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FACULTY OF DENTISTRY
DEPARTMENT OF ORTHOPEDIC DENTISTRY

APPROVED
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«__» _____ 2023

METHODOLOGICAL DEVELOPMENT TO PRACTICAL LESSONS FROM EDUCATIONAL DISCIPLINE

Faculty of dentistry, course 2
Educational discipline Modern technologies of integral prosthetics

Approved:
Meeting of the Department of Orthopedic Dentistry of ONMedU
Protocol № 11 of "30" june 2023year.
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PRACTICAL LESSON No. 1

Topic: Modern clinical examination of patients with defects of teeth and dental rows. Innovative special methods of examination. Drawing up a treatment plan. Innovative features of preparation of the oral cavity for prosthetics with integral prostheses.

Goal: Acquaint applicants with modern clinical examination and methods of oral cavity preparation for prosthetics. Formation of the principles of medical ethics and deontology in students.

Basic concepts:history, diagnosis, radiography, tomography, galvanometry, electromyography

Equipment: Computer, multimedia projector, phantoms.

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:

— Tasks of orthopedic treatment;

— Rules for keeping an orthopedic patient's medical history;

— Additional special examination methods;

Be able:

— Draw up a treatment plan for a dental patient;

— Correctly interpret the data of the anamnesis and the objective examination of the patient to make a diagnosis;

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

— History and clinical examination.

— Main complaints.

— Dental history.

— Medical history.

— 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).

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.);

On the basis of the received data, a diagnosis is formulated and a treatment plan is drawn up, which often includes a number of consecutive measures, the purpose of which is not only to restore the integrity of the tooth rows, but also to eliminate other morphological disorders, as well as to normalize the functions of the organs of the

maxillofacial system and the muscles of the oral and perioral regions . Among these measures, prosthetics is usually the last and final.

Designs of prostheses are designed by the doctor taking into account the entire medical complex, and the question of preparing the patient for the chosen method of prosthetics is decided accordingly.

The peculiarity of the diagnosis in the orthopedic dentistry clinic is that the main disease for which the patient consults a doctor is usually a consequence of other diseases (caries, periodontal disease, trauma, etc.). The essence of the diagnosis is a violation of the integrity or shape of the teeth, dental rows or other organs of the maxillofacial system and their functions. Additionally, data on complications of the condition and concomitant diseases (dental and general) are entered.

Thus, the diagnosis should consist of two parts: 1) the main disease and its complications; 2) accompanying diseases - dental and general. A question may arise as to which disease should be considered the main one, and which one should be considered secondary. The majority of clinicians recommend to consider as the main disease that: 1) is more serious in terms of preserving work capacity, health and life, 2) brought the patient to the doctor at the present time, that is, the one about which he applied; 3) on the treatment of which the main attention of the doctor is directed.

3.2 Preparing the patient for dental prosthetics

The success of prosthetics depends not only on the diligent performance of clinical and laboratory stages, but also on how correctly the patient's preparation plan was drawn up and executed. Preparation for prosthetics begins with sanitation of the oral cavity, that is, with general health measures. The latter are a mandatory part of any plan of preparation for prosthetics. 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.

In addition to general recreational activities, 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.

Special training includes a number of therapeutic, surgical and orthopedic measures, the volume and sequence of which largely depend on the design of the prosthesis.

Therapeutic special preparation of the oral cavity for prosthetics. It should include depulping of teeth that are not affected by caries, only according to certain indicators.

Depulpation is an extreme measure, which should be carried out in the following indications:

1) if it is necessary to polish a significant layer of hard tissues of the tooth, when preparing it for a semi-crown, inlay, plastic or porcelain crown, if a wide cavity of the tooth is determined radiographically;

2) if there is a need for a significant shortening of the crown of the tooth, which violates the occlusal surface, when there are no indications for an instrumental and

surgical method of treatment, and the study of the radiograph of the tooth and diagnostic models indicates the need for its depulpation;

3) before splinting of the frontal teeth, in case of periodontitis, periodontosis, when after studying the diagnostic models and radiographs, a significant reduction of the clinical crowns of the teeth is shown, which is impossible without their prior depulpation, even under anesthesia;

4) with pathological abrasion of the third degree, when there is a decline of the crown part of the teeth by 2/3 or more of its height and the decrease of the interalveolar ridge is not compensated by the reconstruction of the alveolar process, and on the X-ray the cavity of the tooth and the root canals are not completely obliterated, preliminary depulping for the manufacture of pins is shown structures;

5) when persistent hyperesthesia occurs after tooth preparation, which does not go away after repeated treatment (electrophoresis with silver) or when the pulp is exposed;

6) depulpation of teeth inclined into a defect and intended as a support for bridge-like and braced prostheses depends on the amount of inclination;

7) indications for preliminary depulpation of teeth for the purpose of prosthetics are expanded depending on the degree of exposure of their roots.

Absolute contraindications to depulping:

a) hypertensive disease of the third stage (during a crisis);

b) myocardial infarction within 6-12 months after its occurrence;

c) clenching of the jaws (of different nature);

d) microstomia of various genesis (scars after burns, injuries, etc.);

e) epileptic status;

f) the mental deficiency of the patient (oligophrenia, etc.), which makes contact with him difficult.

Surgical special training includes:

1) removal of single teeth,

2) correction of the shape of the alveolar process,

3) plastic surgery of the alveolar process,

4) creating an artificial hole,

5) insertion of a metal subperiosteal or other implant,

6) preparation of the hard palate,

7) elimination of stretch marks and scars on the mucous membrane of the prosthetic bed,

8) deepening of the vestibule and floor of the oral cavity.

Orthopedic and (or) orthodontic special preparation of the oral cavity:

– alignment of the occlusal surface of the tooth rows by increasing the bite

– alignment of the occlusal surface of the tooth rows by shortening the teeth

Medical history. The medical history or ambulatory card of a dental patient is a mandatory official and medical document in which the examination data, diagnosis, orthopedic treatment plan and its implementation are entered. All data must be

recorded consistently and completely, so that not only the medical history can be filled out, but also another doctor can form a complete picture of the patient, the validity of the chosen method of prosthetics and its result. For a young person who is just starting his practice as a doctor, it is not superfluous to remember that this document, reflecting the dynamics of the development of the disease, the method of treatment and its result, is at the same time a certificate of medical maturity, which indicates the level of clinical thinking of the doctor, his capacity for work.

The medical history must be filled in so that the sequence of treatment can be carried out. In other words, another doctor who will continue to treat the patient, based on the records, must clearly imagine the clinical picture that existed before the treatment, the validity of the diagnosis and the method of treatment.

The medical history in some cases can play the role of a legal document, so the entries in it should be clear and given in sufficient volume.

Scheme for filling out medical history

I. Official data (full name, age, profession, address)

II. Complaints of the patient (violations of chewing, aesthetics, defect of crowns, mobility, increased wear of teeth, pain in the temporomandibular joint; pain under the base of a schematic prosthesis, pain in a tooth under an artificial crown, etc.)

III. Anamnesis of the disease (transmitted and accompanying diseases, hereditary diseases; development of the real disease - indicates whether the patient has a connection between the pathology of the teeth and working conditions, living conditions, transferred diseases, at what age did he start losing teeth and which ones, in what sequence, etc.)

IV. Objective data:

A) External examination (type of face, condition of the skin of the face, prominence of the chin and nasolabial folds, the nature of closing the lips, corners of the mouth, position of the chin, height of the lower third of the face

B) Examination of the temporomandibular joint (degree of opening of the mouth, nature of the movement of the lower jaw, presence of confusion of the lower jaw, palpation data of the heads of the lower jaw, auscultation data)

B) Examination of the oral cavity (general characteristics of the mucous membrane of the oral cavity, salivation, state of oral hygiene, dental formula, type of bite, dental examination, periodontal examination, number of antagonizing pairs of teeth, characteristics of dentition defects, condition of the edentulous alveolar process of the upper jaw, characteristics of the relief of the hard palate, characteristics of the mucous membrane of the prosthetic bed on the upper jaw, the state of the bone base of the prosthetic bed on the lower jaw, characteristics of the mucous membrane of the prosthetic bed on the lower jaw, the size and shape of the sublingual space, the size and shape of the sublingual space in the front lower jaw, submandibular salivary glands, size and tone of the tongue, tone of the muscles of the floor of the mouth, cheeks and lips)

V. Data of special examination methods:

1. X-ray characteristics of teeth and peri-dental tissues

2. Data of X-ray examination of TMJ.

3. Tomography and teleroentgenography data.

4. Data on the study of diagnostic models of the jaws.

VI. Diagnosis and differential diagnosis.

Based on the data of the patient's clinical examination, a diagnosis is made, which should consist of the main and secondary.

1. The main disease and its complications:

a) the main disease refers to the one that prompted the patient to go to the orthopedic clinic;

b) complications should include those disorders that are pathogenically related to the main disease.

2. Associated diseases are those treated by dentists

other profiles. If necessary, differential diagnosis is carried out.

3. In the diagnosis "Partial loss of teeth" it is necessary to specify the type of tooth row defect according to Kennedy, and "Complete loss of teeth" - the type of toothless jaw according to I.M. Oxman.

VII. Oral cavity preparation plan for prosthetics:

1. General sanitation measures (removal of dental deposits, treatment of teeth, removal of roots and teeth with mobility of the III degree, treatment of diseases of the mucous membrane of the oral cavity, etc.)

2. Special preparation of the oral cavity (depulpation of teeth, elimination of occlusal disorders, orthodontic preparation, alveolotomy, excision of scars, transfer of the attachment site of frenulums, mucous cords, deepening of the vestibule of the mouth, floor of the oral cavity, etc.).

VIII. Orthopedic course plan.

Specify the type of prosthetics (immediate, near, remote). To justify the choice of the design of the prosthesis as a treatment tool.

IX. Diary of orthopedic treatment.

All visits to the patient are recorded with the date and a detailed description of the performed clinical procedures. During the repeated visits of the patient after the prosthesis has been applied, complaints, objective research data, the nature of the assistance provided and the peculiarities of the patient's getting used to the prosthesis are described. To evaluate the immediate results of prosthetics (prosthetic quality, functional properties, state and reaction of prosthetic bed tissues, number of corrections, patient feedback, etc.)

X. Epicrisis and prognosis of orthopedic treatment.

P.I.B. are indicated. , age and complaints of the patient on the day of the visit to the clinic. What was the diagnosis? Beginning and end of treatment. The type of prosthetics and the design of the prosthesis.

Describe the patient's condition as a result of the treatment and indicate the prognosis.

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

2. requirements for work results, including registration;

– Conduct an examination of a patient with partial absence of teeth.

– To analyze the results of the examination of a dental patient with partial absence of teeth.

– Make a plan for an additional examination of a patient with partial missing teeth.

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

– To determine the tactics of treatment of a patient with partial absence of teeth in the clinic of orthopedic dentistry.

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

1. A 35-year-old female patient complains of a metallic taste in her mouth, a sour feeling when chewing food, burning of the tongue, impaired salivation, headache, irritability, which appeared 2 months after prosthetics. Objectively: in the oral cavity there are bridge-like prostheses with support at 45, 47, 35, 37 made of stainless steel and gold crowns at 15, 16, 17. The lateral surfaces of the tongue are hyperemic, there is slight swelling. Which method of examination is the most informative?

A. General blood test
B. Measurement of the magnitude of the potential difference +
C. Try for Kulazhenko
D. Determination of trace elements of saliva
E. Determination of pH of saliva

2. Patient P., 40 years old. Complaints about bleeding gums, hyperemia, edema. What method of functional diagnostics is used to determine the state of periodontal vessels for orthopedic treatment?

A. Radiography
B. Rheoperiodontography +
C. Galvanometry
D. Mastication
E. Myography

3. A 28-year-old patient complains of a broken crown of the 23rd tooth. Objectively: there is filling material in the mouth of the root canal, percussion is painless. What are the doctor's tactics?

A. Remove the 23rd tooth
B. Restore the 23rd tooth with photopolymer
C. Make a crown according to Belkin.
D. Make a pin tooth
E. X-ray examination of tooth 23 +

4. A military serviceman applied to the dental office of the medical unit for prosthetics of missing 14, 15, 16, 24, 25, 26 teeth. Loss of what percentage of masticatory efficiency according to Agapov with an intermittent defect is an absolute indicator for prosthetics of a serviceman?

A. 18-20%
B. 27-30%
C. 38-40%
D. 50-64%
E. 44-46%

5. Patient L., 37 years old, applied to the clinic of orthopedic dentistry for the purpose of prosthetics in connection with the loss of the central incisor on the upper jaw as a result of trauma. I have not had prosthetics before. History: bronchial asthma. What are the primary measures to prevent bronchospasm?

A. Make a temporary structure
B. Conduct allergy tests for sensitivity to plastics and metals
C. Carry out dissection after anesthesia
D. Apply sedatives
E. Treat the teeth with a remineralizing solution

6. An 18-year-old woman applied in connection with a domestic facial injury. During the examination: in 21, 1/3 of the crown of the tooth was broken, probing along the line of the fracture is painful, the reaction to a cold stimulus is short-term pain, percussion is painless. What research is necessary to make a diagnosis and choose a treatment method?

A. Electroodontometry +
B. radiography
C. Thermometry
D. Luminescent diagnostics
E. Vital coloring

7. The patient, 42 years old, complained of burning tongue, impaired taste, dry mouth. Suffers from chronic cholecystitis. Objectively: the oral cavity is sanitized. In 36,46 fillings with amalgams. Golden bridge prosthesis with supports 23,26. Single crowns with MZP 45,44, when touched with an iron, painful sensations are determined. What research should be conducted first of all to establish a diagnosis?

A. Measurement of microcurrents of the oral cavity +
B. Every sample.
C. Determination of pH of saliva.
D. Determination of taste sensitivity.
E. Definition of traumatic occlusion.

8. A 52-year-old patient complained of a metallic taste in his mouth and burning tongue. About: defects of the dentition of the upper and lower jaw are replaced by soldered bridge prostheses made of stainless steel. What research should be conducted?

A. Galvanometer +
B. Gnathodynamometry
C. Mastication
D. Occlusionography
E. Electromyography

9. A 55-year-old patient underwent elective teeth grinding. what research method should be used to control it?

A. Occlusionography +
B. Periodontogram
C. Chewing test
D. Odontodiagnostics
E. Gnathodynamometry

10. Patient M., 50 years old, was shown placement of implants on the upper and lower jaw for the purpose of prosthetics. Which additional research method should be preferred when planning implantological treatment?

A. Orthopantomography +
B. Electromyomastography
C. Masticatory dynamometry
D. Myotonometry
E. Myography

4. Summary:

1. Examination of the patient. Life history and disease history. Examination, survey, percussion, palpation.
2. Additional examination methods. Study of diagnostic models.
3. Clinical examination methods.

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

Main:

1. 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 Center "Medicine"; 2020. - 720 p.

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

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

Additional:

4. 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.

5. Materials 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: Innovative basic and auxiliary materials for the production of solid prostheses. Selection of metal alloys for metal-ceramic restorations. Modern technology of cast solid restorations. Innovative ceramic materials. The connection of the ceramic lining with the metal frame of the prosthesis.

Goal: To acquaint applicants with materials for the production of one-piece prostheses, with casting technology.

Basic concepts: material management, cobalt-chromium alloy, chrome-nickel alloy, precious metals, base metals.

Equipment: Computer, multimedia projector, phantoms

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. Basic materials for the manufacture of solid prostheses;

- Auxiliary materials for the production of solid prostheses;

-Alloys used in orthopedic dentistry, their composition

-Principles of connecting ceramic cladding with a meial framework;

- Technologies of Lithuania:

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

3. Formation of professional abilities and skills (mastery of skills, curation, determination of treatment regimen, laboratory research, etc.):

3.1.An alloy is a mixture obtained by fusing two or more different metals.

Metal alloys can be formed in the form of:

a. mechanical mixtures (low-melting alloys);
b. solid solutions (chrome-nickel, copper-nickel alloy, platinum-gold alloy);
c. chemical compounds (AlCu2).

The main physical characteristics of metals are: metal color, specific gravity, melting point, material shrinkage. The mechanical properties of metals include: strength, viscosity, hardness, elasticity, plasticity, fatigue of materials, shearing. The technological properties of the materials make it possible to make different products

from them using different processing methods. Important for dental materials are 80 casting properties (fluidity, lack of liquation, ability not to form shrink shells), malleability, ductility, weldability (suitability for soldering), workability by cutting and grinding. Metals and their alloys used in the clinic of orthopedic dentistry must meet the following requirements: anti-corrosion resistance to the effects of acids and alkalis in small concentrations in the conditions of the oral cavity; have high mechanical properties; be technological; have the necessary physical characteristics; to be indifferent to the tissues of the prosthetic bed, to be safe for the whole body; do not affect the pH of the oral fluid.

In addition to the above mandatory characteristics, the alloy of metals intended for facing with ceramics must meet the following requirements: be able to bond with porcelain; the melting temperature of the alloy must be higher than the firing temperature of porcelain; coefficients of thermal expansion (CTE) of the alloy and porcelain should be similar. Metal alloys are divided into main (structural) and auxiliary.

Structural alloys include:

1. Alloys of precious metals: based on gold (Au); based on palladium (Pd); based on silver (Ag); based on platinum (Pt);

2. Base metal alloys - based on iron: chrome-nickel (Cr-Ni); cobalt chrome (Co-Cr); cobaltochromolybdenum (Co-Cr-Mo); nickel titanium (titan nickel) (Ni-Ti, Ti-Ni);

Auxiliary alloys include:

- aluminum-based alloys (duralumin, magnalium);
- bismuth-based alloys (low melting malleable metal);
- copper-based alloys (bronze, brass).

According to the International Standard (ISO, 1989), all metal alloys are divided into the following groups:

1. Alloys of precious metals based on gold.

2. Alloys of precious metals containing 25-50% gold or platinum or other precious metals.

3. Base metal alloys.

4. Alloys for metal-ceramic structures:

a) with high gold content (> 75%);

b) with a high content of precious metals (gold and platinum or gold and palladium > 75%);

c) based on palladium (more than 50%);

d) based on base metals:

- cobalt (+ chromium > 25%, molybdenum > 2%);
- based on nickel (+chromium >11%, molybdenum > 2%).

Basic properties of precious metals

Metal property Metal Gold Palladium Platinum Silver Density, g/cm3 19.3 12 21.5 10.5 Melting point, 0C 1064 1555 1770 960.5 Boiling point, 0C 2550 3980 2450 1955 Shrinkage during hardening, % 1.2 - a paltry 4.4. Strength limit, kgf/mm 2 12.2

18.5 19 14.1. Relative elongation, % 40-50 24-30 40 48-50 82. Brinell hardness, kgf/mm 2 18.5 49 26 26. Cast iron expansion coefficient, C -1 14*10-6 11.7*10-6 8.7*10-6 19*10-6. Gold-based alloys Gold (Au) is a bright yellow metal with a characteristic metallic luster.

It is found in nature in various states: native, in ores, chemically bound state, in the form of impurities in other ores. Refinement technology is used in dentistry to extract pure gold from alloys or clean it from impurities.

There are three ways of refining:

1. The alloy is melted and added to water, and granules similar to small grains are formed. These granules are filled with diluted nitric acid (HNO3) - 2/3 of the volume. Slowly heat the vessel. Silver, copper and other impurities dissolve, and gold precipitates. The resulting sediment is washed in water, melted and an ingot of pure gold is obtained.

2. The alloy is melted and added to water, after granulating the alloy, it is placed in a vessel and poured with "royal vodka" (a mixture of 3 parts of hydrogen chloride and 1 part of nitric acid). Gold and other metals dissolve, and silver precipitates as silver chloride. Pure gold is obtained by reducing gold chloride with ferric sulfate or oxalic acid. At the same time, gold will precipitate in the form of a brown powder. The precipitate is melted and an ingot is obtained.

3. Dry method of aging. The molten alloy is treated with saltpeter or sulfur. The oxides or sulfur compounds of the metals formed, which are impurities, float away. They are fused with borax and removed. This method can remove traces of lead and bismuth.

Various gold-based alloys are used in orthopedic dentistry. By choosing the components in certain ratios, alloys with the required properties are obtained: plastic, malleable (for the production of stamped parts), elastic (for the production of wire, elastic arcs, pins). Gold is a very ductile metal, which makes it possible to produce a foil with a thickness of 0.14 microns.

Alloys are distinguished by the percentage of gold content. Pure gold is marked by the 1000th fine. The most common gold alloys are 900th, 750th proof and solder. Special reagents containing gold chloride or acid solutions are used to determine the gold sample.

Percentage composition of gold alloys Metal Metal content in the alloy, % Gold alloy 900 samples Gold alloy 750 samples Gold alloy 750 samples, solder Gold (Au) 90 75 75 Silver (Ag) 4 8 5 Copper (Cu) 6 8 13 Platinum (Pt) – 9 – Cadmium (Cd) – – 5 Brass (Cu×Zn) – – 2 Application of the alloy For the manufacture of dental prostheses subjected to light or moderate stress. For the production of parts by the casting method, which must have increased elasticity: frames of braces, splint prostheses, clips, pins, tabs, crampons, wire. Solder for prostheses made of gold alloys. Platinum-based alloys Platinum (Pt) is a grayish-white metal that has a very high density.

It is found in nature in the form of ores together with other metals or in its native state. 84 Platinum is harder than gold and silver, has high plasticity and viscosity, chemical resistance (dissolves only in royal vodka), is well processed under pressure,

is liquid in molten form, does not oxidize during heating. Application - included in a number of alloys, including gold. The introduction of platinum into the gold alloy leads to an increase in its mechanical properties. Platinum foil is used in the manufacture of porcelain crowns and crampons for porcelain teeth. Solder for platinum is an alloy of 3 parts gold and 1 part platinum or pure gold. Silver-based alloys Silver (Ag) is a white metal with a blue tint.

In nature, it is found in the form of nuggets, as well as in chemical compounds. Silver is extracted from ores by separating it from other metals by smelting. Silver has the highest electrical and thermal conductivity, so all other metals are compared with it in terms of these indicators. Silver has high plasticity, as a result of which it is well processed by pressure, but it is not sufficiently resistant to oxidation.

During the melting period, this metal combines well with oxygen, which is released during cooling, which can lead to the formation of pop in the ingot. To reduce oxygen absorption, silver is melted under a layer of crushed charcoal. Silver is not used as the main material for dental work, as it is unstable to corrosion in the oral cavity. However, silver is part of many alloys: gold, palladium, solders. Silver is also used to make pins for sealing canals, amalgams. Palladium-based alloys. Palladium (Pd) is a silver-white metal from the group of platinoids.

In nature, it is most often found in polymetallic ores containing platinum, iridium, silver and other metals. Pure palladium is extracted from platinum concentrates by the refinement method as a result of multi-operational pyrometric and electrochemical processing. 85 Chemically, palladium has great stability. In aggressive environments, a protective film against corrosion forms on the surface of palladium and its alloys. Palladium is harder than platinum, but is less workable under pressure. It has fairly high ductility and is good for rolling. In industry, palladium is used to make medical instruments. Alloys containing palladium, silver, gold, and other metals are used for dental needs. they are used for the manufacture of fixed dentures by the method of stamping and casting.

Palladium is part of the alloys used for the manufacture of metal-ceramic dental prostheses, since the applied porcelain mass is better connected to the surface oxide film of the alloys containing it. Alloys based on silver and palladium. Composition: 55-60% silver, 27-30% palladium, 6-8% gold, 2-3% copper, 0.5-1% zinc. They are relatively inexpensive, strong enough and have high anti-corrosion and technological properties. Such alloys have a melting point of about 1100-1200 °C, a Brinell hardness of 60-65 kgf/mm2, a tensile strength of 30-35 kgf/mm2, and a density of alloys of 11-12 g/cm3.

Alloys based on silver and palladium have plasticity and are good for stamping, but they are often used to make parts of prostheses by casting. Solder with gold solder, bleach the alloy in a 10-15% solution of hydrochloric acid. Base metal alloys Table 3. Basic properties of base metals Metal property Metal Iron (Fe) Cobalt (Co) Molybdenum (Mo) Nickel (Ni) Titanium (Ti) Chromium (Cr) Density, g/cm3 7.86 8.7 10 ,2 8.9 4.5 7.2 Melting point, 1535 1480 2680 1455 1670 1900 86 0C Boiling point, 0C 2450 2385 4800 2900 3227 2200 Shrinkage during hardening, % Up to 3.0 Insignificant – – – 1.8 Limit strength, kgf/mm 2 25 26 80-120 35-40 25.6 – Relative

elongation, % 50 5 – 35 72 6.7 Brinell hardness, kgf/mm 2 60-70 132 150-160 70 100 Up to 236 Coefficient tallow expansion, C -1 12*10-6 12.8*10-6 6*10-6 13*10-6 8.5*10-6 8*10-6.

Stainless steel Stainless steel, which is used in orthopedic dentistry, is a multi-component alloy. It includes iron, chromium, nickel, carbon, titanium and a number of other impurities. The main component that ensures corrosion resistance of the alloy is chromium. Its content in the alloy is 17-19%. The minimum chromium content, which ensures corrosion resistance of the alloy, should be at least 12-13%. To increase the plasticity of the alloy, 8-11% nickel is added to it. The presence of nickel makes the alloy malleable, which facilitates pressure treatment. The alloy always contains impurities of other metals, the most undesirable of which are sulfur and phosphorus. The most common in dental practice is stainless steel with a composition of: 72% iron (Fe), 18% chromium (Cr), 9% nickel (Ni), 0.1% carbon (C) and 0.5-0.8% titanium (You). Stainless steel sheets 1×18H9T (C – 0.1%, Cr – 18%, Ni – 9%, Ti – 0.5-0.8%), 2×18H9T (C – 0.2%, Cr – 18 %, Ni - 9%, Ti - 0.5-0.8%) are used for the manufacture of sleeves. Fig. 6.2. 87 The dental industry produces standard sleeves of 22 sizes with a diameter of 6-18 mm. Steels 25x18n10s (Cu – 10%, Ni – 10%), X25H19C2 (Cr – 25%, Ni – 19%, Si–0.2%) (foundry) are used for casting parts of dental structures - various types of removable dentures , metal parts of removable prostheses, blanks for casting (weighing 15 g each), standard teeth and facets, wire with a diameter of 0.5-2 mm for the manufacture of various orthodontic devices, clamps, pins. The melting point of stainless steel is 1450°C. The disadvantage of stainless steel is a large shrinkage during casting (up to 2%), a low strength limit (about 30 kg/mm 2), the danger of intercrystalline corrosion due to the appearance of chromium carbides in the alloy (under certain conditions).

Modern "Dentan", "Dentan D" and "Dentan DM" alloys have significantly improved properties and differ among themselves in the quantitative composition of different metals. Contains 3 times more nickel and 5% more chromium than stainless steel. They are produced in the form of blanks weighing 2-5 g. Cobaltochromium alloys (KHS) Composition: 62% cobalt (Co), 25-28% chromium (Cr), 3-6% nickel (Ni), 4.5% molybdenum (Mo), 0.5% manganese (Mn), 0.5% iron (Fe), 0.25% carbon (C), their main difference is the variation of alloying elements (Ti, Al, Cu, Ta, Mo, Zn, W, etc.). Their successful combination can ensure a strong bond between metal and porcelain. Iron impurities are permissible within 0.5%, as they increase shrinkage during casting and deteriorate the physical and mechanical properties of the alloy.

Cobaltochromium alloys have little shrinkage and good mechanical properties. Cobalt provides high mechanical properties, chromium increases hardness and anti-corrosion properties, molybdenum increases strength, nickel increases the viscosity of the alloy, manganese improves fluidity and lowers the melting point. They are used for the manufacture of cast metal-ceramic, metal-silate, metal-polymer, and solid-cast crowns and bridge-like prostheses. 88 Modern cobaltochrome alloys: "KH Dent", "KH63NM", "Stomix", "Shot-Alloy", "Remanium-2000", "Heraenium". Chromium-nickel alloys (Cr-Ni) Composition: about 70% Ni, 25% Cr, the rest are alloying

elements. They are characterized by better bonding with porcelain than cobalt chrome alloys. Melting point 960-1360 0C.

During the casting of these alloys, such a phenomenon as liquation can occur - non-uniform crystallization of the alloy in separate parts of the casting, due to the unequal crystallization of the alloy components. This is a negative factor, as liquation reduces strength, corrosion resistance and plasticity. It can be reduced by lowering the heating temperature, accelerating metal pouring and slowing down its cooling. Cobaltochrome nickel alloys (Co-Cr-Ni).

They are used for the manufacture of high-precision orthopedic structures (bases of removable prostheses, frameworks of fixed and bridge-like prostheses) by the casting method. These alloys are characterized by high mechanical, technological (sufficient linear and volumetric accuracy) and environmental properties, low shrinkage. Alloys based on other metals Alloys of titanium (Ti) 85-90% with aluminum (Al) 6%, tungsten (W) 4% and nickel (Ni) are used for the manufacture of implants and fixed dentures. The technology of manufacturing dentures from titanium alloys was developed in Japan. Fig. 6.3. Fig. 6.4. 89 Nickel-titanium wire is used in orthodontics and maxillofacial orthopedics.

Alloys based on tantalum and niobium are used for the manufacture of implants. These alloys combine corrosion resistance, bioinertness and the necessary plasticity. Low-melting alloys are alloys whose melting point is lower than the melting point of tin (232 0C). They include various elements: bismuth, cadmium, tin, lead, etc. The connection of these metals forms an alloy of the type of mechanical mixture, and since they do not form chemical compounds and are not mutually soluble, each of these metals in the alloy retains its crystal lattice; the mechanical connection of different crystal structures in the alloy is easily destroyed during heating, which explains why the melting point of such alloys is much lower than the melting point of each of its components.

Fusible metals have good casting properties. Low-melting alloys are widely used in the practice of dental laboratories for the manufacture of stamps, which are used for stamping crowns, caps, bases of prostheses. Molding masses These materials are used for the production of casting molds (molds) based on wax models. Molding masses must meet the following requirements: do not collapse or melt when heated to a temperature that exceeds the melting point of the metal by 200-250 °C; harden for 7-10 minutes; have a high degree of dispersion, which allows you to obtain clean and smooth surfaces; liquid pastes from refractory mixtures must have good fluidity, stability, wet wax models, and be applied to them without forming air cavities; ensure the strength and integrity of the mold, its gas permeability during casting; not to create a negative impact on the structure or properties of the casting material; 90 have the ability to thermal expansion, which compensates for shrinkage during casting; be inert to humans when working with them.

The main component of refractory mixtures is silicon dioxide and its modifications, which is mixed with a liquid binding component in a powdery state. According to the binding substance contained in the molding masses, they are divided into silicate, sulfate (gypsum) and phosphate. Silicate molding masses consist of

powder, which is burnt quartz flour (marshalite) and liquid - hydrolyzed ethyl silicate - transparent, yellow-green in color, with a slight odor, containing from 21 to 41% of silicon dioxide. The industry produces silicate molding compounds: "Siolite", "Formolite", "Silicate", "Silikan", "Fujivest". Sulfate (gypsum) molding compounds - the binder in them is gypsum. They are used when casting alloys with a melting temperature of up to 1100 0C. Representatives: "Silur", "Silur #3-B", "Silur #9", "Exponent", "Gloria Special", "Deguvest California".

Phosphate forming masses - binder - phosphoric acid. Designed for casting frames of metal-ceramic prostheses made of base metal alloys. Representatives: "Virovest", "Vironmos", "Begostal", "Aruvest B". Metal casting technologies Casting methods: casting under steam pressure; Centrifugal Lithuania; vacuum casting. Die casting and centrifugal casting are based on creating pressure on the metal from the outside. Metal parts of prostheses cast in this way are dense, without pop, underfilling and shrinkage cavities.

Most systems of casting machines are built on the action of centrifugal force. The simplest is a manual centrifuge, various automatic centrifuges for casting parts of dental prostheses are common. In such an apparatus, the molten metal under the action of centrifugal force enters the refractory form, 91 filling all its sections. Vacuum casting is based on the creation of negative pressure in the middle of the mold. This helps to remove gas bubbles from the mold cavity, which prevents the formation of pop, but the parts cast by this method are less dense.

The casting process consists of the following sequential operations:

1) modeling of wax compositions (in the case of casting on refractory models — their preliminary receipt);

2) installation of shower-forming pins and creation of a shower system;

3) covering the models with a refractory facing layer;

4) filling the furnace with refractory mass;

5) melting of wax;

6) drying and firing the form;

7) alloy melting;

8) alloy casting;

9) release of parts from refractory mass and shower system.

All castings during cooling to room temperature give a certain shrinkage, which includes 3 stages: shrinkage of the molten metal in the process of reaching the solidification temperature; shrinkage in the process of metal hardening; shrinkage during cooling of the casting from the crystallization temperature to room temperature. The causes of pores in the finished product during casting are: insufficient amount of alloy, use of "dirty alloy", Fig. 6.5. Foundry installations 92 overheating of the alloy, thin joints between volumetric parts, insufficient heating of the furnace, incorrect installation of the casting system. Ceramic materials Porcelain (porcelain) is a product of ceramic production, formed as a result of complex physical and chemical processes of interaction of constituent components under the influence of high temperatures.

French apothecary Duchateau (1776) was the first to use porcelain for the manufacture of dental prostheses. Classification of ceramic masses

1. Typical ceramics and their components: Aluminum oxide; Feldspar porcelain; Glass ceramics; Sieves for coatings with dyes;

2. By purpose: for the manufacture of all-ceramic (metal-free) fixed prostheses (inlays, overlays, crowns, bridge-like prostheses): Vitadur masses ("IPS Empress"), Keramik Kit ("Spezial") and others; for facing one-piece frames of metal prostheses: IPS Classic, d.SIGN ("Ivoclar", Liechtenstein), "Vita" masses (Germany), Ducera Kiss ("DeguDent" Germany), "Noritake" (Japan), "Ultropaline" (Ukraine); for lining solid-cast frameworks of metal prostheses and for manufacturing all-ceramic (without metal) fixed prostheses: Duceram ("Ducera", Germany).

3. According to the technology of manufacturing dental prostheses:

Traditional technology of applying porcelain mass to the base with subsequent firing in vacuum ovens (applying layers of cladding layer by layer or single layer of a neutral color with subsequent coloring); Production of ceramic dental prostheses by the casting pressing method based on fused models (IPS Empress system, "Ivoclar"); Computer technologies for manufacturing ceramic dental prostheses (CAD/CAM system). 93 The main properties of dental porcelain: density - 2.5-2.8 g/cm3; hardness - 400-600 kgf/mm 2 ; melting point – 870-1350 0C; coefficient of thermal expansion (KTR) – 7-9×10-6 0C -1 ; shrinkage during production - 16-42%; bending strength - 50 MPa; adhesion of opac era to metals is 25 MPa. Composition of porcelain dental mass: 60-75% feldspar, 15-35% quartz, 3-10% kaolin, oxides of various metals, dyes.

The percentage ratio of the components may vary depending on the purpose of the porcelain mass. Feldspar is most often an anhydrous silicate of potassium, sodium, calcium and aluminum. It is the main component of porcelain mass. During melting (1180-12000C), it increases in volume, turns into a vitreous mass, and at the same time accelerates the melting of more refractory components (kaolin and quartz) and gives the entire mixture a homogeneous structure and a shiny surface. Potassium feldspar is called "orthoclase" ($K_2O \times Al_2O_3 \times 6SiO_2$), sodium feldspar is called albite, and calcium feldspar is called anorthite. Kaolin is "Chinese" or white clay. Its basis is aluminosilicate - kaolinite ($Al_2O_3 \times 2SiO_2 \times 2H_2O$), which contains aluminum oxides, silicon dioxide and water, as well as various impurities of aluminum and metal oxides, which cause different shades of kaolin. The melting point of kaolinite is 18,000C. Kaolin makes the porcelain mass opaque, reduces its fluidity, preserves the shape of the product during heat treatment, and increases the firing temperature. It plays the role of a binder. Quartz is one of the types of silica - silicic acid anhydride, pure quartz - rock crystal. Belongs to refractory substances, melting point 17100C.

When heated to 5730C, the crystal lattice changes, quartz changes from the α-form to the β-modification. At a temperature of 800-14000C, the density of the material decreases and the volume increases by 15%, which significantly reduces the shrinkage of the entire porcelain mass. An excess of quartz increases the melting point, increases the viscosity of 94 crushed feldspar and gives the products chemical resistance and hardness. Fluxes are substances that are added to the porcelain mass (up to 25%) in order to lower its melting point and improve its flow properties. Glushii

are additives that eliminate the transparency of the porcelain mass. These include titanium dioxin or tin dioxin.

The process of adding them is called jamming. Dyes (up to 20%) are included in the opac to give a suitable color to the metal frame. The basis of the dyes are salts and metal oxides: blue tone - cobalt salts, black tone - iron oxide, yellow tone - a mixture of titanium oxide and zinc oxide, vermilion tone - vanadium oxide, red tone - gold dust. Leucite ($K_2O \times Al_2O_3 \times 4SiO_2$) is a crystalline phase of fired porcelain. The crushed components of the mass are mixed in a certain ratio, obtaining a mixture called a charge. Capsules are filled with this charge and placed in firing furnaces. Firing is carried out for 20 hours at a temperature of about 1300-1400 0C.

The process of firing the charge is called frying, and the resulting mass is called a frit. The frit is placed in cold water, then it is taken out and ground in ball mills. The crushed mass is sifted on sieves with the number of holes up to 1000 per 1 cm2, dried at a temperature of 130-160 0C, plasticizers (starch glue), silages and dyes are added. Depending on the melting temperature, ceramic masses used in dentistry are classified as: refractory (1300-1370 0C); medium melting point (1100-1260 0C); low-melting (860-1070 0C). As a rule, refractory porcelain masses are used for the industrial production of artificial teeth used in removable prosthetics, medium-melting and light-melting ones - for model restoration of the anatomical shape of teeth in metal-ceramic fixed prosthetics. The use of low-melting and medium-melting porcelain in orthopedic dentistry has made it possible to use furnaces with 95 nichrome heating elements for their sintering. Sintering is carried out according to the regime recommended by the factory - the manufacturer of dental porcelain.

There are 4 methods of sintering porcelain:

1. sintering of porcelain in a vacuum;
2. sintering of porcelain in diffusion gas (helium and hydrogen);
3. porcelain sintering under a pressure of 10 atmospheres;
4. to achieve an increase in the transparency of porcelain in the case of using atmospheric pressure during sintering, coarse-grained material is used.

During open firing, the porcelain mass becomes porous due to the evaporation of water and gases during chemical reactions inside the mass. In practice, the sintering of porcelain in a vacuum has become the most widely used. Vacuum sintering gives dental porcelain a more compact mass structure, which improves mechanical properties. The specific color of the material can be adjusted with the addition of opacifiers and dyes. Ceramic masses produce several colors.

Their correct combination during layering makes it possible to imitate the color of a natural tooth with a smooth transition from the relatively darker cervical part of the tooth to the lighter cutting edge. By purpose, porcelain masses are divided into opaque (basic), dentine and enamel (vitreous). The base materials contain metal oxides (silts) in their composition. They are used to model the inner layer of crowns and facings, so these masses are applied directly to the metal cap or to the metal of the frame. It should not crack and be strong.

The middle layer of the structure is filled with dentine mass. With its help, form and color are created. Enamel mass is used to make the outer layer of the product. It

should shine through, especially in the areas of the cutting edge of the tooth. To prevent cracks or wall breaks in the porcelain layers during cooling, the masses must have the same coefficients of thermal expansion. To increase the strength characteristics of porcelain, the method of condensation of porcelain particles is used.

There are 4 condensation methods:

1. electrochemical vibration; 96
2. an artificial or columnar brush;
3. by the gravity method (without condensation);
4. fluted tool - used most often.

Technological conditions for the use of ceramic masses: the start of firing must coincide with the beginning of the discharge of the atmosphere in the working chamber of the furnace; after reaching the optimal firing temperature, a full vacuum must be achieved; increasing the number of firings reduces the strength of porcelain and can lead to cracking; firing at a temperature higher than the optimum reduces the strength of porcelain due to an insufficient amount of glass phase; firing at temperatures below the optimum reduces strength due to an excessive increase in the glass phase; firing in a vacuum with an increase in exposure time, even at the optimal temperature, reduces the strength of porcelain.

Requirements for porcelain masses for covering metal frames:

- the porcelain mass should have small volume changes during the firing process;
- to be strong enough to wear after firing;
- create a good optical effect;
- the coefficient of thermal expansion must correspond to (or be slightly lower than) the KTR of the metal base, which it will cover;
- porcelain coating should be non-toxic and bio-inert.

A good optical effect of porcelain, which would be close to that of natural teeth, can be found with the correct ratio between the glass phase and porcelain opacifiers - phosphors, which are used by various salts and oxides of rare earth metals.

Porcelain and sieves (glass-crystalline materials) are used in dentistry for lining and manufacturing artificial teeth, inlays, crowns, and metal-ceramic prostheses.

Advantages of porcelain teeth:

a. excellent biological compatibility; 97
b. natural look;
c. stability of form;
d. high wear resistance.

Disadvantages: - fragility; - lack of a monolithic connection with plastic and metal bases; - have a larger mass, which increases the mass of the prosthesis; - has a different coefficient of thermal expansion with plastic and metal.

Porcelain masses are produced industrially in the form of:

1) powder and liquids (or only powder diluted with distilled water);
2) paste packaged in special syringe-containers;
3) standard ceramic blanks of cylindrical, rectangular or other shape.

The rules for mass storage include several simple provisions: powder masses must be protected from moisture; pasty masses should be stored at room temperature; masses must be protected from sunlight and high temperature; liquids should be stored at room temperature. The modern dental product market produces many types of ceramic masses, which differ in composition, quality, possibility of application and price policy. Representatives: "Ultropaline" (Ukraine), "Duceram Plus", "Duceram Kiss" (DeguDent, Germany).

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;

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

1. Auxiliary alloys include

A Nickel-titanium alloy, magnalium;

B Gold alloy 750 proof, silver-palladium alloy;

C Hammer metal, duralumin, brass;

D KHS, hammer metal

2. The technological method of extracting pure gold from alloys or cleaning it from impurities is called:

a) curettage;

b) refinement;

c) frying;

d) flotation.

3. Silver belongs to the group of precious metals, but it is not used as the main material for dental work, as it has the following properties:

a) is unstable to corrosion in the oral cavity;

b) has a very low melting point;

c) has low plasticity;

d) a corrosion protection layer is formed on the surface of silver and its alloys

4. Stainless steel is a multi-component glory. What metal is the basis of this alloy?

a) chromium; 99

b) platinum;

c) nickel;

d) iron

5. Low-melting alloys are characterized by a melting temperature lower than the melting temperature of tin, which is:

a) 525 0C;

b) 232 0C;

c) 180 0C;
d) 860 0C;

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4. Summary:

1. Metal alloys, basic physico-chemical and technological properties, requirements for metal alloys.

2. Classification of metal alloys.

3. Alloys based on precious metals: composition, physico-chemical and mechanical properties, use in dentistry;

4. Alloys based on base metals: types, composition, physico-chemical and mechanical properties, use in dentistry;

5. Low-melting alloys: composition, application.

6. Metal casting technology: casting methods, main stages, causes of occurrence, see

7. Metal corrosion: meaning, types, causes.

8. Ceramic masses, composition, properties, classification.

9. Methods of sintering porcelain, their advantages and disadvantages.

10. Oxidizing film, its importance in the production of metal-ceramic structures.

11. Molding masses, types, composition, application.

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 Center "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 Ukraine http://www.dec.gov.ua/index.php/ua/

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

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

PRACTICAL LESSON No. 3

Topic: Restoration of teeth with innovative one-piece constructions after endodontic treatment. Innovative tools for preparation. Modern methods of preparation for one-piece restorations. Safety zones for the preparation of vital teeth.

Goal: To acquaint students with solid constructions, with tools for preparation.

Basic concepts:solid crown, burs, Equipment: Computer, multimedia projector, phantoms.

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. Clinical and laboratory stages of production of a solid crown

- Classification of dental burs

-Methods of preparing a tooth for an integral crown

- Dissection safety zones

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

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.);

Preparation is a preparatory stage of processing a tooth, during which the doctor evenly rounds off the layers of dentin and tooth enamel from the surface. Correct grinding ensures the tightest fit of prostheses to the stump: inlays, dental crowns, bridges. Depending on the material of the orthopedic structures, the teeth can be subjected to strong or minimal grinding. For example, a larger layer of tooth enamel should be polished under metal-ceramics than when prosthetics are made with zirconium or ceramic crowns. In this article, we will talk about the methods of preparing teeth, and what features each type of grinding has. Rules for grinding teeth The doctor must prepare the patient: explain that you cannot move sharply during the preparation, and if necessary, you must give a sign with your left hand.

Facing living teeth under a metal-ceramic crown is performed only under anesthesia. The preparation is carried out as sparingly as possible: the doctor should not grind hard tissues more than is necessary to restore the tooth with a crown while preserving its anatomical shape.

It is possible to grind teeth continuously: there should be frequent breaks during processing, during which the tooth is irrigated with water to avoid overheating of hard tissues. Before work, the dentist must check the technical condition of the drill and the fixation of burs in the tip for turning.

Let's consider the main features of preparation.

It is important to start work from the lateral surfaces so that the adjacent teeth are not damaged, while approximately 0.3 millimeters of the surface is removed.

When installing a metal-ceramic crown, the nerve must be removed from the tooth. Then it is processed and a ledge is made. The ledge for the porcelain crown should be approximately 0.1 millimeters, and the stump should be conical or cylindrical in shape. Plastic crowns are also processed similar to the processing of porcelain products. The ledge for the stamped crown should be from 0.2 to 0.3 millimeters, and the tooth is given the shape of a cylinder. How thick the tooth will be is individual for each patient.

Types of tooth preparation for crowns

Tunnel turning. Refers to the classic method of turning under a metal-ceramic crown, in which the teeth are polished using a drill and a tip made of metal or diamond. High revolutions of the turbine device can lead to overheating, so a stream of water is supplied simultaneously with the treatment. The advantages of this type of preparation include control over the removed layers, which makes it possible to predict the result. But the drill can also often injure the mucous membrane, form microcracks and chips on the tooth.

Ultrasound preparation. Such grinding of teeth under crowns is painless and atraumatic. After preparation with ultrasound, the polished teeth remain free of chips, damage to the enamel, injuries of the nerve bundle - during treatment, the device does not come into contact with the teeth.

The method can be used only in cases where it is necessary to drain a small amount of dental tissues.

Laser treatment. A modern method of grinding teeth with caries or under a crown. The laser instantly heats the water in the surface tissues of the enamel, which leads to microscopic destruction in the tooth. Tooth fragments are removed using a water-air mixture. Such turning is more expensive than others, but the price is justified by the maximum speed of the procedure, low-traumatic, painless. Removal of hard fabrics with an air-abrasive mixture. The principles of tooth preparation with an abrasive jet consist in fast and accurate processing of hard tissues without heating them. A mixture of water and abrasive particles is supplied under high pressure, providing painless turning. The method is especially suitable for clinical cases of grinding teeth with living pulp. Use of chemically active substances for grinding under dental crowns. Reagents that soften the enamel are applied to the surface of the tooth.

With such grinding, there is no need for anesthetics - it is a gentle processing method that does not form chips and cracks, but it takes up to 30 minutes to wait for the effect of the chemical composition. principles of dissection For a long time, doctors acted exclusively according to Black's method.

The main principles of preparation are to remove the edges of enamel without support so that they do not break off later, dentin affected by caries, expansion of the cavity to areas of the tooth that are not susceptible. It was believed that this way you can protect the tooth from its further destruction. The cavity for the seal was created in the form of a box. Black was sure that such a preparation is the ideal option for the filling to be stable and withstand the load during chewing.

Currently, the following principle of carious cavity removal is a priority in dentistry. It was proposed in 1955 by I. H. Lukomskyi. It is called the principle of biological expediency. Modern dentists try to preserve areas of enamel and dentin as much as possible, tooth preparation is done carefully and economically. They cut the cavity to the visible healthy tissues of the tooth. Peculiarities of preparation of teeth for installation of crowns. Facing of teeth for crowns can be carried out in different ways, depending on the method of prosthetics, the material of the orthopedic structures, and the state of the hard tissues of the tooth. Let's analyze some common features of turning.

Dental bursis a device used by doctors to remove affected tooth tissue before further manipulations, such as filling with filling material. They are part of dental drilling and can be made from different materials such as stainless steel, tungsten carbide or diamond braze. Let's consider the types of burs in dentistry:

1. Fissure wrinkles. They are used to remove caries from depressions and furrows on the chewing surfaces of teeth.
2. Construction boron. They are used to create the shape of a cavity for filling or a crown.
3. Polishing burs. They are used for polishing the surface of the tooth after treatment.
4. Surgical burs. They are used in dental surgery to perform various procedures, such as tooth extraction or jaw shape correction.
5. Diamond burs. They have diamond solder and are used in special cases, for example, when working with ceramics or other hard materials.

Advantages:

— Efficiency. Various types of dental burs allow specialists to effectively remove cavities affected by caries, ensuring the preservation of healthy tooth tissues.

— Precision. Modern types of dental burs ensure high accuracy of processing, which is especially important in grinding teeth before future procedures.

— Minimizing discomfort. Thanks to the accuracy and speed of work, the use of these tools can reduce the time of procedures, which reduces discomfort for patients.

— Variety of functions. Different types of burs allow dentists to perform a variety of tasks, including surgery and cosmetic procedures.

— Preserving more healthy tissue. Modern technologies make it possible to minimize the removal of healthy tissue, which is especially important in the treatment of children and adolescents. Finally, all types of dental burs are an integral component of modern methods of dental therapy. These tools facilitate effective and precise treatment, and help improve patient response, making dental manipulations

comfortable. Forms of burs: Classification of burs by shape. One of the key tools used by dentists in their daily practice is various types of dental burs. Such tools come in different forms, each of them is designed for a specific task. Let's analyze the classification of burs in dentistry, how it helps to choose the necessary tool for a specific task:

— Fissured. Fissure types of dental burs are presented in a conical shape, they have a sharp tip and are used to remove carious lesions of depressions and grooves on the chewing surfaces of teeth. This shape ensures precise and effective destruction of the affected shell while preserving healthy areas.

— Buildings. Known ascone-shaped, shaped like a cone. They are used to create cavities to fill the veneer. Construction types of dental burs ensure accurate creation of a pocket suitable for further application of drugs.

— Polishing It is used for surface treatment of teeth. Their form can be diverse, includingcylindricaland conical options. Polishing types of dental burs help create a smooth surface that helps reduce the risk of plaque formation.

— Surgical. Participate in various surgical procedures. Their form may vary depending on the specific type of surgical intervention, including tooth extraction, jaw shape correction.

— Diamond They have a diamond tip and are used in special cases where work with hard materials such as ceramics is required. They provide high strength and processing accuracy.

In summary, the classification of burs by shape is an important aspect of modern dentistry. The correct choice of boron depends on the specific application and can significantly affect the results of the treatment.

Classification of dental burs by purpose

Let's consider the main types of dental burs and their functional purpose.

Fissured Specially developed for the elimination of carious lesions of the recesses and grooves of the teeth. Their difference lies in the sharp tip and conical shape, which ensures the accuracy of removing the affected shell. Fissure types of dental burs are used in preventive medicine and help prevent the development of caries in hard-to-reach places.

Construction Known as conical, they create a tooth cavity intended for further filling with materials. This type allows dentists to precisely shape cavities, providing a secure and long-lasting attachment.

Polishing They are used in the final stage of the procedure, namely for processing. These types of dental burs have the shape of a cylinder or cone, create a smooth surface, which not only improves the aesthetic appearance, but also prevents the accumulation of plaque and the development of caries.

Surgical. Intended for various surgical interventions in stomatology. Their shape can vary significantly depending on the specific type of surgery, including tooth extraction, jaw reshaping, and other surgical procedures.

Diamond. Having diamond tips, they are used in special cases when it is necessary to work with hard materials, for example, ceramics. Their high strength and precision make them indispensable for complex and technical manipulations.

Dimensions of dental burs

The exact and correctly selected size of the working tool plays a decisive role in achieving optimal results in dental therapy. Below we discuss the importance of understanding the differences in bur shape and size.

— Meaning and sizes of cutters. All types of dental species come in a wide range of shapes, diameters and lengths. Based on the functional purpose, the sizes can vary significantly. For example, for burs used in the removal of caries, the diameter of the tip is important, which determines how precisely the affected area can be removed, minimizing the loss of healthy shell.

— Length and application. Long types of dental burs are often used when accessing hard-to-reach areas of the oral cavity, while short ones are more convenient when performing certain procedures, such as polishing.

— Specialization. Each form is designed to solve a specific problem. For example, conical shapes create cavities for filling, and cylindrical shapes are effective for polishing.

— The role of dimensions in surgical interventions. During surgical interventions, various types of dental burs become even more significant. For example, when correcting the shape of the jaw, specialized surgical types of dental burs are used, they ensure accuracy and minimize trauma.

— Aspects of patient comfort. Smaller burs reduce discomfort during treatment, especially when sensitive or working with children.

— The importance of modern technologies. Modern technologies include the development of innovative materials and tools manufacturing methods. This includes diamond solders that increase the stability of devices, computer modeling that allows you to create devices with maximum accuracy and taking into account the individual characteristics of the patient.

Correctly selected sizes ensure accuracy and comfort during dental procedures. Modern technologies, taking into account the individual characteristics of each patient, complement the role of bur sizes in providing high-quality dental care.

Abrasiveness of burs

Dentistry, being a science and an art, strives for constant improvement of tools and methods of treatment. One of the key aspects of using dental burs is their abrasiveness. This indicator plays an important role in achieving a balance between the efficiency of removing affected tissues and sparing healthy tooth tissues.

— Abrasiveness Determines their ability to remove tooth tissue. This parameter is important to achieve optimal results during therapy. Types of dental burs with different abrasiveness are used for specific tasks, such as removal of carious formations, canal cleaning.

— Abrasiveness level and processing efficiency. High abrasiveness can be useful when it is necessary to quickly remove affected tissues, especially in cases of deep caries. However, excessive abrasiveness can lead to loss of healthy tissue and

even dentin damage. Therefore, it is important to carefully choose the level of abrasiveness depending on the specific situation and treatment goals.

— Impact on patient comfort. The level of abrasiveness also affects the patient's comfort during the procedures. Some patients may experience more sensitivity to abrasive materials, and using burs with lower abrasiveness may reduce discomfort.

— Diamond tips and their role in abrasiveness control. Modern dental technologies include the use of diamond brazes to create burs. Diamond soldering ensures high durability and accuracy. They also allow you to more finely adjust the level of abrasiveness, which is important when working in different areas of the oral cavity.

— Peculiarities of the selection of burs, taking into account the type of processing. When performing dental procedures, it is important to consider the type of treatment. For example, for cosmetic procedures such as veneers, low-abrasive types of dental burs may be used to minimize tooth loss and maintain a natural appearance.

— Computer technologies for regulating abrasiveness. Modern dental offices also often incorporate computer technology to fine-tune the abrasiveness of the burs. This allows dentists to individualize treatment based on the characteristics of each patient.

3.2. requirements for work results, including registration;

1. Classification of dental burs
2. Burs for preparation
3. Clinical and laboratory stages of production of a solid crown
4. Methods of preparation
5. Contraindications to tooth preparation
6. Safety zones for preparation of the welcome tooth

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

1. A 52-year-old patient complains of tooth wear, an aesthetic defect, and increased sensitivity to temperature stimuli. Objectively: all teeth are erased by 1/3 of the length of the crown, the interalveolar height is reduced by 5-6 mm. All teeth are stable. What structures are appropriate to restore the interalveolar height.

A. half-crown
B. plastic crowns
C. three-quarter crowns
D. solid crowns
E. Stamped - soldered crowns

2. A 35-year-old patient is undergoing preparation of teeth 21 and 22 for plastic crowns. The teeth are large, not depulped, discolored, defects in the crowns of the teeth are replaced by fillings. What process in the tissues of the teeth prevails when this manipulation is performed?

A. Vascular reaction.
B. aseptic inflammation
C. Pulp dystrophy.
D. Education of replacement dentin.
E. Destructive changes in nervous structures.

3. Patient M. applied to the clinic for prosthetics. Objectively: in 24, a defect of hard tissues within the mantle dentine, a cavity of the M.O. type. The destruction index of the occlusal surface of the tooth according to V.Yu. Milikevic is equal to 0.59. Choose a structure to replace the defect.
A. Tab.
B. Stamped crown.
C. Seal.
D. Pin construction.
E. Half crowns.

4. For a 43-year-old patient, full stamped crowns are made for 26 27. What material should be used for making stamps.
A. stainless steel
B. low-melting alloy
C. solder
D. KXC
E. Silver-palladium alloy

5. Patient T., 32 years old, complained about the destruction of the crowns of the lower chewing teeth, frequent loss of fillings. Objectively: the crowns of 36, 37 teeth are significantly destroyed, repeatedly filled, stable. On the X-ray, the canals are sealed to the tops. It is recommended to make restorative stamped crowns for 36,37 teeth. The thickness of the metal crown is:
A. 0.18-0.21 mm
B. 0.2-0.25 mm
C. 0.25-0.3 mm
D. 0.3-0.35 mm
E. 4-0. 45 mm.

4. Summary:
- Restoration of teeth with innovative one-piece constructions after endodontic treatment.
- Innovative tools for preparation.
- Modern methods of preparation for one-piece restorations.
- Safety zones for the preparation of vital teeth.

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 Center "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 Ukraine http://www.dec.gov.ua/index.php/ua/

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

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

PRACTICAL LESSON No. 4

Topic: Peculiarities of prosthetics of partial secondary dentition with modern metal-ceramic bridge prostheses. Prosthetics with metal-ceramic structures supported by implants.

Goal:to acquaint students with the features of prosthetics with metal-ceramic bridge-like prostheses, to analyze the biomechanics of a bridge-like prosthesis with implant support

Basic concepts:bridge prosthesis, supporting crowns, intermediate part, open spoon, closed spoon, transfer, abutment, silicone.

Equipment: Computer, multimedia projector, phantoms.

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

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

- Construction of a bridge-like prosthesis;
- Requirements for supporting teeth;
- Indications and contraindications for a bridge prosthesis;

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.);

Indications for the use of fixed prostheses are included defects of the dentition, that is, limited on both sides by the teeth. Depending on the extent and topography of the defect (the number of removed teeth and the functional value of those that remained), the possibility of using fixed dentures is determined. Fixed dentures are used for treatment in the following cases:

1) loss of one to four incisors;
2) loss of canines;
3) loss of a premolar or premolars;
4) loss of two premolars and the first molar;
5) suppose if two premolars, first and second molars are lost on one side of the jaw, with a preserved and well-developed third molar.

The use of a fixed bridge prosthesis of this length is contraindicated in the presence of a rudimentary third molar with a poorly developed root system. In these cases, it is necessary to replace the defect with a removable prosthesis.

Included defects are not always a contraindication to the manufacture of fixed types of prostheses. For example, the absence of a canine, two premolars and a molar on one or both sides of the jaw is also considered an included defect. However, with defects of such length, the use of fixed types of prostheses is contraindicated.

Clinical and laboratory stages of manufacturing a stamped soldered bridge prosthesis with an integrally cast intermediate part:

Clinical stage (in the presence of a doctor and patient, but without a dental technician):

1) examination of the patient and making the appropriate diagnosis (making a plan for prosthetics);
2) preparation of supporting teeth for stamped crowns (giving the stump of a tooth a cylindrical shape and hard tissues are removed from the chewing surface along the thickness of the metal), creating parallelism in order to most successfully install the future prosthesis;
3) impressions are taken from both jaws.

One of them is working, the other is auxiliary, both can be working. The working impression should accurately reflect the teeth, their necks, cutting edges and chewing surfaces, the alveolar process in the area of the defect. The auxiliary impression should have impressions of the dentition, especially the cutting edges of the front teeth and the chewing surface of the lateral teeth. The first clinical stage ends with the receipt of impressions. Models are cast from the impressions, and they are matched to the position of the central occlusion according to the features characteristic of each type of bite or with the help of wax templates. The method of determining central occlusion depends on the specific clinical picture, extent and topography of the defect.

Laboratory stage (without the presence of the patient and the doctor, but only the dental technician):

1) production of the model (plastering in the occluder, engraving of the neck, production of the anatomical shape of the tooth, inserting a plaster stamp, obtaining a plaster block);

2) production of a stamped crown (preliminary and final), through the samson machine, drawing the sleeve and firing it, followed by preliminary stamping, again firing and final stamping, then control firing, trimming the crown and its processing.

Again the clinical stage, in which the dental technician transfers his work to the doctor. At the same time, stamped crowns are fitted. After the doctor has tried them on the patient and if the doctor is satisfied with it, he takes another impression, but already together with the crowns, removes these crowns, processes them and gives the obtained result to the dentist.

Laboratory stage:

1) wax filling of the stamped crown (provided that there is a reliable support and they can be removed from the model);

2) the model is cast and plastered in the occluder;

3) modeling of the intermediate part; cleaning of the soldering places from the oxide film (by cleaning the carborundum head between the vestibular and oral surfaces of the tooth facing the defect, i.e. by mechanical processing (frictional force); modeling with wax (Lavax), namely buccal, palatal, lingual tubercles, vestibular, oral surface A bevel is made in the area of the vestibular surface;

4) replacement of wax with metal by casting method;

5) soldering and cleaning from solder;

6) thorough whitening.

Clinical stage: verification of the design of the bridge prosthesis. If the prosthesis fits, the same prosthesis is given to the dentist anew.

Laboratory stage:

1) polishing (sanded with a stiff hairbrush with the participation of DOV (State Institute of Optical Measurements) paste);

2) transfer of the finished prosthesis to the doctor.

The clinical stage is final. In it, the dentist tries on and fixes the prosthesis in the patient's oral cavity, namely the final fitting and fixation with cement. At the same time, the tangential form on the upper jaw is used throughout the dental arch, and from below on the frontal surface. The washing form is used in the lateral part of the lower jaw.

If the intermediate part of the bridge prosthesis is made in the form of a facet, then after the structure is welded and fitted in the oral cavity, the prosthesis is polished and polished. Then the prosthesis is installed on the model and the vestibular part of the body of the bridge prosthesis is modeled with wax, after which the prosthesis is plastered in a cuvette, the wax is evaporated, plastic is formed in a previously selected

color according to a special coloring for plastic, and it is subjected to polymerization. Then the prosthesis is removed from the cuvette, processed and polished. The finished bridge prosthesis with facets is fitted again in the clinic, checking that the facets do not touch the mucous membrane to prevent bedsores.

The bridge prosthesis should be well polished. On a rough, rough surface, the corrosion process begins earlier and proceeds faster. In addition, there should be no pores and sinks in the intermediate part and solder.

After grinding and polishing, the remains of the polishing paste are removed, the prosthesis is treated with alcohol. Then it is fitted in the oral cavity. At the same time, it is noted that the prosthesis can be:

1) free;
2) difficult, which needs to be adjusted.

After applying the bridge prosthesis, the following are checked:

1) the accuracy of the edges of the artificial crowns to the necks of the supporting teeth;
2) stability of the bridge prosthesis on the supporting teeth (there should be no balancing);
3) contact of artificial teeth and crowns with opposing teeth;
4) contact of artificial crowns with neighboring teeth;
5) if there is an increase in the height of the lower third of the face, it is necessary to identify the cause and eliminate it.

Next, you should pay attention to the location of the intermediate part of the bridge prosthesis in relation to the mucous membrane of the alveolar process.

After the prosthesis is placed on the supporting teeth, the occlusion is verified - both central, lateral and anterior, the prosthesis can be fixed on a temporary material (aqueous dentin) for 1-2 days to adapt the patient to the structure.

Prosthetics are completed by fixing the prosthesis to cement (phosphate, bisphosphate, adhesive, zinc-phosphate, glass ionomer).

Features of the design of the intermediate part of the bridge prosthesis.

The intermediate part can be of the following types:

1 - tangent to the front teeth

2 – hanging with high clinical tooth crowns

3 – hanging with low clinical tooth crowns

4 – saddle-shaped all-metal

5 – hanging with lining of the labial or labio-chewing surface

6 - saddle-shaped with lining of visible surfaces - masticatory and partially lateral surfaces of artificial teeth of the lower jaw.

There are special requirements for the design of the intermediate part. Of great importance are its shape and relation to the adjacent tissues of the prosthetic bed - the mucous membrane of the alveolar process.

In the frontal and lateral parts of the dental arch, the position of the intermediate part is not the same. If in the frontal section it must touch the mucous membrane without pressure on it, for which the model in this projection is covered with insulating varnish, then in the lateral section between the intermediate part of the

prosthesis and the mucous membrane that covers the alveolar process, there must be a free space that will not interfere passage of food components (washing space).

In the case of the tangential form, the absence of pressure on the mucous membrane is checked with a probe, passing a sharp end between the mucous membrane and the intermediate part. In the lateral parts of the tooth row, a washing space is created, approximately 2-3.5 mm (for the thickness of the match), this is especially true of the lower jaw. On the upper jaw, the washing space is made smaller, taking into account the degree of exposure of the teeth when smiling. In each specific case, this issue is decided individually.

Solders, fluxes, bleaches. Requirements, purposes of application.

The soldering process is the joining of metal parts during heating using a similar alloy with a lower melting point. Solder must meet the following requirements:

1) have a melting temperature lower than that of basic metals by 50-100°C and a narrow melting temperature range;
2) to flux well, i.e. to be fluid;
3) diffuse well, penetrate into the thickness of basic metals;
4) to be resistant to the action of acids and alkalis;
5) be similar to base metals in color;
6) have resistance against corrosion in the oral cavity;
7) in terms of physical and mechanical properties, approach the metals that are soldered;
8) do not create shells and bubbles.

All solders are divided into classes by melting temperature:

- low-melting (with a melting temperature below 400-500°C, they include: on tin, lead, cadmium, bismuth and zinc bases);
- refractory (with a melting point above 400-500°C, they include: on copper, silver, gold, aluminum, magnesium and nickel bases).

In practice, the following groups of alloys used as solders are distinguished:

- lead-tin alloys, both in their pure form and with the addition of gold, cadmium, silver, etc.;
- zinc-based alloys with aluminum, tin, copper;
- copper-based alloys with zinc, tin, nickel, manganese, phosphorus and silver;
- silver-based alloys with copper, zinc, tin, cadmium, manganese, phosphorus and nickel;
- aluminum-based alloys with silicon and copper.

The soldering process takes place during heating with an open flame. A film of oxides may form on the surface of the metals being soldered, which will prevent the diffusion of the solder. Therefore, in the process of soldering, it is necessary not only to melt the solder, but also to force it to spill over the surfaces to be soldered, and to prevent the formation of an oxide film. This is achieved by using various substances for soldering and fluxes. Borax was the most widespread. During heating, borax absorbs oxygen, preventing it from reaching the metal and the formation of oxides on the surface of the latter. The use of fluxes helps to dissolve the oxide film that floats

to the surface of the solder in the form of slag, which, as a result, gets good contact with the surface of the base metal.

Fluxes should have the following properties:

1) the melting point is lower than the melting point of the solder;
2) easily spreads over a metal surface;
3) decompose and weather at the melting point;
4) remove all oxides that form on the surface of the metal during soldering;
5) easily removed from the surface after the soldering process.

The role of the flux in the soldering process is complex and boils down to:

- cleaning the surface of solid material;
- reduction of the surface tension of the molten metal;
- deposition on the surface of a solid metal of metal ions contained in the flux itself, and formed due to the dissolution of solder in the flux.

Substances used to dissolve scale are called bleaches. Whiteners are selected with such a calculation that they dissolve scale well and affect the metal as little as possible. During heat treatment, stainless steel is covered with a thick layer of oxide film, which must be removed using strong chemicals containing hydrochloric and sulfuric acids. Technicians are advised to use these solutions, know the bleaching regime and follow it.

Production of the intermediate part of the stamped and soldered bridge prosthesis.

The gap between the crowns is filled with a roller made of wax, if there are no standard blanks. The roller should be slightly higher and wider than the crowns. After installing the roller, the models are closed, thanks to which they will receive an imprint of the antagonists on the roller. The teeth are modeled from the roller with a spatula, for which the remaining wax is first removed so that the width of the roller is equal to the width of the adjacent teeth. Then it is drawn according to the number of missing teeth, and modeling of each tooth begins, creating the appropriate anatomical shape of the teeth. On the oral side, a sharp transition from one tooth to another is not created to prevent injury to the mucous membrane of the tongue. More attention should be paid to the modeling of the chewing surface. Incorrect modeling can cause the death of supporting teeth or teeth of antagonists due to their overload during movements of the lower jaw. The ridges of the chewing teeth should be rounded, not sharply defined and not create blocking areas during jaw movements.

When the side of the crown, which is reversible to the defect, has a small height, then a process must be made from the body of the bridge prosthesis to the lingual side of this crown. This allows you to increase the surface of the connection of the crown with the body of the prosthesis, and prevent its detachment. The best option in this case is occlusion on the pad.

There are special requirements for the design of the intermediate part. Of great importance is its shape and relation to the adjacent tissues of the prosthetic bed - the mucous membrane of the alveolar process.

In the frontal and lateral parts of the dental arch, the position of the intermediate part is not the same. If in the frontal section it must touch the mucous membrane

without pressure on it, for which the model in this projection is covered with insulating varnish, then in the lateral section between the intermediate part of the prosthesis and the mucous membrane that covers the alveolar process, there must be a free space that will not interfere passage of food components (washing space).

In the case of the tangential form, the absence of pressure on the mucous membrane is checked with a probe, passing a sharp end between the mucous membrane and the intermediate part. In the lateral parts of the tooth row, a washing space is created, approximately 2-3.5 mm (for the thickness of the match), this is especially true of the lower jaw. On the upper jaw, the washing space is made smaller, taking into account the degree of exposure of the teeth when smiling. In each specific case, this issue is decided individually.

Taking an impression with an open spoon. There are two options for making an open spoon: in the clinic and in the laboratory. When manufacturing a prosthesis based on a large number of implants, it is recommended to manufacture an individual spoon by the laboratory method.

When obtaining an impression by the method of an open spoon, splinting of transfers is usually used.

Splinting of transfers – connection of transfers in the oral cavity or on the model for more accurate production of the frame and avoiding problems with its fitting. Splinting can be done with the help of non-shrink plastic or liquid composite, on a frame made of floss or wire, or without a frame if the transfers are located close together. Splints must be cut into segments after polymerization to relieve internal stress and rejoin.

Making an open spoon in the clinic. It is best to use a transparent plastic spoon, as through the transparent walls of the spoon you can see the transfer and mark the place for forming the hole. Next, a hole for the fixing screw of the transfer is formed in the spoon with the help of a cutter: during the removal of the impression, the impression material interferes with the inspection, so it is recommended to form a hole with a large diameter. When trying on a spoon, it is advisable to remember the external landmarks and, when inserting the spoon, pay attention to how it relates to the lips, nose, midline, etc. If an impression is removed from several adjacent implants, it is recommended to connect them together with a non-shrinking plastic, for example Pattern Resin: this allows you to exclude the scrolling of the transfers in the impression when fixing the analogs of the implants, but if the inclination of the implant is more than 20 degrees, it is not necessary to connect the transfers – it will be impossible to extract these transfers together with the print.

If the distance between the transfers is small, Pattern Resin is applied with a brush drop by drop directly on and between the transfers. If the distance between the transfers is large, they should be tied with a passive tension floss that will allow Pattern Resin to be applied to the floss like a frame. Pattern Resin is applied only to the projection of the transfer. Contact with the gums and the fixing screw should be avoided.

Making an individual open spoon in the laboratory. First, the previous impression is removed with a closed spoon. After casting the model with an ash mask,

the impression transfers are bonded together with Pattern Resin. With the help of a thin diamond disc, the impression transfers are separated from each other and transferred to the clinic. For easier landing of transfer checks in the oral cavity, their numbering is recommended. An individual impression spoon is made on the model, which greatly facilitates the procedure of removing impressions and improves their accuracy. Transfer checks are fixed in the oral cavity and connected to each other with a drop of Pattern Resin.

Obtaining impressions during prosthetics on implants

If the impression is removed using a polyvinylsiloxane mass, then first the corrective mass is applied around the impression transfers, and then a spoon with the main mass is fitted in the oral cavity. If the impression is removed using a monophasic impression material, then the first portion of the material is applied around the transfers using a special syringe, and the second portion is introduced into the oral cavity in a spoon. In order for the monophasic material not to flow through the holes in the spoon, they should be covered with plates of basic wax. The screws of the impression transfers should come out through the holes in the spoon. After hardening of the impression material, the screws should be unscrewed and pulled out. Then the spoon is removed from the oral cavity together with the transfers. The implant analogue is fixed on the impression transfer with the help of a fixing screw. It is very important not to apply excessive force to avoid scrolling the impression transfer in the impression.

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;

- Method of removal with an open spoon.
- Method of removal with a closed spoon.
- Connecting the implant to the abutment.
- Indications for prosthesis on implants.
- Requirements for bridge prostheses.

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

1. A 57-year-old patient applied to the clinic of orthopedic dentistry with complaints of poor chewing of food and an aesthetic defect of the dentition. Objectively: the mucous membrane is of normal color, the remaining teeth are immobile, without obvious signs of pathology of the hard tissues of the teeth.

00 17 16 15 14 13 12 11 21 22 23 24 25 26 27 00

00 37 36 35 34 33 32 31 41 42 43 00 00 00 47 00

A stamped and soldered bridge prosthesis with a plastic lining was made for the patient. What constructive materials affect the mucous membrane of the oral cavity?

A. Metal ions can affect the microflora of the oral cavity, plastic can cause an allergic reaction.

B. Metals and plastics do not affect the mucous membrane of the oral cavity.

C. Have a beneficial effect on the mucous membrane of the oral cavity.

D. Only metal ions affect the mucous membrane of the oral cavity.

E. Only plastic components affect the mucous membrane of the oral cavity.

2. A 65-year-old patient sought help from the clinic of orthopedic dentistry with complaints of difficulty in chewing food due to cementation of the bridge prosthesis on the left upper jaw. Objectively: the prosthesis on the chewing surfaces of the supporting 33, 36 tooth crowns has worn off. It is necessary to rework such a prosthesis: make stamped crowns and solder the intermediate part. Why do you need low-melting metals in this process?

A. to receive stamps and counter stamps

B. for preparing fluxes

C. for soldering metal parts

D. for fitting crowns

E. for chrome plating of crowns

3. A 35-year-old patient has a stamped-soldered bridge prosthesis made in the orthopedic dentistry clinic. Crowns are fitted in the oral cavity. What clinical stage is next

A. design verification

B. preparation of teeth

S. production of the intermediate part

D. fixation of the prosthesis

E. removal of occlusal impression

4. Stamped-soldered bridge prostheses made of stainless steel are made for the patient. In the process of manufacturing crowns, the sleeves are calibrated. Which of the listed devices is used?

A. Bromstrom

V. Larina

S. Parker

D. Kopa

E. Samson

5. A 56-year-old patient complained of difficulty in chewing food. Objectively: absence of 14, 25 teeth, mobility of 15, 16, 17, 26, 27 teeth of the first degree. It is necessary to make bridge prostheses with splinting elements. Choose an impression material for taking impressions from this patient.

A. Stens

V. Repin

S. Gypsum

D. Stomalgin
E. Orthokor

6. A 47-year-old patient applied to the orthopedic dentistry clinic with complaints of poor chewing of food and an aesthetic defect of the dentition. Objectively: the mucous membrane is of normal color, the remaining teeth are not mobile, without obvious signs of pathology of the hard tissues of the teeth.

18 17 0000 14 13 12 11 21 22 23 24 25 00 27 28
38 37 0000 34 33 32 31 41 42 43 44 00 00 47 48

The patient is shown the manufacture of bridge prostheses. The doctor needs to choose the type of bridge prosthesis and explain the advantages of one or another design. What are the advantages of solid cast bridges over stamped and soldered bridges?

A. more accurate, aesthetic, mono-metal
B. no benefits
C. preparation of solid tissues by 0.5 mm
D. expensiveness
E. high requirements for the prosthesis manufacturing technology

7. A 37-year-old patient applied to the orthopedic dentistry clinic with complaints of poor chewing of food and an aesthetic defect of the dentition. Objectively: the mucous membrane is of normal color, the remaining teeth are not mobile, without obvious signs of pathology of the hard tissues of the teeth. Orthognathic bite, deep incisor overlap, the phenomenon of bruxism. The patient has high aesthetic requirements.

18 17 16 15 14 13 00 00 00 00 23 24 25 26 27 28
38 37 36 35 34 33 32 31 41 42 43 44 45 46 47 48

Which bridge prosthesis is the most optimal to use in this case?
A. metal-ceramic bridge prosthesis with cast oral surface
B. combined stamped-soldered bridge prosthesis
C. metal-plastic bridge prosthesis
D. plastic bridge prosthesis
E. adhesive bridge prosthesis

8. A 37-year-old patient complained of missing teeth and impaired chewing of food. Objectively: 14, 15, 16 teeth are missing on the upper jaw. It was decided to make a solid cast bridge prosthesis with support for 13, 16, 17 teeth. What impression materials are used to remove impressions during the manufacture of an integral bridge prosthesis:

A. Visk
V. Siliconov
S. Alginate
D. Crystallizing
E. Thermoplastic

9. The patient is 45 years old, it is planned to make a bridge prosthesis with support for 23 and 26 teeth. Objectively: there are wedge-shaped defects in the area of the necks of the supporting teeth, the teeth are stable, the bite is orthognathic. Which type of gingival preparation of abutment teeth is more appropriate to use in this case?

A. with a ledge symbol
V. without a ledge
S. with a direct ledge
D. with a sloping ledge
E. with a ledge

10. The patient undergoes orthopedic treatment of the included defects of the dentition of the upper jaw with fixed cast dentures. During the patient's second visit, it is necessary to check the conformity of the inner surface of the metal framework of the prosthesis with the surface of the teeth being prepared. How can this be done?

A. in the oral cavity by the stomatoscopic method
B. in the oral cavity using copy paper
S. in the oral cavity with the help of silicone materials
D. visually on the models in the articulator
E. in the oral cavity with the help of a wax plate

4. Summary:

- Peculiarities of prosthetics of partial secondary dentition with modern metal-ceramic bridge prostheses.
- Prosthetics with metal-ceramic structures supported by implants.

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 Center "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 Ukraine http://www.dec.gov.ua/index.php/ua/

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

PRACTICAL LESSON No. 5

Topic: Aesthetics of metal-ceramic restorations. Choosing the color of the future restoration. Errors and their complications in integral fixed prosthetics. Techniques for eliminating errors in integral fixed prosthetics.

Goal: To acquaint students with the method of choosing the color of the future restoration, to acquaint them with errors that may occur at various stages of prosthetics with solid cast structures.

The main onesconcept: Aesthetics, Vita scale, 3D Master, bridge prosthesis fracture, bridge prosthesis fixation, abutment tooth overload.

Equipment: Computer, multimedia projector, phantoms.

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:
    1. 2.1Factors leading to clinical errors in prosthetics with crowns.
    2. The main mistakes about prosthetics with crowns.
    3. The main complications that arise during prosthetics with crowns.
    4. Aesthetics of ceramic restoration

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

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.);

Injury to the mucous membrane of the gums, cheek, oral cavity organs during tooth preparation. To prevent these complications, which most often occur as a result of the use of separation discs, you need to use a protective carriage that is fixed on the straight tip. The most effective means of preventing the disk from jamming between the teeth is to replace the separation technique: a disk is used in which the abrasive material is applied only to the end part, and it is placed not between the teeth, but on the occlusal surface on the line of the clinical neck. The cutting end part is thicker than the metal base of the disk, which prevents it from jamming. The second option: the use of an angular tip and shaped heads without the use of disks.

Insufficient grinding of hard tissues from the chewing surface, as a result of which the artificial crown increases occlusion, and due to the concentration of

pressure on this tooth in different phases of the movements of the lower jaw, traumatic periostitis may develop. To prevent such a complication, a layer equal to the thickness of the metal sleeve is removed from the entire occlusal surface.

Errors and complications are often observed in the manufacture of stamped crowns with plastic facing. Such crowns meet aesthetic requirements to a greater extent than metal crowns. The technology of their production is quite simple, so they are widely used in dental practice. However, these crowns have a number of significant disadvantages that lead to complications in the process of their application. Stamped crowns with a plastic lining only initially match the color of natural teeth to a certain extent after their strengthening. After a relatively short period (1-2 years), the color of the crowns changes, this is especially noticeable when facing steel crowns. In addition, due to the low physical and mechanical qualities of plastic, they wear out quite quickly, and then the crown loses its original shape. Often the underlying metal frame is exposed or shines through. Veneered crowns do not have sufficient strength, and their manufacture requires the grinding of a significant layer of hard tooth tissue. In the process of manufacturing stamped crowns with plastic lining, errors and complications are possible at all clinical and technical stages.

Mistakes and complications are possible during treatment with porcelain crowns. The fitting of a single-piece frame begins with an assessment of the tightness of the edge of the crown frame (with metal-ceramic – the cap) to the line of the ledge or the edge of the crown. They check whether the frame is not balancing on the model. Visually check the conformity of the shape of the tooth stump on the model and in the mouth. If the edges of the crowns (cap) are exactly adjacent to the stump of the tooth on the model and the frame does not balance, then the frame is put on the stump of the teeth being prepared, having previously wiped it with alcohol. With the correct preparation, the frame is easy to put on. If this does not happen, then with the help of copying paper, areas of the stump of the tooth that interfere with the correct fit of the frame are identified and they are ground. The correct fit of the frame can also be hindered by inaccurately cast areas of the inner surface of the crowns (caps), which can be seen upon careful examination. These are rounded or flat protrusions formed during casting on a porous refractory form. They are ground to fit the frame in the mouth. After the frame, according to the doctor, is fitted, the tightness of the fit of the inner surface of the crown (cap) to the stump of the tooth is evaluated. For this purpose, a mixed impression mass is introduced into the crown - sielast, thiodent. The following indicators testify to the accuracy of production: in the neck area (the inner surface at the edge of the crown), this mass lies in a thin layer through which the metal shines through, in the remaining areas, the mass layer is uniform in thickness (0.1-0.2 mm). Check the accuracy of occlusion of their contacts during all movements of the lower jaw. If the occlusion surface will be partially or completely covered with plastic or ceramic, then during all occlusion movements between the cap and the occlusal surface of the antagonist teeth, a clearance of 1.2-1.5 mm should be maintained.

Clinical evaluation of bridge prostheses before their fixation is carried out according to the following parameters: ease of application on the stumps of

supporting teeth, tangential or flush shape of the body of the prosthesis, slight overlap of the mucous membrane of the alveolar process with the tangential shape of the prosthesis, accuracy of reproduction of occlusal surfaces and absence of concentration of occlusal contacts on individual teeth during all jaw movements, the accuracy of reproducing the shape and color of artificial teeth. The requirement for ease of fitting the prosthesis is due to the fact that when the metal frame is exerted, internal loads occur, which over time can cause chipping of the ceramic coating. Internal loads can also occur when the prosthesis is fixed with too thick cement.

There are several types of dental cements. They consist of powders and liquids. The main components of all powders are oxides of a number of elements: zinc, magnesium, calcium, silicon, aluminum, phosphorus, fluorine, iron and others. The basis of liquids is ortho-, meta- and para-phosphoric acids.

Cements are divided into three groups according to their composition: phosphate cements, silicate cements, and mixed cements. Cements with a predominant content of silicon oxide and other silicates are called silicate. The mixed group of cements consists of components of phosphate and silicate cements.

Taken in the specified ratios specified in the instructions, the powder and liquid when mixed form a well-plastic mass, suitable for molding and other uses within a few minutes. Hardened cement has sufficient hardness and strength. The strength properties of cement depend on the taken ratios of powder and liquid, as well as on the method of preparation of the mixture.

Our studies have shown that the hardness of cement of the same series, prepared by different doctors according to the method they are used to, can be different. Thus, for one of the tested cements, it ranged from 28 to 52 kgf/mm 2 according to Vickers. The tensile and compressive strength of the same cement were equal to 136.7 and 764.3 kgf/cm2, respectively, which indicates their sufficiently high strength. Dental cements show a slight shrinkage during hardening. The coefficient of thermal expansion of cements is 8-9x10-6. They retain their properties in a humid environment, are resistant to the action of weak bases, and are less resistant to acids. The following cements are widely distributed in our country.

Phosphate is cement. The powder includes 80% zinc oxide, as well as magnesium, aluminum, calcium and silicon oxides. The liquid consists of 57% orthophosphoric acid, 12% aluminum and magnesium phosphates and water.

Bisphate also belongs to the group of phosphates. It has high physical and chemical properties, it is used to fix various fixed dental prostheses. The setting time is about 3 minutes.

Silicate-cement powder. It consists of 41% silicon oxide, 30% aluminum oxide, magnesium, calcium, fluorine, phosphorus, etc., liquid - 43% ortho-, meta- and para phosphoric acids, 8% zinc and aluminum oxides and water.

Silicon is a silicate cement for sealing teeth.

Ercodont and salidont are a mixed group of cements. They are used for sealing teeth.

All cements in dental practice are used as auxiliary materials. Their use should be carried out according to the instructions.

The last clinical stage consists in strengthening the bridge prosthesis on the supporting teeth. This stage is very responsible. Despite the careful preparation of the abutment teeth and fitting of the crowns in the oral cavity, the bridge prosthesis cannot always be placed in its place due to small inaccuracies that violate the parallelism of the abutment teeth. The prosthesis should fit freely in its place, not resting on one or another part on the support points, not pulling and not pushing the teeth between which it is located. This is extremely possible, as otherwise these teeth will be injured. That is why you should not apply force to the bridge prostheses, but it is better to grind the interfering parts on the supporting teeth, and then the prosthesis will fit freely in its place.

Both crowns and other abutments should be well fitted to their abutments beforehand when they are fitted, but there may be some misalignment when the impression is taken and they will not fit as perfectly as before during the fitting . In such cases, the prosthesis is sometimes not even placed in its place. Sometimes, the reason that the prosthesis does not fit can be improper welding of parts of the prosthesis (displacement of the crowns). In such cases, the prosthesis should be unsoldered, the impression should be removed again together with the crowns in the oral cavity, and they should be soldered to the body of the prosthesis again, but with a new impression and model.

Parts of the prosthesis adjacent to the gingival edges should not be sharp, cut into and press on soft tissues, injure them. These complaints of the patient are often ignored, as they believe that the pain caused in such cases during the application of the prosthesis will pass in a few days and everything will be fine. And indeed, after a week - two patients stop feeling the extra parts cutting into the gums, but the irritation does not stop, and after one or another period of time, longer or shorter, depending on different conditions, such phenomena occur that require the immediate removal of the prosthesis . After removing the prosthesis, the doctor usually wonders how the patient could tolerate its presence in the mouth for so long: the entire area occupied by the prosthesis is covered with ulcers and bleeding, the prosthesis itself is covered with sticky mucus and stinks. All this can be prevented by careful fitting of the prosthesis and its supporting parts to the supporting points and the gingival margin to which it adjoins. In general, it should be taken as a rule that a crown or a bridge prosthesis should be placed freely and painlessly on their supporting points, pain should not be felt when closing the jaws, that is, when pressing on the chewing surface of the prosthesis.

No part of the bridge prosthesis should interfere with articulation. Just in that point, most often, there are serious omissions. The fact is that completely healthy teeth, which are extremely sensitive to grinding, are usually chosen as a support for a prosthesis. Meanwhile, the chewing surface of the supporting teeth must be polished to the thickness of the crown. If we take into account that the supporting teeth are molars and premolars, then it becomes clear that these teeth, which have well-developed tubercles, are not so easy to process by grinding if the pulp is alive. This is the reason for the increase in bite with bridge prostheses. It should be pointed out that even the slightest increase in bite entails trauma to the periodontium of the

supporting teeth, since all the force of pressure in this case falls exclusively on these teeth, and they eventually loosen and become sensitive when pressed. In addition, in places where the bite is increased, antagonists wipe the crowns until the chewing surface of the teeth is exposed, which is again harmful for them, places are formed that contribute to the retention of food residues that collect between the crown and the tooth, often even cold pains appear and warmth.

When the prosthesis is placed on the supporting teeth, the occlusion is carefully checked once again. All points that interfere with the correct closing of tooth rows are eliminated by grinding the metal. If the patient feels some awkwardness, then the prosthesis is reinforced with artificial dentine and left in the oral cavity for 1-2 days, after which these phenomena disappear completely. If the complaints do not disappear, it is necessary to once again check the occlusion, the length of the crowns, the relationship of the artificial teeth to the mucous membrane of the alveolar process.

When strengthening the bridge prosthesis, it is necessary to thoroughly dry the metal crowns and supporting teeth with alcohol, ether or warm air. Special visfat cement for strengthening bridge prostheses is mixed to a sour cream-like consistency and filled with crowns. The abutment teeth are covered with cotton pads and changed from time to time, keeping the teeth dry, close to the application of the prosthesis and hardening of the cement, in modern installations you can use a saliva suction device. Then the excess cement is carefully removed and the edges of the crowns and the gingival margin are lubricated with petroleum jelly or a special varnish to insulate them from saliva. The patient is advised not to eat or drink for 2 hours.

Fixation of bridge prostheses is based on the same principles as crowns. Depending on which of the structures is taken as a support, some differences appear in their fixing with cement. There are features that are characteristic of the method of fixing only bridge prostheses. They are related to the fact that to fix bridge prostheses, it is necessary to simultaneously strengthen two or three, and sometimes more, crowns located at a significant distance from each other. Therefore, it takes more time to degrease and dry the teeth, although the duration of cement hardening remains the same as when mixing it for one crown. The most frequent complications in the fixation of bridge prostheses are overbite and decementing of supporting structures. An increase in bite occurs due to the fact that excessively hardened cement is not fully squeezed out from under the crown, and the crowns are decemented because saliva gets into them. Thus, good isolation of supporting teeth from saliva and quick application of bridge prostheses are the main conditions for successful performance of this manipulation.

If, after fixation of the bridge prosthesis, disconnection of the bite outside the bridge prosthesis is detected, it is necessary to immediately remove the bridge prosthesis and repeat the described manipulations again.

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

3.3. requirements for work results, including registration;

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

1. Patient H., 36 years old, applied to the clinic for prosthetics. It was decided to make a stamped metal crown for 46 teeth. During the inspection of the structure in the oral cavity, it can be seen that the crown does not correspond to the anatomical shape of the tooth, the edge of the crown does not correspond to the edge of the gums. What to do in this case:

A. Additionally, grind the chewing surface of tooth 46.
B. Remove the anatomical impression and return the crown to the technician.
C. Shorten the crown on the plaster column.
D. Break the crown on the punch.
E. Restamp the crown.

2. During the preparation of tooth 47, the doctor damaged the lateral surface of the patient's tongue with a separation disk. A few minutes later, the bleeding patient was taken to the dentist. Objectively: on the right side of the surface of the tongue - a deep cut wound of about 2-3 cm, from the depth of which - bleeding with bright red blood. What are the doctor's tactics in this clinical case.

A. Ligation of the external carotid artery
B. Ligation of the lingual artery in the triangle by N. I. Pirogov
C. Antiseptic treatment of the wound and tamponade
D. Stopping bleeding by applying a clamp in the wound
E. Deep dull stitching of the wound+

3. Patient Sh., 47 years old, turned to the clinic with complaints about chipping of the ceramic coating in the area of the cutting edge 33 of the metal-ceramic prosthesis crown. The prosthesis was made 1.5 months ago. Orthognathic bite. What is the possible reason for this error:

A. the frame metal was overheated during the final processing of the prosthesis;
B. the doctor excessively shortened the stump of tooth 33;
C. fixation of the crown on thick cement;
D. incorrect modeling of the cutting edge of the crown;
E. insufficient cutting layer of metal-ceramic mass was applied.

4. What complications can cause misalignment of occlusal contacts during prosthetics with a metal-ceramic crown:

A. abrasion of antagonistic teeth;
B. fracture of the crown of the tooth, which has been restored;
C. possible chipping of the ceramic coating due to local functional overload;
D. all the above complications are possible;
E. development of traumatic periodontitis of the abutment tooth.

5. Patient P., 39 years old, turned to the clinic with complaints about permanent dis-cementation of the crown with support on the 13th tooth. The metal-ceramic crown was made 1.5 years ago. During this time, the patient went to the clinic three times for cementation of the structure. The tooth is devitalized. What caused this complication:

A. lack of ledge;
B. the presence of a tab;
C. significant conicity of the prepared tooth;
D. wrong design choice;
E. filling of root canals with endomethasone.

6. Patient S., 55 years old, complains of an aesthetic defect of a metal-plastic crown on the 11th tooth. Objectively: the plastic is chipped on the 11th tooth. What is the possible reason:

A. polishing defect;
B. plastic defect;
C. casting defect;
D. violation of polymerization technology;
E. violation of occlusion.

7. A 28-year-old patient came to the orthopedic dentistry clinic for the stage of fixation of a metal-ceramic bridge prosthesis with a support on the 24th, 26th tooth. During the fitting, no defects were found, and after fixation, the doctor found contact between the upper and lower teeth only in the area of the prosthesis. What mistake was made when fixing the prosthesis.

A. Medical treatment of abutment teeth was not carried out
B. Not dried supporting teeth and crowns
C. Fixation of the prosthesis on a dense mass
D. Improper preparation of abutment teeth
E. Fixation of the prosthesis on liquid cement

8. A 47-year-old patient applied to the orthopedic dentistry clinic with complaints of poor chewing of food and an aesthetic defect of the dentition. Objectively: the mucous membrane is of normal color, the remaining teeth are immobile, without obvious signs of pathology of the hard tissues of the teeth.

18 7 16 15 14 13 00 00 00 00 23 24 25 26 27 28
38 37 36 35 34 33 32 31 41 42 43 44 45 46 47 48

The patient is shown the manufacture of a metal-plastic bridge prosthesis. After preparation and removal of impressions, it was decided to make temporary bridge prostheses from plastic. What materials are used for temporary fixation.

A. Repin
B. Zinc phosphate cements

C. Glass ionomer cement
D. Silicate cements
E. Acryloxide

9. A 47-year-old patient applied to the orthopedic dentistry clinic with complaints of poor chewing of food and an aesthetic defect of the dentition. Objectively: the mucous membrane is of normal color, the remaining teeth are immobile, without obvious signs of pathology of the hard tissues of the teeth.

18 7 16 15 14 13 00 00 00 00 23 24 25 26 27 28

38 37 36 35 34 33 32 31 41 42 43 44 45 46 47 48

The patient is shown the manufacture of a metal-ceramic bridge prosthesis. What materials are used for temporary fixation.

A. Dentin paste
B. Repin
C. Glass ionomer cement
D. Silicate cements
E. Acryloxide

10. A 43-year-old patient complained of missing teeth, impaired chewing of food, cosmetic defect. Objectively: 32, 31, 41, 42 teeth are missing from the lower jaw. It was decided to make a bridge prosthesis with support for 33 and 43 teeth. After fixing the bridge prosthesis, the patient is given a recommendation:

A. Rinse your mouth with water
B. Take food 5-10 minutes after fixation
C. Do not use this half of the jaw for 2 days
D. Do not rinse the oral cavity and do not eat for 1.5 - 2 hours
E. Do not eat during the day

11. A 25-year-old patient came for an appointment with an orthopedic dentist with complaints about the cementation of a metal-ceramic crown on the front tooth of the upper jaw. During the examination, it was established that the prepared 21 teeth lacked a crown and cement remains. The decision was made to fix the patient with a metal-ceramic crown. Why is bisfat cement used in orthopedic dentistry?

A. for fixation of artificial crowns
B. for trying on artificial crowns
C. to stop bleeding
D. to stop bleeding from the tooth canal
E. to take an impression of the teeth

4. Summary:

- Aesthetics of metal-ceramic restorations.
-Choosing the color of the future restoration.
- Mistakes and their complications in integral fixed prosthetics.
- Techniques for eliminating errors in integral fixed prosthetics.

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 Center "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 Ukraine http://www.dec.gov.ua/index.php/ua/

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

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