


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



**METHODOLOGICAL DEVELOPMENT
TO PRACTICAL LESSONS
FROM EDUCATIONAL DISCIPLINE**

Faculty **of dentistry**, course **3**
Educational discipline **Orthopedic dentistry**

Approved:
Meeting of the Department of Orthopedic
Dentistry of ONMedU
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PRACTICAL LESSON No. 1

Topic: Examination of patients in the orthopedic dentistry clinic. Clinical examination methods. Additional and special examination methods. Preliminary and final diagnosis. Changes in the maxillofacial apparatus with partial loss of teeth.

Goal: Familiarize yourself with the peculiarities of the diagnosis in the clinic of orthopedic dentistry. Get acquainted with the methods of preparing the patient for prosthetics. Get acquainted with the features of changes in the maxillofacial apparatus with partial loss of teeth. Formation of professional literacy and the ability to think logically in students. 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 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.

Depulption 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 depulption;

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 depulption, 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) depulption 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 depulption 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:

- 1) alignment of the occlusal surface of the tooth rows by increasing the bite
- 2) 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 testifies to 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, data of palpation of the heads of the lower jaw, data of auscultation)

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, examination of the teeth, examination of the periodontium, 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 condition 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

jaws, the size and shape of the sublingual space, the size and shape of the sublingual space in the front part of the lower jaw, the submandibular salivary glands, the size and tone of the tongue, the 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 indicate 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 treatment 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 patient visits are recorded with date and detailed description of performed clinical procedures. During repeated visits of the patient after the prosthesis is 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 performing 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, swelling. 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. 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. 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. 1. 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. 2. 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. 3. A 52-year-old patient complained of a metallic taste in his mouth and a burning sensation in his 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 tooth 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

Summary:

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

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

Main:

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

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

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

Additional:

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

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

Electronic information resources:

- State Expert Center of the Ministry of Health of 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. Vernadskyi <http://www.nbuv.gov.ua/>

PRACTICAL LESSON No. 2

Topic: Functional anatomy of the maxillofacial apparatus. Biomechanics of the maxillofacial apparatus. Functional occlusion. Devices that reproduce the movements of the lower jaw.

Goal: Acquaint applicants with the anatomy of the upper and lower jaws. TMJ anatomy. Anatomy of masticatory muscles.

Basic concepts: buttresses, upper jaw, lower jaw, temporomandibular joint, sagittal movements of the lower jaw, translational movements of the lower jaw.

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. anatomy of the upper jaw;

- anatomy of the lower jaw;

- anatomy of the mandibular joint;

- chewing muscles;

- buttresses of the upper jaw;

- structure of the articulator:

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

-Palpate TMJ and masticatory muscles.

- To carry out basic clinical methods of diagnosis of lesions of the temporomandibular joint and masticatory muscles.

- Evaluation of the state of occlusion

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

Movements of the lower jaw occur as a result of complex interaction of chewing muscles, temporomandibular joints and teeth, coordinated and controlled by the central nervous system. All movements of the lower jaw can be performed arbitrarily, under the control of the cerebral cortex. Movements of the lower jaw associated with the performance of its specific function, for example, chewing, are carried out reflexively or subconsciously. These movements occur when the underlying brain centers are disturbed and can be either conditioned or unconditioned reflexes. To carry out such voluntary or reflex activity, motor centers need sensory information, which they receive with the help of peripheral nerve receptors. These receptors are located in periodontal ligaments, muscle fibers, structural elements of temporomandibular joints, tendons and mucous membrane. They transmit information to brain centers through afferent neurons.

The information received and transmitted by these receptors includes: 1) the degree of pressure on the teeth and its direction;

2) speed and force of muscle contraction;

3) muscle length;

4) degree of stretching of muscles, ligaments and tendons;

5) position of fixed and moving elements in space;

6) the relationship between the articular head and fossa in motion;

7) consistency, shape and taste of foreign bodies in the oral cavity.

The temporomandibular joint (*articulatio temporomandibularis*) is a paired articulation of the articular heads of the lower jaw with the articular surfaces of the high bones. The right and left joints physiologically form one system, movements in them occur simultaneously. According to its structure, the temporomandibular joint has a number of common features with other joints, but it also has specific features that determine its unique function. Each joint consists of a joint, articular process of the lower jaw, articular fossa of the tympanic part of the temporal bone, articular tubercle, disc, capsule and ligaments.

Incongruent, that is, the discrepancy in the size of the articular fossa and the articular head, is equalized thanks to two factors. First, the joint capsule is

attached not outside the fossa (as in other joints), but inside it - at the front edge of the stony drum (glazer) gap, which causes the narrowing of the joint cavity. And, secondly, the articular disk, being located in the form of a biconcave plate between the articular surfaces, creates a different pit with its lower surface, more corresponding to the articular head.

The articular head is an ellipsoidal roller (length up to 20 mm, width up to 10 mm) at the end of the articular process of the lower jaw, covered with fibrous cartilage (Fig. 20). It consists of a thin layer of compact bone under which spongy bone substance is located. The front surface of the articular process has a pterygoid fossa, where the lower bundles of the external pterygoid muscle are attached. The upper (smaller) bundles of this muscle are attached to the joint capsule and disc. Incongruent articular surfaces create instability of intra-articular relationships, complete dependence of these relationships on the closure of tooth rows, the condition of the masticatory muscles.

The articular head, making excursions along the posterior slope of the articular tubercle, normally transmits masticatory pressure through the articular disc to the thick bony articular tubercle. Such topographic relations are normally supported by the occlusion of the tooth rows and the tension of the external pterygoid muscles. In case of occlusion disorders and displacement of the articular heads, microtrauma of the soft tissues of the joint occurs, and then inflammatory and degenerative processes, pain and dysfunction of the joint occur.

The articular disc is a biconcave plate of oval shape with anterior and posterior thickenings (poles).

It consists of dense fibrous connective tissue similar to cartilage and contains cartilage cells. The disk is located between the articular surfaces, repeats their shape, increases the contact area, dampens the chewing pressure falling from the head to the joint fossa. Its lower surface forms, as it were, a movable fossa for the articular head. The disc is fused along the edges with the capsule of the joint, therefore it divides the cavity of the joint into two parts - upper and lower. The volume of the upper part is equal to 1.5 ml, and the lower part - about 0.5 ml. In the upper part, mainly translational movements of the articular head and sliding of the disc along the slope of the articular tubercle occur, and in the lower part, rotational movements of the articular head around the horizontal axis take place. Both departments perform a single function, as the movements occur simultaneously. The fibers of the upper bundle of the external pterygoid muscle intertwine in the front part of the disc, causing its movement along the posterior slope of the articular tubercle down and forward. In addition, due to its elasticity, the disk is a buffer between the articular surfaces, which weakens chewing blows.

The joint capsule of TMJ consists of two layers: outer (fibrous) and inner (synovial). The synovial layer is lined with endothelial cells that secrete synovial fluid, which facilitates the friction of the joint surfaces. This fluid is

also an immunobiological environment to protect the joint from the introduction of infection.

Masticatory muscles:

Masticatory muscle, *m. masseter*, starts from the lower edge of the zygomatic arch (*punctum fixum*, i.e. fixed point) in two parts: superficial and deep. The superficial part (*pars superficialis*) begins with tendon bundles from the front and middle parts of the zygomatic arch; the deep part (*pars profunda*) begins directly with the muscle tissue from the middle and back areas of the zygomatic arch, goes obliquely down and forward. Both parts are connected and attached to the outer surface of the branch and the corner of the jaw in the area of the *tuberositas masseterica* (*punctum mobile* or mobile point). The main function of the muscle consists in raising the lower jaw, and its superficial part is also involved in pushing it forward.

Lateral pterygoid muscle, *m. pterygoideus lateralis* (*externus*), begins in two parts: the upper part - from the *fades infraorbitalis* and *crista infratemporalis* of the large wing of the main bone and is attached to the joint bag of the mandibular joint and the articular disc, pulling it forward during contraction. The lower head starts from the outer surface of the *lamina lateralis processus pterygoideus* of the main bone and, going back, is attached to the *fovea pterygoidea* of the lower jaw. With unilateral contraction, it moves the lower jaw to the opposite side, with bilateral contraction, it pushes it forward.

Medial pterygoid muscle, *m. pterygoideus medialis* (*interna*), starts from the walls of the *fossa pterygoidea* of the main bone (*punctum fixum*, i.e. fixed point), goes back and down, attaching to the *tuberositas pterygoidea* of the lower jaw (*punctum mobile*, i.e. mobile point). With bilateral reduction, it raises the lowered lower jaw and helps to push it forward; with one-sided reduction, it will mix the jaw and the opposite side.

Temporal muscle, *m. temporalis*, is distributed in the temporal fossa, starting from the temporal surface of the large wing of the main bone and the scales of the temporal bone (fixed point or *punctum fixum*). The temporal muscle can be divided into three components: front, middle and back.

The muscle bundles, going down, converge and turn a powerful tendon, which passes through the middle of the zygomatic arch and is attached to the coronal process (mobile point or *punctum mobile*) of the lower jaw. When all the bundles are shortened, the muscle raises the mandible, when the middle and rear bundles are shortened, the forward-protruding lower jaw is pulled back.

Maxillohyoid muscle, *m. mylohyoideus* (Figs. 9, 10, 12, 13), flat, irregularly triangular in shape. It starts from the *linea mylohyoidea* (internal oblique line - *linea obliqua interna*). The bundles of the muscle go from top to bottom, from back to front and, connecting along the middle line with the same bundles of the opposite side, form a seam - *raphe m. mylohyoidei*, which takes part in the formation of the floor of the oral cavity and is also called the diaphragm of the oral cavity. The back bundles of the muscle are attached to the

front surface of the body of the hyoid bone. The muscle does not have a permanent fixed point during attachment, i.e. punctum fixum, when the lower jaw is fixed, it pulls the hyoid bone up and forward, when the hyoid bone is fixed, it participates in lowering the lower jaw.

Abdominal muscle, m. digastricus or biventer (fig. 7, 9, 10, 12, 13), has two bellies, front and back, which are connected to each other by a tendon. The anterior abdomen (venter anterior, marked with an arrow in Fig. 12) begins in the fossa digastrica mandibulae, goes back and down and passes into the tendon, which is strengthened by the process of the middle fascia of the neck to the body of the hyoid bone; this tendon, bending back and up, passes into the posterior abdomen (venter posterior), which is attached to the incisura mastoidea of the temporal bone. With a fixed hyoid bone, it participates in lowering the lower jaw; with a fixed lower jaw, the biceps muscle pulls the hyoid bone up.

Muscles involved in the act of chewing:

Chin - hypoglossal muscle, m. geniohyoidcus (Figs. 9, 10, 13), starts from the chin of the spine of the lower jaw, goes down and slightly back, being located above m. mylohyoideus, and is attached to the front surface of the hyoid bone; with a fixed hyoid bone, it takes part in lowering the lower jaw; when the lower jaw is fixed, it pulls the hyoid bone up and forward.

Chin-lingual muscle, m. genioglossus, fig. 9, 10, is located directly under the mucous membrane and is attached through the aponeurosis to the elevation located in the center of the lingual surface of the lower jaw (spina mentalis); its fibers go on both sides of the frenulum of the tongue and attach to the fascia under its back, partially merging with the longitudinal and vertical muscles of the tongue (Fig. 14).

When this muscle is shortened, the tongue is pushed forward from the oral cavity, and when it is unilaterally shortened, it is also forward, but with the tip deflected in the opposite direction.

The hypoglossal muscle (m. hyoglossus) is located deeper than the chin-hypoglossal muscle, partially covering it. When contracting, this muscle lowers the root of the tongue, due to which a small indentation is formed on the tongue between the back of the tongue, on the one hand, and the hard and soft palate, on the other, behind which the food ball moves in the process swallowing food.

The subcutaneous muscle of the neck, platysma, in the form of a thin muscle plate, is located under the skin of the neck, tightly fused with it. Muscular bundles of the platysma, starting in the chest area at the level of the 2nd rib, are directed upward and medially, intertwining with the bundles of the opposite side, are attached to the edge of the lower jaw, participating in its lowering; lateral bundles of platysma pass to the face, reaching the corner of the mouth, and when shortened, pull it down and outward.

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: assignments, tasks, tests, etc. (if necessary).

1. The shift of the lower jaw to the right is facilitated by the contraction of the following muscle:

- A. right medial pterygium;
- B. left medial pterygoid;
- C. right lateral pterygium;
- D. left lateral pterygoid;
- E. both maxillo-hyoid.

2. Which of the listed muscles are masticatory:

- A. buccal, temporal, zygomatic, actually chewing;
- B. temporal, which raises the upper lip, transverse of the nose;
- C. lateral and medial pterygoid, temporal and actually masticatory;
- D. temporal, chin, zygomatic major and minor, chin;
- E. cheek, chin, large zygomatic muscles.

3. What muscles move the lower jaw forward?

- A. temporal;
- B. internal pterygoids;
- C. external pterygoid;
- D. double-abdominal;
- E. actual chewing.

4. Combined joints are characterized by the presence of:

- A. movements around 2-3 axes;
- B. movements that occur simultaneously in 2 joints;
- C. 2-3 or more articular surfaces;
- D. discs, menisci, ligaments in the joint cavity;
- E. all of the above.

5. What chewing movements can the lower jaw perform:

- A. sagittal and transversal;
 - B. sagittal and vertical;
 - C. sagittal, vertical, transversal;
 - D. sagittal, vertical, horizontal;
 - E. vertical, horizontal, transversal.
-

6. How does the articular head move n / h when moving n / h on the side of contraction?

- A. the articular head moves down forward and slightly outward;
- B. the articular head rotates along its axis;
- C. the articular head moves down and along its axis;
- D. the articular head moves forward and deep;
- E. the articular head does not move.

4. Summary:

4.1 What is the specificity of the structure and function of the temporomandibular joints compared to other joints?

4.2. How and with what muscle is the articular disc articulated in the front and central parts?

4.3. Fibers of which muscles, penetrating into the inner parts of the articular discs, are determined to ensure active tension of the disc?

4.4. Where is the synovial fluid of the temporomandibular joints located and what function does it perform?

4.5. What layers does the masticatory muscle consist of, and during which movement of the lower jaw is it active?

4.6. What type of movements is the upper lateral pterygoid muscle responsible for, and what is the lower lateral pterygoid muscle responsible for?

4.7. How many parts does the temporalis muscle consist of, and what functions does it perform?

4.8. what muscles interacts with the medial pterygoid muscle when lifting the lower

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

Main:

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

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

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

Additional:

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

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

Electronic information resources:

- State Expert Center of the Ministry of Health of Ukraine
<http://www.dec.gov.ua/index.php/ua/>

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PRACTICAL LESSON No. 3

Topic: Analgesia in the clinic of orthopedic dentistry. Local and general complications of injection anesthesia. Emergency conditions at a dental appointment.

Goal: To acquaint students with anesthesia on the upper and lower jaws. Providing first aid in emergency situations.

Basic concepts: infiltration anesthesia, conductor anesthesia, intraligamentary anesthesia.

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. mandibular anesthesia;

- torus anesthesia;

- mental anesthesia;

- infraorbital anesthesia;

- tuberal anesthesia;

- palatal anesthesia;

- incisal anesthesia.

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.);

DRUGS FOR GENERAL ANESTHESIA (ANESTHESIA)

Two types of general anesthesia can be used for analgesia during outpatient dental procedures:

- inhalation anesthesia

- non-inhalation anesthesia

For inhalation anesthesia, which is usually carried out through a nasal mask, nitrous oxide with oxygen and flurothane or methoxyfluorane is used.

Treatment of teeth under inhalation anesthesia finds fewer and fewer enthusiasts among dentists, as the doctor is forced to breathe drug fumes while being in very close contact with the patient.

Most often, non-inhalational anesthesia is used during dental treatment under general anesthesia, namely the method of total intravenous anesthesia (TVA). For this purpose, such non-inhalation anesthetics as sodium hexenal and thiopental (group of barbiturates), propanidide (sombrevin), ketamine (ketalar, calypsol), diprivan (propofol) are used. These drugs provide a short-term stage of surgical anesthesia (from 3 to 30 minutes). The dosage of the drug and the scheme of premedication are selected individually by the anesthesiologist (Stolyarenko P.Yu., Kravchenko V.V., 2000; Bogdanov A.B. and others, 2001).

LOCAL ANESTHESIA

According to N. E. Vvedenskyi's classic ideas, local anesthetics affect the functional state of sensitive nerve endings and conductors, changing their excitability and conductivity. The susceptibility of neurons to the action of local anesthetics is not the same.

Local anesthetics reduce or completely eliminate the flow of pain impulses from the site of intervention to the central nervous system, affecting sensitive nerve endings or fibers. Unmyelinated and thin myelinated nerve fibers are most sensitive to these drugs. As a result, pain, then olfactory, taste, temperature sensitivity is suppressed. The feeling of touch and pressure on tissues, tactile sensitivity is carried out by myelinated fibers of type A, which are less sensitive to the action of anesthetics. Thus, local anesthetics cause a reversible temporary loss of the feeling of pain, cold, heat and lastly - pressure.

Myelinated fibers that go to skeletal muscles, tactile receptors and proprioceptors are more resistant to the action of the anesthetics used. This explains the feeling of pressure on the tissues during the operation, even with well-conducted local anesthesia.

The study of the mechanism of action of local anesthetics at the molecular level made it possible to reveal the significance of the structure for the manifestation of their analgesic activity. According to their chemical structure, all currently used anesthetics are weak bases that do not dissolve well in water, so their salts are used for injection into tissues, which are well soluble in water and easily diffuse into tissues. Absorption depends on the dose, concentration, presence of a vasoconstrictor, as well as on the place and speed of administration of the drug.

To manifest local anesthetic activity, the drug must pass through the membrane of the nerve fiber, therefore, hydrolysis of the salt of the local anesthetic must occur in the tissues with the release of the anesthetic base, which is well soluble in fats and penetrates through the phospholipid membrane.

Hydrolysis of the drug depends on its pH and tissue pH. Most local anesthetics have a pH of 7.6-7.9, so their hydrolysis occurs in the weakly alkaline environment of the intercellular fluid.

Inside the cell, the pH is lower than on the outside of the membrane, so part of the local anesthetics goes into the cationic form, which interacts with the receptor on the inside of the membrane, breaking its permeability to Na ions. Other things being equal, the local anesthetic is more effective, the higher its concentration on the outer membrane of the nerve fiber and the more active its hydrolysis, that is, the closer the pH value of the anesthetic is to the pH of the tissues.

Constituent components of a modern local anesthetic drug

The constituent components of the modern local anesthetic drug are four groups of substances.

1. local anesthetics

- Novocaine,
- Lidocaine,
- Trimecain,
- Prilocaine,
- Mepivacaine,
- Articaine,
- Bupivacaine,
- Etidocaine

2. preservatives

- Parahydroxybenzoates

3. vasoconstrictors

- Adrenaline (epinephrine),
- Norepinephrine (norepinephrine),
- Mesaton,
- Felipressin (octapressin)

4. Stabilizers

- Sulphites of sodium and potassium

The preparation for local anesthesia does not necessarily have to contain all these components. Only one local anesthetic is sufficient to block the conduction of impulses along nerve fibers, but vasoconstrictors are used to prolong its action and enhance the effect.

Classifications of local anesthetics

By duration of action

1. short-acting

- Novocaine,
- Articaine

2. Medium duration of action

- Lidocaine,
- Mepivacaine,
- Trimecain,

- prilocaine
- 3. long-acting
- Bupivacaine,
- Etidocaine

By chemical structure

1. ethereal
 - Novocaine,
 - Dikain,
 - Anesthesin
2. amides
 - Lidocaine,
 - Trimecain,
 - Pyromecain,
 - Prilocaine,
 - Articaine,
 - Mepivacaine,
 - Bupivacaine,
 - Etidocaine

Contraindications and limitations to the use of local anesthetics

All contraindications and restrictions to the use of local anesthetics are reduced to three main positions.

1) allergic reactions to local anesthetic

A history of an allergic reaction is an absolute contraindication to the use of a local anesthetic.

2) insufficiency of metabolism and excretion systems.

3) age restrictions

It should be taken into account that the minimum toxic doses of all local anesthetics for children are much lower than for adults. To achieve guaranteed complete analgesia and minimize the likelihood of toxic effects, the most effective and safe modern local anesthetic drugs based on articaine, mepivacaine or lidocaine should be used, limiting the dosage of the drug used.

Criteria for choosing a local anesthetic drug

When choosing a local anesthetic drug, it is necessary to take into account:

- volume and nature of dental intervention - at the same time, a drug is selected with the necessary depth and duration of anesthesia, according to the volume and nature of the intervention;

- the patient's presence of concomitant pathology, pregnancy, fear of treatment - at the same time, contraindications to the use of vasoconstrictors are taken into account, taking into account the general somatic condition of the patient;

- age restrictions - at the same time, the specifics of prescribing local anesthetic and vasoconstrictor are taken into account, their dosages are specified in the dental treatment of children and the elderly.

Preparations for applied anesthesia

For applied analgesia, the following local anesthetics are used as an active ingredient in most commercial drugs produced by various companies:

- Dikaine (tetracaine) in the form of 0.5-4% solutions and ointments. Dikain is 10 times more toxic than novocaine. Therefore, children under 10 years of age are not anesthetized with dikain. For adults, the maximum single dose is 20 mg.

- Anesthesin (benzocaine) in the form of 5-20% solutions (in oil or in glycerin) and ointments, pastes, as well as in the form of powders. The maximum single dose for adults is 5 g.

- Lidocaine in the form of 5-15% aerosol solutions and 2-5% ointments and gels. The maximum single dose for adults is 200 mg (0.2 years).

- Pyromecain (bumecain) in the form of 5% ointment and 2% solution in ampoules. Piromecain is an amide anesthetic similar in structure to Trimecain. In terms of depth and duration of anesthesia, it is not inferior to dikain, but it is less toxic. The maximum single dose for adults is 400 mg (0.4 years).

The duration of anesthesia when using topical anesthesia is 10-20 minutes. The depth of mucosal analgesia is 1-3 mm. The anesthetic effect usually develops after 1-2 minutes.

Forms of application: aqueous solutions, solutions based on alcohol, polyethylene glycol and glycerin, ointments, gels. In addition, antiseptics are often added to commercial preparations: chlorhexidine, furacilin, cetrimide, etc. Hyaluronidase, dimethylsulfoxide and other substances can be used to increase diffusion activity. Various aromatic additives, plant extracts, sweeteners, dyes, etc. can be added to the finished preparation.

According to Stosh V.I. et al. (1998) conditionally four components of the pain reaction can be distinguished: sensory, psychoemotional, vegetative and motor.

The local anesthetic drug affects only the sensory component of the pain reaction, eliminating direct pain sensitivity in the area of intervention.

Combined analgesia includes premedication and local anesthesia and allows influencing all components of the pain reaction. Premedication is the use of one or more medications in the preoperative period with the aim of facilitating (potentiating) anesthesia and reducing the risk of possible complications (Stosh V.I. and others, 1998).

The most widespread, so-called, sedative premedication:

Drugs used for sedative premedication:

- herbal sedatives (valerian, motherwort, corvalol, valocordin, valoserdin, etc.)

- benzodiazepine tranquilizers (diazepam, phenazepam, midazolam, etc.)

- drugs of other chemical groups (trioxazine, etc.)

Indications for the use of sedative premedication

Pronounced (insurmountable) fear of treatment, coronary heart disease, hypertension, bronchial asthma, diabetes, thyrotoxicosis, parkinsonism, epilepsy, persistent desire of the patient.

Drugs used for premedication

Sedative drugs of plant origin

- Valerian tincture - 60 drops
- Stinging nettle tincture - 30 drops
- Corvalol, valocordin or valoserdin - 30 drops

Application method

Orally 15-20 minutes before treatment

- Benzodiazepine tranquilizers

3.2. requirements for work results, including registration;

1. Drugs for anesthesia.
2. Mechanism of action of local anesthetics.
3. Constituent components of a modern local anesthetic drug.
4. Classifications of local anesthetics.
5. Contraindications and restrictions to the use of local anesthetics.
6. Criteria for choosing a local anesthetic drug
7. Preparations for applied anesthesia.
8. Indications for the use of sedative premedication.

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

1. Patient K., 32 years old, 3 months pregnant, applied to the orthopedic dentistry clinic for prosthetics. Objectively: absent 16 . It is planned to manufacture a bridge-like prosthesis with support for 15 and 17 teeth. Articain series Ultracain DS anesthetic was used for analgesia. Why did the orthopedist choose this anesthetic?

- A. Decreases the volume of utero-placental blood circulation
- B. low toxicity
- C. Low toxicity, does not penetrate the hematoplacental barrier+
- D. Does not contain sulfites
- E. Most often used in dentistry

2. A 46-year-old patient is scheduled to have metal-ceramic crowns made for 11 and 12 teeth. History: liver disease. The teeth are not depulped. The patient is nervous, afraid of preparation. What type of pain relief should be preferred.

- A. anesthesia with cooling
 - B. Audioanalgesia
 - C. Premedication, injection anesthesia +
 - D. applied anesthesia
-

E. general anesthesia

3. A 76-year-old patient with missing teeth on the upper jaw needs to take an impression to make an individual spoon. The patient has a pronounced vomiting reflex to irritation of the palate. What medication should be used to lubricate the mucous membrane of the palate in this case?

- A. 3% solution of dicain +
- B. 1% norepinephrine solution
- C. 4% epinephrine solution
- D. 2% atropine solution
- E. 10% glucose solution

4. Summary:

- How to carry out tuberos anesthesia?
- How to perform mandibular anesthesia?
- How to perform infraorbital anesthesia?
- How to perform mental anesthesia?
- How to perform incisal anesthesia?
- Provision of first aid in emergency situations.

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

Main:

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

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

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

Additional:

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

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

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<http://www.nbuv.gov.ua/>

PRACTICAL LESSON No. 4

Topic: Methods of replacing defects of hard tissues of teeth. Orthopedic designs. Artificial crowns, indications for prosthetics. Preparation of teeth for artificial crowns. Protection of welcome teeth during and after preparation. Clinical and laboratory stages of manufacturing stamped metal crowns.

Goal: to acquaint students with orthopedic structures, preparation of teeth for artificial crowns; preparation technique.

Basic concepts: preparation, artificial crowns, clinical and laboratory stages.

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.

- Defects of hard tissues of teeth;

- Classification of artificial crowns;

- Calculation of IROPZ according to Melikevich;

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.);

The earliest and most common form of damage to the maxillofacial system are defects of tooth crowns of various origins. Their causes can be acute and chronic trauma, hypoplasia, fluorosis, wedge-shaped defects, pathological abrasion, congenital and hereditary defects in the development of hard tissues. The most frequent is caries, the prevalence of which among the adult population of the globe is 80-100%.

The destruction of the tooth crown due to caries or other causes is directly proportional to the time of its action and can have different degrees of severity. Depending on the size and localization of the tooth crown defect, treatment methods also change.

The classification of carious cavities according to Black reflects their localization and allows you to choose one or another method of eliminating the defect that is most appropriate in this situation:

The first class unites all cavities arising in fissures and natural pits. They are characterized by preservation of all cavity walls.

The second class includes cavities located on the contact surfaces of molars and premolars. The same class includes cavities that arose on the affected surfaces of these teeth, but later spread to the chewing surface. With such an arrangement of defects, the interdental contact is disturbed, which can cause damage to the marginal periodontium.

The third class - carious cavities, located on the contact surfaces of the front teeth. Cavities of this class are characterized by preservation of a strong cutting edge and its corners.

The fourth class includes cavities occurring on the front teeth, in which the cutting edge is partially or completely destroyed. With this type of cavity, it is rarely possible to restore the shape of the tooth with an ordinary filling.

The fifth class unites carious cavities located near the neck in the periosteal part of the tooth (cervical cavities), regardless of its functional affiliation. These cavities are characterized by a tendency to surround the tooth in a circular manner.

The sixth grade is also allocated. It includes cavities located on the cutting edge of the front and tops of the humps of the lateral teeth.

When solving the question of the method of restoration of a destroyed tooth, a complex and at the same time strictly differentiated approach should be taken. Some help in choosing a method of restoration of a destroyed crown can be provided by V.Yu. Milikevich (1984) index of destruction of the occlusal surface of teeth (IROPZ). The entire area of the occlusal surface of the tooth is taken as a unit. The destruction index (cavity or seal surface area) is calculated from a unit, that is, the area of the entire occlusal surface premolars: Black class 1 Black class 2 molars: Black class 1 Black class 2 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9

Indications for the use of artificial crowns:

1. An absolute indication for the use of artificial crowns is a significant destruction of the tooth due to caries, its complications or other reasons. That is, in other words, the indications are those defects of tooth crowns that cannot be eliminated by a filling or an inlay.

2. In some cases, metal crowns are used to cover teeth that serve as a support for clasps, especially if it is necessary to change their clinical form.

3. For fixation during treatment with bridge prostheses, that is, supporting crowns.

4. In case of pathological abrasion to prevent the development of further abrasion.

5. Abnormal shape, color, structure of teeth.

6. For fastening various orthodontic or maxillofacial devices.

7. For splinting in periodontal diseases and jaw fractures.

8. To keep medicines.

9. Aesthetic indications (porcelain, plastic and combined crowns).

Covering intact teeth with crowns should be considered contraindicated, if this is not caused by the design features of dental prostheses. Teeth with incurable foci of chronic inflammation in the marginal or apical periodontium, teeth with pronounced pathological mobility (III degree according to Entin) should not be covered with crowns; with poor general health.

In order to reduce the possible negative consequences of using artificial crowns on the periodontal tissues of supporting teeth and the patient's body, the crown must meet the following basic requirements:

- Do not overestimate the central occlusion and do not block all types of occlusal movements of the jaw; .

- Closely adhere to the tissues of the tooth in the region of its neck; .

- The length of the crown should not exceed the depth of the maxillofacial groove, and the thickness of the edge should not exceed its volume; .

- Restore the anatomical shape and points of contact with neighboring teeth; .

- Do not violate aesthetic norms.

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;

- Reasons for the formation of dental defects.

- Principles of classification according to Black.

- The main components of IROPZ.

- Indications for prosthetics with artificial crowns.

- Requirements for artificial crowns.

3.4. control materials for the final stage of the lesson: assignments, tasks, 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 eroded 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 on 26 27 are made. 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.

6. Patient D., 52 years old, when trying on stamped crowns for 24, 25 teeth, it turned out that the crowns were narrow. During the examination of the crowns, it was established that this defect is related to non-compliance with the crown manufacturing technology. The defect was eliminated, the crown was tried on, polished and fixed with cement on the stump of the tooth. How was the specified defect corrected.

- A. Restamped crown
- B. The tooth was additionally treated
- C. Widened the crown on the anvil
- D. Fixed with crampon forceps
- E. Put on the stump under pressure

7. Patient N., 26 years old, came to the clinic of orthopedic dentistry for the third clinical appointment regarding the manufacture of a stamped metal crown for the 26th tooth. During the examination of the crown, the orthopedist discovered a hole on the medial buccal hump of the crown, which was formed as a result of polishing. What are the doctor's tactics?

- A. Make a new crown
- B. Seal the hole in the crown
- C. cement the crown on cement
- D. Re-chroming
- E. cement the crown on Acryloxide

8. In a 56-year-old patient, tooth 15 is being prepared for a full metal stamped crown. Which zone is the safest for this tooth?

- A. palatal
- B. media
- C. distal
- D. buccal
- E. In the area of the neck

4. Summary:

-
- Requirements for metal stamped crown.
 - Rules for preparing teeth.
 - Tools for preparing teeth.
 - Changes in tooth tissues during preparation.
 - Clinical and laboratory stages of manufacturing a stamped crown.

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

Main:

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

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- 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.

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PRACTICAL LESSON No. 5

Topic: Provisional crowns showing the methods of manufacturing materials. A direct method of making provisional crowns. Laboratory method of making provisional crowns. Clinical and laboratory stages of production of solid metal and combined crowns.

Goal:To acquaint students with the method of manufacturing temporary crowns, solid metal and combined crowns

Basic concepts: Provisional crowns, combined crowns, solid crowns

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. 2.1 Indications for the manufacture of a plastic crown.

2. Features of preparing teeth for a plastic crown.

3. Know the clinical and laboratory stages of manufacturing plastic crowns.

4. Indications for the manufacture of an artificial stamped combined crown.

5. Features of tooth preparation for a combined crown.
6. Know the clinical and laboratory stages of manufacturing combined crowns.

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

1. Be able to prepare a tooth for a combined crown.
2. To be able to prepare a tooth for a plastic crown.

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

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

The general indication for the use of plastic crowns is aesthetic requirements, but there must be certain clinical conditions, in the absence of which it is better not to make this prosthesis. In particular, with a low clinical crown, pathological attrition of teeth, allergies, deep bite and absence of lateral teeth, which are relative contraindications. The presence of defects in the lateral parts of the dentition, especially I-II classes according to Kennedy, is also a relative contraindication.

Features of tooth preparation. Given the need to manufacture a stronger plastic crown, the tooth tissue should be ground to a greater thickness. The starting point can be a tooth prepared for a stamped crown. At the same time, it should be borne in mind that when applying a stamped crown, the space between it and the supporting tooth is filled with fixing cement. During the production of a plastic crown, the volume is almost completely restored by the material of the prosthesis. Only a thin layer of cement remains between it and the hard tissues of the tooth, which is necessary for fixing the artificial crown. It is better to prepare a tooth with a ledge. However, this method requires more art, so orthopedists often perform without a ledge. Although this technique is indicated when the cervical part of the tooth is affected by caries and it is impossible to make a protrusion. A layer of tooth tissue with a thickness of approximately 1.5 mm is removed from the chewing surface or cutting edge. Hard tissues are especially carefully removed from the palatal surface of the front teeth, where there is a danger of opening the tooth cavity. The separation with the antagonists should be within 1-1.5 mm. The side walls of the tooth are additionally polished in such a way as to obtain a barely pronounced cone (inclination no more than 3-5 degrees). With a more pronounced cone, there is a danger of deterioration of fixation, and with insufficient inclination, a crown with thin walls is obtained. At the end of the preparation, the sharp corners are carefully smoothed and the degree of separation of the prepared tooth from the antagonists is checked both during central occlusion and during lateral

movements of the lower jaw. Next, they start taking prints. When making plastic crowns, an impression made of alginate materials or double gives the best results. Determine the color of the plastic. This ends the first clinical stage.

The impression obtained in the clinic is used to make a working model. The accuracy of the plastic crown largely depends on the strength of the material used for the model. Preference is given to the strongest types of gypsum - marble, supergypsum and others, as well as cement (combined model). To make a phosphate-cement model, teeth are formed in the impression, on which crowns are planned. Then a 1.5 mm thick wire, bent at an angle, is inserted into the unhardened cement for a better connection with the plaster, with which the entire impression is filled.

Evaluating the quality of the obtained working model, special attention is paid to the accuracy of the representation of the dento-gingival groove. The existing practice of engraving the neck of the tooth in any way leads to damage to the plaster and violation of the accuracy of the impression obtained. In this regard, the most promising method should be recognized as not engraving the neck, but cutting the gingival margin to its deepest impression in the gingival groove. After preparation of the cervical part of the tooth, aimed at ensuring the maximum immersion of the edge of the plastic crown in the gingival groove (no more than 0.5 mm), modeling of the anatomical shape is carried out using colorless wax. The wax reproduction of the future artificial crown is made larger in volume, taking into account the processing of the plastic after polymerization, while restoring close contact with the antagonists and adjacent teeth.

The abutment tooth with a wax reproduction of the artificial crown is cut out of the plaster model together with the adjacent teeth in the form of a block. The plaster teeth, which are adjacent to the wax model, are cut in a conical shape, and the entire plaster block is plastered in a special cuvette by one of the methods. The method should be recognized as the best, when the abutment tooth is located vertically in the cuvette. This reduces the probability of the gypsum stump breaking when forming the plastic dough. The surface of the hardened gypsum is lubricated with petroleum jelly, the upper part of the cuvette is placed on it and it is filled with gypsum. The cuvette with the hardened plaster is placed in boiling water for 10-15 minutes, and then opened. The remains of the melted wax are thoroughly lubricated with hot water and the cuvette is cooled. For the production of plastic crowns, domestic plastics "SYNMA-74" and "SYNMA-m" are used. Plastic is released in the form of a powder-liquid kit.

The plastic cuvette can be made in two colors. It is known that in the region of the neck the tooth has a more yellow shade than the cutting edge. Sometimes the cutting edge of the crown is completely light, almost transparent. In this case, the production of a single-tone crown does not give the desired result.

To make a two-color crown, plastering should be done so that the entire vestibular surface is open. Plastic is mixed in two colors, corresponding to the color of the teeth. Formation is carried out, as indicated above, in the color that is the main one. After strictly observing the polymerization regime, the plastic crown is released from the cuvette, plaster residues are removed from its surface, processed, ground and polished; store in water before placing in the oral cavity.

Extraction of the prosthesis from the cuvette occurs after unscrewing the screw. Then, a dental spatula or plaster knife is inserted into the gap between the base of the cuvette and the counter cuvette, and the parts of the cuvette are usually easily separated with a lever-like movement. Having opened the cuvette, with the help of a knife, a circular incision is made in the plaster in the direction of the walls of the cuvette and the prosthesis is removed together with the plaster covering it. It is better to use a special press for this, especially for mass work. Remains of plaster are removed in cold water with a stiff brush, the passage is wiped dry and processing begins.

Processing, grinding and polishing of a plastic crown. Processing is carried out with the help of files, mainly semicircular with a large notch, as well as special knives - stichels and scrapers. The latter have the shape of spoons of different sizes with sharp edges. Stichels are straight, pointed, three-sided and semicircular.

It is appropriate to note that these tools are hardly used nowadays, including for processing removable prostheses. They were displaced everywhere by various drills and cutters.

After careful processing, the prosthesis should be polished with sandpaper and abrasive materials so that there are no even scratches. Grinding can be done manually and on grinding motors. In the latter case, a special holder for sandpaper is inserted into a special tip of the grinding motor. A strip of sandpaper is inserted into a device that resembles a disco holder, but instead of a screw there is a cut, and during rotation, the paper is wound on it and sanding is carried out. At the same time, one should be very careful not to deform the prosthesis due to heating. The final grinding and polishing is carried out with felt and felt felts of various shapes fixed in the grinding motor, usually starting with a cone-shaped one. Then, instead of the felt, a hard brush is inserted into the grinding motor, and while constantly greasing the surface of the prosthesis with a slurry of abrasive material, grinding is continued.

After grinding, the crown is washed with a brush in cold water and polished with a soft hair brush with chalk or plaster diluted in water (you can mix it in vegetable oil).

Applying and fixing a plastic crown. The doctor inspects the finished crown and checks the quality of its manufacture. The inner surface of the crown must exactly match the topography of the tooth being prepared. However, in the process of modeling and manufacturing the crown, the surface of the plaster stump may be damaged and its impression on the plastic will be distorted. When

removing excess plastic, you should be careful and remove only the part that breaks the shape of the prepared tooth. The edge of the crown should be refined and have smooth contours that correspond to the relief of the gingival margin. If the crown needs correction, it is done before checking it in the oral cavity.

After disinfection, the crown is placed on the supporting tooth. There are few times when the crown is exactly in its place without prior correction. The reason for this is, as a rule, mistakes in the preparation of natural teeth or a violation of the technology of manufacturing a prosthesis. If the crown is difficult to fit, first of all, it is necessary to check the quality of the preparation of the tooth once again. If inaccuracies are detected, additional grinding of areas of the tooth that violate the required shape is performed. Only after making sure of the correctness of the preparation of the natural tooth, proceed to identifying the defects of the plastic crown. Practice shows that it is better to do this on an insulated crown, as it slides less in the hands.

For this, they usually use copy paper soaked in water. After placing the copy paper under the crown, they try to put it on the tooth. At the same time, one should not make great efforts so as not to cause cracking or splitting of the plastic. Having received prints of the copy paper, they must be carefully studied. All the impressions inside the crown will correspond to the areas that interfere with the overlap. In most cases, this is excess plastic that filled the defects on the surface of the cast tooth. The presence of imprints on the inner edge of the crown may indicate an artificial narrowing of the neck of the plaster tooth after engraving. Imprints on the outer contact surfaces of the plastic crown indicate damage to the adjacent plaster teeth. In this case, the crown will be wider than the interdental spaces.

In all areas marked with copy paper prints, the plastic must be sanded. For this, as a rule, metal burs are used - ball-shaped, fissure, reverse-cut and others, choosing those of them that most accurately correspond to the shape of the area being worked. So, for example, impressions at the bottom of the cutting edge in the crown are best removed with spherical or shaped burs of small diameter, which would not expand the impression of the cutting edge. It is more convenient to process the inner edge of the crown with thick fissure burs. They do not slip when working from the edge of the crown and due to the fact that they have a large diameter, only the necessary layer of plastic is removed without disturbing the general relief of the inner surface of the crown.

With the help of copying paper, the accuracy of the fit of the plastic crown to the tooth is checked until the prosthesis is fully fitted. The criterion for this is primarily the deepening of the edge of the crown into the gingival groove. Then check the occlusal contacts. The crown should not interfere with the closing of other opposing pairs of teeth and should not cause premature contacts in case of lateral occlusions. Excess plastic, which violates the occlusion or relationship, is polished with burs or shaped heads.

Restoration of interdental contact points requires special attention. The crown should be adjusted until the patient feels pressure on the adjacent teeth.

At the same time, it is necessary to ensure that after removing part of the plastic, interdental contacts are preserved.

The inspection of the crown in the oral cavity is completed by assessing the anatomical shape and, if necessary, its correction is carried out, after which polishing is resumed (or carried out if it was not) and the plastic crown is fixed on the tooth with cement. The color of the latter is selected for each plastic separately, and before strengthening the crown, a trial batch is made to check their compatibility.

Thus, in the manufacture of a plastic crown, there may be 2-3 clinical stages and 1-2 laboratory stages, depending on how the central occlusion was determined, i.e. with or without wax templates.

Combined stamped crown is a type of permanent fixed prostheses, which are made to preserve the hard tissues of the teeth and restore defects of the crown part of the tooth in the frontal areas. Correcting the esthetic deficiencies of the previously discussed crowns, stamped combination crowns have a plastic vestibular surface and a metal cutting edge, occlusal surface, proximal and oral sides.

Advantages:

- aesthetics
- cheapness
- ease of manufacture

Disadvantages:

- insufficient marginal fit
- possibility of cladding chipping
- leakage of the edge of the crown

Clinical and laboratory stages of making a crown according to Belkin. At the patient's first visit, the tooth is prepared and an impression is taken in the same way as for a stamped metal crown, which is made in a laboratory using conventional technology. At the second patient visit, the crown is fitted according to the generally accepted method. Then it is removed from the tooth and a hole with a diameter of 1.5-2 mm is drilled in the center of the front wall with the help of a spherical or wheel-shaped bur. Having temporarily put the crown aside, the hard tissues of the tooth are additionally polished from the vestibular and a little from the contact surfaces in order to create space for plastic. Additional dissection can be painful, so a pain reliever is necessary.

After additional preparation, the crown is filled with melted modeling wax and placed on the stump of the tooth, while the wax fills the space created for the future plastic, and its excess comes out through the hole in the crown. After that, you can remove the crown, determine the places of insufficient preparation by the thinnest layer of wax and, if necessary, additionally polish them, then refill the crown with melted wax, put it on the stump of the tooth again, check the occlusion ratio and get a general impression together with the crown. The color of the plastic is determined and the crown is sent to the laboratory. In the laboratory, a plaster model is obtained in the reverse way from

the impression in which the crown is located (no wax corrections are allowed inside the crown). The crown on the model is slightly heated over a vodka flame, after which it is easily removed. The crown is ground and polished as usual, and then a "window" is cut on its vestibular surface with a separation disk, leaving a narrow (approximately 0.5 mm) rim in the cervical part and along the cutting edge. To strengthen the plastic around the perimeter of the cut-out hole, cuts are made with a wheel-shaped bur so that teeth are formed.

The prepared framework of the stamped crown is installed on the working model and checked for deformation after sawing the "window". Then the crown is removed from the model, degreased, and masked at the gingival rim and the remaining areas of the edge of the crown in the windows with a special white insulating varnish (EDA type). After heating the crown frame for fixing and drying the varnish, it is again installed on the working model and the vestibular surface is modeled with wax, taking into account the adjacent teeth. A plaster block is cut from the model, including the tooth with the crown and adjacent teeth, plastered in a cuvette with the vestibular surface up, and after soaking in water or an insulating oil coating, a plaster counterstamp is cast. The assembled cuvette is placed under the press until the gypsum crystallization ends. Then the cuvette is opened, the wax is melted with a stream of hot water, and after cooling, plastic of the appropriate color is formed. After polymerization, the crown is removed from the cuvette, processed and polished. Differing in ease of manufacture, this crown also has disadvantages that limit its use. The disadvantage of such a crown is a weak mechanical connection of plastic with metal. A narrow strip of metal under the clear and small hooks do not guarantee a long-term tight fit of the facing material to the metal structure. The consequence of this is the presence of transparencies into which the contents of the oral cavity penetrate, metal translucency, defects of plastic veneers (cracks, discoloration, loss), insufficient fit of the crown in the neck of the tooth, which leads to trauma to the marginal periodontium.

There is V.S. Kurylenko's method, which differs from Belkin's method in that when the patient is visited again, the doctor immediately cuts a "window", and then the technology is similar.

The appearance of metal-ceramics 40 years ago led to significant progress in the production of dentures that have the color of natural teeth. The disadvantages of prostheses that are lined with plastic (for example, insufficient color fastness and wear resistance) were eliminated when dental ceramic masses began to be used as a lining material.

- 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: assignments, tasks, tests, etc. (if necessary).

1. Patient Yu., 36 years old, is being made a combined crown according to Belkin for the 11th tooth. After trying on the stamped metal crown, during the second clinical appointment, the following measures must be taken:

Carry out additional preparation of the vestibular and incisal surfaces

A hole is cut on the vestibular surface of the crown

Fill the crown with wax

Get an impression along with the crown

All answers are correct

2. Disadvantages of a combined stamped crown:

B. possibility of cladding chipping;

C. leakage of the edge of the crown;

D. plastic color change;

E. plastic toxicity;

All answers are correct

3. The following are not used for polishing plastic cladding:

A. GOI pasta;

B. "fluff" brush;

C. felt;

D. hard hair brush;

E. polishing powder.

4. A plastic crown is used as:

A. aesthetic replacement of the defect during prosthetics;

B. to cover the stump;

C. as a type of permanent structure;

D. in the treatment of pathological attrition;

E. all answers are correct.

5. An 18-year-old patient is scheduled to make a 21-inch plastic crown. Objectively: the 21-inch crown is gray, the root canal is sealed to the top. Which of the listed plastics will be used to make the crown.

A. Sinma-M;

B. Acrylic;

C. Bacryl;

D. Ethacryl;

E. Carbodent.

4. Summary:

1. Stages of tooth preparation for various combined crowns.

2. Mixing the impression material.

3. Stages of fitting a combined crown.

4. Stages of tooth preparation for plastic crowns.

5. Stages of fitting a plastic crown.

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

Main:

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

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

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

Additional:

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

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

Electronic information resources:

- State Expert Center of the Ministry of Health of 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. 6

Topic: Bridge-like prostheses - indications for prosthetics. Structural features and biomechanics of bridge-like prostheses. Clinical and laboratory stages of manufacturing stamped and soldered bridge-like prostheses. Clinical and laboratory stages of manufacturing solid metal and combined bridge-like prostheses

Goal: Get acquainted with the technology of welding parts of a bridge prosthesis. To study the clinical and laboratory stages of their production. Master the technique of modeling the intermediate part of a bridge prosthesis. Get acquainted with the technology of precision casting of a bridge prosthesis. To study the clinical and laboratory stages of their production. To master the method of preparation of supporting teeth for the structure of a bridge prosthesis.

Basic concepts: Abutment teeth, biomechanics of bridge-like prostheses, construction of bridge-like prostheses

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.

1. Indications for the use of bridge prostheses.

2. Clinical and laboratory stages of manufacturing bridge prostheses.

3. Know the technology of welding parts of a bridge prosthesis.

4. Technology of precise casting of a bridge prosthesis.

5. Clinical and laboratory stages of production of an integrally cast bridge-like 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 production of a stamped soldered bridge prosthesis with an integrally cast intermediate part:

Clinical stage(in the presence of the doctor and the patient, but without the dentist):

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 prints. 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, takes out 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.

Clinical stage- 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 is 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 teeth-antagonists;
- 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 resolved 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 point:

- 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 additives 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 resolved individually.

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

1. Anatomical structure of teeth, dental rows.

2. The concept of "fixed bridge prosthesis".
3. Indications and contraindications for the manufacture of stamped and soldered bridge prostheses.
4. Determination of central occlusion at the stages of manufacturing stamped and soldered bridge prostheses.
5. Prepare abutment teeth for bridge prosthesis structures.

3.3. requirements for work results, including registration;

1. Anatomical structure of teeth, dental rows.
2. Indications for the manufacture of solid bridge prostheses.
3. Contraindications to the use of solid bridge prostheses.
4. The technique of creating a peri- and subgingival ledge.

3.4. control materials for the final stage of the lesson: assignments, tasks, 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 and 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 turned 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 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 turned 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 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 for taking 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:

1. Basic requirements for solid bridge prostheses
2. indications for the use of intermediate parts of bridge prostheses.
3. How is masticatory unloading distributed over a bridge-like prosthesis
4. Requirements for supporting 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 University "Medicine"; 2020. - 720 p.

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

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

Additional:

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

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

Electronic information resources:

- State Expert Center of the Ministry of Health of 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.nbu.gov.ua/>

PRACTICAL LESSON No. 7

Topic: Factors that ensure fixation of permanent prostheses. Materials for temporary and permanent fixation of orthopedic structures. Errors and complications during prosthetics with artificial crowns and bridge prostheses

Goal: Familiarize students with materials for fixation, analyze prosthetics errors with unchanged structures. Basic concepts: hyperemia of the pulp, pores, fracture of the prosthesis, fixation, ledge

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);

1. Factors 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. Properties of fixing cements.

5. Peculiarities of fixation of bridge prostheses on dental cements.

6. Know the technique of fixing bridge prostheses.

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

1. Eliminate a technological error in the manufacture of crowns.

2. Fix the bridge prosthesis on the cement.

3. Fix the bridge prosthesis on the temporary cement

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.);

During prosthetics of tooth defects with stamped metal crowns, mistakes can be made by both the doctor and the dental technician.

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 disks, 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 disc, 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/mm² 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 $8-9 \times 10^{-6}$. 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 in advance 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 is necessary to point out that even the slightest increase in the 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, the 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: assignments, 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.

Ligation of the external carotid artery

Ligation of the lingual artery in the triangle by N. I. Pirogov

Antiseptic treatment of the wound and tamponade

Stopping bleeding by applying a clamp in the wound

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 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

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 your mouth 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:

1. What factors lead to clinical errors in prosthetics with crowns.
2. What are the main mistakes in prosthetics with crowns.
3. What are the main complications that arise during prosthetics with crowns.
4. Types of dental cements for fixing bridge prostheses.
5. Indications for fixation of various types of bridge prostheses with dental cements.

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

Main:

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

- Rozhko M.M., Nespyradko 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. 8

Topic: Partial changes in the prosthesis-structure, indications for prosthetics, planning of fixation of the CZP. Support teeth staple line. Methods of fixing the special equipment. Justification of the construction of

the limits of the bases of the ChZP. Determination and fixation of the ratio of the jaws in 1.2.3.groups of defects of the dental rows

Goal:To acquaint students with the structural features of CZM, to learn how to choose abutment teeth, to acquaint students with comparing jaws with different groups of defects

Basic concepts: staple line, prosthesis base, fixing elements, central occlusion

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);

- types of constructions of partial lamellar prostheses.

- choose and apply options for partial lamellar prostheses.

- compare the jaws with different groups of defects

-requirements for supporting teeth

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.);

The constituent elements of a partial removable lamellar prosthesis are a base (plastic or metal), artificial teeth made of various materials and all kinds of mechanical devices for fixation.

Despite the variety of existing designs, parts that are repeated in all types of removable prostheses can be found in them. They should include the base, retaining devices (clips) and artificial teeth. In addition to the base, retaining elements, the arch prosthesis also includes an arch and its extensions.

Plate prosthesis consists of a base that rests on the alveolar process, the body of the jaw, artificial teeth that restore the integrity of the dentition, and clasps (hooks) or other mechanical devices that fix the prosthesis on natural teeth.

The main feature of lamellar prostheses with retaining clasps is that they are located on tissues that are not adapted to perceive chewing pressure. Therefore, it cannot reach the same value as with a bridge prosthesis, when chewing pressure is transmitted in a more natural way, that is, through the periodontium of the supporting teeth. Therefore, the functional value or masticatory efficiency of non-supported removable plate prostheses is significantly lower than that of bridges. If in the latter it is 90-95%, then in lamellar - 25-30% and no more than 40%. And the main reason for such a difference is the perception of pressure by a non-specialized tissue.

The pressure of the base on those subject to the fabric of the prosthetic bed causes their atrophy. There is increased desquamation of the epithelium. This breaks the endurance of the mucous membrane to external irritations, as a result of which a chronic inflammatory process often occurs in it.

The part of the prosthesis, adjacent to the necks of the teeth and the edge of the teeth, causes cervical caries and gingivitis with the formation of a gingival pathological pocket. The clasps that fix the prosthesis constantly slide on the surface of the tooth crown as a result of the prosthesis sinking into the mucous membrane under load and returning to its original position when it is removed. As a result, the enamel is injured, hyperesthesia appears, and caries is often the case.

However, removable prostheses have an advantage over non-removable bridges in that they are more hygienic.

Taking into account the shortcomings of both prostheses, which remove defects of the dentition, their evolution was along the lines of preserving the soundness and reducing the prosthetic base, uniform distribution of chewing pressure between the mucous membrane of the prosthetic bed and the teeth while simultaneously increasing the stability and functional value of the prosthesis. If the base of the removable lamellar prosthesis is reduced, then the specific pressure will increase, that is, the pressure per unit of the mucous membrane of the prosthetic bed. How can this be compensated? Naturally, redistribute part of the load on the mucous membrane on the teeth. This trend led to the emergence of supported prostheses.

The size of the prosthetic base depends on the number of teeth that have been preserved, the degree of atrophy of the alveolar process, the degree of contraction of the hard palate, the presence of a torus on it, the pliability of the mucous membrane, etc. The fewer teeth are left, the larger the base. Good conditions for fixation of the prosthesis (high alveolar process, pronounced erection of the hard palate or an increase in the number of clasps) allow reducing the base of the prosthesis.

The base of the prosthesis has the following maximum limits on the upper jaw. On the buccal and labial sides of the edentulous area of the alveolar process, the border of the prosthesis passes 0.5-1 mm below the transition fold, bypassing the mobile buccal-alveolar tracts of the mucous membrane and the frenulum of the lip. The distal edge of the prosthesis does not reach the "A" line, that is, the border between the hard and soft palate, which is clearly visible when pronouncing the "A" sound. The hump of the upper jaw must necessarily overlap with the prosthesis, which is the most important condition for its fixation and stabilization.

In relation to the preserved teeth, the location of the base is different in the anterior and lateral sections. Front teeth with an orthognathic bite overlap with the base of the prosthesis to the thickness of the wax base plate (1.5 mm), and with a deep bite, this area is completely freed from the base to prevent an increase in the interalveolar height and excessive pressure on the interdental papillae of the opposing teeth.

The lateral teeth are overlapped by the base of the prosthesis by 2/3 of the height of their crown, which prevents immersion in those subject to tissue and peeling of the gingival margin in the cervical region of natural teeth,

contributes to the stabilization of the prosthesis and the transfer of pressure to the teeth.

With a pronounced torus of the hard palate, it is necessary to exclude the contact of the base of the prosthesis with the mucous membrane of this formation in order to prevent this injury and the occurrence of balancing of the prosthesis. For this, an insulation (chamber) 0.5 mm deep is created on the inner surface of the base of the prosthesis in the area of the torus.

The base plate, with a total thickness of 1.8 mm, is slightly increased in places where it adjoins the natural teeth, with the aim of further correction during fitting of the finished prosthesis in the patient's oral cavity.

The edges of the base should have a rounded shape and sufficient thickness, which depends on the severity of the cheek pockets in the lateral sections, the degree of atrophy of the alveolar process in the front section and the position of the upper lip.

Limits of the base of the prosthesis on the lower jaw. The vestibular borders of the base of the prosthesis on the lower jaw in the area of the edentulous alveolar parts pass 0.5-1 mm above the transitional fold (the deepest point of convergence), having notches against the places of attachment of the frenulum of the lower lip and the buccal-alveolar cords. In places where the base adjoins the natural teeth (front and side), the degree of overlap of the latter corresponds to $2/3$ of the height of the crown in an orthognathic bite. This increases the area of the prosthetic base, improves fixation due to the tight girth of each tooth, prevents its settling into the proper mucous membrane and injury to the interdental papillae.

The lower limit of the base of the prosthesis from the oral side overlaps the internal oblique line and passes slightly above the transition fold with the release of areas corresponding to the place of attachment of the frenulum of the tongue.

In the case of terminal defects of the dentition of a large length, the distal border is recommended to be located in the area of mucous tubercles, duplication of the mucous membrane that is present, covering them partially or completely depending on the degree of their mobility and the place of attachment of the pterygoid fold.

When performing chewing, speaking and other functions, the lower jaw begins to move as a result of muscle contraction, and at the same time, the prosthesis moves, which comes into contact with the moving tissues of the oral cavity. Therefore, it is highly desirable to expand the limits of the lower prosthesis due to the retroalveolar and sublingual regions. The muscle of the same name is attached to the lower jaw in the area of the linea mylohyoidca, in the area of the angle of the lower jaw - the internal pterygoid muscle, in the area

The disadvantages of the base of the lamellar prosthesis caused a natural desire to reduce its size, and these possibilities are limited on the lower jaw. On the upper jaw, the basis was reduced primarily in the posterior third of the hard palate, where it could be the cause of vomiting. In the presence of a palatal torus

and the impossibility of its isolation and basis, a "window" is cut in the middle of the sky. This allows you to release the area, which is always covered by a thinned mucous membrane, which is very sensitive to pressure

According to some authors, reducing the area of the prosthesis base on the upper jaw to 20% after an oval cut in the middle or back third of the hard palate does not lead to an increase in masticatory pressure. At the same time, such a shortening of the base in the front third of the sky leads to an increase in pressure by 7-17%, while the more pliable the mucous membrane is, the more the pressure under the base increases.

The introduction of support-holding clasps, rod, rail, button, telescopic and other fixing and supporting elements into the design of removable dentures allows to reduce the area of the base and, what is especially important, to free the cervical region of the remaining teeth from abutting the base. This is of primary importance for the prevention of periodontal damage of the remaining teeth when treated with removable prostheses.

In case of uneven compliance of the soft tissues of the prosthetic bed, the use of so-called two-layer bases is recommended to avoid balancing the prosthesis base or overloading the least compliant areas. At the same time, the areas of the base adjacent to the inflexible mucous membrane are made of elastic plastic, and those located in the area of highly pliable tissues are made of ordinary hard plastic. As a result, the differentiated basis will sink into those subject to tissue without causing their overload.

When constructing the limits of the base, it is necessary to take into account that it can provide good fixation and stabilization of the prosthesis even without any mechanical devices, in particular due to anatomical retention.

Anatomic retention. Anatomical retention is created by natural anatomical formations on the upper and lower jaws, which, due to their shape and position, can limit the freedom of movement of the prosthesis during conversation or eating. Thus, the well-preserved alveolar ridges of the upper and lower jaws, the high elevation of the hard palate prevent horizontal movements of the prosthesis, which weaken the adhesion force. The alveolar ridges of the upper jaw prevent the prosthesis from sliding forward. In this regard, they act in common with the front part of the palatine complex. The best conditions for fixation of the prosthesis are when there is a moderately pronounced elevation of the hard palate, which allows both adhesion forces and the action of the resistance nodes, which limit the lateral and front displacements of the prosthesis, to be manifested. The use of adhesion (adhesion) and anatomical features of the prosthetic bed does not solve the entire problem of fixation, if only because with a small base of the prosthesis, the forces of adhesion (adhesion) are negligible, and the anatomical conditions may be unfavorable. However, the latter are a great help in the prosthesis attachment system, and they should not be ignored. Mechanical devices (fixtures) play a decisive role in fixing removable prostheses.

Fasteners are divided into direct and indirect. Direct retainers are located on the tooth and prevent vertical displacement of the prosthesis. These include clasps, attachments of all systems (lock connections). According to the location, fixators are divided into intracoronary (intracoronary) and extracoronary (extracoronary). The former include some types of attachments, the latter — staplers.

Indirect retainers prevent rotation (overturning) of the prosthesis. Their role can be performed by continuous staplers, extensions, overlays, etc.

Clammer fixation of prostheses. Fixation of a partial removable prosthesis can be presented as a purely technical task, if it is considered only from the point of view of fastening the prosthesis and those devices and materials that are used for this purpose. In fact, this is a complex technical and biological problem, the final solution of which requires the efforts of many researchers.

Currently, orthopedists have at their disposal various designs of clasps, which allow even in difficult conditions to strengthen the prosthesis in the oral cavity, using natural teeth as a support.

Clamer (hook) was first used by Mouton (1764). The problem is to apply such a system of clasps that, while fixing the prosthesis, would not have a harmful effect on the supporting teeth, allowing to preserve the residual dentition for a long time. At the same time, the issue of prevention of rapid atrophy of the alveolar process should be resolved through the correct distribution of forces falling on the prosthesis between the supporting teeth and the tissues of the prosthetic bed. From this point of view, the fixation of a partial removable prosthesis is presented as a complex biomechanical problem.

Most paper clips have both advantages and disadvantages. Knowing where, when and in what order these or other staples are located is an art. It was realized by studying the clinical features of the tissues and organs of the oral cavity, as well as the mechanical properties of the clasps themselves and the way they interact. That is why there are many different constructions of clasps, used according to the relevant evidence.

Before talking about the purpose of a clasp, you should decipher such concepts as supporting, stabilizing and fixing functions. The first function refers to the transmission of chewing pressure through the support elements of the clasp to the teeth, which prevent the prosthesis from settling and overloading the tissues of the prosthetic bed. By the second - they understand the prevention of lateral displacement, and finally, by the retaining (fixing) function, they mean the prevention of slipping of the prosthesis from the prosthetic bed.

The most advanced types of staplers perform all three functions at the same time, for example, a supporting and retaining stapler (three-armed, combined). In other clasps, one or another function prevails, which, for example, holds. Such a stapler is a regular wire retaining stapler.

Retaining clips. In the design of any retaining metal clasp, three main elements are distinguished, namely: shoulder, body and process.

In partial plate plastic prostheses, the most widely used round wire bent retaining clips (Fig. 357, 358). The shoulder of the clasp is its springy part that covers the crown of the tooth and is located directly in the area between the equator and the neck. It should fit tightly over the entire length to the surface of the abutment tooth, repeat its configuration and have high elastic properties. Adhesion in only one point leads to a sharp increase in the specific pressure during movement of the prosthesis and causes enamel necrosis. The death of the enamel of the supporting tooth is most often the result of an uneven distribution of pressure due to a poor fit of the clasp. Clamps should be passive, i.e. do not exert pressure on the covered tooth when they are not under tension. Otherwise, there is an unusual stimulus that is constantly acting, which can be the cause of the primary traumatic occlusion. The active pressure of the clasp is, in addition, the cause of enamel necrosis, if the tooth is not covered with a metal crown. Therefore, it is important that the clips are made of a material that has good elastic deformation, and could acquire this quality with appropriate heat treatment. They are made of wire (stainless steel or gold-platinum alloy) of different diameters: 0.4-1.0 mm. The larger the diameter of the wire clip, the higher its holding force.

The properties of the staple arm depend on its length, diameter, cross-sectional shape, and material. The longer the shoulder, the more elastic it is.

Artificial teeth, used to replace dentition defects, must meet certain requirements. They must be made of material that has an irritating or harmful effect. These are general clinical requirements. In addition, the teeth must have the correct anatomical shape, beautiful and diverse color, in order to compensate for both the lack of chewing function and aesthetic disorders. In terms of color, artificial teeth imitate the natural transition of the lighter color of the translucent cutting edge to the more intense and darker coloring of the cervical region. The teeth should not be destroyed by chewing pressure and should wear little. The method of connecting the teeth to the material of the base is important, while the best teeth are those that are monolithically connected to the base of the prosthesis. Finally, the material from which the teeth are made must be available and cheap. These are special requirements.

When choosing the design of a partial removable prosthesis, the first question that arises before the doctor is the method of its fixation in the oral cavity. An effective method of fastening is one of the conditions that ensure good functional qualities of the prosthesis. To fix partial removable prostheses, adhesion, anatomical retention, artificial mechanical devices are used: clasps, pelotovs, telescopic crowns, etc.

Mechanical devices (fixtures) play a decisive role in fixing removable prostheses.

Fasteners are divided into direct and indirect. Direct retainers are located on the tooth and prevent vertical displacement of the prosthesis. These include clasps, attachments of all systems (lock connections). According to the location, fixators are divided into intracoronal (intracoronary) and external

coronal (extracoronary). The former include some types of attachments, the latter — staplers.

Types of paper clips. Clamps are divided according to different characteristics: according to the method of manufacture (bent, cast); according to the shape of the profile section (round, semi-round and ribbon); according to the degree of girth of the tooth and their number (one-arm, two-arm, overturning, double, multi-link); by function (retaining, supporting and supporting-relieving); according to the method of connection with the base of the prosthesis (rigid, semi-rigid, elastic, hinged).

Indirect retainers prevent rotation (overturning) of the prosthesis. Their role can be performed by continuous clamps, appendages, overlays, etc

The number of supporting teeth and their location are of great importance for fixing the prosthesis.

Clammer line. The line connecting the supporting teeth on which the staples are located is called the staple line. Its direction depends on the position of the supporting teeth. If the supporting teeth are located on one side of the jaw, the staple line has a sagittal direction, and when the supporting teeth are located on opposite sides of the jaw, it is transverse or diagonal.

When used as a support for one tooth, the attachment of the prosthesis is called point, for two teeth - linear, for three or more teeth - planar. The least advantageous type of attachment is point attachment, when all shocks perceived by the prosthesis under functional load are transmitted to the periodontium of one tooth, leading to its overload.

The harmful effect of clamps on the periodontium of supporting teeth could be significantly reduced by using points of anatomical retention (alveolar processes or parts, maxillary ridges, palatal arch, internal oblique lines) to fix the prosthesis.

Linear mounting from the point of view of statics, it is more expedient than a point one. Only in the absence of the possibility of choice, it is necessary to create a sagittal staple line, which is disadvantageous from the point of view of the stability of the supporting teeth and the prosthesis itself. For example, two teeth remained on the upper jaw on one side - the first molar and the first premolar. The staple line in this case will be sagittal. In other words, when constructing a staple line, it is necessary to strive for parts of the prosthesis to be on both sides of it, that is, the staple line should be the imaginary axis of rotation of the prosthesis (transversal on the lower jaw, diagonal on the upper). However, even the most expedient linear strengthening has very significant disadvantages regarding the impact on the stability of the tooth. Under masticatory pressure, the prosthesis moves like a lever in different directions. The force of this movement is measured by the length of the lever arm. The shoulder is equal to the perpendicular restored from the middle of the staple line, that is, the line connecting the middle of the support teeth. The greater the arm of the lever, that is, the greater the force of masticatory pressure, the greater the overturning effect on the supporting teeth.

Flat mounting. To protect the tooth against the force of rotation, another force must be resisted - the center of resistance, which is what the planar attachment serves when a system of levers with centers of resistance is formed. Depending on the number of centers, there are triangular, quadrilateral, and so on systems

For the stability of the prosthesis, it is necessary that the resistance is greater than the force of rotation during chewing. Therefore, strong multi-rooted teeth are chosen for the center of resistance. By using their stability as a positive factor for prosthetics and involving a large number of teeth to transmit chewing pressure, the balance of the prosthesis is achieved.

A staple system can be considered satisfactory if it meets the following requirements.

1. Performs fixation to the same extent on all supporting teeth.
2. Prevents overturning or rotation of the prosthesis.
3. Does not increase the height of the bite (interalveolar) on occlusal linings.
4. Minimally violates aesthetic standards.
5. The clasp system should not create a traumatic occlusion.

Currently, orthopedists have at their disposal various designs of clasps, which allow even in difficult conditions to strengthen the prosthesis in the oral cavity, using natural teeth as a support. Clamer (hook) was first used by Mouton (1764). The problem is to apply such a system of clasps that, while fixing the prosthesis, would not have a harmful effect on the supporting teeth, allowing to preserve the residual dentition for a long time. At the same time, the issue of prevention of rapid atrophy of the alveolar process should be resolved through the correct distribution of forces falling on the prosthesis between the supporting teeth and the tissues of the prosthetic bed. From this point of view, the fixation of a partial removable prosthesis is presented as a complex biomechanical problem.

Most paper clips have both advantages and disadvantages. Knowing where, when and in what order these or other staples are located is an art. It was realized by studying the clinical features of the tissues and organs of the oral cavity, as well as the mechanical properties of the clasps themselves and the way they interact. That is why there are many different constructions of clasps, used according to the relevant evidence.

Before talking about the purpose of a clasp, you should decipher such concepts as supporting, stabilizing and fixing functions.

The first function refers to the transmission of chewing pressure through the support elements of the clasp to the teeth, which prevent the prosthesis from settling and overloading the tissues of the prosthetic bed.

The second means prevention of lateral displacement
the retaining (fixing) function means preventing the prosthesis from slipping out of the prosthetic bed.

The most advanced types of staplers perform all three functions at the same time, for example, a supporting and retaining stapler (three-armed, combined). In other clamps, one or another function prevails, which, for example, holds. Such a stapler is a regular wire retaining stapler.

Retaining clips. In the design of any retaining metal clasp, three main elements are distinguished, namely: shoulder, body and process.

In partial plate plastic prostheses, the most widely used round wire bent retaining clips. The shoulder of the clasp is its springy part that covers the crown of the tooth and is located directly in the area between the equator and the neck. It should fit tightly over the entire length to the surface of the abutment tooth, repeat its configuration and have high elastic properties. Adhesion in only one point leads to a sharp increase in the specific pressure during movement of the prosthesis and causes enamel necrosis. The death of the enamel of the supporting tooth is most often the result of an uneven distribution of pressure due to a poor fit of the clasp. Clamps should be passive, i.e. do not exert pressure on the covered tooth when they are not under tension.

To prevent this, one shoulder should fix the prosthesis, and the other should counteract it, i.e. prevent it from moving to one side or the other (reciprocal action).

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;

1. What are the main requirements for supporting teeth.
2. What are the main requirements for the placement of clasps on abutment teeth.
3. What are the main requirements for NPP modeling
4. What are the principles of conducting clinical and additional methods of research on abutment teeth

5. rules for the placement of clasps in partial plate prosthetics.

6. What are the limits of the prosthesis on the upper jaw

7. What are the limits of the prosthesis on the lower jaw

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

Patient Ya., 49 years old, complained of partial absence of teeth, difficulty in chewing food, aesthetic disturbances. Objectively: 17, 16, 13, 12, 11, 21, 22, 23, 27, the teeth are stable, the mucous membrane is pale pink. The lower jaw has all the teeth. The missing teeth were removed 3 years ago. Previously, the patient did not have prosthetics. In this case, what kind of arrangement of clasps will provide better retention of the partial lamellar prosthesis?

- A. Transversal
- B. Diagonal
- C. Sagittal
- D. Dotted

+E. On the plane

2. Patient N., 50 years old, turned to an orthopedic doctor with complaints about partial absence of teeth, difficulty in chewing food, aesthetic dissatisfaction with the state of the teeth. Objectively: 17, 16, 12, 13, 21, 22, 23, 17, the remaining teeth are stable, the mucous membrane is pale pink. The lower jaw has all the teeth. . The alveolar process is well defined, the arch of the palate is high. Previously, the patient did not have prosthetics. How should the posterior border of a partial plate prosthesis be positioned in relation to line A?

- A. Back by 1-2 mm
- B. Along the A line
- C. + 1-3 mm ahead
- D. 15-20 mm ahead
- E. 4-5 cm ahead

3. Patient R., 65 years old, went to the district dental polyclinic to see an orthopedic doctor with complaints of partial absence of teeth, difficulty in chewing food, aesthetic dissatisfaction with the state of the teeth. Objectively: 17, 11, 21, the remaining teeth are stable, the mucous membrane is pink. What system of fixation of a partial lamellar prosthesis should be used?

- A Staples on 17-11-21 teeth
- B. Tiller bar on 17-11 teeth
- C. Kulazhenko-Barchukova vestibular clamp
- D. Telescopic crowns on 11-21 teeth
- E. + Telescopic crowns on 11 21, clasp on 17 teeth

4. Patient Sh., 47 years old, turned to the doctor with complaints of partial absence of teeth, difficulty chewing food, aesthetic dissatisfaction with the state of the teeth. Objectively: 16,13, 22, 23, The remaining teeth are stable, the mucous membrane is pale pink. The lower jaw has all the teeth. The missing teeth were removed due to periodontitis 2-4 years ago. Previously, the patient did not have prosthetics. On which teeth is it advisable to place the retaining clips of a partial plate prosthesis?

- a. 16 13 22
- b. 16 22 23
- c. 13 22 23
- d. 16 13 23 +
- e. 16 13 21

5. Patient N., 53 years old, complained about the partial absence of teeth on the upper jaw. Objectively: the remaining teeth are stable, the bite is orthognathic. The teeth have the correct anatomical shape, the equator is well defined. The mucous membrane is pale pink, moderately pliable. The patient was recommended to make a partial lamellar prosthesis. What function does the PPP basis not violate?

- A. tactile sensitivity
- B+. the degree of grinding of food
- C. language
- D. temperature reception
- E. sense of taste

6. Patient T., 50 years old, complained about the partial absence of teeth on the upper jaw. Objectively: 00 00 16 00 00 13 00 00 21 22 23 00 00 00 00 00 . The remaining teeth are stable, the bite is orthognathic. The teeth have the correct anatomical shape, the equator is well defined. The mucous membrane is pale pink, moderately pliable. Patients are recommended to make a partial lamellar prosthesis.

The basis of the NPP for the upper jaw with a terminal defect is due to:

- A.. leave the alveolar ridges free
- B. partially cover the hills
- C+. completely cover the hills
- D. lie on the chewing surface
- E. do not reach the cheeks

7. Patient Kh., 42 years old, complained of partial absence of teeth on the upper jaw. Objectively: 18 17 16 00 00 13 00 00 00 00 00 00 00 00 27 28. The remaining teeth are stable, the bite is orthognathic. The teeth have the correct anatomical shape, the equator is well defined. The mucous membrane is pale pink, moderately pliable. Patients are recommended to make a partial lamellar prosthesis.

Which of the specified elements are not used in removable lamellar prostheses?

- A. basis
- B. teeth
- C+. arcs
- D. staples are bent
- E. pellets

8. Patient U., 59 years old, complained of partial absence of teeth on the upper jaw. Objectively: 16,13,25,27.. The remaining teeth are stable. The teeth have the correct anatomical shape, the equator is well defined. The mucous membrane is pale pink, moderately pliable. The patient was recommended to make a partial lamellar prosthesis. What type of staple fixation provides better retention of the prosthesis?

- A. transversal
- B. diagonal
- C. sagittal
- D. +plane
- E. dotted

9. A 63-year-old man applied for prosthetics. Objectively: 43-33 teeth are destroyed by 1/2. Periodontal tissues are normal. The rest of the teeth on the lower jaw are missing. What crowns for abutment teeth must be made to fix a removable prosthesis?

- A+. Telescopic crowns.
- B. Plastic.
- C. Equatorial crowns.
- D. Semi-crowns.
- E. Solid crowns.

10. A 79-year-old patient is shown the fabrication of a PRP on the upper jaw with holding clasps for 15, 24, 26 teeth. The shoulder of the retaining clip on the supporting tooth should be located:

- A. + between the equator and the neck of the tooth
- B. in the base of the prosthesis
- C. at the gingival margin
- D. on the chewing surface of the tooth
- E. none of the above

11. A 76-year-old patient applied to the clinic for prosthetics. Objectively, the presence of the roots of 14.23 teeth is determined on the upper jaw. What method of fixation is preferred in the presence of one or more roots on the jaw?

- A.+button fasteners
- B. telescopic crowns
- C. pellets
- D. tiller rod
- E. of Kemeny's clasp

12. A 66-year-old patient applied to the orthopedic dentistry clinic for prosthetics. After an objective examination, the production of the PPP is shown. The base of the lamellar prosthesis transmits chewing pressure to:

- A. + mucous membrane
- B. teeth and mucous membrane
- C. on the remaining teeth
- D. antagonistic teeth
- E. none of the above

4. Summary:

What are the requirements for supporting teeth

What does the emergency department consist of?

What are staple lines

What are the groups of defects

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

Main:

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

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

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

Additional:

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

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

Electronic information resources:

- State Expert Center of the Ministry of Health of 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. 9

Topic: Positioning of teeth in CZP. Inspection of CZP. Technologies of production of CZP with a plastic base. Compression and casting pressing of plastics. Overlaying and correction of CZP.

Goal: Familiarize students with the technology of manufacturing dental veneers, familiarize students with the method of setting teeth Basic concepts: setting teeth, polyremization, superimposition, fixation, correction

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);

-
- Clinical-laboratory stages of the production of special equipment
 - Choice of color and style of plastic teeth
 - Methods of setting teeth
 - Recommendations to the patient after handing over the prosthesis

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

- Planning of orthopedic treatment of CZP
- Carrying out placement of teeth on the tributary

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

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

The work begins with casting models (when using alginate impression materials, the model can be cast by a doctor). When trimming the model, it is important to keep as full a space as possible corresponding to the transition fold.

Next, they proceed to determine the limits of the base of the future prosthesis. It would be more rational to perform this manipulation together with a doctor.

The size of the prosthetic base depends on the number of preserved teeth and their location, the degree of atrophy of the alveolar process, the severity of the hard palate, the degree of compliance of the mucous membrane of the prosthesis bed, the severity of the palatal ridge (torus) and methods of strengthening the prosthesis.

On the upper jaw: the fewer teeth remained, the more the size of the base fit; the smaller the teeth, the smaller the size of the base. On the lower jaw, the size of the bases on the lingual side is constant, and on the vestibular side - it depends on the number of missing teeth. Delineation of the borders of the prosthesis is performed with a chemical pencil, since the trace of an ordinary pencil can be removed with moisture.

Borders of prostheses on the upper jaw.

From the vestibular side: at the level of the transitional fold, bypassing the frenulum and folds of the mucous membrane closer to the oral side.

From the oral side: in the presence of front natural teeth, only at the level of the cusps of the teeth, without overlapping them. In the area of molars and premolars at the level of 2/3 of the height of the crowns. If there is a torus, it must be covered with a base with appropriate isolation of the area. On the

model, the torus is outlined with a circular line, trying not to expand the boundaries of the torus. In the future prosthesis, there will be a small thin chamber in the area of the torus on the palatal side of the prosthesis, which will allow the prosthesis not to rest on the torus.

Round the distal border of the prosthesis in the spaces between the last molars. That is, the distal border of the prosthesis will be a line drawn immediately behind the last molars of the jaw.

Borders of prostheses on the lower jaw.

From the vestibular side: at the level of the transitional fold, bypassing the frenulum and folds of the mucous membrane closer to the oral side.

On the oral side: cover all the remaining teeth by $\frac{2}{3}$ of the height of the crowns. The lingual edge of the prosthesis passes along the transition fold, having a corresponding cutout for the lingual frenulum in the form of a crescent notch.

After the model is outlined, they start making wax templates with biting rollers. They are necessary for the doctor to determine in the clinic the state of central occlusion in the patient and record that will help the technician to plaster the models in the occluder precisely in the position of central occlusion.

Templates and rollers are made of base wax. The wax is produced in plates with an area of approximately 20x10 cm. The plate is pre-cut with the area of the outlined area on the model. On the lower jaw, it is taken into account that the plate will have to be folded in half. Next, the wax plate is heated over the flame of a burner or alcohol (for the lower jaw – the wax plate is folded in half, with the heated part inward, the doubled plate is heated again); the opposite side to the heated thumbs are pressed against the palatal surface of the model. Excess wax on the border is trimmed with a heated spatula. Strengthen the wax base with a wire to avoid its deformation in the oral cavity. To do this, cut off 4-6 cm of wire with a diameter of 0.8 cm, bend it like a horseshoe, according to the shape of the oral part of the alveolar process, try it on a wax template. The wire is taken with tweezers and heated well over the burner. After that, the wire segment is smoothly lowered into the wax outside the template at the base of the alveolar process from the palatal side. The wax template is ready.

Next, they proceed to the production of biting rollers. The heated plate of wax is rolled into a roller and placed in an area free from teeth. The roller should be monolithic, height 1-1.5 cm, width 1 cm; located in the center of the alveolar process, tightly glued to the wax base (to do this, run a heated spatula along the inner and outer surface of the roller). The rollers are given a smooth surface. The distal sections of the rollers are made in the form of bevels "to nothing". In the presence of natural teeth, the rollers are made 2-3 mm higher than the level of the teeth.

Ready wax patterns with bite rollers on the models are transferred to the clinic. The doctor determines the central occlusion.

The next stage of manufacturing partial lamellar prostheses is plastering

the models into the occluder.

The occluder is an imitator of vertical movements of the lower jaw (opening and closing the mouth).

Placement of artificial teeth in partial removable plate prostheses is carried out taking into account a number of anatomical landmarks.

Anatomical guidelines for placing artificial teeth are:

Teeth standing next to each other

Antagonist teeth

The ridge of the alveolar process

Interalveolar lines

The shape of the dental arches

Middle face line

Lip frenulums

The shape of the alveolar process

Pupillary line

Smile line

Cutting edge level

Setting artificial teeth is carried out in occluders and articulators, which ensures the appropriate accuracy of reproduction of various occlusal ratios. For the correct location of artificial teeth, they are polished (shape of the alveolar ridge, height of the teeth, location of the clasp arm, occlusal contacts).

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

-Clinical-laboratory stages of the production of special equipment

-Etiology and pathogenesis, classification of tooth row defects

- Setting the teeth of the technique

- Overlaying and Fixing of special equipment

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

1 Patient D., 71 years old, applied to the orthopedic dentistry clinic for the purpose of prosthetics. After an objective examination, it was decided to produce a PPP.

Dental formula: 18 00 16 15 00 13 00 00 00 00 00 24 00 00 27 00

00 47 00 00 00 00 00 00 00 00 00 34 35 00 00 00

the condition of the supporting teeth is satisfactory. The mechanical methods of fixation of the lower jaw include:

A. Sticking

B. Shut-off valve

C. Functional absorption

+D. Clamer

E. All of the above

2 Patient U., 68 years old, applied to the orthopedic dentistry clinic with complaints about the absence of chewing teeth on the upper jaw. Objectively:

18 00 00 00 14 13 12 11 21 22 23 24 25 00 00 00

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

It was decided to produce a PPP. The distal border of the CPP should be located at:

A. Palate folds

V. To the solid sky

+S. Lines A

D. To the soft sky

E. None of the above

3. Patient F., 55 years old, applied to the clinic of orthopedic dentistry for the purpose of prosthetics. Objectively: Patient M., 46 years old, turned to the clinic of orthopedic dentistry with complaints about the impossibility of using a brace prosthesis. Objectively: 00 17 16 15 14 00 12 11 21 22 23 00 25 26 27 00 00 47 46 45 44 43 42 41 31 32 33 34 35 36 37 00 teeth are intact, stable. Orthognathic bite. They decided to make a partial plate prosthesis for the upper jaw. When checking the structure of the prosthesis in the oral cavity, the teeth are in occlusion, and a gap is determined between the artificial and lower teeth. At what stage of prosthetics was a mistake made?

A. Making a wax base with a bite roller.

B. Obtaining prints.

+S. determination of central occlusion.

D. Production of models.

E. Placement of artificial teeth.

4. Patient D., 61 years old, complained about the absence of teeth, impaired chewing of food. Objectively: 22, 24, 25 teeth are missing on the upper jaw. The partial defect of the dentition should be understood as the absence of teeth:

A. 1-3

B. 2-6

+C. 1-13

D. 3-8

E. 5-7 5.

5. Patient E., 55 years old, complained of missing teeth, impaired chewing of food. Objectively: 34, 35, 36 teeth are missing from the lower jaw. A small defect in the dentition should be understood as the absence of teeth:

+A. 1-3

B. 4-6

C. 2-6

D. 7-9

E. 5-8

6. Patient Zh., 41 years old, complained about the absence of teeth, impaired chewing of food. Objectively: 33, 32, 31, 41, 42, 43 are missing from the

lower jaw. An average dentition defect should be understood as the absence of teeth:

- A. 1-13
- +B. 4-6
- C. 2-6
- D. 7-9
- E. 5-8.

4. Summary:

What are the clinical and laboratory stages of the production of the CZP
What methods of setting teeth exist
Types of artificial teeth
What recommendations are given to the patient after handing over the prosthesis

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

Main:

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

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

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

Additional:

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

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

Electronic information resources:

- State Expert Center of the Ministry of Health of 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. 10

Topic: Bügel prostheses. Planning constructions depending on clinical conditions. go fixing elements. Parallelometry of diagnostic models

Goal: To acquaint students with the advantages of hook prostheses, to analyze the main types of fixing elements, to determine the details of hook prostheses, their purpose and location. Basic concepts: Kennedy classification, parallelometry, duplication of models, supporting and retaining clasps, the Neya system

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. To be able to determine indications for bygel prosthetics.
 2. Know the classification of dentition defects according to Kennedy, Kulazhenko
 3. Determine the details of the brace prosthesis, their location and purpose
 4. Classification of supporting and retaining elements
- 3.1. content of tasks (tasks, clinical situations, etc.);
-

Bügel prostheses are quite new and the most modern type of removable prostheses. The uniqueness of the technology, its complexity and the need to know a large number of subtle points in the manufacture of this type of prostheses made it necessary to study the technology of the production of braced prostheses as a separate section.

Work in the field of production of one-piece partial prostheses began about 70 years ago. The production of clasp prostheses became possible thanks to the development of gold alloys with casting properties and spring hardness, casting technology with expanding packing masses, and, finally, thanks to the development of cobalt-chromium-molybdenum alloys in the early 1930s by the AUSTENAL company. In the 50s, the casting technique came to the fore due to the fact that:

a) cobalt-chromium-molybdenum alloys with a very high modulus of elasticity, that is, with high hardness of the frame and stability of the shape of the staples,

while at the same time sufficient viscosity to prevent fractures of the frame and fixing elements;

b) accurate casting technologies, which allow even very complex frames with various fixing and supporting elements to be obtained in one-piece casting.

A characteristic feature of bygel prostheses is the combined nature of the transmission of masticatory pressure. Thus, bridge-like prostheses transmit chewing pressure only to the supporting teeth (because these prostheses apply only to the teeth), partial lamellar prostheses - only to the mucous membrane of the mouth. Bügel prostheses rest on the teeth with the help of so-called occlusion pads and on soft tissues - with the help of saddles and arches.

Before analyzing the technological and laboratory features of the production of the brace prosthesis, the characteristics of its components, we will analyze the classification of defects of the tooth rows, in which brace prostheses are made. The classification is necessary for the selection of the design of the brace prosthesis together with the doctor.

In the practice of domestic orthopedic dentistry, two classifications are accepted: Kennedy (international) and Kulazhenko (a simple, accessible classification developed by the founder of the Faculty of Dentistry in Odesa).

Kennedy classification.

According to Kennedy, all dentitions with defects are divided into four classes (Fig. 5.1). It is built according to the principle: "The more difficult the defect is for prosthetics, the smaller the number of the defect class." The first class includes dental arches with bilateral end defects (the most complex type of defects), the second class includes arches with unilateral end defects, the third class includes dental arches with included defects in the lateral area, and the fourth class includes frontal defects. In practice, these defects are more often combined, that is, the patient usually has two defects that fit under different classes according to Kennedy. In this case, a more severe defect is selected as a class, that is, a defect with a smaller number, and the second defect will form a subclass.

Kulazhenko's classification.

/ class. The dentition defect is limited to one tooth — a continuous shortened dentition without a distal support (Kennedy class II) (Fig. 5.2).

// class. Two defects limited to two teeth — a shortened dentition with bilateral defects without distal support (Kennedy class I).

III class. Two defects limited to three teeth — bilateral defects limited to three teeth, one defect without distal support (according to Kennedy — class II, subclass I).

IV class. Two defects limited to four teeth - bilateral defects with distal supports (according to Kennedy - class III, subclass I).

In the presence of additional defects, in addition to the main ones, these cases form a subclass of the main class (as in Kennedy's classification). The absence of front teeth in the presence of lateral teeth is also class II, but with a distal support, and, therefore, the design of the prosthesis will be different.

A parallelometer is a device for determining the relative parallelism of the surfaces of two or more teeth or other parts of the jaw, such as the alveolar ridge. Many designs of parallelometers have been proposed, but they are based on the same principle, namely: at any displacement, the vertical rod is always parallel to its original position. This allows you to find points located on parallel vertical planes on the teeth. The parallelometer is equipped with a set of rods: an analyzing rod, rods with disks of different diameters for measuring subcenters, a graphite rod for delineating the dividing line, a blade for removing excess wax. The analyzing rod is made flat and serves to determine the most favorable direction of the parting line, therefore, and the position of the clamps, which ensure unhindered introduction of the prosthesis and its good fixation. Ways of insertion and removal of the prosthesis. The insertion path is the movement of the prosthesis from the initial contact of its clamp elements with the supporting teeth to the tissues of the prosthetic bed, after which the occlusive pads are installed in their beds, and the base is precisely located on the surface of the prosthetic bed. The way to remove the prosthesis is outlined by its movement in the reverse direction, i.e. from the moment of detachment of the base from the mucous membrane of the prosthetic bed until the complete loss of contact of the supporting and retaining elements with the supporting teeth. There are several ways to introduce a prosthesis, but you should choose the most convenient one. The best way to insert and remove the prosthesis should be one where the prosthesis is easily applied and removed, encountering a minimum of obstacles that cannot be excluded, and at the same time ensuring the same retention on each tooth. The route of introduction depends on the location of the staples, and the latter, of course, affects aesthetics. Therefore, you should find such a solution, in which the clasps will be less visible and the shape of the front teeth will be preserved. In view of the requirements of aesthetics, it is sometimes necessary to sacrifice other qualities, for example, fixation. After studying the models in the parallelometer and articulator, the orthopedist draws the final design of the brace prosthesis on the superplaster model. This work can be performed by an experienced dental technician.

Since the modeling of the frame of the brace prosthesis and its casting is carried out directly on the impact-resistant model, it is necessary to take seriously its manufacture: after casting the frame, the clasps should fit tightly to the teeth, and the arch and basic grids should be separated from the mucous membrane of the prosthetic field by the right distance. For this purpose, a superplaster model is specially prepared for duplicating.

The preparation consists in the fact that all the spaces between the teeth, as well as part of the surface of the teeth between the necks and the boundary line, are filled with refractory wax or plastered with moldin or plaster. On the supporting teeth, niches are filled only on the side of the dentition defect from the neck to the border line.

In order to accurately place the clasps on the refractory model on the supporting teeth of the vestibular and oral sides, according to Ney's

recommendation, a plate of refractory wax is inserted between the neck of the tooth and the boundary line and it is cut along the lower edge of the shoulder of the support-holding clasp.

On the lower edge of the shoulders on the tooth, there are steps that will be transferred to the fire-resistant model.

H.P. Sosnin recommends using a sharp scalpel to make a groove on the lower edge of the clapper's shoulders, which will be transferred to the fire-resistant model and will be a reference point for the location of the clapper's shoulders. After filling the gaps and retention points on the model with wax, start laying the spacers. The arch and base grids should not adhere to the mucous membrane of the prosthetic field. These gaskets are made of wax, tin or lead plates. The thickness of the spacers under the grids should be 1.5-2 mm - depending on the height of the supporting teeth, the type of bite. The thickness of the pads for the sublingual arch should be 0.5-1.5 mm - depending on the individual features of the relief of the alveolar process and the flexibility of the mucous membrane. Pads for the palatal arch have a thickness of 0.3-0.5 mm.

So, having selected the plates of the required thickness and shape, cover the model with them according to the drawing of the frame. Plates are fixed with universal glue. If there are no such plates, you can use an adhesive plaster, which is glued with 1-2 layers of glue. In this case, the thickness of the spacers is regulated by the number of adhesive plaster layers.

The plates should be of uniform thickness, smooth and fit tightly to the model.

After that, the model is fixed on the table of the parallelometer in the position in which the boundary line was applied to the supporting teeth. A knife-shaped rod is fixed in the collet device and, turning the table with the model, the remains of wax, mold or plaster of the boundary line are cut off. These same teeth at the level of the boundary line provide parallelism, which is important for obtaining a high-quality fireproof model.

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

-
- Classification of dental defects according to Kennedy
 - Indications for prosthetics with braced prostheses
 - Requirements for abutment teeth
 - Her clasp system

3.3. requirements for work results, including registration;

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

1. The patient is 46 years old. Complaints about difficulty chewing, weight loss. Objective examination of the oral cavity; the lower jaw has an intact dentition. On the upper jaw, the preserved teeth are stable 13 12 11 21 22 23 24 47 46 45 44 43 42 41 31 32 33 34 35 36 37 3:3 sealed.

The mucous membrane is pale pink. Alveolar processes and palate are well defined. The bite is direct.

Determine the diagnosis and treatment plan?

Answer: Absence of chewing teeth of the upper jaw, Kennedy class 1. X-ray examination of sealed 3:3 teeth is necessary, with the subsequent manufacture of artificial crowns on them. Bügel prosthesis with a multi-link clasp on the v/sh.

2. The patient is 59 years old. Complaints about missing teeth on both jaws, difficulty chewing. Pain in some teeth. Examination of the patient's oral cavity. Dental formula:

7000321:0034007 87004001:1230007. 321 without noticeable pathological changes, stable.

:1230007 - III degree mobility. The gingival mucosa is hyperemic in the form of lencolic from gingival pockets. Dental layering. Bleeding gums. The bite is orthognathic, closer to a deep overlap.

Make a treatment and examination plan. Make a diagnosis? Outline a plan for subsequent orthopedic treatment. Answer: The diagnosis is periodontitis of the 1st and 3rd degree. Large defects of the dentition of the upper and lower jaw. TREATMENT PLAN:

Surgical removal of teeth with mobility of the third degree. X-ray examination of preserved teeth. Splinting of groups of teeth using a non-removable splint. Restoration of dentition defects with lamellar prostheses.

3. A 51-year-old patient complains of difficulty eating and pain in the alveolar mucosa in the area of missing teeth. Lost teeth many years ago. Objective examination: the dental arch of the upper and lower jaw is curved in the vertical direction in the area of the chewing teeth.

4321:0234 stable, without pathological changes, 1! missing, ----- missing chewing teeth on the upper jaw on the left 321:1234 : 5678----- 7654 : protruding, roots exposed, stable, when closing the jaws they touch with a mucous membrane - alveolar processes.

Imprints of the humps of the teeth are visible on the mucous membrane. Orthognathic bite. Make a diagnosis, make a treatment plan.

Answer: Diagnosis – Unilateral absence of chewing teeth on the upper jaw on the right, on the lower jaw on the left, Popov-Godon phenomenon.

Treatment: Surgical removal of protruding teeth with the subsequent manufacture of brace prostheses.

4. The patient is 49 years old. Complaints about missing teeth on the lower jaw, difficulty chewing. Examination: Dental formula: 7600321:12300078

321:1234

The teeth are stable - bridge-like prostheses on the upper jaw, the intact necks of the lower jaw teeth are exposed, well defined, the alveolar process is low, the tongue frenulum is attached high. Orthognathic bite. Answer: The diagnosis is Kennedy class 1, complete absence of the lateral teeth of the lower jaws. Treatment plan – On the lower jaw, a brace prosthesis with a wide multi-link clasp instead of an arch on the remaining teeth.

5. The patient is 54 years old. Complaints about the absence of teeth on the upper jaw, difficulty in chewing. He lost his teeth as a result of caries.

6. Dental formula: 87654321:12300000 - the dentition is intact.

87000321:12300000

Abrasion of the teeth of the 1st degree. The teeth are stable, well defined, the ridges are erased, the bite is straight. The vault of the palate is well defined, the humps of the lower alveolar processes of the nasopharynx are well defined, the mucous membrane is dense.

Diagnosis: Complete absence of teeth on the left front /Kennedy P/, partial absence of chewing teeth on the front /Kennedy P, 1st subclass /.

Abrasion of the teeth of the 1st degree. Treatment plan, upper jaw brace prosthesis with multi-link clasps on the remaining teeth, Bonville clasp at 76! teeth and T-shaped on the 3rd tooth; on the lower jaw, a fixed prosthesis with resistance-retaining Akker clasps on 83 teeth and a resistance-retaining one on 3 teeth.

7. Patient, 52 years old. Complaints about missing teeth. Difficulty chewing. She lost her teeth as a result of periodontal disease. Dental formula:

80004300:0034007

7000321:12300078

Objective examination: the teeth are protruding, slightly mobile in the mediobuccal direction. The jaw is hyperextended, slightly swollen. Dental layering. The teeth are intact. Normognathic bite, non-surgical X-ray examination of 4300:00340000 teeth.

321:123

Diagnosis: Periodontitis 1-P degree. Partial absence of chewing teeth on both jaws and incisors on the upper. At the university, P subclass according to Kennedy.

Treatment plan: Splint the lower incisors with soldered crowns, make a bridge-like prosthesis on the lower teeth with support on 43:34 teeth. Bügel prostheses with multi-link clasps and resistance-retaining clasps on both jaws.

8. Patient, 53 years old, teacher. Complaints about tooth mobility. Difficulty pronouncing and chewing. Objective examination

87004321:12345078

87654321:12340078

- 321:123

mobility III art. Other teeth - mobility 1 st. The teeth are mobile, protruding, the alveolar processes are atrophic, the vaulted palate is well defined. After tooth extraction – Kennedy 1U. The diagnosis is periodontitis of the 1st century. Treatment plan: Immediate prosthesis on the upper and lower extremities. Removal of 321:123 teeth. 321:123.

After 1.5-2 months, the production of prostheses for both jaws with splinting elements.

4. Summary:

-
1. Indications for a brace prosthesis
 2. Advantages of the bygel prosthesis
 3. Design features of the bygelny prosthesis
 4. Parallelometry
 5. Duplication of models
-

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

Main:

- Yerys, L. B. Modern technologies for manufacturing maxillofacial prostheses: [teaching manual for students of higher medical schools. education institutions of the IV level of accreditation and dentists, orthopedists and surgeons] / L. B. Yeris, V. M. Dvornyk; Ministry of Health of Ukraine, Central Medical Center, UMSA. – Poltava: Astraya, 2016. – 71 p. Dvornyk; Ministry of Health of Ukraine, Central Medical Center, UMSA. – Poltava: Astraya, 2016. – 71 p.

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

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

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

Additional:

- Belikov, O. B. Maxillofacial orthopedics: a study guide. Part 1. Subject of maxillofacial orthopedics. Maxillofacial traumatology / O. B. Belikov; Ministry of Health of Ukraine, Central Medical Center, UMSA. – Poltava: Dexy Print, 2002. – 207 p

- 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. 11

Topic:BP fixation. Indications for the use of various types of mechanical fasteners. Supporting and holding clasps. Technological stages of manufacturing BP with solid metal frame. Duplication of working models. Compensation of shrinkage of alloys during casting. Molding masses. Technologies of casting of frameworks of braced prostheses and prostheses with a metal base

Goal:To acquaint students with indications for the manufacture of brace prostheses, to acquaint them with casting technology

Basic concepts:casting, duplication of models, alloys, metals, shrinkage

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:

- To be able to determine the construction of the bygel prosthesis.

-Know the basic clasps used in the manufacture of brace prostheses.

-Determine the details of the byugel prosthesis, their location and purpose.

- Familiarize yourself with the rules for preparing models for duplicating.

-Learn the algorithm for preparing models for duplication.

- To study the properties and technologies of using domestic duplicate masses.

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

After studying the models in the parallelometer and articulator, the orthopedist draws the final design of the brace prosthesis on the superplaster model. This work can be performed by an experienced dental technician.

Since the modeling of the frame of the brace prosthesis and its casting is carried out directly on the impact-resistant model, it is necessary to take seriously its manufacture: after casting the frame, the clasps should fit tightly to the teeth, and the arch and basic grids should be separated from the mucous membrane of the prosthetic field by the right distance. For this purpose, a superplaster model is specially prepared for duplicating.

The preparation consists in the fact that all the spaces between the teeth, as well as part of the surface of the teeth between the necks and the boundary line, are filled with refractory wax or plastered with moldin or plaster. On the supporting teeth, niches are filled only on the side of the dentition defect from the neck to the border line.

In order to accurately place the clasps on the refractory model on the supporting teeth of the vestibular and oral sides, according to Ney's recommendation, a plate of refractory wax is inserted between the neck of the tooth and the boundary line and it is cut along the lower edge of the shoulder of the support-holding clasp.

On the lower edge of the shoulders on the tooth, there are steps that will be transferred to the fire-resistant model.

H.P. Sosnin recommends using a sharp scalpel to make a groove on the lower edge of the clapper's shoulders, which will be transferred to the fire-resistant model and will be a reference point for the location of the clapper's shoulders. After filling the gaps and retention points on the model with wax, start laying the spacers. The arch and base grids should not adhere to the mucous membrane of the prosthetic field. These gaskets are made of wax, tin or lead plates. The thickness of the spacers under the grids should be 1.5-2 mm - depending on the height of the supporting teeth, the type of bite. The thickness of the pads for the sublingual arch should be 0.5-1.5 mm - depending on the individual features of the relief of the alveolar process and the flexibility of the mucous membrane. Pads for the palatal arch have a thickness of 0.3-0.5 mm.

So, having selected the plates of the required thickness and shape, cover the model with them according to the drawing of the frame. Plates are fixed with universal glue. If there are no such plates, you can use an adhesive plaster, which is glued with 1-2 layers of glue. In this case, the thickness of the spacers is regulated by the number of adhesive plaster layers.

The plates should be of uniform thickness, smooth and fit tightly to the model.

After that, the model is fixed on the table of the parallelometer in the position in which the boundary line was applied to the supporting teeth. A knife-shaped rod is fixed in the collet device and, turning the table with the model, the remains of wax, mold or plaster of the boundary line are cut off. These same teeth at the level of the boundary line provide parallelism, which is important for obtaining a high-quality fireproof model.

The main element of the brace prosthesis, which distinguishes it from all other types of prostheses, is the supporting and holding clasp. This type of fasteners got its name due to its dual function. It acts as a distributor of chewing pressure between the teeth and the mucous membrane of the oral cavity. The bent wire clasps, which are the main ones for partial plate prostheses, are retaining in function, because they serve only to fix the prosthesis. They do not transmit the chewing load.

As you know, the crown part of the tooth has an equator – the most convex part. The equator divides the crown of the tooth into two parts. The zone below the equator is called the retention zone; because the paper clip, when placed here, does not rise above the equator. The zone above the equator is called the reference zone. In this zone, the supporting parts of the clasps are located: occlusive pads, hooks, catches. It is these elements that redistribute the load on the tooth. A clasp that combines elements of support and retention is called support-retaining.

The supporting and holding clasp consists of three parts: the shoulder or shoulders (the holding part), the occlusal pad (supporting) and the body (the connecting part of the clasp with the frame or saddles). In the modern practice of orthopedic dentistry, this type of braces can only be cast.

Ackers (1918) and Roach (1924) developed the first support-retaining clasps for brace prostheses. These were rough in shape and wide clasps, which did not even remotely resemble today's clasps in buckle prostheses.

Clamer Ney.

In 1949, the Ney system of clackers was developed in the USA. This system was based on the data of the parallelometer, just like modern Bügel prosthetics. The Ney stapler system requires that the hard parts of the stapler arms be above the equator and the movable, holding part of the stapler arm be below the equator.

All the variety of staples of the Neya system are grouped into 5 main forms.

1st class - Acker's clasp.

Class 2 – double-sided T-shaped Roach clamp.

3rd class is a combination of 1st and 2nd class, i.e. a clasp that has 2 shoulders (one of Acker, the other of Roach).

4th class - back action clipper.

Class 5 – ring clasp (for single chewing teeth).

Ney's system allows you to perform all the work on planning and manufacturing of brace prostheses in the laboratory by one technician without the involvement of a doctor. Modern prosthetic prosthetics requires joint planning of prostheses by the technician and the doctor. Ney's system also assumes the distribution of load only on 2-3 supporting teeth and does not take into account the mobility and inclination of other teeth. For these reasons, in modern practice, the application of Ney's clacker system is limited.

All clammers, and several hundred of them have been proposed in recent decades, are divided into three large groups. The first group is occlusal clasps (their arms are directed from the occlusion side), the second group is gingival clasps (their shoulders are directed from the gum side), and the third group is combined action clasps (this is the least common group of clasps).

Occlusal clasps

Acker's Clamer. The most popular and simple clasp consists of 2 shoulders, an occlusive pad and a body. The overlay is located strictly perpendicular to the longitudinal axis of the tooth. The body is located on the distal surface at right angles to the pad. The shoulder is at an angle of 45° to the occlusal surface of the tooth. The shoulder of Akker's clamp consists of three parts: supporting, intermediate and retaining. The supporting part is located above the equator, and the supporting part is located below it. The holding part should be up to ½ the length of the shoulder. The intermediate part is the part of the shoulder lying on the equator. The shoulders of the clasp have a conical shape with a 30% thinning to the top of the shoulder.

Application: most effective on molars and large premolars with terminal defects (Kemen class 1, 2). Also, Akker's clamp is effective on single cost molars inclined to the mesial side.

Two-link clasp. This clasp is like two Akker clasps with one occlusion pad. That is, the clasper has double vestibular and oral shoulders, located on two adjacent teeth.

In practice, there are often cases when the tooth limiting the defect does not have a pronounced equator, and the tooth located in front has a clearly defined equator. In this case, a two-link clasp becomes very valuable.

Modeling technique: the shoulders of the first link of such a clasp are located above the equator, closer to the occlusal zone of the tooth. The shoulders of the second link are below the equator.

A distinctive feature of this clasp is the ban on the use of two-link clasps on molars if they are made of precious alloys.

There are also three-link clasps, but they are less common, and are made according to the same method - the first two pairs of shoulders are retaining, only the last link is retention.

Clamer Bonville. This is a representative of overturned clackers. That is, the clasp is a variant of the stabilization design. This type of clackers cross the gap and are placed on the oral and vestibular surfaces of the abutment teeth. Such a stapler is a double Akker stapler, directed in different directions.

Application: molars or second premolars in Kennedy classes 2 and 4, as a stabilizing structural construction. The Bonville clasp provides good fixation, stabilization and resistance to prostheses.

Acker double clamp. Represents two mutually directed Akker clasps, connected to each other by shoulders.

Clamer from two oppositely directed shoulders. It consists of two shoulders and two occlusions of their overlays. Clamer is made according to the type - one shoulder, one pad. Usually, the vestibular shoulder falls below the equator, and the oral shoulder rises higher.

Application. In cases where it is necessary to cover two side by side supporting teeth from different sides. It is used on molars and premolars.

Double-shouldered clip with an overlay on the adjacent tooth. The shoulders of such a clasp are located on the tooth with a pronounced equator, and the occlusive pad is on the adjacent tooth, where there is a place for it.

Application: 1st class according to Kemei with mobility of the extreme supporting teeth, with 2nd class - under appropriate conditions.

Medio-distal clasp. Quite an aesthetic stapler with a wide splinting function. It is a stapler with a wide body and narrow shoulders. The body of the clasper is located above the equator, two short shoulders depart from the body, they are practically inflexible. The shoulders are located on the equator or slightly below it.

When modeling, it is taken into account that the connection of such a clasp with the arch is made with the help of an additional device that should not touch the gums.

When the premolars are rotated 90°, it is recommended to place the pads in the fissures of the teeth, and the shoulders on the lateral surfaces. In this case, fixation is carried out at the expense of neighboring teeth. Application: It is used for splinting mobile teeth. Convenient for fixing frontal teeth with diastema and tremors. The most convenient clip for use on canines.

3.3. requirements for work results, including registration;

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- To be able to determine the construction of the bygel prosthesis.
 - Know the basic clasps used in the manufacture of brace prostheses.
 - Determine the details of the byugel prosthesis, their location and purpose.
 - Formation of a professionally significant personality under the structure;
 - Education of high consciousness when choosing a removable prosthesis for the further health of the prosthesis wearer.
 - Ethical and deontological principles when checking PPP constructions.
 - Actual aspects of deontological, ecological, legal, psychological, patriotic, professional responsibility, etc.
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3.4. control materials for the final stage of the lesson: assignments, tasks, tests, etc. (if necessary).

1 What should an orthopedic doctor do with the model after examining it in a parallelometer?

- A. Hand over to the dental technician for further work.
- B. Plaster in the occluder.
- C. Duplicate the model.
- D. They model the frame of the brace prosthesis on it.
- E. +Draws on it the final design of the brace prosthesis.

2 What thickness should be the lining under the nets?

- A. 0.1 - 0.2 mm
- B. 1.0 - 1.5 mm
- C. +3. 1.5 - 2.0 mm
- D. 2.0 - 2.5 mm
- E. 2.5 - 3.0 mm

3 What thickness should be the gasket under the hyoid arch?

- A. 0.1 - 0.2 mm
- B. +2. 0.5 - 1.5 mm
- C. 1.5 - 2.0 mm
- D. 2.0 - 2.5 mm
- E. 2.5 - 3.0 mm

4 Which clasp should be used when making a removable prosthesis, if the abutment tooth has a low crown or the clasp is visible when smiling?

- A. Klammer Kemeny
- B. Clasps of the Neyla system
- C. Clamer Fera
- D. Reverse clamp
- E. Clamer Eliot

5 Patient F., 45 years old, has a one-sided final defect of the front teeth, ending with the 45th tooth. It is planned to be replaced with a brace prosthesis. Where should the occlusion plate be placed to prevent functional overload of tooth 45?

- A. In the interdental space between 44 and 45 teeth
- B. There are 44 teeth in the distal fissure
- C. There are 44 teeth in the medial fissure
- D. There are 45 teeth in the distal fissure
- E. Does not matter

6 Bolnoi N., 67 years old, went to the clinic complaining of discomfort when eating. Mobility of teeth, aesthetic, phonetic defects About-but: all teeth are missing on the lower jaw, except for 43, 44-2 degrees of mobility, clinical crowns are high. In order to restore masticatory efficiency, the patient is

recommended: fabrication of a partial lamellar prosthesis for the lower jaw.

Question: What type of staple fastening will you choose?

- A. Dentoalveolar plastic clip
- B. Restraining
- C. Supportive and retaining
- D. Telescopic stapler
- E. Clammer Roach

7. A 45-year-old woman came to the clinic complaining of discomfort while eating, aesthetic and phonetic defects. About: absence of teeth on the lower jaw, except for 33,34,43,44,-,1-2 degrees of mobility. Diagnosis: dentition defect on the lower jaw, 1st class according to Kemela, 1st subclass.

Question: Choose a type of orthopedic construction for this pathology?

- A. Bügel prosthesis according to Rumpel
- B. Partial removable plate prosthesis with staple fixation at 34.44,
- C. Bügel prosthesis on attachments
- D. Bügel prosthesis with multi-link continuous clasp
- E. Bügel prosthesis with telescopic fixation

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

Main:

- Yerys, L. B. Modern technologies for manufacturing maxillofacial prostheses: [teaching manual for students of higher medical schools. education institutions of the IV level of accreditation and dentists, orthopedists and surgeons] / L. B. Yeris, V. M. Dvornyk; Ministry of Health of Ukraine, Central Medical Center, UMSA. – Poltava: Astraya, 2016. – 71 p. Dvornyk; Ministry of Health of Ukraine, Central Medical Center, UMSA. – Poltava: Astraya, 2016. – 71 p.

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

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

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

Additional:

- Belikov, O. B. Maxillofacial orthopedics: a study guide. Part 1. Subject of maxillofacial orthopedics. Maxillofacial traumatology / O. B. Belikov; Ministry of Health of Ukraine, Central Medical Center, UMSA. – Poltava: Dexy Print, 2002. – 207 p

- 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. 12

Topic: Checking the BP design. Superimposition of BP. Adaptation to replaceable prostheses, terms of use. Repair and replacement of prostheses. The influence of the bases of changes of prostheses on the mucous membrane of the oral cavity. Prosthetic stomatitis. Errors and complications in prosthetics with partial replacement prostheses

Goal: To acquaint students with the effect of the bases of removable prostheses on the mucous membrane, to introduce errors and their elimination with partial removable prostheses

Basic concepts: prosthetic stomatitis, adaptation, rebasing, application and fixation of prostheses

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:

- the technology of fitting the frame of the bygel prosthesis to the model and oral cavity, to note the features of the latter in the first and second cases.

- Formation of students' professional literacy and the ability to think logically.

- Formation of principles of medical ethics and aesthetics in students.

- The impact of partial lamellar prostheses on supporting tissues.

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.)

Checking the construction of the finished frame begins with the first working model, cast from high-strength plaster. The day before, it is washed with boiling water, washed from wax and the pads are removed, and then a frame is placed on it. Sometimes it is not immediately put on the model, then it is carefully adjusted with the help of shaped abrasive heads.

The clasps should cover the supporting teeth tightly throughout, the occlusal linings should be placed in shapes or artificially created recesses. The bracket is placed over the mucous membrane and alveolar processes. There should be a place for a plastic base under the nets. When the fitting of the frame on the first models is finished, they are transferred to the model plastered in the occluder, the ratio of the tooth rows with occlusive overlays and hook loops, continuous clasp and other details is checked. The frame fitted to the model is handed over to the doctor for inspection in the patient's empty mouth. This clinical stage is responsible for the manufacture of the prosthesis.

Carefully, effortlessly fix the frame on the supporting teeth. The shoulders of the retaining clasps should pass the equator with little effort and tightly cover the tooth along its entire length. Occlusal linings should be placed in fissures and not increase the bite.

They check that the inner surface of the clasps, which are directed to the tooth, is polished, does not have notches, etc. The edges of the clips and its ends should be rounded.

It is checked that the bracket does not touch the mucous membrane and at the same time is not far from it. Special attention should be paid to the location of the bracket and frenulum of the tongue.

There should be enough space for plastic under the nets. Then, when the frame is tightly and accurately fixed, and the retaining clips are in the retention zones, the patient is offered to close the rows of teeth and the location of the occlusive overlays is checked. If an overlay or a multi-chain stapler increases the bite, then the place of increase is found with copy paper and polished.

The frame tested in the oral cavity is put on the model in the occluder and sent to the laboratory for setting the teeth. The clinical picture with partial loss of teeth is diverse and depends on the number of lost teeth, their position, speech, type of bite, the condition of the hard tissues and periodontium of the preserved teeth, the time that has passed since the teeth were removed, and, finally, the general condition of the patient.

All this should be taken into account when examining a patient with partial loss of teeth. It is necessary to emphasize the attention of students, and in the future, orthopedic doctors, on the ability to assess the clinical condition of the oral cavity and choose a rational design of a partial removable prosthesis, a means of its fixation. Therefore, in the case of partial loss of teeth in the majority of cases, there is a need for special preparation of the oral cavity -

therapeutic, surgical, orthopedic to create a prosthesis design capable of restoring the integrity of the tooth rows, function, aesthetics, speech and preserving the remaining teeth, that is, a design that would make minimal negative impact on supporting tissues. It is necessary to clearly know the indications for the manufacture of partial lamellar prostheses for various defects of the dentition.

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

1. A woman, 65 years old, she turned to the maxillofacial surgery clinic in connection with a fracture of the edentulous lower jaw (in the area of the missing premolars on both sides - with displacement of the fragments, in the area of the angle on the right and the coronal process on the left - without displacement). History: trauma of the lower jaw. The patient uses a complete removable prosthesis of the lower jaw. What method of immobilization should be used?

- A. *Prosthesis of the patient with fixation with ligatures to the lower jaw
- B. Osteosynthesis using bone frames or pins.
- C. Vankevych tooth-gingival splint with one inclined plane.
- D. Gum splints of the Limberg, Sheremet type.
- E. Port-Guning type gingival splints.

2. Patient K., 19 years old, came to the clinic with signs of concussion /nausea, repeated vomiting/. During the examination, a fracture of the vertebral column in the region of the mental foramen on the right with displacement of fragments was determined, the dentition is intact, the teeth are stable. In conditions of limited time /due to an unfavorable general condition/ it is preferable to carry out splinting

- A. *Vasilyev's standard tape tire;
- B. A plastic splint according to Marey;
- C. Tygerstedt tire;
- D. Weber's gingival splint;
- E. Vankevich with a gingival splint.

3. Patient C, 35 years old, was brought by the ambulance team to the maxillofacial hospital after a facial injury from work. Objectively: the dentition is intact. Fracture of the lower jaw in the frontal section with a bone defect measuring 0.8 cm, the fragments are mobile. Primary surgical treatment of the wound was carried out, an aseptic bandage was applied. What method of therapeutic immobilization of fragments of the lower jaw should be used?

- A. *Applying Entelis twisted spacer bar
 - B. Applying a Tigerstedt splint with a spacer bend
 - C. Applying a Tigerstedt splint with hook loops
 - D. Applying a Tigerstedt splint with an inclined plane
-

E. Applying a smooth splint with a stencil insert

4. Patient S., 45 years old, came to the clinic with complaints of pain in the lower jaw. Three weeks ago, the patient received an injury, which resulted in a right-sided fracture of the lower jaw. The patient was fixed with an aluminum wire splint with hooks. Objectively: the face is symmetrical, opening the mouth is accompanied by slight pain, slight mobility of the fragments is observed. The occlusal relations are slightly disturbed. The teeth on the lower jaw are stable, have low crowns. These radiographs show that between teeth 45 and 46, a fracture of the body of the lower jaw is determined without a defect bones Which splint should be used to complete the treatment?

- A. *Weber tire
- B. Shina Vankevich
- C. Shina Limberga
- D. Shina Zbarzh
- E. Chin sling

5. A 25-year-old patient applied to the maxillo-facial surgery clinic due to a fracture of the lower jaw (in the area of the missing molars on both sides - with displacement of the fragments, in the area of the corner to the right). On both jaws, 3 teeth remained on both sides of the fracture. What method of immobilization of the lower jaw should be used

- A. *Vankiewicz tooth-gingival splint with two inclined planes
- B. Osteosynthesis using bone frames or pins.
- C. Bimandibular extraction with Tigerstedt splints
- D. Dento-gingival splint of the Weber type
- E. Ligature binding of teeth

4. Summary:

-
- 1 Adaptation to brace prostheses
 - 2 Rebasings of a fixed prosthesis
 - 3 Fitting and fixing the mouthpiece in the oral cavity
 - 4 Recommendations for the care of prostheses
 - 5 Treatment of prosthetic stomatitis

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

Main:

- Yerys, L. B. Modern technologies for manufacturing maxillofacial prostheses: [teaching manual for students of higher medical schools. education institutions of the IV level of accreditation and dentists, orthopedists and surgeons] / L. B. Yerys, V. M. Dvornyk; Ministry of Health of Ukraine, Central Medical Center, UMSA. – Poltava: Astraya, 2016. – 71 p. Dvornyk; Ministry of

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