

Ministry of Health of Ukraine

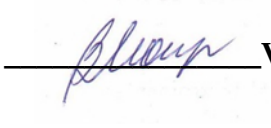
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APPROVED

at the meeting of the Department of Surgical dentistry and Maxillo-facial surgery

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Head of Department

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Study subject Surgical Dentistry and maxillofacial surgery.

Elective discipline "Operative approaches in maxillofacial surgery, soft tissue re-generation, facial aesthetics

GUIDELINES

**BEFORE CONDUCTING A PRACTICAL LESSON WITH STUDENTS OF THE
IV COURSE OF THE FACULTY OF DENTAL**

Topic #7: Modern equipment, drugs, devices used in aesthetic medicine.

The number of hours is 3 hours.

Compiler: prof. Astapenko O.O.

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I. Relevance of the topic: with the development of society and general improvement, a person began to increasingly want to look beautiful and young. The proportion of people over 60 is 24%, which is a record value in the history of civilization. With the requirements for a younger look of the face, the development of aesthetic surgery began. At this stage of development, civilization is the most advanced method of dealing with old age.

II. Learning objectives of the lesson:

Get acquainted with the basic tools for rejuvenating operations

To form an idea of the possibilities of aesthetic surgery

Understand the main indications and contraindications to aesthetic operations

To develop a professional ability to assess the patient's face from an aesthetic point of view

To study the basic techniques of operations

III. Goals of personal development (educational goals):

Gain a caring attitude towards the patient and respect for his personality

Cultivate a sense of aesthetics in the maxillofacial area

Understanding the main manifestations of aging

Acquisition of terminological knowledge that can better explain to patients their age-related changes

Professional competencies

1. The student must:

- to name the anatomical and physiological features of the structure of the jaw bones and teeth: innervation and blood supply to the hard and soft tissues of the face.

- collect anamnesis and examine the patient

- make a plan for examining the patient; - make a plan of additional research methods.

- determine the indications for the main types of anti-aging operations

- determine general and local contraindications to the main types of anti-aging operations

2. General competencies:

- ability to clinical thinking; - knowledge and understanding of the subject area and professional activity; - the ability to quickly make informed decisions when providing emergency care; - the ability to apply and evaluate the quality of facial rejuvenation surgery

3. Teaching methods

- story, explanation, educational discussion; - illustration, demonstration, individual observation; - individual survey; - solving typical situational problems; - solving atypical situational problems; - professional practical training; - group method for solving the task (work in small groups);

4. Control methods

Express survey, interview, partially targeted survey. Individual survey. Individual written assignments. Testing.

Solutions of typical and atypical problems. Individual control of skills and their results

5. Control questions

Basic indications for aesthetic operations

Histological structure of the skin of the face

Relatives and absolute contraindications to aesthetic operations

Age-related changes in the maxillofacial area

The main types of conductive anesthesia of the skin of the maxillofacial area

Types of general anesthesia, main drugs.

Basic surgical instruments

Ethical duties of a surgeon

IV. Contents of the topic of the lesson:

Modern equipment, drugs, devices used in aesthetic medicine

Among the medical fields, external aesthetic problems of a person are solved, first of all, by dermatology, cosmetology, nanomedicine, dentistry, surgical dentistry and maxillofacial plastic surgery.

In recent years, trends associated with the introduction of high-tech achievements have emerged in aesthetic medicine. Emphasis is placed on finding the most effective methods of rejuvenation with minimal aggression. Painful types of massage, long and uncomfortable procedures, and regular injection interventions are a thing of the past. Endoscopic interventions and laser techniques with the effect of small damage are gaining more and more popularity.

Modern equipment used in aesthetic cosmetology

The division into types in hardware cosmetology occurs depending on the physical parameters used to achieve the set goals. This is how the generalized classification of hardware methods looks like:

Mechanical methods (this includes diamond microdermabrasion)

Vacuum methods (example – vacuum roller massage).

Electrical methods (microcurrent therapy, galvanization).

Laser methods (laser epilation, photorejuvenation).

Radio wave methods (RF lifting).

Ultrasonic (peeling, phonophoresis, facial cleansing).

There are a huge number of types of devices for hardware cosmetology, they can be divided into three main groups:

Group	Devices	Characteristic
Equipment for rejuvenation	RF lifting device fractional CO2 laser.	under the action of the electromagnetic field of the radio frequency range, metabolic reactions are activated in the cells. Electrical energy is converted into thermal energy, the procedure directly affects the dermis and subcutaneous fat tissue, bypassing the epidermis. When the dermis is heated to a high temperature (approximately 42°C and above), the collagen fibers are compressed and thickened, which leads to the formation of a subcutaneous framework of its own fibers, which tightens the skin. This technology is based on the method of fractional photothermolysis - the effect of a laser beam of a certain length, divided into several light streams. the skin is intensively cleaned of dead cells and cells that have lost their ability to divide. Due to this, young and healthy cells begin to multiply actively, taking the place of used cells
Equipment for skin treatment	diode laser for the treatment of Star Vein vessels	The device acts on tissues with a laser beam with a wavelength of 980 nm. This wavelength of the laser beam makes it possible to effectively fight vascular defects and eliminate the possibility of complications as much as possible

Equipment for figure correction.	apparatus for cryolipolysis	Its principle is based on the destruction of fat cells due to the influence of low temperatures.
Equipment for getting rid of unwanted hair	ELOS device	The principle of operation of the device consists in processing the hair follicle with the power of a laser and microcurrents, as a result of which the hair loses the ability to ever recover. The characteristics of the wavelength allow you to directly affect the hair shaft, without affecting the adjacent tissues. When increasing the wavelength, the ND YAG laser is able to remove tattoos and permanent makeup, discoloring the paint pigment and disrupting its structure.

Modern drugs used in aesthetic cosmetology

1. Medicines for biorevitalization

Biorevitalization is the introduction by microinjection of hyaluronic acid into the surface layers of the skin.

Jalupro is a one percent hyaluronic acid and amino acid cluster.

HyalRepair-08 is a combination of hyaluronic acid and vitamin C

Juvederm hydrate - contains hyaluronic acid plus the antioxidant mannitol.

NCTF 135 HA contains a large number of useful substances: amino acids, hyaluronate, minerals.

Meso-Wharton P199 - contains hyaluronate, coenzymes, antioxidants, polypeptides, vitamins, growth factor.

2. Preparations for contour plastic surgery

Contour plastic involves the introduction of specific drugs - fillers - into certain layers and areas of the skin by a cosmetologist.

Drugs are divided into the following groups:

Fillers based on collagen.

Synthetic fillers.

Autofillers are drugs created from the patient's tissue.

Preparations based on hyaluronic acid.

Complex, combined fillers.

The most popular and effective preparations for contour plastic surgery: Stylage; Plural; Teosyal; Juvederm; Surgiderm; Restylane.

3. Medicines for botulinum therapy

Botulinum therapy is an injection procedure for the prevention and correction of mimic wrinkles using the drug botulinum toxin. They use the drugs Dysport ("Dysport"), Botox ("Botox"), Xeomin ("Xeomin")

4. Lipolytic drugs

Lipolytics are drugs that ensure the breakdown of fat cells and the removal of decay products from the body through the lymph and blood. Lipolytics of direct and indirect action are distinguished. The most common direct-acting lipolytics are phosphatidylcholine and sodium deoxycholate, which are usually used in pairs. Unlike the previous category of drugs, indirect lipolytics do not directly affect the cells of adipose tissue - they do not provoke, but accelerate lipolysis, stimulating accompanying physiological processes. Indirect lipolytics of this type include L-carnitine, caffeine, guarana extract, bromelain, yohimbine, cocoa extract and some other drugs

Nanomedicine in aesthetic medicine

Nanotechnology and nanomaterials are used in many cosmetic products, including moisturizers, hair care, make-up and sunscreen products. The first is the use of nanoparticles as filters for ultraviolet (UV) radiation. Titanium dioxide (TiO₂) and zinc oxide (ZnO) are the main components of such products. The second direction is the delivery of medicinal and cosmetic products, for which liposomes, niosomes, solid lipid nanoparticles, and nanostructured lipid carriers are used. Proposed use of nanocrystals, nanoemulsions, dendrimers in cosmetology (V.V. Korolenko, 2010).

Nanotechnology for protection against UV radiation

Particles of zinc oxide ZnO and titanium dioxide TiO₂ are used as UV filters in sunscreens. Nanoparticles of these oxides, while providing UV protection and retaining absorption properties, are devoid of the chalky white coating of traditional sunscreens. Products based on ZnO and TiO₂ are transparent and have increased aesthetics, less odor, are less slippery and less absorbed by the skin. Many sunscreens and moisturizers with nanoparticles are available today (Villalobos-Hernández J.R., Müller-Goymann C.C., 2006; Müller R.H. et al., 2007). There are many modifications to the standard ZnO and TiO₂ UV protection systems. Oxonica has developed a UV-absorbing system containing TiO₂ nanoparticles, and Nanophase Technologies produces polymeric ZnO nanocrystals smaller than 35 nm in size. Other nanoparticles are also used for UV protection. The company

"Rohm and Haas" produces nanoparticles of a copolymer of styrene and acrylate with a size of 300 nm, which increase the sun protection factor by up to 70%.

Modern equipment, drugs, devices used in aesthetic dentistry

The concept of "aesthetic dentistry" refers to any dental manipulations that improve the appearance of teeth, gums and bite. At the same time, the main attention is paid to improving the color and shape of the teeth, normalizing their position, and improving the overall appearance of the smile.

The spectrum of aesthetic dentistry services:

Professional hygiene

Teeth whitening

Artistic restoration of teeth

Dental prosthetics: veneers, metal-free inlays, crowns of increased aesthetics

Orthodontic alignment of tooth rows

Surgical plastic surgery of the gums, implantation

In the process of professional teeth cleaning, the deposits on the teeth are destroyed by specialized means and tools. Modern technologies and equipment allow painless cleaning of even thick plaque. The final result of this procedure in dentistry is the lightening of the enamel approximately two times. In addition, the procedure has a positive effect on the condition of the gums - they stop bleeding and become stronger.

In a greater number of professional dental offices, three methods are practiced:

ultrasound;

using Kavo Prophyflex;

Air Flow cleaning

The most modern technique is Kavo Prophyflex - a soda jet tip for professional oral hygiene. In fact, this technique is the same as Air Flow, except that the abrasive substance is a specialized powder.

Teeth whitening: types and methods

Photo bleaching This method makes it possible to change the color by about 8-10 tones at most. In the process, the dentist applies the appropriate whitening gel containing hydrogen peroxide and activates it with the appropriate radiation. Halogen, ultraviolet radiation and LED (irradiation with an LED lamp) can be used.

Laser teeth whitening

Despite its name, this method is not based on the action of a laser, but on the action of hydrogen peroxide, but at a lower concentration. The laser performs the function of an activator.

Chemical teeth whitening

After that, a gel based on a 40% hydrogen peroxide solution (higher concentration than in other systems) is applied to the surface of the teeth.

In advance, the mucous membrane and gums are isolated with a special protective composition, and the soft tissues of the oral cavity are fixed with special retractors. After 15-20 minutes, the gel is washed off

Artistic restoration of teeth occupies an important place in aesthetic dentistry. Direct methods of tooth restoration are all types of restorations that are carried out directly in the patient's mouth. These include:

Teeth augmentation;

Sealing of root canals;

Restoration of tooth tissues to form a stump for a crown.

Restoration of a destroyed tooth by the method of prosthetics, installation of crowns and other orthopedic structures, which are made in a dental laboratory, is called indirect restoration. Veneers, luminirs are thin ceramic, zirconium dioxide plates that are fixed on the front part of the tooth and are used mainly in the restoration of teeth in the smile area. The indication for installing a veneer is both the destruction of the crown part of the tooth and aesthetic defects.

The only way to reconstruct the dentition after the removal of one or more teeth is prosthetics. At the moment, the possibilities of orthopedic dentistry are practically limitless and allow restoring the functions and aesthetics of the dentition with any initial indications.

The most aesthetic and physiological method of prosthetics is prosthetics on implants. The implant is implanted in the bone tissue at the site of the removed tooth and acts as a tooth root, on which a crown made according to an individual digital mold is subsequently installed.

In case of atrophy, insufficient thickness of the jaw bone for implantation, osteoplasty is performed - bone tissue growth to the required volume. To stimulate the process of bone regeneration, preparations are used to restore the bone tissue of teeth.

Test tasks

1. Specify the meaning of the term biorevitalization:

A) is the introduction by microinjections of hyaluronic acid into the surface layers of the skin.

B) is the performance of eyelid surgery with the aim of ridding the patient's skin of various types of wrinkles

C) is the use of innovative methods of chemical action on the skin of the face

D) use of ultrasonic technologies.

2. List the drugs for botulinum therapy

A) drugs Dysport ("Dysport"), Botox ("Botoks"), Xeomin ("Xeomin")

- B) Trichloroacetic acid, salicylic acid
- B) naltrexone, ketamine
- D) Silicone-containing gels

3. Specify the meaning of the term autotillers

- A) drugs created from the patient's tissue.
- B) preparations of donor blood
- B) drugs obtained from sibs

4. During the examination of the patient, the reduction of the zygomatic bones is determined, the general appearance of the face is distorted due to the narrowing of the middle third of the face, the patient refuses operations on the zygomatic complex, he wants to avoid "injections". Which of the following should the doctor choose?

- A) choose botulinum therapy
- B) convince the patient of the need for parietal bone transplantation to replace the zygomatic complex defect
- C) refuse to administer the patient

5. Patient G., 50 years old, 1 degree of obesity, was prescribed drugs of the class of lipolytics, indicate the most common lipolytics of direct action?

- A) phosphatidylcholine and sodium deoxycholate
- B) asparaginase
- C) calcium channel blockers
- D) botulinum toxin

6. When examining the patient, the chin is smoothed, the upper lip is much shorter, it visually "stretches" when smiling, the chin fold is pronounced, a feeling of tension is created, the lower jaw is tilted back, which operation is indicated for the patient?

- A) orthognathic surgery on the lower jaw
- B) dermabrasion
- B) facial contouring with silicone implants
- D) does not require surgical intervention

7. Specify the mechanism of action of devices for RF lifting?

A) under the action of the electromagnetic field of the radio frequency range, metabolic reactions are activated in the cells. Electrical energy is converted into thermal energy, the procedure directly affects the dermis and subcutaneous fat tissue, bypassing the epidermis.

B) This technology is based on the method of fractional photothermolysis - the effect of a laser beam of a certain length, divided into several light streams. the skin is intensively cleaned of dead cells and cells that have lost their ability to divide.

C) The device acts on tissues with a laser beam with a wavelength of 980 nm. This wavelength of the laser beam makes it possible to effectively fight vascular defects and eliminate the possibility of complications as much as possible
D) The principle of operation of the device consists in processing the hair follicle with the power of a laser and microcurrents, as a result of which the hair loses the ability to ever recover. The characteristics of the wavelength allow you to directly affect the hair shaft, without affecting the adjacent tissues. When increasing the wavelength, the ND YAG laser is able to remove tattoos and permanent makeup, discoloring the paint pigment and disrupting its structure.

8. Select the characteristics of the diode laser for the treatment of Star Vein vessels

A) the device acts on tissue with a laser beam with a wavelength of 980 nm. This wavelength of the laser beam makes it possible to effectively fight vascular defects and eliminate the possibility of complications as much as possible

B) under the action of the electromagnetic field of the radio frequency range, metabolic reactions are activated in the cells. Electrical energy is converted into thermal energy, the procedure directly affects the dermis and subcutaneous fat tissue, bypassing the epidermis. When the dermis is heated to a high temperature (approximately 42°C and above), the collagen fibers are compressed and thickened, which leads to the formation of a subcutaneous framework of its own fibers, which tightens the skin.

C) This technology is based on the method of fractional photothermolysis - the effect of a laser beam of a certain length, divided into several light streams. the skin is intensively cleaned of dead cells and cells that have lost their ability to divide.

D) does not have a correct answer

9. Artistic restoration of teeth occupies an important place in aesthetic dentistry. Direct methods of tooth restoration are all types of restorations that are carried out directly in the patient's mouth. These include

A) Tooth augmentation, filling of root canals; , restoration of tooth tissues to form a stump for a crown.

B) implantation

B) tooth eruption

D) preparation of teeth for orthopedic crowns

10. Specify the skin layer from which its regeneration occurs

A) basal layer

B) stratum corneum

B) dermis

D) spinous layer

Assessment of students in a practical session

Evaluation according to the following criteria:

1. Evaluation of the result of solving test tasks.

2. Evaluation of the solution to the situational problem. 3. Evaluation of demonstration of practical skill or ability. 4. Evaluation of work with the phantom. 5. Evaluation of the student's oral answer.

6. Assessment of student activity.

Evaluation criteria are excellent

evaluation of work with patients	assessment of solving a clinical situational problem	assessment of the solution of test tasks	assessment of demonstration of practical skill or ability	assessment of oral response
The student has a deep and perfect knowledge of the technique of examining patients with age-related changes in the skin of the face	Accurately formulated and substantiated clinical diagnosis	The percentage of correct answers is 91-100%	The student will learn practical skills of varying degrees of complexity	The student has firmly mastered the material, consistently teaches it competently

List of references:

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4. Atlas of plastic surgery of the face and neck edited by Professor F.M. Khitrova
5. Bernadsky Yu.Y. Fundamentals of surgical stomatology and maxillofacial surgery. - Minsk: Belknyga, 1998