layer of hard tissues of the tooth crowns. The decision on the need for splinting is made based on the assessment of tooth mobility, which characterizes the functional state of the periodontium. With a loss of 1 / 2 of the length of the root of the tooth, the splinting plane is horizontal (mesiodistal and transverse direction).

In case of loss of 3/4 of the length of the tooth root, horizontal and vertical splinting. After determining the splinting plane, you should choose the type of stabilization - sagittal (within the lateral part of the tooth row), frontal (front part); fronto-sagittal, parasagittal, along the arc, along the arc in combination with the parasagittal. Periodontal disease complicates orthopedic treatment to varying degrees. Even in simple cases, for example, when restoring uncomplicated defects of the dentition, periodontal diseases lead to difficulties in choosing teeth to perform the support and retention function of the fixing elements of prostheses.

With the preservation of a full dentition with a weakened periodontium, orthopedic treatment involves splinting the movable teeth, their union into a single block. More often, it is necessary to splint and restore the integrity of the tooth row at the same time. Orthopedic structures used in the course of comprehensive treatment of periodontal diseases are represented by: 1. structures made before therapeutic and surgical treatment - temporary; 2. Permanent or long-term prostheses. Temporary splinting Temporary prostheses are made in order to restore defects of the dentition and splint existing teeth. The method of temporary splinting is used in the advanced stage of generalized and focal chronic periodontitis, less often in the period of exacerbation at the initial stage. Temporary splints are used throughout the entire period of complex treatment until the moment of permanent splinting apparatus. Temporary splinting allows you to eliminate the traumatic effect of pathological mobility and chewing function, that is, to eliminate one of the pathogenetic mechanisms that support hemodynamic disorders in periodontitis. The splint provides an even distribution of chewing pressure between the periodontium of the teeth included in the splint, creates peace for the affected tissues and helps increase the effectiveness of pathogenetic and symptomatic therapy.

Based on the vascular-biomechanical hypothesis, the use of a temporary splint allows you to break the pathogenetic chain of inflammation-blood supply dystrophy-chewing function, which contributes to the improvement of periodontal tissue trophism, removal of the inflammatory process. It is unacceptable to perform gingivotomy and gingivectomy without first making a temporary splint. With generalized periodontitis, all teeth are included in the splint, providing immobilization along the arch. In case of focal periodontitis, the length of the splint depends on the localization of the lesion and its relationship with the teeth in which the periodontium is not affected: the splint must necessarily include teeth with unaffected periodontium in the block. It is quite difficult to unequivocally answer which of the fittings is better. There is data that polyethylene tires have better adhesion due to special plasma treatment - activation and are better permeated by the composite, which is important because it allows the composite to create a stronger single unit with the tape; they have better biocompatibility with the tissues of the human body because they consist of bio-inert glass rather than plates.

The advantage is that their modification is produced in the form of an empty flagellum, which significantly expands the scope of application: the flagellum is optimal for splinting lateral teeth using the technique of creating a groove, for restoring a single defect of the dentition or as an alternative to intra-root pins. Permanent splinting Permanent splints are used as medical devices to immobilize teeth for a long time. The patient uses such tires constantly. Depending on the topography of the dentition defect, prevalence and degree of periodontal destruction, permanent structures can be removable, non-removable and combined. Fixed splints Fixed prostheses are better than removable ones, because they fix the teeth in horizontal and vertical planes. They provide reliable attachment of movable teeth, forming a block of them that can resist as a whole the horizontal and vertical forces that develop during chewing. They hardly disturb speech, and patients quickly get used to them. The main problem in manufacturing is ensuring reliable fixation of the tire or tire-prosthesis to the splinted tooth.

The structure must be rigid enough and fit exactly to the prosthetic bed, which also has a sufficient contact area. It is possible to increase the contact area and increase resistance to lateral displacement by introducing parapulpary or intracanal pins into the structure. The most reliable non-removable structure should be recognized as the one that fixes the element of which is a solid-cast lined or unlined crown ("solid-cast non-removable tires"). The stiffness of the solid cast crown splint-prosthesis depends on the material from which the structure is made. The cross-section of the structure (directly proportional) and its length (inversely proportional).

It is possible to increase the stiffness of the structure by increasing the cross-section, for example, by creating a garland from the palatal (lingual) surface. To ensure the necessary rigidity, the structure is supplemented with a palatal brace fixed on T-bolts. Grooves for latches are formed in the region of the second premolars or first molars. The structure is placed on temporary cement for a period of up to 3 months, and if during this period of time it is found that the structure is not rigid enough (this is manifested by chipping of the lining, loosening of the cement, exacerbation of the inflammatory process in the periodontium), then it is necessary to

redo the structure. Currently, indications for the use of metal-ceramic structures are expanding, and metal-ceramic prostheses can be used in mild and moderate periodontitis.

Metal-ceramic prostheses have a number of positive properties:

•the biological inertness of ceramics (unlike plastic) excludes trauma to the marginal periodontium;

•on the glazed surface of metal-ceramic prostheses, the conditions for the formation of plaque are much less favorable.

The field of application of non-removable structures is limited by included defects. The abutment tooth must be quite stable, have enough bone support. In another case, the manufacture of removable splint constructions (byugelnoy) is shown. It reliably splints the tooth row in the horizontal plane and provides any type of stabilization of the tooth row. The open marginal periodontium of the existing teeth allows you to avoid trauma to the gums during the use of the prosthesis. The disadvantage is that single-piece clamps are not enough to fix the tooth in the vertical direction. This problem can be solved with the help of hybrid prostheses, i.e. prostheses in the design of which there are both clip-on fixing elements and locking elements (for example, rigid fixators, i.e. telescopes). Bügel prostheses with claspless fixation require the manufacture of anchor crowns, due to which the entire structure turns into a type of combined removable (non-removable) prostheses. Removable splints The splinting properties of removable splints are provided by various combinations of continuous support-retaining and reversible staples, as well as various forms of occlusive overlays. Their spread was facilitated by the development of parallelometry techniques, precision casting on refractory models, the use of chrome-cobalt alloys and alloys of precious metals. Removable splints can be used to splint one group of teeth or the entire tooth row. When immobilizing the front teeth, it is desirable to bring the splint to the premolars, and when splinting the lateral ones - to the canines. Removable tires can be included in the design of the arch prosthesis as its component part. These are prostheses tires: 1. tire of the continuous clamper type; 2. tire-kappa; 3. a single tire for the entire tooth row.

Comparative assessment of removable and non-removable tires Both types of tires have positive and negative properties. The positive properties of non-removable tires include:

1) their ability to provide blocking of the system in three directions: vertical, transversal, mediodistal;

2) leaving the gingival pocket open (the exception is a block of full crowns), making it available for medical and surgical (curettage) therapy;

Patients quickly get used to non-removable splints, and phonetic disorders rarely occur and are quickly eliminated without the help of a doctor. Negative properties of non-removable splints: 1. the need for tooth preparation, which is accompanied by gross trauma to the enamel and dentin; 2. the use of pin splints involves the removal of the pulp, which creates a danger of the development of apical periodontitis when filling the canals; 3. non-removable tires are difficult to put on with a fan-like divergence of the teeth; 4. the constructions of cap tires are weak and break along the soldering line, re-cementing takes place; 5. non-removable splints worsen oral

hygiene. The splinting properties of non-removable splints are provided by staples, claw-retracting processes and occlusive overlays. They create immobilization in only two directions: vestibulooral, mediolateral (for front teeth) or mediodistal (for lateral teeth). These tires do not always create fixation in the vertical direction. Removable splints are easy to clean, less likely to disturb oral hygiene. Violations of aesthetics are minimal. The advantage is the possibility of using them for the prevention of functional overload of the periodontium, with defects of the tooth rows with signs of periodontal disease, but without pathological mobility of the teeth. The production of removable splints is carried out in the laboratory, in the oral cavity of the patient, manipulations are reduced. This also refers to the advantages of this type of tire. The disadvantages of such tires include the fact that great accuracy is required in their manufacture: the mandatory use of parallelometry and precision casting on refractory models. If the accuracy of application and removal of the splint is violated, overloading of the periodontium of individual teeth is possible. Indications for including teeth in a splint Indications for including teeth in a splint depend on the amount of atrophy of the dental alveolus and the form of periodontal disease.

Teeth with mobility of the III degree are subject to removal. It is necessary to remove teeth with mobility of the II degree, if there is atrophy of more than 2 / 3 of the socket. Teeth with mobility of the first degree with atrophy of the socket by more than half in periodontitis are removed, and in periodontosis they must be included in a splint. With chronic periapical changes, teeth with mobility of the I degree and with well-sealed root canals are subject to splinting. With poor obturation of the root canal, the tooth can be included in the splint only in the absence of changes in the apical periodontium and a calm clinical course (absence of pain before treatment and 3-4 weeks after it). In case of exacerbation of chronic periodontitis, the tooth is not included in the splint. Teeth with II-degree mobility and chronic periapical foci, even if the canals are well sealed, should not be splinted. The presence of a fistula is a contraindication to including a tooth in a splint block, even if the canal is sealed. The main types of splinting The direction of pathological mobility of any tooth is always distinct and depends on its location in the dental arch. For molars and premolars, the lines of their mobility lie in almost parallel planes, for incisors and canines - in planes located at an angle to each other. The best result when splinting is achieved if the splint unites the teeth, the lines of mobility of which lie in intersecting planes. A splint is used for the front group of teeth, which unites the incisors and canines.

This is front immobilization. It is convenient because, firstly, the periodontium of the canines is less affected and takes on part of the pressure, relieving the weakened periodontium of the incisors, secondly, the unity of a group of teeth that have the same function is restored, thirdly, the teeth are located in an arc, in the connection due to this, the tire acquires great stability. Immobilization of the teeth, in which the tire is located in the anterior-posterior direction, is called lateral (sagittal). Lateral immobilization allows you to create a block of teeth resistant to forces developing in the vertical, transverse and anteroposterior directions. With a certain degree of atrophy of the holes, this is enough to reduce the functional load and obtain a therapeutic effect. Peculiarities of prosthetics for patients with dentition defects in periodontitis and periodontitis. The features of the clinical picture of the

periodontium, complicated by tooth loss, include the appearance of an additional functional load caused by a decrease in the number of teeth.

The number of lost teeth, the location of the defect, the type of bite, and the degree of atrophy of the alveolar part are of great importance for the development of the disease in these conditions. When the side teeth are lost, the front ones receive an additional load. In this connection, the mobility of the teeth increases, the upper incisors and canines diverge fan-like, moving forward, the gaps between them increase, the interalveolar height decreases, and as a result, the lower third of the face decreases. At the same time, the position of the lower head of the lower jaw in the articular fossa changes, there is a danger of functional overload of the joint. All the mentioned features of the course of periodontitis and periodontitis with partial loss of teeth determine the nature of orthopedic therapy. It consists in splinting the preserved teeth and prosthetics of the defect. It is fashionable to divide patients with periodontal diseases and dental continuity into three groups. The first group includes patients with included, the second - with terminal (unilateral and bilateral) defects of the dental arch; the third group consists of patients with multiple defects and small (2-3) groups of teeth. When the defect is located in the front part of the tooth row, prosthetics is carried out with the help of various types of bridge prostheses. The rest are the remaining teeth. A bridge prosthesis is a splint. If the defect is large (loss of canines, premolars), the remaining root teeth are splinted with a permanent splint, and the defect is replaced with a removable prosthesis. With one-sided and two-sided included defects, which are formed during the removal of 1-2 molars and premolars, splinting is carried out with bridge prostheses, the supporting elements of which are equatorial and full crowns. A decrease in the height of the body of the bridge prosthesis leads to a decrease in the area of its adhesion to the crown, which causes the failure of the prostheses. In these cases, cast structures or small saddle-shaped prostheses with clasps on the teeth, blocked with non-removable splints, are used.

Bridge prostheses are contraindicated if the distal tooth is mobile. For this, splinting with an arched prosthesis with a continuous clasper and claw-like processes is used for the mobility of the front teeth. Removable splint prostheses are indicated for large included defects, significant damage to the periodontium, or the absence of sufficiently strong distal support. An arched prosthesis is used, which allows for transverse stabilization. The front group of teeth splinting with non-removable splints. With high mobility of the teeth, splinting can be strengthened by including a multi-link clasper in the lower arch prosthesis, thanks to which the front teeth receive additional support from the lingual side. You can also create a circular fixation.

For this, the multi-link stapler is supplied with claw-like appendages. Better circular fixation is achieved with a mutual combination of non-removable splints and splinting removable prostheses. A correctly selected and carried out set of orthopedic interventions, aimed not only at the restoration of dentition defects, but also at the reliable stabilization of the remaining teeth, contributes to the normalization of occlusal loads, periodontal trophism and reparative processes in its tissues, thereby increasing the effectiveness of periodontal disease treatment. In order to optimally choose an orthopedic design for patients with periodontitis complicated by secondary dentition, it is necessary to determine the algorithm of examination of these patients.

When examining the oral cavity, attention is paid to the condition, number, location of the teeth, the presence of periodontal pockets, the condition of the tissues of the prosthetic bed, and hygiene.

The degree of tooth mobility is related to the load and depth of destruction of the tooth's connective tissue and the course of the inflammatory process in the periodontium. The most pronounced mobility of the teeth in the vertical form of resorption of the alveolar process and the acute course of inflammation, which has worsened, the elimination of which is usually carried out by a significant decrease in mobility, stabilization of the teeth. Mobility is characterized by the direction and degree of deviation of the tooth from its normal position. There are three degrees of movable teeth: I - the tooth tilts in the vestibular-oral (labial-lingual) direction within the width of the cutting edge (1-2 mm); II - in addition to the degree of mobility specified in I, there is mobility in the mediodistal direction; III-in addition to those indicated, the tooth is visually movable in the vertical direction.

3.2. recommendations (instructions) for performing tasks (professional algorithms, orientation maps for the formation of practical skills and abilities, etc.);

3.3. requirements for work results, including registration;

— Conduct an examination.

— Analyze the results of the examination of a dental patient.

— Make a plan for additional examination of the patient.

— Explain the results of clinical and special (additional) research methods.

4. Summary:

— Anamnesis of the patient. Main complaints. Medical history. Dental history.

— Examination. External overview. Reduction of the lower third of the face, expressiveness of nasolabial and chin folds, degree of mouth opening (free, difficult). Temporomandibular joint. Examination of the masticatory muscles.

— Intraoral examination. Assessment of the state of bone and mucous formations affecting the fixation of the prosthesis in the oral cavity.

— Determination of mobility and flexibility of the mucous membrane.

— Diagnosis. Plan and objectives of orthopedic treatment.

5. List of recommended literature (main, additional, electronic information resources):

Main:

- Orthopedic dentistry: textbook / Rozhko M.M., Nespryadko V.P., I.V. Paliychuk and others; under the editorship M.M. Rozhka, V.P. Nespryadka.- K.: Medical University "Medicine"; 2020. - 720 p.

- Rozhko M.M., Nespryadko V.P., Mykhaylenko T.M. and others. Dentoprosthetic technique. K.: Book plus; 2016. 604 p.

- Rozhko M.M., Popovych Z.B., Kuroyedova V.D. Dentistry. Textbook. K.: Medical University "Medicine"; 2018. 872 p.

Additional:

Dentistry: in 2 books. : textbook. Book 2 / M.M. Rozhko, I.I. Kirylenko, O.G. Denisenko and others. ; under the editorship M.M. Horn — 2nd edition. — K.: VSV "Medicine", 2018. — 992 p. ; color kind.

- Material science in dentistry: a study guide / [Korol D.M., Korol M.D., Ojubeiska O.D. etc.]; in general ed. King D.M. – Vinnytsia: New book, 2019. – 400 p.

Electronic information resources:

- State Expert Center of the Ministry of Health of Ukrainehttp://www.dec.gov.ua/index.php/ua/
- National Scientific Medical Library of Ukrainehttp://library.gov.ua/
- National Library of Ukraine named after V.I. Vernadskyihttp://www.nbuv.gov.ua/

Practical lesson No. 20

Topic:Clinical and laboratory stages of manufacturing removable and non-removable tires. Advantages and disadvantages of splinting methods. Immediate prostheses.

Goal:to study the classification of inflammatory periodontal diseases. Learn the clinical manifestations of periodontal tissue diseases and be able to distinguish between them. Carry out differential diagnosis of traumatic occlusions. The use of splints in the treatment of periodontal tissue diseases.

Basic concepts:examination of a dental patient, dental instruments for examination, X-ray diagnostics, occlusion, traumatic occlusion, periodontism.

Equipment:Computer, phantoms, examination instruments, X-rays

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).
2. Control of the reference level of knowledge:

2.1. requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units);

Know:

— structure of the upper jaw;
— structure of the lower jaw;
— structure of the temporomandibular joint;
— the structure of the mucous membrane of the oral cavity.
— tooth structure
— to know the classification of dentition defects

Be able:

— determine the relationship between the upper and lower jaws;

— to examine the patient
— read x-rays

2.2. questions (test tasks, tasks, clinical situations) to check basic knowledge on the subject of the lesson.

— Examination. External overview. The degree of reduction of the lower third of the face, the expression of facial skin folds, the degree of mouth opening (free, difficult).

— Examination of the temporomandibular joint.

— Examination of the masticatory muscles.

— Examination of teeth and dentition

3. Formation of professional abilities and skills (mastery of skills, curation, determination of treatment regimen, laboratory research, etc.):

3.1. content of tasks (tasks, clinical situations, etc.);

Splinting teeth with removable structures has a number of advantages over non-removable ones, as it does not require preparation of hard tissues of the teeth, excludes trauma to the gums by the edge of the splint, their correction is possible and medical manipulations can be carried out without hindrance. These advantages of removable tires are realized with high precision of their manufacture. Because, firstly, it is necessary to repeatedly remove and put on the splint, secondly, the inaccuracy in the manufacture of structural elements of the splints does not ensure reliable stabilization of the teeth, thirdly, the manufacture of flip-up clasps without occlusal overlays leads to the movement of teeth. The splinting properties of removable splints are provided by a combination of support-retaining staples, as well as occlusive overlays of various shapes. Removable splints can be used to splint a group of teeth or the entire tooth row. When immobilizing the front group of teeth, it is desirable to bring the splint to the premolars, when splinting the lateral ones - to the canines. Removable splints can be included in the design of the arch prosthesis as its component part. In this case, they are talking about prosthetic tires.

There are three types of tires: 1) tires of the continuous clamper type; 2) tire caps; 3) a single tire for the entire tooth row. Removable tires for front teeth: a) circular tire; b) tire with claw-like processes. The main indications for the manufacture of removable splinting structures are the initial and first stages of localized or generalized periodontitis/periodontosis. Requirements for removable tires: - the tire should fix the teeth as much as possible, eliminating movements in horizontal and vertical directions; - the splint should not interfere with therapeutic and surgical treatment; - the tire should not injure the tissues surrounding the tooth; - the tire should not have retention points for food retention; - the tire must be cosmetically effective; - the retention parts of the clamp and the shock absorbers of the chewing disk must be elastic, and the other part must be rigid; - the splint must include a block of teeth with an intact periodontium (with localized forms of periodontitis and periodontosis); - when the clinical situation changes, the tire should be easily transformed into a splint by welding artificial teeth in place of the lost ones.

Stamped splints Clinical stages Preparation of teeth (if necessary) Taking impressions Inspection of the splint frame and its application Grinding, polishing of the splint Casting of the model Laboratory stages Stamping of the frame A removable circular splint is a continuous stapler that passes from the vestibular and oral surfaces of the teeth. On the lingual side, the links of the continuous clasper are located above the tubercles, on the vestibular side, the continuous connection runs along the gums and does not adhere to them. Thus, conditions are created for fixation of the splint, and possible violations of the aesthetic norms of the smile are minimized.

A removable tire with claw-like processes, which unites movable teeth into a single block, is made of KHS and gold-platinum alloys. A multi-link clasper, with slightly expanded orally located links, covers the teeth with labial processes that depart from it and pass into the interdental spaces in the form of claw-like branches. Such a tire is cast on a ceramic model. Van-Til's removable kappa splint - differs from the previous one in that it is made of metal, the splint covers the cutting edges and enters the vestibular surfaces of the front teeth. However, metal on the labial surface disrupts aesthetics, and metal overlays on the labial surface can disrupt occlusal contacts; to eliminate them, the hard tissues of the front teeth should be prepared. Spreng's removable splint-kappa is a splint strip that covers the lingual surfaces of the lower incisors and canines, is located on the cutting edges and partially on the premolars. Fastening of the tire is achieved with the help of a system of supporting and holding clamps, in case of defects of the tooth row, the tire is connected to an arch prosthesis. The front teeth undergo special preparation: the cutting edges are shortened, they are beveled slightly in the lingual direction, and they are carefully polished. The disadvantage of the splint is that it does not touch the labial surface, thus does not exclude the protrusion of the teeth and their tortoocclusion. The splint is not used for protrusion of the front teeth. For the circular stabilization of the teeth, removable splinting devices are proposed. Binin B. M. recommends a multi-link splint that covers the teeth of the entire jaw from the oral and vestibular sides.

A. L. Grozovsky improved the multi-link tire. He proposed to solder occlusal pads on the chewing teeth and flip-up staples on the front teeth to the tire. These elements prevent the tire from moving towards the neck of the teeth and protect the mucous membrane from injury. V. Yu. Kurlyandsky's tire is a bent wire tire, the continuity of which is achieved by using a hinge. Elbrecht proposed a solid tire with tire elements. It is a closed system of continuous clasps covering the dentition from the vestibular and oral side with interdental membranes and overlays in the lateral areas of the dental arch, preventing the splint from sagging, and anchor fixing grips in the area of the front teeth. Anchor retainers can become wedged between the teeth, contributing to their loosening.

In order to more evenly distribute chewing pressure on the front teeth, a modified Elbrecht splint should be used (A. V. Grimov, 1974). Instead of anchor grips to prevent subsidence, tires are cast simultaneously with the frame of the cap or a pre-stamped metal cap with a thickness of 0.2 mm is soldered (with a deep bite complicated by crowding and oral inclination of the front teeth). It is a basic structure for the manufacture of removable tires. Due to the reliable, but elastic frame, the

integrity of the teeth is ensured in almost any direction. At the end of the 20th century, later, instead of Elbrecht tires, combined tires with support-retaining staples of the Ney system began to be used. Marey's cap splint is indicated when the teeth of the lower jaw are crowded and tilted in the lingual direction, as the use of other splinting structures is not effective due to their insufficient fixation. It is not recommended to use a splint on the upper jaw due to its cosmetic defect and unsatisfactory fixation. Manufacturing technology: the obtained working model is studied in a parallelometer. In relation to the boundary line, overlapping it by 0.1-0.2 mm closer to the neck of the tooth, outline the boundaries of the future mouthguard with a pencil. Next, the models are cut into blocks of 3-4 teeth each. Using a metal stamp and a counterstamp made of sheet steel 0.2 mm, the fragments of the tire are stamped, which are fitted in the oral cavity. After removing the impression with fragments of the cap, the parts are soldered together. To prevent breakage, a 1.2 mm thick reinforcing beam is soldered from the tongue side. Pashkovska L.O. for the purpose of temporary splinting of teeth in patients with periodontal disease, elastic removable splints made of plasticized polymethyl methacrylate were used.

Such tires have a number of advantages over inelastic tires: - easy putting on; - tight fit to the teeth; - high cosmetic and functional value of tires. Elastic splints of the epiprosthetic type are most effective when performing curettage, gingivotomy, and gingivectomy. The main disadvantages of removable tires: - they firmly fix the teeth and in this connection unevenly distribute the chewing pressure on the tooth row; - lead to loosening of the teeth during application and removal of the tire; - mouth splints lead to demineralization of the hard tissues of the teeth; - contribute to the abrasion of hard tissues of the teeth; - holding the teeth in a horizontal direction, they do not protect them from excessive vertical loads arising during chewing. In this regard, this type of splinting of the teeth is advisable to use in the initial stages of periodontitis and periodontitis, as well as in the case of low mobility of the teeth. In case of periodontal diseases of an inflammatory or dystrophic nature, complicated by partial loss of teeth, there is a need not only to splint mobile teeth, but also to replace defects in the dentition. The choice of splint design depends on the topography, the size of the defect and the number of preserved teeth, their stability. Depending on these conditions, it is possible to make fixed and removable prostheses. Non-removable splints-prostheses are made according to the type of bridge-shaped prostheses for limited defects of the dentition.

The number of supporting teeth that are included in the splint-prosthesis depends on the degree of their mobility, the size of the defects, and the condition of the opposing teeth. With pathological mobility of the teeth of the I-II century. it is advisable to use prosthetic splints for small defects (missing 1-2 teeth) - on three supporting teeth, for larger ones (missing 3 teeth) - on 3-4 supporting teeth. This fixation of prosthetic splints reduces the pathological mobility of the supporting teeth and restores the chewing function. The splinting part of the prosthesis can be made in the form of crowns (which reach the gingival margin), half-crowns, caps, equatorial crowns and other devices. In order to relieve the load on the abutment teeth, the intermediate part of the denture splints during tooth row prosthetics in the lateral parts of the jaw should be narrowed and sufficiently washable. If artificial teeth of

lamellar prostheses are present on the opposite jaw, the intermediate part of the splints-prostheses is modeled according to the width of the antagonist teeth. Prosthetic splints of a tangential design, used to restore defects of the dentition in the front part of the jaw, are made so that the artificial teeth do not touch the gums and are separated from them by 0.5-1mm. The treatment of periodontal tissue diseases, complicated by the partial absence of teeth without distal support, is the most difficult in choosing the method of splinting and the design features of the splint-prosthesis. The saddle-shaped part of the prosthesis, which does not have bilateral support, should be considered as a cantilever, which puts more stress on the abutment teeth. The presence of a tooth row defect without a distal support makes it necessary to include a masticatory pressure shock absorber in the prosthesis between the clamp and the saddle-like part. The purpose of such a shock absorber is to remove the vertical, horizontal and overturning components of chewing pressure transmitted from the saddle-shaped part of the prosthesis to the supporting teeth. In case of large defects of the dentition, splints-prostheses are made in the form of partial removable lamellar prostheses with splinting elements, claspless splints-prostheses, braced prostheses with splinting elements and a beam fixation system, and splints-prostheses of a light design.

Partial removable plate and buckle prostheses are made according to the generally accepted method. The splinting elements in such prosthetic splints are: - multi-link staplers (cast, bent); - vestibular arches; - occlusal pads, claw-like processes; - cap elements (Marei M. R.); - cap elements: stamped, cast (A. V. Grimov). The manufacturing process of a one-piece construction of a prosthetic tire includes the following stages:

1) study of diagnostic models;

2) preparation of the occlusal surfaces of the teeth for the location of the support elements of the splint structure, if necessary;

3) obtaining impressions and working models, determining central occlusion;

4) study of the working model in the parallelometer and selection of the insertion/extraction path of the prosthetic tire;

5) planning the construction of a prosthetic tire and drawing a picture of its frame on a plaster model;

6) preparation of the model for duplicating and obtaining a fire-resistant model;

7) reproduction of the drawing of the frame of the tire structure;

8) modeling of a wax reproduction of a splint-prosthesis;

9) creation of a sprue system;

10) Lithuanian process;

11) treatment of the frame of the tire-prosthesis;

12) inspection of the frame in the oral cavity;

13) final processing and polishing of the tire structure;

14) inspection of the splint-prosthesis in the oral cavity;

15) replacement of wax with plastic replacing the defect of the part of the tooth row;

16) final processing, grinding, polishing of the structure;

17) application of a ready-made splint-prosthesis.

Possible mistakes in the treatment of periodontal tissue diseases: • Inadequate examination. • Inaccurate and incomplete diagnosis. • Errors in treatment planning and preparatory measures. • Mistakes during orthopedic treatment: - selective grinding of teeth without taking into account their anatomical shape and position; - selective grinding of teeth without taking into account protective and supporting ridges; - manufacture of tires and tire prostheses without taking into account the functional and reserve capabilities of the supporting teeth; - manufacture of temporary removable splinting medical devices that prevent therapeutic, surgical and physiotherapeutic interventions; - manufacture of permanent tires and prosthetic tires without taking into account the presence and severity of somatic pathology; - improper formation of the occlusal surface of permanent splinting dental prostheses. • The patient's failure to follow the doctor's recommendations. Possible complications: • Traumatic pulpitis after selective grinding of teeth, carried out without observing the rules of phasing and accurate diagnosis. • Overloading of the periodontium of the teeth due to the wrong choice of the splinting prosthesis design (without taking into account the functional and reserve capabilities of the supporting teeth). • TMJ dysfunction due to incorrect formation of the occlusal surface of permanent splint prostheses. • Exacerbation of periodontitis with exacerbation of a somatic disease. Prognosis of treatment With correctly conducted complex treatment and strict adherence to all preventive measures, the function of the maxillofacial system, including periodontal tissues, is restored for a long time. The degree of restoration of the lost function depends on the severity of periodontitis and somatic pathology.

3.2. recommendations (instructions) for performing tasks (professional algorithms, orientation maps for the formation of practical skills and abilities, etc.);

3.3. requirements for work results, including registration;

— Conduct an examination.

— Analyze the results of the examination of a dental patient.

— Make a plan for additional examination of the patient.

— Explain the results of clinical and special (additional) research methods.

4. control materials for the final stage of the lesson: tasks, assignments, tests, etc. (if necessary).

5. Summary:

— Anamnesis of the patient. Main complaints. Medical history. Dental history.

— Examination. External overview. Reduction of the lower third of the face, expressiveness of nasolabial and chin folds, degree of mouth opening (free, difficult). Temporomandibular joint. Examination of the masticatory muscles.

— Intraoral examination. Assessment of the state of bone and mucous formations affecting the fixation of the prosthesis in the oral cavity.

— Determination of mobility and flexibility of the mucous membrane.

— Diagnosis. Plan and objectives of orthopedic treatment.

6. List of recommended literature (main, additional, electronic information resources):

Main:

- Orthopedic dentistry: textbook / Rozhko M.M., Nespryadko V.P., I.V. Paliychuk and others; under the editorship M.M. Rozhka, V.P. Nespryadka.- K.: Medical University "Medicine"; 2020. - 720 p.
- Rozhko M.M., Nespryadko V.P., Mykhaylenko T.M. and others. Dentoprosthetic technique. K.: Book plus; 2016. 604 p.
- Rozhko M.M., Popovych Z.B., Kuroyedova V.D. Dentistry. Textbook. K.: Medical University "Medicine"; 2018. 872 p.

Additional:

Dentistry: in 2 books. : textbook. Book 2 / M.M. Rozhko, I.I. Kirylenko, O.G. Denisenko and others. ; under the editorship M.M. Horn — 2nd edition. — K.: VSV "Medicine", 2018. — 992 p. ; color kind.

- Material science in dentistry: a study guide / [Korol D.M., Korol M.D., Ojubeiska O.D. etc.]; in general ed. King D.M. – Vinnytsia: New book, 2019. – 400 p.

Electronic information resources:

- State Expert Center of the Ministry of Health of Ukrainehttp://www.dec.gov.ua/index.php/ua/
- National Scientific Medical Library of Ukrainehttp://library.gov.ua/
- National Library of Ukraine named after V.I. Vernadskyihttp://www.nbuv.gov.ua/

Practical lesson No. 21

Topic: Temporomandibular joint disease. Etiology, clinic, differential diagnosis, treatment. Drawing up a treatment plan. Orthopedic methods of treatment of TMJ dysfunctions.

Goal:

- educational: to acquaint students with the main methods of treating temporomandibular joint diseases in orthopedic dentistry, to learn the therapeutic effect of various treatment methods in accordance with a specific clinical picture, to give doctors the opportunity to theoretically learn the methods of manufacturing various prostheses and devices depending on the clinical situation.
- educational: formation of professional skills in the diagnosis and treatment of diseases of the temporomandibular joint.

Basic concepts:examination of a dental patient, dental instruments for examination, x-ray diagnostics, TMJ.

Equipment:Computer, phantoms, examination instruments, X-rays

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).

2. Control of the reference level of knowledge:

2.1. requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units);

Know:

— structure of the upper jaw;
— structure of the lower jaw;
— structure of the temporomandibular joint;
— the structure of the mucous membrane of the oral cavity.
— tooth structure
— The building of the SNS

Be able:

— determine the relationship between the upper and lower jaws;
— to examine the patient
— read x-rays

2.2. questions (test tasks, tasks, clinical situations) to check basic knowledge on the subject of the lesson.

— Examination. External overview. The degree of reduction of the lower third of the face, the expression of facial skin folds, the degree of mouth opening (free, difficult).
— Examination of the temporomandibular joint.
— Examination of the masticatory muscles.
— Examination of teeth and dentition

3. Formation of professional skills, skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.):

3.1. content of tasks (tasks, clinical situations, etc.);

DISEASE OF THE TEMPOROMANDIBULAR JOINT

In 1996, Yu.A. Petrosov proposed a working classification, according to which functional disorders and diseases of the temporomandibular ligaments foreheads are divided into 5 groups.

1. Dysfunctional conditions of the joint:
— neuromuscular dysfunctional syndrome;
— occlusion-articulation syndrome;
— usual dislocations in the joint.
2. Arthritis:
— acute infectious (specific, non-specific);
— acute traumatic;
— chronic rheumatic, rheumatoid and infectious-allergic diseases.

3. Arthrosis:
— post-infectious (neoarthrosis);
— post-traumatic (deformative) osteoarthritis;
— myogenic osteoarthrosis;
— exchange arthrosis;
— ankylosis (fibrous and bone).
4. Combined forms.
5. Neoplasms (benign and malignant) and dysplastic tumor-like processes.

Diseases of the temporomandibular joint (TMJ) are common and diverse. The most common are arthritis, arthrosis and sprains. In addition, there are pathological conditions of the joint, which are symptoms of various neuromuscular disorders of the maxillofacial region.

The complex of treatment of these diseases includes orthopedics.

ARTHROSIS

Arthrosis of the temporomandibular joint is a chronic disease characterized by dystrophic changes in its cartilage, bone and connective tissue.

Clinical picture

Complaints of patients can be different. Some note a constant aching, dull pain that intensifies when the joint is loaded; others complain only about the appearance of pathological noises, crunches, crepitations, and clicks. Some patients complain of difficult mobility of the joint, especially in the mornings, note the limitation of opening the mouth, the shift of the lower jaw to the side. There may be complaints about chewing food on only one side, because chewing on the opposite side causes pain and discomfort. The disease begins gradually, the anamnesis may include: previous inflammatory processes in the joint, injuries, long-term absence of teeth, pathological attrition of teeth, long-term use of dentures with improperly restored occlusal surface of tooth rows, interalveolar height. Some patients associate the occurrence of joint disease with the flu and its complications, with rheumatism. During the examination, signs noted by patients and symptoms that were not reflected in the survey are revealed. It should be remembered that not all signs of nosology occur at the same time in every patient.

As a result of the face examination, the following can be detected: a decrease in the height of its lower part, which is indicated by pronounced nasolabial folds, sunken lips, maceration in the corners of the mouth; facial asymmetry due to the shift of the lower jaw to the side of the affected joint. Palpation and auscultation reveal a crunch, crepitation in the joint. Palpation of the lateral pterygoid muscle is usually painless.

Clinical evaluation of the movements of the lower jaw allows establishing a limited opening of the mouth, which is determined by the distance between the central incisors. In some cases, it can be no more than 0.5 cm.

A characteristic movement disorder of the lower jaw in arthrosis is its shift to the side when opening the mouth, which is revealed by observing the movement of the incisal point when opening and closing the mouth. There can be different options here: the lower incisal point will form a curve when opening the mouth, but at the end

it will be set in one line with the upper incisal point; the lower incisor point moves without deviations when opening the mouth, only at the end of opening the mouth it moves to the side.

The doctor receives the necessary information during the examination of teeth, dental rows and assessment of occlusal contacts. In patients with TMJ arthrosis, the following can be detected: absence of teeth, pathological attrition of teeth, poor-quality dentures, increased or decreased interalveolar height, deformed occlusal surfaces of individual teeth and tooth rows that create premature occlusal contacts, or obstacles in the wrong direction of movement of the lower jaw.

A detailed visual examination of the occlusion is performed on jaw models installed in the articulator. Additional summaries for the diagnosis of TMJ arthrosis are obtained by conducting laboratory-instrumental research methods: radiography, recording of movements of the lower jaw, electromyography.

Changes characteristic of arthrosis are revealed during X-ray examination of the joint. X-ray examination reveals gross changes: flattening of the head and decrease in its height, exophytic growths, change in its shape (hook shape, club-shaped, sharp). The earliest changes are revealed only on tomograms: narrowing of the X-ray joint space; appearance of erosion in the cortical layer of the articular surface of the head and articular tubercle, cyst sclerosis.

The results of recording the movements of the lower jaw objectively demonstrate its shift to the side of the affected joint.

Etiology and pathogenesis.

TMJ arthrosis can be caused by general and local causes. The general ones should include: metabolic, neurodystrophic, endocrine disorders, infectious diseases. Local includes:

- long-term current inflammatory process in the joint;
- excessive load on the articular surface of the head of the lower jaw, which may be associated with a neuromuscular disorder of the maxillofacial area with bruxism, with the absence of teeth, especially lateral ones, deformation of the occlusal surface of the dentition and pathological attrition.

These factors can be combined with each other. Thus, bruxism, manifested as teeth grinding during sleep, is associated with pathological wear, which, by reducing the interalveolar height and deforming the occlusal surface of the tooth row, creates unfavorable conditions for the functioning of the joint.

Dystrophic processes in the joint can develop as a result of the influence of general and local factors — disruption of both cellular and extracellular mechanisms that provide trophism.

The general mechanism of development of TMJ arthrosis is that gradually the cartilage covering the articular surface of the head of the condylar process undergoes dystrophy and disappears in some places; dystrophic processes can lead to disc perforation. In the cyst, restructuring phenomena are noted, sometimes with an excess of bone formation; the head is deformed - it becomes hook-shaped or club-shaped. Cartilage regeneration is weak.

It is especially worth emphasizing the importance of occlusive and articulating

factors in the development of joint pathology. Their pathogenetic role is reduced to or acceleration of the increase of dystrophic changes in the joint that arose as a result of causes of a general or local nature. The described mechanism can take place both in the conditions of a normal bite and in its pathology.

In the latter case, a decrease in the interalveolar height, deformation of the occlusal surface of the tooth row, and a change in the nature of the movements of the lower jaw lead to a violation of the patterns of load distribution on the joint elements. Compensatory and adaptive processes develop in the joint. In the formation phase, all structural reserves and metabolic changes in the cells and tissues of the joint are included. In the next phase, there is a restructuring of the structure and metabolism in the cells and tissues of the joint, which ensures its functioning under conditions of changed load. Over time, the compensatory and adaptive capabilities of the joint are exhausted, pathology develops: the structure of the joint elements changes as a result of its overload, dystrophic processes, disc thinning, deformation of the head of the lower jaw, asynchronous movements of the lower jaw occur.

Diagnosis and differential diagnosis

Arthrosis must be differentiated from arthritis (Table 10) and functional neuromuscular disorders. Arthritis occurs in young and middle-aged people, its course is acute, progressive, with sharp pains. Arthrosis, as a rule, is observed in the face of middle-aged and elderly people, proceeds slowly.

Differential diagnostic signs of arthritis and TMJ arthrosis

Signs	Arthritis	Arthrosis
Connection with focal infection, allergy, injury	clear	liquid
Connection with functional overload as a result of dental pathology	liquid	Usually
Movement in the joint	Sharply disturbed, possible ankylosis	Moderately disturbed, accompanied by a clicking sound
Local inflammation of peri-articular tissues	It is noted often	It is rarely observed

X-ray changes	Changes in the size of the joint space	Flattening of the head, exophytic growths on the articular head of the lower jaw, change in the shape of the head

Acute arthritisin contrast to arthrosis, they are manifested by sharp pain in the joint, which intensifies during movements of the lower jaw; with purulent processes, swelling of peri-articular tissues and hyperemia of the skin in front of the auricle is determined; there is general malaise, increased body temperature, loss of working capacity, sleep disturbance, and appetite.

An important differential diagnostic argument in favor of acute arthritis should be the presence of a specific cause of its occurrence. For example, for purulent arthritis, the nature of the spread of the inflammatory process to the joint from neighboring areas in osteomyelitis of the lower jaw, phlegmon, inflammation of the middle ear.

Characteristic features of rheumatoid arthritis are the systemic nature of the disease and the presence of the rheumatoid factor in the blood. Immune complexes are found in synovial fluid macrophages, neutrophils; they circulate in the blood.

Certain difficulties arise in the differential diagnosis with chronic arthritis, since a number of clinical signs are similar to the manifestations of arthrosis: limitation of movement of the lower jaw, creaking in the joint. One can distinguish them according to the course of the disease. The chronic course of arthritis can worsen, and at this stage, aching, stabbing, shooting pains characteristic of arthritis appear.

In the differential diagnosis of arthrosis and neuromuscular disorders of the maxillofacial region, difficulties arise due to the lack of a single terminology in defining these disorders. Of the well-known terms "Kosten's syndrome", "musculo-facial painful dysfunctional syndrome", "temporomandibular joint dysfunction painful syndrome", the last term, abbreviated as BSD, received the most recognition.

BSD is characterized by pain in the masticatory muscles and clicking in the TMJ. These symptoms are often transient. Headaches are observed in patients suffering from BSD, the frequent cause of which is muscle tension in the buccal-occipital region. There may also be atypical facial pain, neuralgia. Limitations of the movements of the lower jaw, as a rule, are associated with an increase in muscle tone and stiffness.

Some patients complain of tinnitus, hearing impairment, pressure and ear plugging.

The determined differential diagnostic value is the nature of noises that occur in the joint with arthrosis and BSD. In arthrosis, their origin is mainly connected with the friction of the deformed surfaces of the head and articular disc, and therefore crepitation and crunching prevail.

BSD is characterized by clicking, the likely cause of which is an increase in the tone of the lateral pterygoid muscle. The mechanism of clicking in the joint during spastic contractions of the lateral pterygoid muscle can be represented as follows. For

example, against the background of normal functioning of the lower jaw in the phase of anterior occlusion due to some factor, such as stress, a spasm of the lateral, pterygoid muscle occurred. Let's assume that at this moment the head of the lower jaw and the disk were on the slope of the articular tubercle. When the lower jaw is turned, the heads move back, and the disks are held in the front position due to the spasm of the lateral pterygoid muscles. There is an obstacle in the way of the movement of the heads - the rear pole of the disks, when it is overcome, a clicking sound occurs. Conventionally, this click can be called retropolar when closing. If at this moment the mouth is opened quickly, the click may occur again when overcoming the posterior pole (posterior pole click when opening). At this moment, it is possible to block the movement of the lower jaw, if the head cannot overcome the rear pole of the disc.

Palpation and X-ray of the joint help to distinguish arthrosis from neuromuscular disorders. With BSD, palpation of the masticatory muscles, including the lateral pterygoid muscle, is painful, the X-ray picture is unchanged.

The results of electromyographic studies, which show an increase in the biopotentials of muscles at rest, allow us to differentiate arthrosis from BSD.

The muscular nature of the patient can be established with the help of diagnostic anesthesia. With arthrosis of the TMJ, blockade of the motor branches of the trigeminal nerve according to the method of Egorov and Karapetyan does not relieve pain and does not improve mouth opening. With BSD, after the blockade, the pain decreases or stops, the mobility of the lower jaw improves.

Deforming arthrosis with exostoses should be differentiated from condylar hyperplasia, chondroma, osteochondroma. These pathological conditions can be definitively distinguished after tumor removal based on the results of a histological examination of the postoperative material.

Treatment

Treatment of arthrosis is complex. Medical, physical, orthopedic and surgical methods of treatment are used according to the indicators. The orthopedic doctor needs to correctly define the purpose, content, volume and sequence of orthopedic dental interventions in this complex of treatment and preventive measures.

The goal of orthopedic interventions in TMJ arthrosis is to eliminate factors that cause overloading of joint elements. Removal of the traumatic overload of TMJ elements is achieved by normalizing the shape and function of teeth, tooth rows, and their relationships.

Orthopedic treatment methods used for these purposes can be divided into the following groups:

1) that normalize occlusal contacts;
2) ratio of normalizing dentitions;
3) which restore the anatomical integrity of teeth and dental rows;
4) movements of the lower jaw that normalize;

The object of intervention when applying the first group of treatment methods is

the teeth, their occlusal surface; of the second group — tooth rows; the third — teeth, dentition, prosthetic bed, prosthesis and their relationships; the fourth — muscle, joint, lower jaw.

Orthopedic methods should be used against the background of drug effects. In the treatment of patients with arthrosis, who have violations of occlusal contacts, selective grinding of teeth is indicated.

The therapeutic effect is achieved due to the elimination of tooth contact that disrupts the agreed function of the joints and the neuromuscular apparatus.

Selective grinding of the teeth allows to eliminate!" obstacles limiting the smooth sliding of the teeth and impaired guiding function of the teeth, as well as creating occlusal contacts that ensure the harmonious interaction of all elements of the maxillofacial system, including the joint.

Before selective grinding of the teeth, patients must be explained the necessity and harmlessness of this intervention. Selective grinding of the teeth involves the elimination of premature contacts detected in the central ratio of the jaws, central, front and lateral occlusions.

With the central ratio of the jaws in patients with intact dentition, premature contact between the palatal tubercle of the first upper molar and the buccal tubercle of the first lower premolar most often has to be eliminated.

In the position of central occlusion, it may be necessary to eliminate a much larger number of premature tooth contacts: between the vestibular slopes of the palatal cusps of the upper molars, premolars and the oral slopes of the buccal cusps of the lower teeth of the same name; between the vestibular slopes of the buccal tubercles of the lower molars, premolars and the oral slopes of the buccal tubercles of the upper teeth of the same name; between the vestibular surface of the front lower teeth and the palatal surface of the upper teeth; between the slopes of the palatal tubercles of the upper molars, premolars and the vestibular slopes of the lingual tubercles of the lower teeth of the same name.

By eliminating the listed premature contacts, simultaneous bilateral multiple contact between the teeth in the position of central occlusion is achieved, which is important for the normal functioning of the TMJ.

Selective grinding during anterior occlusion eliminates premature contacts that occur between the front teeth and the contacts of the lateral teeth, which prevent the smooth and symmetrical sliding of the lower tooth row on the upper one during the transition from the central to the anterior occlusion.

Eliminating premature contacts on the working and balancing sides that occur with lateral occlusion also involves the awareness of smooth, unhindered glides. As a result of the performed procedure, the contact of the cusps of the antagonist teeth of the same name occurs on the working side, and the contact of the cusps of the teeth of the different names appears on the balancing side. With this type of contact, overloading of the joint during lateral movements of the lower jaw is excluded, which is very important for reducing the intensity of dystrophic processes in the joint, which are observed in arthrosis.

The next orthopedic measure, aimed at creating favorable conditions for the functioning of the joint, is the normalization of the shape of the tooth rows. It is

achieved by eliminating the anomalies and deformations of the dentition by orthodontic methods, as well as by restoring occlusal relationships with artificial crowns, bridge prostheses, and braced prostheses. It is very important to correctly restore the interalveolar height, the shape and size of the ridges and grooves of the occlusal surface of the teeth. The restored form of the occlusal surface of the teeth should not create premature contacts in all types of occlusion and cause joint tissue overload.

When planning orthopedic measures, it is necessary to foresee the normalization of the position of the articular heads in the articular fossa. This is achieved by using removable and non-removable appliances: a plastic mouthguard on the lower or upper jaw; a cutting plate for the entire tooth row: or for the side teeth; palatal plate with an inclined plane; crown or cap devices with an inclined plane; mouth opening restraints.

Prosthetic measures for arthrosis of the TMJ are also carried out according to the indicators, the design features of dental prostheses and the stages of treatment depend on the clinical features of the disease.

In the case of a decreasing bite, pathological wear, dentures are preceded by normalization of the interalveolar height and the position of the lower jaw with the help of a plastic cap on the dentition. The correctness of the determination of the interalveolar height, therefore, and the position of the heads of the lower jaw in the articular fossa should be controlled radiologically during the production of a plastic cap. Usually, after 2-4 months of using the apparatus, pain and discomfort disappear, which indicates the final adaptation of the neuromuscular apparatus, the newly formed interalveolar height. After that, prosthetics is made.

Measures that normalize the movements of the lower jaw, in addition to the orthopedic interventions listed above (selective grinding of the teeth, restoration of the shape of the occlusal surface of the dentition, prosthetics), include a set of exercises aimed at restoring the coordination of the masticatory muscle function. Depending on the nature of the lower jaw movement disorder, various exercises are indicated.

Physical and surgical methods of treatment play an important role in the complex treatment of arthrosis.

Physiotherapy methods include electrophoresis, galvanization, fluctuation, massage, physical therapy. When conducting electrophoresis, a 10% solution of potassium iodide and a 10% solution of novocaine are used.

DISLOCATION OF THE LOWER JAW

Dislocation of the lower jaw is a pathological condition characterized by displacement of the head of the lower jaw beyond the limits of its physiological movements, when the head of the lower jaw moves to the top of the articular or tubercle is located on its front surface.

Clinical picture

With acute dislocations, the mouth remains open, the patient cannot close it, speech is difficult, saliva flows from the mouth. Attempts to move the lower jaw and

close the mouth cause pain. The lowered lower jaw can be located symmetrically in case of bilateral dislocation and asymmetrically in case of unilateral dislocation.

When palpating the joints, the fingers fall into the empty joint pits, which indicates the exit of the heads of the lower jaw from the joint pits. The protrusion of the skin under the zygomatic arch is visually determined, where the heads of the lower jaw are located in front of the articular tubercle. The position of the dislocated head of the lower jaw is clearly visible on the inspection or radiograph of the TMJ lateral tomogram.

Clinical manifestations of usual dislocations differ from those of acute dislocations. Habitual dislocations can occur repeatedly even during the day. As a rule, patients themselves easily exercise dislocations, but all this has a very burdensome effect on the mental state of the patient.

Etiology and pathogenesis

The causes and conditions of the dislocation of the lower jaw are diverse: injuries, the result of inflammatory, dystrophic processes in the joint, neuromuscular disorders of the maxillofacial region, congenital anomalies of TMJ development. With injuries, acute dislocations of the lower jaw occur, and under the influence of other listed factors, chronic dislocations develop, which received the name of habitual dislocations. The main pathogenetic links of habitual dislocations are excessive stretching of the musculo-ligamentous apparatus and capsule of the joint, a change in the shape, size and structure of the intra-articular disc, deformation of the bony elements of the joint. As a result of these changes, anterior dislocations occur most often. They occur when yawning, moaning, biting off a lump of food; in case of dental or other medical interventions related to wide opening of the mouth: extraction of teeth, removal of impressions, intubation of the trachea, etc.

Diagnosis and differential diagnosis

Peculiarities of the functioning of the joint in patients suffering from habitual dislocations are revealed during examination, palpation and listening. For habitual dislocations of the lower jaw, significant excursions of the heads when opening the mouth are characteristic. They are well defined by palpation. The heads of the lower jaw, slipping past the top of the articular tubercles of the temporal cyst, stretch the capsule and the musculo-ligamentous apparatus, causing the most painful sensations in the joint and impaired function.

When listening, clicking sounds are detected, the occurrence of which is mainly related to the weakening of the connection of the disk with the head of the lower jaw and their asynchronous movement during the functioning of the lower jaw. The mechanism of their occurrence when opening and closing the mouth is as follows. When opening the mouth, the head of the lower jaw with the disc begins to make its way forward. At some point, the synchronous movement of the head and disc is disrupted: the disc lags behind the head and presses against the articular tubercle; the head, moving further, jumps over the anterior pole of the disc, making a clicking sound (anterior pole click when opening the mouth). With the reverse movement of the lower jaw, a click may occur again at the moment of overcoming the front pole (anterior pole click when closing the mouth).

If the disk remains in place or does not move together with the head (the movement of the head and the disk will be asynchronous), then during further movement back, the head will pass through the back pole of the disk, while a clicking sound will appear (back pole click when closing). Further, when opening the mouth (at the very beginning) there is a click at the moment of overcoming the back pole and at the end of opening when overcoming the front pole.

Dislocations of the lower jaw should be differentiated from dislocations of the articular disc. The pathogenesis of intra-articular disc dislocation is based on either deep structural disorders that weaken the connection of the disc with the head of the lower jaw, or neuromuscular disorders, primarily spasms of the lateral pterygoid muscle; or a combination of these factors.

Dislocations of the disc, due to the loss of a strong connection with its head of the lower jaw, can occur with any movements of the lower jaw. Displacement of the discs causes pain and restriction of movement in the joint, associated with the restriction of its components. An anteriorly displaced disc can block the movement of the lower jaw.

Dislocations of the disc caused by spasm of the lateral pterygoid muscle are accompanied by pain, which occurs with anterior medial dislocations of the disc, which is explained by excessive stretching and rupture of the posterior condylar fusion. In addition, when closing the mouth, the head of the lower jaw overtakes the progressive movement of the disc back and falls into the neurovascular zone of the "post-disc cushion", causing its compression and pain of arthrogenic origin.

Clicking sounds occur when the lower jaw moves. The mechanism of the clicking in the joint during disc dislocation is understood in the following way. With spastic contraction of the lateral pterygoid muscle, the disk and the head move forward, the disk remains in this position until the muscle relaxes. If at this moment, as a result of the contraction of the muscles that raise the lower jaw, the head of the vise" rotates to its original position, then it, jumping over the rear pole, makes a clicking sound. The sound can also occur when opening, because the head must overcome the rear pole of the disc.

Pain upon palpation of the lateral pterygoid muscle is a differential diagnostic feature. Additional information can be obtained with electromyography. The appearance of bioelectric activity at rest in the masticatory or mimic muscles, asymmetry in the activity of the muscles of the same name indicate the muscular mechanism of disc dislocation.

Dislocations of the disc are not detected by X-ray examination, they are difficult to establish with the help of tomography of the joint; time-consuming, complex and dangerous arthrography.

The most valuable for these purposes was computer tomography of the TMJ, which makes it possible to easily differentiate different tissues of the joint, to detect the state and position of the disk. When a disc is displaced, its front shift, sometimes breaking its rear attachments, and perforation of the disc are revealed. The disk that has shifted forward from the head blocks the movement of the lower jaw.

Treatment

The treatment of patients with an acute dislocation consists in exercising the dislocation and immobilizing the lower jaw for 10-15 days by applying a sling-shaped bandage. Methods of treating acute dislocations are described in the literature on surgical stomatology.

For the treatment of habitual dislocations, removable and non-removable mouth opening restraints are used. There are two types of mouth opening restraints.

The first is based on the creation of an obstacle to the movement of the jaw due to emphasis on the front edge of its branch. It achieved; with the help of removable or non-removable devices, supplied with sprouts with pelotes resting on the branch of the lower jaw.

The second type of limiters for opening the mouth is built on the principle of interjaw hinged binding with the help of dental appliances and devices.

The term of treatment with these devices is 2-3 months. The effectiveness of the treatment increases with the appointment of medication and physiotherapeutic treatment. In the treatment of dislocations, other orthopedic measures are carried out according to the indicators: selective grinding of teeth in the presence of premature occlusal contacts; normalization of the interalveolar height in case of its violations, restoration by prosthetics of missing teeth.

In the complex treatment of habitual sprains, orthopedic interventions, medication, physical and surgical methods, relaxation therapy to relieve spasm of masticatory muscles, blockade of masticatory muscles with anesthetics, massage, exercises are used.

A high therapeutic effect is achieved when using operative methods, repositioning and fixation of the disc, strengthening the ligamentous apparatus of the joint (F. T. Temerkhanov).

3.2. recommendations (instructions) for performing tasks (professional algorithms, orientation maps for the formation of practical skills and abilities, etc.);

3.3. requirements for work results, including registration;

— Conduct an examination.

— Analyze the results of the examination of a dental patient.

— Make a plan for additional examination of the patient.

— Explain the results of clinical and special (additional) research methods.

4. control materials for the final stage of the lesson: tasks, assignments, tests, etc. (if necessary).

5. Summary:

— Anamnesis of the patient. Main complaints. Medical history. Dental history.

— Examination. External overview. Reduction of the lower third of the face, expressiveness of nasolabial and chin folds, degree of mouth opening (free, difficult). Temporomandibular joint. Examination of the masticatory muscles.

— Intraoral examination. Assessment of the state of bone and mucous formations affecting the fixation of the prosthesis in the oral cavity.

— Determination of mobility and flexibility of the mucous membrane.

— Diagnosis. Plan and objectives of orthopedic treatment.

6. List of recommended literature (main, additional, electronic information resources):

Main:

- Orthopedic dentistry: textbook / Rozhko M.M., Nespryadko V.P., I.V. Paliychuk and others; under the editorship M.M. Rozhka, V.P. Nespryadka.- K.: Medical University "Medicine"; 2020. - 720 p.

- Rozhko M.M., Nespryadko V.P., Mykhaylenko T.M. and others. Dentoprosthetic technique. K.: Book plus; 2016. 604 p.

- Rozhko M.M., Popovych Z.B., Kuroyedova V.D. Dentistry. Textbook. K.: Medical University "Medicine"; 2018. 872 p.

Additional:

Dentistry: in 2 books. : textbook. Book 2 / M.M. Rozhko, I.I. Kirylenko, O.G. Denisenko and others. ; under the editorship M.M. Horn — 2nd edition. — K.: VSV "Medicine", 2018. — 992 p. ; color kind.

- Material science in dentistry: a study guide / [Korol D.M., Korol M.D., Ojubeiska O.D. etc.]; in general ed. King D.M. – Vinnytsia: New book, 2019. – 400 p.

Electronic information resources:

- State Expert Center of the Ministry of Health of Ukrainehttp://www.dec.gov.ua/index.php/ua/

- National Scientific Medical Library of Ukrainehttp://library.gov.ua/

- National Library of Ukraine named after V.I. Vernadskyihttp://www.nbuv.gov.ua/