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ODESSA NATIONAL MEDICAL UNIVERSITY
FACULTY OF DENTISTRY
DEPARTMENT OF ORTHOPEDIC DENTISTRY

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«31» 05 2023

METHODOLOGICAL DEVELOPMENT TO PRACTICAL LESSONS FROM EDUCATIONAL DISCIPLINE

Faculty **of dentistry**, course **2**

Academic discipline **Industrial nursing practice in orthopedic dentistry**

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

Topic: Organizational principles of the orthopedic office. Clinic and laboratory equipment.

Goal:practice is mastering the technique of performing certain dental manipulations on phantoms, models, which are used in the treatment of patients with defects of the crown part of the tooth, with partial and complete edentia, for the possibility of their further application in the treatment of patients and the formation of special (professional) competencies in the clinic of orthopedic dentistry.

Basic concepts: orthopedic department, orthopedic office, dental laboratory.

Equipment: Computer, multimedia projector.

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:

-Organization of dental polyclinic work.

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

According to the "Fundamentals of the Legislation of Ukraine on Health Care" (1992), orthopedic departments of city, district, regional polyclinics have the right to use funds voluntarily transferred by enterprises, institutions, organizations and individual citizens, as well as with the owner's permission, to improve the quality of their work or a body authorized by him to establish fees for services in the field of health care. The list of such paid services is approved by the Cabinet of Ministers at the request of the Ministry of Health of Ukraine. Extra-budgetary sources of funding, as already mentioned earlier, are the main ones in the organization of the work of orthopedic departments.

The realities of our time have shown that along with state health care institutions, alternative institutions for the provision of dental services are being formed on the basis of various forms of entrepreneurial activity and private and collective forms of ownership. In order to get permission to open them, you should go through state registration with local authorities and obtain a license for the right to practice medicine from the Ministry of Health of Ukraine in accordance with the procedure established by current legislation.

A big step forward in providing highly effective orthopedic care to the population of Ukraine and strengthening the material and technical base of dental polyclinics (orthopedic departments) will be the introduction of the population health insurance system, which is declared in the "Basics of Ukrainian legislation on health care" (1992). Insurance of citizens is supposed to be carried out at the expense of the State Budget of Ukraine, funds of enterprises, institutions, organizations and their own contributions.

A special feature of the orthopedic dental service is that it is maintained at the expense of self-supporting or special funds. In addition to the budgetary orthopedic

unit, there is a dental inpatient department of the hospital, where assistance is provided to patients with lesions of the maxillofacial area. Orthopedic care for the city population is provided by the orthopedic department of the city dental polyclinic. The flow of patients for orthopedic treatment is formed due to self-referral to the polyclinic, as well as by referral of patients, including dispensary patients, by dentists of other specialties.

The right to free and discounted treatment and prosthetics is enjoyed by liquidators of the accident at the Chernobyl nuclear power plant, disabled people of the Second World War, laborers and persons equal to them, pensioners, children, etc.

Orthopedic treatment of employees of industrial enterprises is carried out in dental offices (departments) of medical and sanitary units organized there or in dental institutions at the place of residence. In addition, the provision of orthopedic care can be organized at the expense of visiting teams of dentists-orthopaedists of the city dental polyclinic to industrial enterprises. Patients are admitted directly in the medical and sanitary department, and dental work is performed centrally in the dental laboratory of the dental polyclinic. Industrial enterprises pay the dental polyclinic for orthopedic treatment of employees. The center for providing orthopedic medical care to the rural population is the central district hospital, which includes an orthopedic department with a dental laboratory. Mobile dental offices are equipped at the Central Medical Center to provide dental care to the population of the district. Such an office must include a dentist-orthopedic doctor. First of all, such offices provide assistance to the population of medical districts where there are no dentists, as well as to organized collectives during the period of mass agricultural work.

ORGANIZATIONAL STRUCTURE OF THE DENTALPOLYCLINIC AND ORTHOPEDIC DEPARTMENT

A dental polyclinic is a medical and preventive institution, the activity of which is aimed at the prevention of dental diseases, timely identification and treatment of patients with diseases of the maxillofacial area.

The structure of the dental polyclinic

The organizational structure of the polyclinic includes: administrative department, registry office, primary examination office and department of therapeutic, surgical, and orthopedic stomatology. In addition, the polyclinic usually has an X-ray room, a physiotherapy room, a laboratory, a workshop for repairing equipment and tools, and an organizational and methodical room. The specific structure of the polyclinic is determined by the health care authorities by subordination.

The registry is part of the dental polyclinic and occupies a special place in its work. Persons with secondary education who have undergone special training must work in the registry office. The number of medical registrars is established in accordance with staffing standards developed by the Ministry of Health of Ukraine at the rate of 1 post of registrar for 10 positions of dentists of all specialties. In independent dental polyclinics, as well as at large dental departments of medical and preventive institutions, a primary reception office is organized. Emergency dental care is provided here, and the scope and type of specialized dental care is determined for primary patients.

The main structural division of the dental polyclinic is the therapeutic department. The surgical stomatological department is a special structural division of the polyclinic, the purpose of which is to provide surgical assistance to patients.

The orthopedic department of the dental polyclinic provides assistance to both adults and children in cases where this assistance is not available at children's dental institutions.

The orthopedic department includes offices for receiving patients, a dental laboratory and a foundry

Registration of primary patients to orthopedic doctors is carried out in the polyclinic registry, where appropriate medical documentation is created, as in the case of a regular visit to the polyclinic. The doctor on duty examines the patient, chooses the design of the necessary prosthesis. If during the examination the need for rehabilitation of the oral cavity is revealed, the patient is sent to a therapeutic or surgical department, where treatment and preparation for prosthetics are carried out. After that, the nurse issues a ticket for an appointment with an orthopedic doctor.

The patient issues an order at the registry office for the manufacture of orthopedic structures of dental prostheses. After preparing the necessary teeth for the specified structure, the orthopedist takes impressions. The nurse gives the impression to the production manager, who distributes all the work among the dental technicians. The head of production determines the terms of the intermediate stage of the prosthesis production, when the patient must appear to the doctor.

Orthopedic care, depending on the work of dental technicians, is provided in three forms: individual, team, staged. In the case of individual work, the dental technician completely manufactures a dental prosthesis himself, in the case of team work - there is a division according to the type of prostheses, staged - according to the type of operations in one prosthesis.

The planned workload of a dentist-orthopedic doctor is 18 conditional work capacity units (CPU). It takes 35-40 minutes to complete one unit. On average, the workload of an orthopedic doctor per year, provided that he works with an examining doctor, depending on the length of work, ranges from 1,950 to 2,300 UOP, if he works without an examining doctor - 1,750 to 2,100 UOP.

The dental polyclinic is headed by a chief doctor who has experience in medical and organizational work and is highly qualified.

Depending on the category of the polyclinic, the head doctor may have a deputy from the medical department, as well as from administrative and economic work. The head doctor manages all medical and preventive, organizational and methodological, economic and financial activities of the polyclinic and is responsible for the organization, level and quality of dental care for the population.

For this purpose, it conducts an analysis of the qualitative and quantitative indicators of the work of polyclinic doctors, the dental morbidity of the population, evaluates the effectiveness of preventive and curative work, and ensures the improvement of the professional training of doctors and secondary medical personnel. The chief physician is responsible for the development of the material and technical base of the institution, the use of medical personnel, dental equipment and medicines, the timeliness and reliability of dental records and reporting, their

implementation and presentation according to the reporting forms and in the amount established by the Ministry of Health of Ukraine.

The first assistant to the chief physician is his deputy from the medical department. Like the head doctor, he is appointed from among doctors who have the necessary experience of working in the specialty and organization of polyclinic service. In his work, he is subordinate to the chief doctor and organizes the work of the departments in accordance with the "Regulations on the Dental Polyclinic", orders and instructions of health care authorities, current legislative acts, orders and instructions of higher organizations.

Each department is headed by a manager. This is usually a doctor with at least 5 years of practical experience. He directly supervises the activities of the department's staff, bears full responsibility for the quality and culture of patient care. The head of the department consults patients.

Depending on the number of the population served and medical positions, there are five categories of dental polyclinics: Category I — 30-40 medical positions; II category - 25-29; III - 20-24; IV - 15-19 and V - 10-14 full-time positions.

The staff of medical personnel (dentist-orthopedic doctors) is maintained at the expense of earned or special funds. Standard: one position per 10,000 adult population of a given settlement, 0.7 positions for serving 10,000 adult rural population and 0.8 positions for 10,000 adult population in other settlements.

The position of the head of the orthopedic department (held at the expense of the state or at the expense of special funds) is established in the polyclinic, where according to the current staffing standards, there are at least 4 positions of dentists-orthopedics.

The position of deputy chief physician from the medical department is established if there are 40 or more medical positions in the polyclinic staff, including the position of chief physician.

The positions of radiologists are established at the rate of 1 position per 15,000 x-rays per year, and the positions of physiotherapists are established by the decision of the health care authority at the rate of 0.1 position per 15,000 attached population.

The positions of dental technicians of the dental laboratory, which are maintained at the expense of the state or at the expense of special funds, are established depending on the volume of work on dental prosthetics, determined according to the current standards of time for dental work. For every 10 positions of dental technicians, 1 position of senior dental technician is established.

In each polyclinic, the position of the head of the dental laboratory (head of production) is also established, and in polyclinics with at least 15 positions of dental technicians and senior dental technicians, this position is introduced instead of the position of senior dental technician.

The position of medical statistician is introduced at the rate of 1 position for 40 positions of dentists of all specialties.

The number of positions of junior nurses also depends on the number of positions of doctors. According to staff regulations, 1 position of a junior nurse is provided for 3 positions of dentists-orthopedics and 20 positions of dental technicians.

4. Summary:

- Organization and structure of orthopedic dental care for the population of Ukraine.
- Organization and structure of the office of a dentist-orthopedic doctor.
- Organization and structure of the dental laboratory, its divisions.
- Requirements for ventilation, lighting and technical characteristics of the office (department) of orthopedic dentistry.
- Accounting and reporting statistical forms in orthopedic dentistry.

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

Main:

1. Materials science in dentistry: a study guide / [Korol D.M., Korol M.D., Ojubeiska O.D. etc.]; in general ed. King D.M. – Vinnytsia: New book, 2019. – 400 p.
2. Propedeutics of orthopedic stomatology: a textbook / P.S. Flis, H.P. Leonenko, I.A. Shinchukovskyi and others. ; under the editorship PS Fleece. — 2nd edition. — Kyiv: Medicine, 2020. — 328 p
3. Orthopedic dentistry: textbook / M.M. Rozhko, V.P. Nespryadko, I.V. Paliichuk and others.
4. M.M. Rozhko, V.P. Nespryadko, I.V. Paliychuk et al. Prosthetic technique: textbook - Kyiv, "Knyga-plus", 2016. - 604 p.

Additional:

1. Propedeutics of orthopedic dentistry: a textbook [Korol D.M., Korol M.D., Nidzelskyi M.Ya. etc.]; in general ed. King D.M. - Vinnytsia: Nova Kniga, 2019. – 328 p.
2. Dentistry: in 2 books. — Book 1: textbook (University III-IV years) / M.M. Rozhko, Z.B. Popovych, V.D. Kuroyedova .. -K.: VSV "Medicine", 2018. - 992 p.
3. Chulak L.D., Shuturminskyi V.G. Clinical and laboratory stages of manufacturing dental prostheses. Odesa. Odesa honey. University, 2009, 318 p.
4. Flis P.S., Bannyk T.M. Technique of manufacturing removable prostheses.-K.: Medicine. - 2008. - 254.
5. Gitlan E.M., Krot M.K. Manual on bygel prosthetics. - K.: Zdorovya, 2001. - 140p.

Electronic information resources

1. State Expert Center of the Ministry of Health of Ukraine http://www.dec.gov.ua/index.php/ua/
2. National Scientific Medical Library of Ukraine http://library.gov.ua/
3. National Library of Ukraine named after V.I. Vernadsky http://www.nbuv.gov.ua/

PRACTICAL LESSON No. 2

Topic: Workplace of a dentist-orthopedic doctor and dental technician, equipment and tools.

Goal: Acquaint applicants with the workplace of a dentist-orthopedic doctor and dental technician, equipment and tools.

Workplace of a dentist-orthopedic doctor. Tools for the work of a dentist-orthopedic doctor. Requirements for the workplace of a dental technician. Dental tools. The main dangerous factors that can affect the employee when working in the orthopedic department. Safety rules..

Basic concepts:dentist, orthopedist, dental technician. equipment, tools.

Equipment: Computer, multimedia projector.

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:

- Organization of the orthopedic department

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

Equipment and equipment of the orthopedic officeand dental laboratory

A spacious room with sufficient natural lighting with an area of not less than 14 square meters must be allocated for one workplace of an orthopedic dental office. An area of at least 7 square meters is added to each additional additional chair. The height of the room should be high enough (at least 3 m). The chair should be placed near and opposite the window to ensure natural lighting of the patient's oral cavity and access of fresh air to the workplace.

The office is provided with supply and exhaust ventilation and artificial lighting (daylight lamps). The walls are usually painted with oil paints of soft tones (pale blue, light green). The floor is covered with linoleum, which ensures the necessary sanitary and hygienic requirements. Equipment and furniture are placed in such a way that the staff does not make unnecessary movements and there are conditions for the work of the doctor, nurse, junior nurse (paramedic) and the well-being of the patient. To equip the office of an orthopedic doctor, special equipment is needed.

One of the main manipulations in the clinic of orthopedic dentistry is the preparation of teeth for crowns and other types of prostheses with the help of various shaped discs, diamond or carborundum stones, heads, burs driven by an electric or pneumatic machine. Modern types of prosthetics require different speeds of rotation of cutting tools for preparing teeth.

Dental installations have been developed, which consist of a dental chair, an installation with micromotors for straight and angled tips, a turbine tip with a rotation

speed of over 300,000 rpm. The complex also includes a doctor's chair and a medical table.

The BEPB-3, BEPB-07A portable armless drill can be used to provide orthopedic care outside the dental clinic (at home, at the bedside of a seriously ill person who is unable to visit medical facilities due to his health condition, in the field, in transport, etc.). Such a drill is equipped with a miniature electric drive with replaceable tips for fixing drills, the rotation speed of which is from 3000 to 10000 rpm. Speeds are switched using the keys located on the panel of the drill's body. The drill is also convenient in that it can be powered from an autonomous 24V power source. During transportation, the drill is placed in a special suitcase. The weight of the drill when stacked is 5 kg.

The dental chair serves for the patient to stay in a sitting-lying position.

For mixing cement in the arsenal of the orthopedic doctor there are special spatulas made of stainless steel. A spatula with a wooden or plastic handle is used for work related to wax, one end of which has a rock-like shape, the other is slightly curved, adapted for melting wax. For working with metals, there are scissors for cutting metal. There are special crampon pliers for fitting crowns, making pins, and bending clasps. To remove crowns, bridge-like prostheses, forceps are used, one half of which is pointed.

A dental anvil is used to fit crowns, make pins, etc.

Rubber spatulas and metal spatulas are used for mixing plaster during the removal of impressions and casting models, plaster knives are used for trimming the edges of models.

Peculiarities of the organization of the dental laboratory

Usually, the orthopedic department and the dental laboratory are located on the same floor. In the laboratory, a room should be provided, taking into account the specific conditions that are created at various stages of the manufacture of prostheses. Independent rooms of the laboratory are: main room, plastering room, molding room, polymerization room, soldering room, foundry room. It is permissible to carry out plastering, molding and polymerization in one room.

The main requirements for all rooms are to provide cold and hot water, a large table with a metal surface, where a hopper for storing gypsum, a press for squeezing gypsum from cuvettes and a regular press are installed. In addition, a table is needed for preparing dough from various plastics and forming it into cuvettes. The table should have one or two attached dental presses for pressing the plastic dough into the cuvettes before fixing them in the jig, and the table should have a hermetically sealed container for collecting the plastic residues after forming the cuvettes in order to reduce the evaporation of methyl methacrylate.

At least two open-type sterilizers or similar devices are installed in the polymerization room on a gas stove. Above the table and the gas stove there must be an exhaust hood of the ventilation unit. The main room. This room is intended for performing the main processes related to the manufacture of dentures (modelling, setting of teeth, processing of dentures, etc.). The height of the working room should be at least 3 m. Each employee should be allocated at least 13 m:i volume of the production room and at least 4 m2 of area.

The walls of the main room of the laboratory should be painted with light-colored oil paint, the floor should be covered with linoleum. Windows must meet a number of sanitary and hygienic requirements: the light ratio (the ratio of the glazed surface of the window to the floor area) is assumed to be at least 1/5, windows must be placed at an equal distance from each other and from the corners of the house; the upper edge of the window should be closer to the ceiling (20-30 cm); window membranes should be narrow and long; workplaces should be placed so that light falls on them directly or from the left side; the distance from the place of work to the windows in rooms illuminated by natural light should not exceed three times the distance from the floor of the room to the upper limit of the window opening, the maximum width of the area illuminated by windows on two sides of the room should be 15-18 m. These values should be observed, as they are of great importance for the health of technicians, because they perform fine, jewelry work with constant eye strain.

Workplace of a dental technician. For the convenient, fast and most efficient execution of all processes related to the manufacture of prostheses, each dental technician must have an individual workplace consisting of a laboratory table, the surface of which is covered with marble or (at a distance of 20-25 cm from the edge of the table) sheet brass or stainless steel. The surface of the table has a half-moon cutout, and in the center there is a special cutout for cutting models — fiiagel. One or two boxes are placed directly under the cutout for storing tools and collecting waste plaster, plastic, metal scraps.

A lighting device is placed on the surface of the table - on the left or directly above the table, a grinding motor or a specially mounted drill, a gas burner, an electric spatula for heating wax and other operations related to wax. Ventilation (exhaust) must be connected to each workplace.

A chair for a dental technician must have a rotating back. The equipment of the dental technician's workplace is of great importance, since this is where he spends most of his working time. It is necessary that it meets all the requirements of ergonomics, occupational health and safety. At the same time, the elements of aesthetics and modern design should be taken into account along with the technical requirements.

Polishing and soldering rooms. The features of these rooms are the placement of tables with loop motors for polishing prostheses made of metals and alloys, dust collectors for polishing prostheses made of precious metals. A powerful dust collection system and good lighting are connected to all train motors.

In the soldering room, it is necessary to place fume hoods, where soldering devices equipped with compressors for automatic supply of gasoline are installed. A muffle furnace for wax melting is placed in the hoods. Powerful exhaust ventilation is an integral attribute.

Foundry. Wide possibilities for the manufacture of various types of prostheses have been opened thanks to the creation of original equipment, where high-frequency induction melting of metal alloys is combined with centrifugal casting and a new technology for preparing molds for casting. The high-frequency centrifugal furnace was developed by S. D. Bogoslovskyi and V. A. Marskyi in 1956. The high-frequency

installation of the LP-10-1 type consists of two blocks: a generator block, a block of induction furnaces. The generator of the installation is located in a metal case that has several doors for access to compartments for different purposes.

The unit of induction furnaces consists of a metal anti-interference housing, which has a top cover with an inspection glass and side doors fixed with screws. In the middle, under the cover, there is a unit of double furnaces, in which the built-in inductors and clamps for the furnaces are oppositely arranged and balance each other. In recent years, modern foundry installations have been widely used.

Room for workwith metal ceramics and precious metals. The main technique in the work is an electric furnace with software, which burns and glazes the surface of dentures made of porcelain and ceramics. Management of the technological process is carried out automatically by the program. A vacuum mixer is used to mix the molding mass and cover the wax compositions of the models. A special sandblasting unit is used to clean the cast parts from the remains of molding mass, slag and prepare the surface for finishing.

Special sets of tools for metal-ceramics are produced for modeling ceramics.

The room should be especially clean and maintain a constant temperature.

To work with precious metals, use premises that are under security alarm. Necessary for work are: analytical scales with a weighing accuracy of up to 0.00001 g, a set of special chemical reagents for determining the sample of gold alloys.

Accounting documentation

When the population applies to the polyclinic registry, the registrar fills in the passport part of the dental patient's medical card (f. no. 043/0), writes out a doctor's appointment ticket, which indicates the date and time of the appointment, the doctor's last name, the office number, the floor on which he is located . All accounting documentation in the registry should be stored in such a way that it can be easily found.

It is rational to place file folders by precincts, streets, alphabetically or by corresponding numbers. In parallel with this, the implementation of the automated management system (AMS) "Polyclinic" and "Outpatient Card" (a.025-6/0) allows to create a single database on the population of the service area, which facilitates the accounting and analysis of all sections of the polyclinic's activity. To record the work of dentists-orthopedics, there are documents that reflect the specifics of their work - f. 037-1/0,039-3/0, 039/0. Based on the results of the summary of the work of all dental professionals for 12 months, the table "Work of the dental office" and the annual "Report of the medical and preventive institution" (f. 20) are also filled out. The information contained in the reporting documents (f. 20, 039-2,3,4/0) is processed (indicators are calculated) and analyzed by the management apparatus in the Orgmethodkabinet. It should be noted that the new samples of accounting and reporting documentation were approved by the Order of the Minister of Health of Ukraine No. 302 of 12.27.99.

4. Summary:

- Workplace of a dentist-orthopedic doctor.
- Tools for the work of a dentist-orthopedic doctor.

- Requirements for the workplace of a dental technician.
- Dental tools.
- The main dangerous factors that can affect the employee when working in the orthopedic department.
- Safety rules..

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

Main:

5. Materials science in dentistry: a study guide / [Korol D.M., Korol M.D., Ojubeiska O.D. etc.]; in general ed. King D.M. – Vinnytsia: New book, 2019. – 400 p.
6. Propedeutics of orthopedic stomatology: a textbook / P.S. Flis, H.P. Leonenko, I.A. Shinchukovskyi and others. ; under the editorship PS Fleece. — 2nd edition. — Kyiv: Medicine, 2020. — 328 p
7. Orthopedic dentistry: textbook / M.M. Rozhko, V.P. Nespryadko, I.V. Paliichuk and others.
8. M.M. Rozhko, V.P. Nespryadko, I.V. Paliychuk et al. Prosthetic technique: textbook - Kyiv, "Knyga-plus", 2016. - 604 p.

Additional:

6. Propedeutics of orthopedic dentistry: a textbook [Korol D.M., Korol M.D., Nidzelskyi M.Ya. etc.]; in general ed. King D.M. - Vinnytsia: Nova Kniga, 2019. – 328 p.
7. Dentistry: in 2 books. — Book 1: textbook (University III-IV years) / M.M. Rozhko, Z.B. Popovych, V.D. Kuroyedova .. -K.: VSV "Medicine", 2018. - 992 p.
8. Chulak L.D., Shuturminskyi V.G. Clinical and laboratory stages of manufacturing dental prostheses. Odesa. Odesa honey. University, 2009, 318 p.
9. Flis P.S., Bannyk T.M. Technique of manufacturing removable prostheses.-K.: Medicine. - 2008. - 254.
10. Gitlan E.M., Krot M.K. Manual on bygel prosthetics. - K.: Zdorovya, 2001. - 140p.

Electronic information resources

1. State Expert Center of the Ministry of Health of Ukraine http://www.dec.gov.ua/index.php/ua/
2. National Scientific Medical Library of Ukraine http://library.gov.ua/
3. National Library of Ukraine named after V.I. Vernadsky http://www.nbuv.gov.ua/

PRACTICAL LESSON No. 3

Topic: Professional duties of a nurse of the orthopedic department. Disinfection and sterilization.

Goal: Acquaint applicants with the professional duties of a nurse in the orthopedic department. Disinfection and sterilization.

Basic concepts: nurse, asepsis, antiseptic, disinfection, sterilization.

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:

- Basics of medical ethics and deontology
- Medical documentation

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

EDUCATIONAL AND QUALIFICATION REQUIREMENTS AND FUNCTIONAL DUTIES OF A NURSE IN A DENTAL PRACTICE

Dental care is one of the most widespread and, accordingly, one of the most socially significant types of outpatient medical care for the population. Therefore, the prevention of dental diseases and their treatment will continue to be the priority tasks of the national health care sector.

The growing importance of the preventive direction of dentistry leads to an increase in the requirements for staffing of the dental service. Long-known professional roles are filled with new content, completely new professions appear in the dental field of medicine, for example, dental hygienist. Accordingly, average medical workers of dental institutions are also forced to acquire new knowledge and skills. However, the system of training medical personnel does not respond quickly enough to the needs of the labor market. The regulatory framework, which defines the qualification requirements for specialists in the field of dentistry, is also changing rather slowly.

A nurse in modern dentistry is the primary and immediate assistant to the dentist and must certainly have a wide range of specialist knowledge in all areas of dentistry, such as:

1. Therapeutic dentistry.
2. Surgical dentistry.
3. Pediatric dentistry.
4. Orthopedic dentistry.
5. Orthodontics.

In addition, the nurse should know:

- organization of the work of the dental department (cabinet) to ensure the sanitary and anti-epidemic regime;
- regulatory documents on the sanitary and anti-epidemic regime in dentistry;
- disinfection regime in the dental department (office);
- system of infection control, infection safety of patients and staff in dentistry;
- methods and methods of carrying out disinfection measures;

- stages of processing medical instruments, equipment;
- quality control of disinfection, pre-sterilization cleaning, sterilization;
- hand disinfection methods;
- safety measures when working with disinfectants;
- basics of providing first aid in case of accidental poisoning with disinfectants;
- ways of transmission of socially dangerous and infectious diseases, their prevention;
- rules for determining the frequency of respiratory movements, measuring blood pressure, counting the pulse, measuring body temperature,
- ways of introducing medicines into the body;
- the ways of removing medicines from the body, the importance of individual characteristics of the body, its condition to identify signs of the effect of medicines - depending on age, gender, condition, etc.;
- the list of medicinal products that are subject to mandatory subject-quantitative accounting;
- medicinal products to be stored in the refrigerator;
- drugs incompatible in one syringe;
- quality control of medicines;
- medication dosage rules;
- rules of injections;
- collection rules for the intravenous drip system;
- complications of parenteral administration of drugs and algorithm of actions of a nurse in case of its detection;
- hygienic measures during the care of the skin and mucous membranes;
- rules for applying warming compresses;
- use of a heating pad and ice pack;
- humidified oxygen delivery technique.

In accordance with the qualification requirements of nursing, a dental office nurse must also possess the following professional skills:

1. Preparation of hands for performing manipulations.
2. Organization of proper use and storage of disinfectants in the dental office (facility).
3. Processing of dental instruments, equipment.
4. Implementation of quality control measures for disinfection, pre-sterilization cleaning, sterilization of instruments and dressing material.
5. Disposal of disposable medical instruments.
6. Implementation of measures for processing the used dressing material.
7. Compliance with precautionary measures and safety techniques when working with disinfectants.
8. Provision of first aid in case of poisoning by disinfectants.
9. Counting breathing rate, measuring pulse, blood pressure.
10. Proper storage of medicines.
11. Performing venipuncture, setting up subcutaneous, intradermal injection, intravenous infusion system.

12. Detection of side effects from drug therapy, complications during parenteral administration of drugs into the body.

13. Carrying out hygienic measures during patient care.

14. Applying a warming compress, heating pad, ice pack.

15. Adjustment of oxygen supply using an oxygen mask.

16. Identification of psychological problems of patients.

Hygienic education and training of patients, particularly children, is of great importance in the work of nurses of medical and preventive dental institutions.

The goal of the work of most medical institutions is to increase the effectiveness of treatment and preventive measures by actively informing and educating patients, so quite often the sanitary and educational work of a nurse begins from the moment of the patient's first visit to a polyclinic and continues throughout the entire period of treatment.

In addition, a nurse can perform the following additional duties:

1. Provide patients with explanations and recommendations regarding preparation for various types of additional methods of clinical examination.

2. To conduct explanatory work, conversations with relatives of patients and their accompanying persons.

3. Assist doctors and the administration of the medical institution in recording and analyzing the results of the work of individual structural and functional divisions and the entire institution as a whole.

4. Participate in the planning of sanitary and educational work.

5. Conduct questionnaires of patients and their parents (at a children's dental appointment).

6. Keep accounting documentation regarding the reception of patients, as well as conducting classes and discussions on the prevention of dental diseases.

The most important condition for the effectiveness of the work of a dental nurse is the constant improvement of her qualifications, the study of new normative materials, professional literature. Therefore, the average medical staff should be involved in participating in various professional conferences, seminars, workshops, etc.

Modern trends of expansion of the duties of the average medical staff in stomatology have spread not only to nursing, but also to the activities of dental technicians. The professional role of a nurse in dentistry has acquired a new meaning — now it is most often a dental assistant who helps to work "with four hands", and it is precisely such applicants for dental office nurse vacancies that most employers (up to 53.8% on the labor market) seek to see. after all, such a system of receiving patients in dental institutions not only contributes to more productive work of the doctor, but also significantly increases the quality of the treatment.

PSYCHOLOGICAL AND DEONTOLOGICAL ASPECTS OF WORK NURSE IN DENTISTRY

The modern ideology of providing dental services should be based on the ideas of a professional partnership between a doctor and a nurse.

Thus, three modern principles of nurse behavior can be singled out: independence, activity, initiative.

The principle of independenceconsists in providing the nurse with the opportunity to:

1. Change the behavior at your own discretion depending on the situation - the experience and personal qualities of the doctor, the condition and characteristics of the patient.

2. Play your own role (meeting the patient, finding out how he is feeling after the appointment, etc.).

3. Make independent decisions and be responsible for their implementation, for example, join the doctor-patient dialogue, express your arguments.

4. To control oneself during the performance of functional duties. The principle of activity consists in:

1. Anticipatory "reflection" during interaction with the doctor,

that is, in the ability to understand him "without words", to predict decisions and actions.

2. Attentive attitude towards the patient, i.e. in the ability to warn him in advance about discomfort, to explain his actions in order to avoid anxiety.

The principle of initiativeis reflected in such aspects of the nurse's activity as:

1. A creative approach to responsibilities — a desire to improve manual operations, to find more convenient ways for the doctor and himself to perform them.

2. Ingenuity — the ability to find solutions and act outside the norm in unexpected and extreme situations.

The level of comfort at the appointment is influenced not only by the nurse's attitude towards the patient, but also by her "workability" with the doctor (dentist-assistant dyad). Establishing close cooperation between a doctor and a nurse has a positive effect on:

1. Carrying out manipulations.

2. Quality of treatment.

3. Achieving the predicted aesthetic result.

4. Elimination or reduction of the patient's physical and mental discomfort.

Effective interaction between a doctor and a nurse is implemented in:

1. Mandatory professional communication with the patient at the reception.

2. Demonstrations of the institution's achievements — technologies, materials, professional skills of the staff, modern painkillers, safety, aesthetics.

3. Formation of the patient's confidence in the adequate price policy of the institution.

4. Stimulation of the patient's adequate perception of the personality and work style of the doctor and nurse.

5. Encouraging the patient to become a regular customer.

6. Encouraging him to voluntary marketing moves, i.e. spreading positive feedback about the doctor, nurse, dental clinic among relatives and friends.

In the process of joint activity, the nurse and the doctor gradually adapt to each other. Together, they learn or adopt manual skills from each other, develop a comfortable style and pace of their execution, learn to demonstrate similar principles of communication to patients. The process of such mutual professional and personal

"rubbing" can happen unconsciously and without much tension, but conflicts are also possible.

Such a professional couple can appear by chance. It is formed by people who have similar or complementary character traits. They quickly begin to understand each other from half a word and exchange secrets of skill. Such tandems do not appear often, and in such cases, doctors and nurses value their partnership very much and are reluctant to work with other colleagues. Accordingly, if one member of such a professional couple moves to work in another dental institution, his partner goes with him.

So, today the role of a nurse at a dental appointment has changed — the ideology of providing dental services is now based on the ideas of a professional partnership between a doctor and a nurse. Today, dentists must not only be able to give clear instructions to assistants and nurses during work, but also listen and take into account the opinion of the latter. And the nurse, in turn, must work with the doctor "in four hands". In order to make the right decisions in non-standard situations in which a nurse often has to work, to communicate effectively with patients and properly fulfill her expanded duties, a nurse must constantly improve herself and raise her professional level.

Duties of a dental nurse include a number of important tasks that contribute to high-quality dental care. Let's take a closer look at them:

Interviewing the patient and filling out the title page of the outpatient card of the dental patient: The nurse collects information from the patient, registers it in the medical documentation and helps to open the outpatient card.

Dental formula (anatomical, clinical, international): The nurse determines the patient's dental formula, taking into account the number and position of teeth.

Issuance of a referral to an X-ray room and a physiotherapy room: The nurse prepares the necessary documents for a patient to be referred for X-ray or physiotherapy.

Preparation of instruments for the examination of the dental patient: The nurse ensures the availability of sterile instruments for the examination of the patient.

Quality control before sterilization cleaning of medical products: The nurse checks the quality of cleaning and sterilization of medical instruments.

Sterilization control of orthopedic instruments: The nurse is responsible for the correct sterilization of orthopedic instruments.

Treatment of the working surface of the dental table, chairs, installations and equipment: The nurse ensures the cleanliness and readiness of the working space for performing dental procedures.

4. Summary:

- Responsibilities of a dental nurse.
- Basics of medical ethics and deontology in dentistry.
- Survey of the patient and filling in the title page of the dental patient's outpatient card.
- Dental formula (anatomical, clinical, international (according to WHO).

- Issuance of a referral to an x-ray room taking into account the methods of radiography of the teeth and jaws, a referral to a physiotherapy room, a certificate about the rehabilitation of the oral cavity.
- Preparation of tools for examining a dental patient.
- Quality control before sterilization cleaning of medical products (azopyram and phenolphthalein samples).
- Sterilization control of orthopedic instruments.
- Treatment of the working surface of the doctor's dental table, dental chairs, dental installations and equipment.

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

Main:

9. Materials science in dentistry: a study guide / [Korol D.M., Korol M.D., Ojubeiska O.D. etc.]; in general ed. King D.M. – Vinnytsia: New book, 2019. – 400 p.
10. Propedeutics of orthopedic stomatology: a textbook / P.S. Flis, H.P. Leonenko, I.A. Shinchukovskyi and others. ; under the editorship PS Fleece. — 2nd edition. — Kyiv: Medicine, 2020. — 328 p
11. Orthopedic dentistry: textbook / M.M. Rozhko, V.P. Nespryadko, I.V. Paliichuk and others.
12. M.M. Rozhko, V.P. Nespryadko, I.V. Paliychuk et al. Prosthetic technique: textbook - Kyiv, "Knyga-plus", 2016. - 604 p.

Additional:

11. Propedeutics of orthopedic dentistry: a textbook [Korol D.M., Korol M.D., Nidzelskyi M.Ya. etc.]; in general ed. King D.M. - Vinnytsia: Nova Kniga, 2019. – 328 p.
12. Dentistry: in 2 books. — Book 1: textbook (University III-IV years) / M.M. Rozhko, Z.B. Popovych, V.D. Kuroyedova .. -K.: VSV "Medicine", 2018. - 992 p.
13. Chulak L.D., Shuturminskyi V.G. Clinical and laboratory stages of manufacturing dental prostheses. Odesa. Odesa honey. University, 2009, 318 p.
14. Flis P.S., Bannyk T.M. Technique of manufacturing removable prostheses.-K.: Medicine. - 2008. - 254.
15. Gitlan E.M., Krot M.K. Manual on bygel prosthetics. - K.: Zdorovya, 2001. - 140p.

Electronic information resources

1. State Expert Center of the Ministry of Health of Ukraine http://www.dec.gov.ua/index.php/ua/
2. National Scientific Medical Library of Ukraine http://library.gov.ua/
3. National Library of Ukraine named after V.I. Vernadsky http://www.nbuv.gov.ua/

PRACTICAL LESSON No. 4

Topic: The technique of preparation and storage of impression materials in the orthopedic department.

Goal: Acquaint the acquirers with: the method of mixing impression materials. Rules for disinfection of prints. Storage rules.

Basic concepts: Impression materials, disinfection.

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:

- Classification of print materials
- Physico-chemical properties of impression materials

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

Impression materials in orthopedic dentistry

The print is a negative reflection of the tissue relief, which is obtained with the help of special materials. We will immediately make a reservation that there is no difference between "mold" and "imprint" mass. Cast materials are used in many areas of dentistry, but their main purpose is to obtain impressions for the creation of orthodontic and orthopedic products, which are a carrier of information for the dental laboratory.

Impressions are not only necessary for creating models, but are also important diagnostic material that allows you to confirm the diagnosis, on the basis of which a competent treatment plan is drawn up. The use of impression materials in therapeutic dentistry allows you to perform direct restorations with unsurpassed accuracy, thanks to which the functionality of the chewing apparatus corresponds to the natural one. With their help, they create matrices for preparing teeth and use them in the treatment process, precisely adapting the restorative surfaces to antagonistic teeth.

Modern printing materialsare widely used in dental laboratories, for example, silicone impression material is used to create copies of solid plaster models.

Properties and requirements for impression materials

First, let's define the main requirements for molding materials:

- safety for the patient and specialist - the material should not have a negative effect on the tissues of the oral cavity and the body as a whole, be hypoallergenic;
- convenience when working with the material, which is achieved due to the optimal ratio between mixing time, working time and hardening time;
- inertness of the material in relation to the environment of the oral cavity, as well as the absence of a negative effect on the material itself;

- short hardening time (too long a time of exposure of the material in the mouth can cause discomfort in the patient);
- recovery after deformations;
- possibility of disinfection;
- spatial stability after removal from the oral cavity;
- Impression molding materials should provide the ability to cast quality products with smooth surfaces that are easily separated from the model.

Let's consider the main characteristics of impression materials:

- accuracy of display of relief details;
- spatial stability;
- viscosity, fluidity, hardness;
- thixotropy;
- deformation;
- wetting

The accuracy of the display of relief details

The accuracy of the relief display is one of the main requirements. The materials used today, namely alginates and silicones, allow you to transfer the smallest details. Accuracy is checked using a special block in the form of a metal cylinder, on the upper plane of which there are grooves, and around the plane there is a centering ring. The grooves have different widths (from 20 to 75 μm), and depending on which of them the material can display, its accuracy is determined. Gypsum has the lowest (75 μm) accuracy, and silicones have the highest.

Spatial stability

During polymerization, the material shrinks, due to which its dimensions change. This is characteristic of all materials, but in some of them such changes are very small, so it does not lead to significant changes in dimensions (gypsum has such properties). It should also be borne in mind that the properties of impression materials can change and shrinkage can increase over time, so it is necessary to strictly observe the time intervals.

The causes of such changes are ongoing chemical or physical reactions in the mass, although the material has already become solid. For example, the release of alcohol in C-type silicones, the evaporation of which leads to a change in the size of the print. The result of physical reactions occurring in the material can be the evaporation of moisture, which can also lead to changes in dimensions (for example, in alginate). Therefore, it is recommended to cast the models as soon as possible after making the cast, taking into account the recovery of the material after deformation.

Viscosity, fluidity, hardness

Viscosity and fluidity determine the ability of the material to spread. The value of these indicators is affected by intermolecular interaction, the structure and length of molecules, as well as the concentration of the material.

Silicones have low viscosity, so they perfectly reflect all the details of the relief of soft and hard tissues. At the same time, their rather large softness is the cause of deformations, which does not allow casting accurate models. In this case, silicones with a high ultimate hardness are used, which also allow registering the smallest details, but in addition to this they keep their shape well.

Hardness is the ability of a material to resist external forces, and it can be determined by impacting it with objects with high hardness.

Thixotropy

Thixotropy is characteristic primarily of polyester materials - they become more fluid under excess pressure. Such properties of the impression materials are used in the removal of two-phase impressions, when the correction materials are subjected to pressure, which is added to the impression spoon and transmitted by means of narrower base materials. The thixotropy of the corrective materials provides better registration of the relief - due to their lower viscosity, they penetrate much deeper.

Deformation

The impression material must not only deform well so that it can be easily removed from the oral cavity, but also recover its shape in order to accurately convey all the registered details of the relief.

To determine the level of deformation, materials with predetermined dimensions are used, which are subjected to a regulated gradually increasing load. During this process, the degree of dimensional change is assessed. The degree of recovery is determined by a similar algorithm, comparing the initial dimensions of the workpiece and the recovery after the applied load.

Wettability

Moisture present in the oral cavity should not have a negative effect on the cast. The interaction of material and liquid media can occur in two directions. In the first case, the liquid spreads over the surface with the formation of a film, and such materials are called hydrophilic, and in the second case, it collects in drops, and the materials are called hydrophobic. What properties this or that material has depends on the intermolecular interaction in the liquid itself, as well as between the liquid and the material.

Classification of impression materials in orthopedic dentistry

Classification is carried out according to several features, on the basis of which impression materials are:

- rigid/elastic;
- irreversible/reversible.

In irreversible, the polymerization process is a chemical reaction, its results remain unchanged, and reversible thermoplastic materials harden or acquire plastic properties upon reaching a certain temperature.

Hard (hard crystalline) impression materials include thermoplastic compounds, gypsum, and eugenol pastes. The category of elastic (elastomeric) impression materials includes agar, alginate hydrocolloid compounds, polyester materials, C and A type silicones. Let's talk about them in more detail.

Gypsum

It is widely used in clinical practice and during dental work. However, it is practically not used as an impression material today due to the availability of materials with more acceptable quality characteristics. Its main advantage is the absence of shrinkage, which allows you to create high-precision prostheses.

These are impression materials, the characteristics of which make them the optimal choice for budget prosthetics, primarily for the production of cast structures in the lateral groups of teeth.

Calcium sulfate hemihydrate is used as a molding material - it is obtained by firing natural gypsum (calcium sulfate dihydrate).

Thermoplastic compounds

They are a mixture of components that becomes plastic when heated, can change shape and strengthen at a lower temperature. When the temperature is raised again, the material regains its plasticity. The composition of impression materials of this type usually includes such substances as rosin, paraffin, zinc oxide, plasticizing additives, etc.

The material is softened in a water bath, after which it is placed in an impression spoon and applied to the prosthetic bed. After hardening, it does not deform, it does not retain spatial stability well enough after removal from the oral cavity. All this limits the scope of its use - most often it is used as an auxiliary. For example, it can be used to register occlusion.

Agar hydrocolloids

Impression materials also include reversible hydrocolloids, which are a mixture of polysaccharides obtained from seaweed. This mixture has a gel-like structure, and when heated, turns into a liquid with high viscosity, which can be used as an impression material. With a further decrease in temperature, the mass again acquires the consistency of a gel and retains its spatial structure. It differs in the degree of viscosity and is sold in syringes or tubes.

They are used in conditions of high humidity, which does not affect the accuracy of the print. Models made of agar hydrocolloids are easy to cast. The material is neutral to taste and smell, does not stain clothes.

Alginate hydrocolloids

They are widely used in orthopedic dentistry, for example, in the manufacture of removable prostheses. An example can be Zhermack Tropicalgin alginate impression material.

They are also well suited for the creation of orthodontic devices, for obtaining impressions in the manufacture of veneers, etc. Their advantage is the ability to reflect soft tissues on a large area. With their help, it is possible to register frenulums, transitional folds, relief of the mucous membrane, which is necessary when creating structures that are in direct contact with soft membranes (bubble prostheses, lamellar prostheses, etc.).

Available as a powder in bags or cans. Raw materials for the material, namely potassium and sodium salts of alginic acid, are obtained from seaweed. Kneading the impression mass results in a gel-like material, which remains so until the water evaporates. To keep water as long as possible, inhibitors are added to the powder.

Polyester materials

They are distinguished by high spatial stability and rigidity, which increases over time. This makes them the optimal material for obtaining impressions from implants. Also, polyester materials are characterized by a long working time, which allows you to perform all the necessary manipulations.

They have good hydrophilicity, so the presence of moisture does not affect the quality of prints. An additional plus is thixotropy, thanks to which the material becomes less viscous under pressure.

C-type silicones

They have high characteristics of strength and hardness, so they are well suited for registering very small details of the relief. Silicones recover well after deformation, are universal in application and have an affordable cost.

Silicone impression material is hydrophobic, and you can get a high-quality impression only if the prosthetic bed is dry. Among the main disadvantages is rather low spatial stability, which is due to the release of ethyl alcohol and shrinkage.

A-type silicones

Silicones of this type are the most promising materials and are most widely used in clinical practice, displacing alternative materials. Unlike C-type silicones, this is a material that polymerizes without the release of byproducts, so when using it, it is possible to avoid shrinkage.

The main advantages of this group of impression materials are high accuracy of the relief detail display, good wettability, elasticity. A-type silicone does not cause discomfort in the patient, as it is neutral in taste and smell, and has a pleasant color. A significant advantage for the dentist is the possibility of using automatic mixing systems. A vivid representative of impression materials from the A-silicone group is the Panasil Kettenbach corrective impression material.

Polysulfide (thiocol)

They are produced in the form of sets consisting of two components: the main one and a catalyst. The latter contains lead dioxide, so pastes of this type always differ in shades: from light to gray-brown.

They have excellent elasticity and high tensile strength, which allows you to get several models from one mold. An important advantage of the material is that if it is necessary to specify any details of the prosthetic bed, a new portion of the impression mass can be added to the cast already created and its correction carried out.

4. Summary:

- Classification of print materials.
- The technique of mixing impressions of different impression materials. Rules for disinfection of prints.
- Storage rules.

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

Main:

13. Materials science in dentistry: a study guide / [Korol D.M., Korol M.D., Ojubeiska O.D. etc.]; in general ed. King D.M. – Vinnytsia: New book, 2019. – 400 p.
14. Propedeutics of orthopedic stomatology: a textbook / P.S. Flis, H.P. Leonenko, I.A. Shinchukovskyi and others. ; under the editorship PS Fleece. — 2nd edition. — Kyiv: Medicine, 2020. — 328 p
15. Orthopedic dentistry: textbook / M.M. Rozhko, V.P. Nespryadko, I.V. Paliichuk and others.
16. M.M. Rozhko, V.P. Nespryadko, I.V. Paliychuk et al. Prosthetic technique: textbook - Kyiv, "Knyga-plus", 2016. - 604 p.

Additional:

16. Propedeutics of orthopedic dentistry: a textbook [Korol D.M., Korol M.D., Nidzelskyi M.Ya. etc.]; in general ed. King D.M. - Vinnytsia: Nova Kniga, 2019. – 328 p.
17. Dentistry: in 2 books. — Book 1: textbook (University III-IV years) / M.M. Rozhko, Z.B. Popovych, V.D. Kuroyedova .. -K.: VSV "Medicine", 2018. - 992 p.
18. Chulak L.D., Shuturminskyi V.G. Clinical and laboratory stages of manufacturing dental prostheses. Odesa. Odesa honey. University, 2009, 318 p.
19. Flis P.S., Bannyk T.M. Technique of manufacturing removable prostheses.-K.: Medicine. - 2008. - 254.
20. Gitlan E.M., Krot M.K. Manual on bygel prosthetics. - K.: Zdorovya, 2001. - 140p.

Electronic information resources

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

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

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

PRACTICAL LESSON No. 5

Topic: Technique of preparation and storage of materials for fixation of orthopedic structures.

Goal: Acquaint applicants with the classification of materials for fixation of fixed orthopedic structures. Rules for the storage of fixing cements. The technique of preparing cements for fixing fixed structures.

Basic concepts: dental cements, fixation,

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:

- Classification of dental cements.
- Types of fixed structures

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

Dental cements are an important material in clinical dentistry. They are used as a gasket to protect the pulp, as filling materials, and also to fix fixed structures of dental prostheses, orthodontic devices on supporting teeth or implants. Cements for fixation must be sufficiently resistant to the influence of the oral cavity environment and provide a strong connection due to mechanical adhesion and adhesion. The required properties include: high tensile, shear and compressive strength, as well as sufficient stiffness to withstand stress at the interface between the artificial crown and the tooth.

Fixing cements must meet the following requirements:

- To be indifferent to the tissues of the tooth and the whole body as a whole
- Do not cause irritation of dentin and pulp
- To be chemically stable in the oral cavity
- Do not dissolve in oral fluid
- Have minimal water absorption
- Have low thermal conductivity
- Maintain constant volume and do not deform during hardening
- Have minimal shrinkage so as not to disturb the edge fit
- Harden in the presence of water or saliva

- Have a hardness close to that of a tooth to resist abrasion
- Have a pH of around 7 during and after curing
- Do not change color over time
- To be well compatible with tooth tissues, metals. plastics and porcelain according to physical and mechanical indicators
- Have a coefficient of thermal expansion close to the coefficient of expansion of tooth tissues
- Have high adhesion to tooth tissues, metals, plastic, photo polymer, porcelain.

Cements for fixation are classified as:

1. According to the validity period:

- For temporary fixation
- For permanent fixation

2. By chemical composition:

- Zinc-eugenol
- Negligent
- Zinc phosphate
- Polycarboxylate
- Glass ionomer
- Composite
- Compromise

3. By components:

- Powder/liquid
- Pasta/pasta
- Liquid/Liquid

4. According to the hardening method:

- Chemical
- Light
- Double
- Ultrasound

5. According to the composition of the liquid:

- Distilled water
- Acid solution
- Monomer

6. According to the method of kneading:

- Kneading by hand
- Mixing in capsules
- Kneading in a gun

After checking the bridge-like prosthesis in the clinic, they proceed to its permanent fixation in the oral cavity.

Before placing a bridge-like prosthesis in the oral cavity, it is thoroughly washed with hydrogen peroxide and disinfected with alcohol. The abutment teeth are covered with cotton swabs and treated medically (primarily from dental plaque). The surface of the tooth is thoroughly treated with alcohol and dried with ether, if the tooth is depulped. The rules for mixing cement and its consistency depend on the brand and the goal to be achieved when fixing the crown. Prepared cement is introduced into the

crown with a clinical spatula, filling it by about one third. The inner walls are smeared to the edge of the crown. A bridge prosthesis with cement is placed on the teeth, making sure that the cotton swabs do not get under the edge of the crown. After applying a crown with cement, it is necessary to immediately check the occlusal relations in the case of central occlusion. If the bridge prosthesis is in full contact with the opposing teeth, the patient is asked to keep the teeth closed for 10-15 minutes until the cement hardens. After that, the remains of cement are carefully removed from the surface of the crowns and adjacent teeth, interdental spaces. Next, the occlusion ratios are checked, and the patient is asked to refrain from eating and drinking for another 2 hours.

Zinc phosphate, polycarboxylate, glass ionomer, composite cements and cements are most often used for permanent fixation of fixed denture structures. None of the known cements have adhesion to the hard tissues of the tooth, but they play an important role in fixing fixed prostheses. Optimal fixation of crowns and bridges consists in fitting a well-made prosthesis to a properly prepared tooth. The cement fills the space between the walls of the crown and the tooth, provides a mechanical connection between the crown and the tooth after hardening. The effectiveness of the formed connection depends on a number of factors. The initial value for reliable fixation of prostheses is the thickness of the cement film. It is known that the thinner the film, the higher the fixing strength. The clinical effectiveness of fixation of prostheses depends on the resistance of cements to solubility (disintegration). The higher the solubility, the worse the fixation. Correct mixing of cement (according to the manufacturer's instructions) is also an important factor in reliable fixation.

One of the main factors ensuring the fixation of bridge-like prostheses is adhesion (sticking). An adhesive bond arises as a result of the action of intermolecular forces or the force of chemical interaction. Biological compatibility is of great importance for the successful use of cements, so these materials should not have a chemical effect on the dentin of the tooth and a harmful effect on the pulp, the surface of the materials from which fixed prostheses are made.

According to the International Classification, cements are divided into 8 types:

- zinc phosphate,
- silicate,
- silicophosphate,
- bactericidal,
- zinc-eugenol,
- polycarboxylate,
- glass ionomer,
- polymeric.

Additions to the classification taking into account cements for fixation, namely:

1. By term of validity:
   - for temporary fixation;
   - for permanent fixation.
2. By chemical composition:
   - zinc-eugenol;
   - chelate;

- zinc phosphate;
- polycarboxylate;
- glass ionomer;
- composite;
- comporable

3. By components:
   - powder/liquid;
   - paste/pasta;
   - liquid/liquid.
4. According to the hardening method:
   - chemical;
   - light;
   - double;
   - ultrasound.
5. According to the composition of the liquid:
   - distilled water;
   - acid solution;
   - monomer
6. By the method of kneading:
   - manual kneading;
   - kneading in capsules;
   - kneading in the gun.

Fixing cements must meet the following requirements:

1. be indifferent to the tissues of the tooth and the whole organism as a whole;
2. not to cause irritation of dentin and pulp;
3. be chemically stable in the oral cavity;
4. do not dissolve in oral fluid:
5. have minimal water absorption;
6. have low thermal conductivity;
7. keep volume constant and not deform during hardening;
8. have minimal shrinkage so as not to disturb the marginal fit;
9. harden in the presence of water or saliva;
10. have a hardness close to that of a tooth to resist abrasion;
11. have a pH of about 7 during and after hardening;
12. do not change color over time;
13. be well compatible with tooth tissues, metals, plastics and porcelain in terms of physical and mechanical parameters;
14. have a coefficient of thermal expansion close to the coefficient of expansion of tooth tissues.

4. Summary:

- Classification of materials for fixation of fixed orthopedic structures.
- Rules for storing cements for fixation.
- The technique of preparing cements for fixing fixed structures.

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

Main:

17. Materials science in dentistry: a study guide / [Korol D.M., Korol M.D., Ojubeiska O.D. etc.]; in general ed. King D.M. – Vinnytsia: New book, 2019. – 400 p.
18. Propedeutics of orthopedic stomatology: a textbook / P.S. Flis, H.P. Leonenko, I.A. Shinchukovskyi and others. ; under the editorship PS Fleece. — 2nd edition. — Kyiv: Medicine, 2020. — 328 p
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20. M.M. Rozhko, V.P. Nespryadko, I.V. Paliychuk et al. Prosthetic technique: textbook - Kyiv, "Knyga-plus", 2016. - 604 p.

Additional:

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22. Dentistry: in 2 books. — Book 1: textbook (University III-IV years) / M.M. Rozhko, Z.B. Popovych, V.D. Kuroyedova .. -K.: VSV "Medicine", 2018. - 992 p.
23. Chulak L.D., Shuturminskyi V.G. Clinical and laboratory stages of manufacturing dental prostheses. Odesa. Odesa honey. University, 2009, 318 p.
24. Flis P.S., Bannyk T.M. Technique of manufacturing removable prostheses.-K.: Medicine. - 2008. - 254.
25. Gitlan E.M., Krot M.K. Manual on bygel prosthetics. - K.: Zdorovya, 2001. - 140p.

Electronic information resources

1. State Expert Center of the Ministry of Health of Ukraine http://www.dec.gov.ua/index.php/ua/
2. National Scientific Medical Library of Ukraine http://library.gov.ua/
3. National Library of Ukraine named after V.I. Vernadsky http://www.nbuv.gov.ua/