

Federal State Budgetary Educational Institution
of Higher Education
"NORTH OSSETIAN STATE MEDICAL ACADEMY"
of the Ministry of Health of the Russian Federation



Department of Dentistry No. 2

METHODOLOGICAL RECOMMENDATIONS FOR STUDENTS

MODULE

"MAXILLOFACIAL AND GNATIC SURGERY"

Vladikavkaz

Topic: "Diseases and injuries of the nerves of maxillofacial region".

Purpose: To know the diseases and nerve injuries of maxillofacial region and methods of their treatment.

Questions to study:

1. Classification of nerve diseases
2. Clinic, diagnosis, treatment of trigeminal neuralgia
3. Clinic, diagnosis, treatment of trigeminal neuropathy
4. Clinic, diagnosis, treatment of facial nerve lesions.
5. Paralysis and paresis in the defeat of the facial nerve.
6. Differential diagnosis of trigeminal neuralgia and neuropathy
7. Indications for the use of conservative and surgical methods of treatment.
8. Indications for surgical treatment (decompression, neurolysis, nerve stitching, fascial, muscular, skin plastic surgery).

Classification:

According to the localization of the lesion, there are:

- defeat of the trigeminal nerve;
- facial nerve damage;

According to the nature of pathological changes, there are:

- neuralgia;
- neuropathy (neuritis).

TRIGEMINAL NEURALGIA

Trigeminal neuralgia is a sensitivity disorder expressed in paroxysmal pain in the nerve innervation zone.

Etiology and pathogenesis.

Currently, trigeminal neuralgia is considered a polyethological disease. Among its causes are: narrowing of the bone openings through which it passes; fusion of the dura mater in the area of the trigeminal node; violation of the circulation of ventricular fluid of the brain as a result of arachnoiditis: molecular and colloidal changes in the nerve fiber, changes in the chewing apparatus, leading to malocclusion. The cause of neuralgia

may also be allergic-an inflammatory reaction in the branches of the nerve as a result of infection or hypothermia of the face. In old age, neuralgia occurs as a result of changes in the vessels feeding both the extracranial and intracranial sections of the trigeminal nerve.

Clinical picture.

Sharp paroxysmal pains lasting from several seconds to 1 min. They are usually limited to the innervation zone of one of the affected nerve branches. The intensity of pain varies. Over time, they become drilling, cutting, burning, beating like an electric current. An attack of pain occurs both spontaneously and as a result of any irritation. With strong pressure on the affected nerve branch with a cotton-tup, the pain subsides, and sometimes breaks off. Usually there is an exact localization of pain, but sometimes the pain may not correspond to the topography of the nerve, it becomes diffuse.

Attacks of pain in some cases are accompanied by vegetative symptoms: sweat appears on the diseased side of the face, redness of the skin, pupil dilation, swelling, lacrimation, increased saliva and nasal secretions are observed.

Diagnosis.

To diagnose the lesion of one or another branch of the trigeminal nerve, "trigger" zones and zones of perversion or sensitivity disorders on the skin or mucous membrane of the mouth are determined.

Treatment.

Conservative treatment of trigeminal neuralgia physical methods:

- darsonvalization
- Bernard currents (diadynamic therapy)
- fluctuation
- medicinal electrophoresis
- vitamin therapy (B1, B6, nicotinic acid)
- sedative (seduxen, meprobamate, trioxazine, bromide-medinal medicine)
- antiepileptic (carbamazepine, diphenine, tegretol, baclofen).

Surgical treatment of trigeminal neuralgia:

- local blockades by trimecaine
- intravenous infusion of anesthetic on the peripheral nerve
- nerve fiber intersection
- alcoholization of the nerve
- intersection of conducting paths
- destruction of sensory nuclei in the medulla oblongata and medulla at the level of the thalamus and pain-conducting pathways from the thalamus to the cerebral cortex at the trigeminal node and sensitive root
- intersection
- electrical destruction
- decompression
- stereotactic destruction of the trigeminal node (rhizotomy and rhizolysis) (open and percutaneous hydrothermal and chemical rhizotomy, selective thermal destruction, high-frequency coagulation, rhizolysis with glycerol).

Trigeminal neuropathy is a lesion of the trigeminal system characterized by changes in the interstitium, myelin sheath and axial cylinders of fibers, manifested by symptoms of prolapse and (or) irritation in the innervation zone of the main branches or twigs.

Etiological factors of trigeminal neuropathy:

- infectious lesion (herpetic herpes zoster or herpes simplex, malaria, viral hepatitis, brucellosis, syphilis, multiple sclerosis, influenza, etc.)
- traumatic
- compression of the nerve in the cranial canal or orifice- developmental anomaly- compression during the formation and eruption of teeth
- nerve compression in the cranial canal or orifice- acquired pathology- traumatic injury
- nerve compression in the cranial canal or orifice- acquired pathology –compression by neoplasm.

Clinical picture of trigeminal neuropathy:

with allergic symptoms

- constant pain in the innervation zone of the terminal (less often the main) branches of the nerve
- pain is spontaneous or provoked by pressure, facial expressions, talking, eating, temperature changes, etc.
- aching, excruciating, piercing, burning, cutting, etc., of varying intensity
- presence of trigger points
- disorder of all types of sensitivity
- manifestation of trophic disorders (edema, hyperemia, desquamation)

with hypesthesia/anesthesia

- decreased sensitivity in the area of innervation of the affected nerve branch
- feeling of numbness or paresthesia ("cold", "crawling goosebumps", "bundle of needles", etc.)
- disorder of all types of sensitivity
- manifestation of trophic disorders (edema, hyperemia, desquamation).

Treatment of trigeminal neuropathy.

Main tasks:

- elimination of the causal factor
- restoration of nerve fiber conduction

Means:

- conservative
- surgical

Conservative means:

- restoration of nerve conduction
- elimination of ischemia (scars, etc.): trilon B (introduction by ultrasound) lidase (introduction by electrophoresis)

- enhancement of regenerative ability of nerve fiber: nicotinic acid, vitamin B1, vitamin B6
- stimulation of the trophic nerve.

Defeat of the facial nerve

Syndromes observed in the area of facial nerve innervation (facial convulsions and hyperkinesis):

- facial hemispasm is a unilateral hyperkinetic syndrome observed in the area of facial nerve innervation and manifested by paroxysms of myofasculations and myoclonia of facial muscles on the affected half of the face
- facial paraspasm is a bilateral hyperkinetic syndrome observed in the area of facial nerve innervation and manifested by paroxysms of myofasculations and myoclonia of facial muscles on the affected half of the face
- blepharospasm is hyperkinesis, limited to convulsive contractions of the circular muscle of the eye all these lesions are the result of damage to the extrapyramidal system externally manifested by facial hyperkinesis.

Syndromes observed in the area of facial nerve innervation (systemic CNS lesions and brain tumors):

- multiple sclerosis
- myasthenia gravis
- Rossolimo-Melkersson-Rosenthal syndrome
- Guillain-Barre syndrome
- vascular lesions of the central nervous system
- CNS tumors

(These processes are more often expressed in bilateral paresis and paralysis of facial muscles).

Causes of facial nerve damage (facial neuropathy):

- ischemia, compression of the nerve in the bone canal with edema caused by vascular disorders, hemorrhages of paranephral tissues, dystrophic tissue changes, inflammation
- injury, mechanical damage caused by injuries and operations
- inflammation, destruction of the myelin sheath and loss of axial cylinders by axons, perivascular infiltration by lymphocytes and edema of the nerve stem caused by a viral and autoimmune process
- combined defeat.

Clinical picture of facial neuropathy:

- impaired function of facial muscles
- reduced tissue sensitivity
- vegetative-vascular disorders (discoloration of the skin and mucous membranes, decrease in tissue temperature).

Treatment of facial neuropathy tasks:

- correction of microcirculatory disorders low-molecular dextran vasoactive drugs (trental)
- edema relief steroid hormones (prednisone, hydrocortisone)
- correction of neurotroph B vitamins (B1, B6, B12, milgama) ATP hyperbaric oxygenation
- surgical restoration of nerve integrity neuroraphy nerve branch transposition, nerve transplantation, neuromuscular block transplantation, static suspension of the face.

Topic: "Inflammatory and dystrophic diseases of the TMJ".

Purpose: To know the clinic, diagnosis, treatment of inflammatory and dystrophic diseases of the TMJ.

Questions to study:

1. Anatomical and physiological features of TMJ
2. Structure, frequency and classification of TMJ diseases and injuries
3. Inflammatory diseases of the TMJ
4. Inflammatory and dystrophic diseases of the TMJ
5. Methods of TMJ research
4. TMJ ankylosis, causes and mechanisms of development, main methods of treatment.

CLASSIFICATION OF TMJ DISEASES, P.G.SYSOLYATIN, A.A.ILYIN, A.P.DERGILEV (1998)

Articular

I. inflammatory (arthritis)

1. non-infectious arthritis
2. arthritis associated with infection: 1. infectious, 2. reactiveb

II. non - inflammatory

1. internal violations

2. osteoarthritis: 1. not related to internal TMJ disorders (primary), 2. related to internal

TMJ disorders (secondary)

3. ankylosis: 1. fibrous, 2. bony

4. congenital and acquired anomalies

5. tumors: 1. primary, 2. secondary, 3. metastatic

Inarticular

1. bruxism

2. pain syndrome of TMJ dysfunction

3. contracture of the masticatory muscles.

Inflammatory diseases of the TMJ

NON-INFECTIOUS ARTHRITIS

- rheumatoid arthritis
- juvenile arthritis
- Rheumatic arthritis (polyarthritis)
- microcrystalline arthritis
- arthritis in diffuse connective tissue diseases
- arthritis combined with spondyloarthritis (psoriatic, etc.).

Rheumatoid arthritis is a chronic systemic disease of unknown etiology. Mainly small joints are affected, including the TMJ.

Stages of rheumatoid arthritis:

1. early – osteoporosis

2. moderate – osteoporosis and destruction of articular cartilage (narrowing of the articular gap)

3. severe – bone erosion 4st. (terminal) – ankylosis

Clinic:

- articular noises in the TMJ
- morning stiffness
- arthralgias of varying severity

- limitations of mouth opening

Criteria for the diagnosis of systemic pathology:

- pain in 3 or more joints (past or present)
- swelling, restriction of movements in 3 or more joints (in 2 symmetrical ones) with the inclusion of the hand, wrist or foot
- stage 2 or 3 arthritis of the joints of the hand, wrist or foot
- positive reaction to rheumatoid factor.

The main treatment is carried out by a rheumatologist – symptomatic.

TMJ INFECTIOUS ARTHRITIS

Develop as a result of direct infection in the joint or metastatic.

They are divided into:

- nonspecific (banal infection)
- specific (brucellosis, syphilitic, etc.)

Arthritis is observed against the background of:

- otitis (drum string)
- furunculosis
- tonsillitis
- pneumonia
- sepsis
- after extensive abdominal operations, etc.

Acute infectious arthritis

Etiology:

- contact spread of infection
- hematogenic spread of infection

Clinic:

- intense pain in the parotid region
- lack of lower jaw movements
- hyperemia and swelling of tissues above the joint
- painful palpation
- hyperthermia ($\approx 38^{\circ}\text{C}$)

Treatment:

- rehabilitation of the primary focus of infection
- analgesics
- lavage of the articular cavity, or arthrotomy
- antibiotic therapy
- anti-inflammatory drugs
- antihistamines
- physical therapy
- in the acute period, physical unloading of the joint, after – mechanotherapy

Chronic infectious arthritis

Etiology:

- specific infection
- contact or hematogenic spread of infection on the background of immunosuppression (severe infections, after severe operations, etc.)

Clinic:

- sluggish flow
- progressive functional disorders
- the clinical picture is similar to non-infectious arthritis
- the predominance of the proliferative component of inflammation

Treatment:

- rehabilitation of the primary focus of infection
- mechanical unloading of the joint
- joint lavage
- antibiotic therapy
- physical therapy
- anti-inflammatory therapy
- paraarticular blockades
- immunocorrection
- after the relief of the inflammatory process, mechanotherapy (with pronounced functional disorders, absorbants, "hydraulic pressure", surgical treatment).

Dystrophic-degenerative, and sometimes proliferative processes, referred to as sclerosing or deforming arthrosis, can be primary or secondary. These processes lead to degeneration of articular cartilage, changes in bone structures towards sclerosis of the end plates — sclerosing arthrosis, which can be considered as the most favorable outcome. Another, more severe, option may be deforming osteoarthritis, when the articular surfaces take the form of "mountain peaks, peaks", which causes sharp violations of jaw movements up to their complete impossibility. With deforming

arthrosis, the articular gap is always radiologically traced, although sharply deformed, narrowed, but preserved.

Radiologically, dystrophic processes in the TMJ are considered as sclerosing and deforming arthrosis. With sclerosing arthrosis, there is pronounced sclerosis of the cortical (bony) surfaces and narrowing of the articular gap, which is preceded by dystrophic changes in the cartilage. With deforming arthrosis, flattening of the articular fossa, expansion and flattening of the articular head and tubercle, shortening of the neck of the articular process, exophytes on articular surfaces are noted on radiographs.

According to clinical and radiological manifestations in the TMJ in adults during degenerative-dystrophic diseases, four stages are distinguished:

stage I — initial manifestations characterized by looseness of the ligamentous apparatus of the joint, with moderate and uneven narrowing of the height of the articular gap, due to degeneration of articular cartilage;

stage II — pronounced clinical symptoms: in addition to clinical symptoms, there is the appearance of sclerosis and ossification of the condylar process and a decrease in TMJ function;

stage III (late) — characterized by complete degeneration of cartilage, an increase in bone overgrowth, massive sclerosis of articular surfaces, shortening of the condylar process and flattening of the articular fossa and a sharp restriction of joint function;

stage IV (advanced), accompanied by the appearance of fibrous ankylosis.

Treatment in the early stages is possible with the use of physiotherapy, rational prosthetics, in the later stages of deforming arthrosis, treatment is only surgical.

Subject: "Contracture of the lower jaw".

Purpose: To know the definition, etiology, clinic, treatment of contractures

Questions to study:

1. Degrees of mouth opening
2. Definition of contractures. Widgets.
3. Contracture Clinic
4. Lechenie contractures.

TMJ contracture is the restriction of lower jaw movements or reduction of the jaws to complete immobility.

According to the degree of opening of the mouth, contractures are divided into:

1. light (2-3 cm)
2. medium (1-2 cm)
3. severe (up to 1 cm)

Disease can be of various etiologies.

Inflammatory contracture (trism) occurs with direct and reflex irritation of devices associated with the innervation of the masticatory muscles (pain irritation). Postinfectious contractures are accompanied by nerve or muscle damage. They occur when the technique of conducting conduction anesthesia is violated after inflammatory processes of tissues adjacent to the lower jaw (abscesses, phlegmons, pericoronitis, etc.).

Treatment of inflammatory contracture is reduced to the elimination of the inflammatory process. In the case if it is impossible to access the opening of a purulent focus in the oral cavity, it is necessary to relieve the spasm of the masticatory muscles by blocking the motor branches of the third branch of the trigeminal nerve according to Bershe — Dubov. With the duration of the inflammatory process with the reduction of the jaws for more than 2 weeks, physiotherapy and therapeutic gymnastics are indicated.

Scar contracture occurs due to scar tissue changes surrounding the lower jaw. This occurs during ulcerative-necrotic processes in the oral cavity (noma, complications after scarlet fever, typhus, cardiovascular decompensation), chronic specific processes (syphilis, tuberculosis, actinomycosis), thermal and chemical burns, trauma (including after surgery to remove benign and malignant tumors). Scar contractures occur in patients after erroneous administration of irritating solutions instead of anesthetic (hydrogen peroxide, formalin, calcium chloride, ammonia, etc.). Wound healing by secondary tension leads to the formation of scar tissue, represented by collagen fibers, which practically does not stretch. This leads to deformation of tissues and organs. There are dermatogenic, desmogenic (connective tissue), pyogenic, mucosogenic and bone contractures.

The clinic is characterized by reduction of the jaws of varying degrees. Dermatogenic and mucosogenic scars, as well as scars replacing a through defect, are determined visually, deep — palpationally. The movements of the articular heads are preserved (small rocking and lateral movements lower jaw). With persistent Scar and bone splices, the reduction of the jaws can be especially significant, but an attempt to dilute them in this case is not accompanied by acute pain. Palpation at the same time , it is sometimes possible to determine rough cicatricial contractions in the entire

vestibule of the mouth or in retromolar region, in the area of the zygomatic bone, coronal process.

Treatment of scar contractures depends on the localization of deformed tissues, the volume of the lesion, the duration of the disease and can be conservative with the use of paraffin, pyrogenal, lidase, repidase, hydrocortisone, vacuum therapy, ultrasound, helium-neon laser, etc. The main goal of conservative treatment is to prevent the development of hyalinosis of collagen fibers. These methods of treatment are effective for fresh, "young" scars no more than 12 months old. In other cases, surgical treatment is indicated. Surgical intervention consists in dissection of scars, excision of scar tissue and its replacement with another tissue.

There is also a **post-injection contracture** (erroneous administration of a drug during anesthesia). In post-injection contractures, mechanical jaw dilation is effective. Bilateral anesthesia is performed according to Berche-Dubov with a 2% lidocaine solution or another anesthetic and jaw reduction. This procedure is accompanied by a clearly audible crack due to the rupture of the scar junction between the branch of the lower jaw and the medial pterygoid muscle. After that, the mouth opens freely. The next day after such a procedure, the volume of opening the mouth again it decreases, as patients spare themselves because of the disease. Anesthesia is repeated according to Berche-Dubov and mechanical opening of the mouth to the norm, which is no longer accompanied by noise phenomena. Carrying out such procedures depends on the time that has passed after the development of contracture (on average 2 weeks), and active mechanotherapy.

Topic: "Ankylosis of the TMJ".

Purpose: Types. Clinic. Etiology. Treatment of ankylosis.

Questions to study:

1. Anatomical and topographic structure of the TMJ
2. Ankylosis. Etiology, pathogenesis, clinic
3. Diagnosis of ankylosis
4. Differential diagnosis of ankylosis
5. Treatment of various forms of ankyloses.

Ankylosis is a reduction of the jaws, characterized by a significant restriction or complete absence of movements in the TMJ, associated with persistent fibrous or

bony adhesions inside the joint with the articular cavity of the temporal bone, and often surrounding the articulation of tissues.

Reasons:

- injury,
- postpartum traumatic injuries,
- inflammatory processes near the condyle process (otitis media, mastoiditis, osteomyelitis of the lower jaw branch).

Pathogenesis: inflammatory process - melting of joint elements - replacement with granulation tissue - fibrous ankyloses - bone ankyloses.

In the initial stage of the disease, the opening of the mouth is limited. The amplitude of the movements of the lower jaw is gradually reduced. In the late stage of movement only in the horizontal direction. During palpation, the articular heads are more or less mobile.

Ankylosis of the temporomandibular joint can be:

- one-sided
- two-way
- full — develops immobility of the lower jaw
- partial - remains of articular cartilage and areas of the surface of the articular head are preserved.

The deformation of the lower part of the face is caused by intra-articular bone accretions and often by accretions of the condylar process of the lower jaw with the zygomatic arch, filling the space from the upper part of the branch, the semilunar notch, including the coronal process, causing significant deformation. The severity of jaw deformity depends on the time of occurrence of ankyloses.

With unilateral ankylosis, there is a displacement of the midline of the face towards the lesion, flattening of tissues along the body of the lower jaw on the intact side and bulging on the side of the lesion due to shortening of the branch and the body of the lower jaw are determined. When palpating the articular heads, movements in the affected joint are not determined, and in the joint of the opposite side are limited. *With bilateral ankylosis*, the sinking of the chin of the lower jaw is sharply pronounced (shortening on both sides of the base of the body and its branches. The bite is broken. Often the front lower teeth they come into contact with the mucous membrane of the palate.

Radiologically.

- Fibrotic ankylosis is an uneven width of the articular gap, the latter is difficult to trace in places due to the formation of fibrous adhesions.
- Bone ankylosis:

- a. Complete bone ankylosis is a shortening of the branch and condyle of the mandible, the latter is expanded, in the form of bone overgrowth it connects with the articular cavity of the temporal bone. The articular gap is not determined. The angle of the jaw is deformed, a spur forms on it. If a coronal process is involved in the process, then it forms a single bone mass with the articular one.
- b. With incomplete bone ankylosis, a gap with a partially preserved shape of the articular head is detected on a larger or smaller joint length.

Treatment

Conservative therapy

- physiotherapeutic methods (phonophoresis, ultrasound)-at the beginning of the disease
- absorbable medications (potassium iodide solution, lidase, hyaluronidase, hydrocortisone, etc.)
- hydrocortisone injections of 25 mg 2 times a week, only 5-6 injections (there is a resorption of fibrous adhesions inside the joint).

With insufficient effect of therapy, it is possible to forcibly open the mouth (redressation) in combination with these methods of treatment and mechanotherapy.

Treatment of bone and persistent forms of fibrous ankyloses is surgical – the creation of a false joint, restoration of the size of the anatomical shape of the lower jaw and bite. The most effective use as a graft of auto style (rib, iliac crest, etc.), formalized, frozen, lyophilized, gamma irradiated bones. However, the use of autografts is associated with additional trauma, and the use of allogeneic transplants involves the presence of special laboratories and tissue banks.

Topic: "Plastic with local fabrics. Plastic with tissue scraps from remote areas. Plastic surgery with the use of free tissue transplantation. Bone plastic surgery of the jaws".

Purpose: To know the methods of plastic surgery with local tissues, flap on the leg, Filatov stem. Know the method of free tissue transplantation.

Questions to study:

1. Plastic with local fabrics
2. Plastic with tissue flaps from remote areas (flaps on the leg, Filatov flap, flaps on microvascular anastomosis)
3. Free skin and bone grafting

4. Free cartilage transplantation
5. Free bone grafting
6. Mathematical foundations of calculation for the elimination of a defect.

Plastic with local fabrics

The tasks of plastic with local tissues are:

- proper mobilization of the wound edges from the defect side;
- convergence of the edges of the wound without tension with the help of various kinds of sutures, taking into account the lines of relaxation facial skin that corresponds to the course of wrinkles.

In plastic surgery, local plastic with counter triangular flaps is widely used. The method is based on the cutting out and mutual oncoming movement of two adjacent triangular-shaped flaps consisting of skin and subcutaneous fat. Triangular flaps can be with the same angles (symmetrical) and with unequal (asymmetrical triangular flaps). The movement of triangular flaps is accompanied by an increase in tissue in the direction of the middle incision.

Indications for plastic surgery with counter triangular flaps (according to Limberg):

- for counter tissue exchange
- for the growth (elongation) of tissues in the direction of the middle incision
- the semilunar fold of the skin covering the inner corner of the eye
- for the replacement of facial and neck skin defects (when removing long-term non-healing ulcers, benign tumors and tumor-like skin formations).

It should be remembered that the larger the angle of the flap being cut out, the more viable it is, but less mobile. The sharper the angle, the flap is more mobile, but less viable.

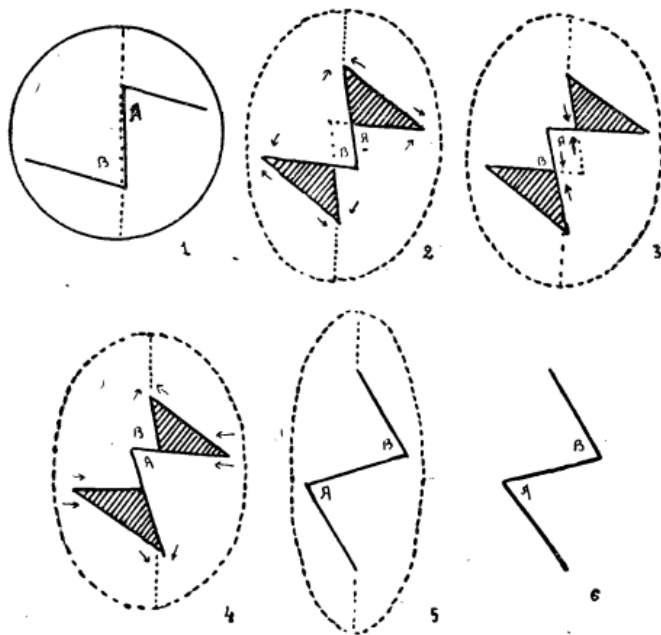


Рис. 14. Схема Лимберга. 1—средний и дв. боковые разрезы, 2—перемещение лоскутов; стрелки указывают растяжение кожи; 3—стрелки указывают сокращение краев лоскута в области рубца; 4—стрелки указывают перемещение прилегающих участков кожи; 5—линии рубца после перемещения лоскутов; 6—распределение швов.

Plastic surgery by Y.K. Shimanovsky.

With more or less significant skin defects, another method of closing the defect can be used, namely, moving and sliding the flap on the wide leg of the skin surrounding the defect. After unpacking the flaps, they are shifted towards each other. In case of triangular skin defects, arcuate incisions are made towards the apex of the triangle from its two adjacent corners. The skin flaps bounded by the incision lines and the edges of the defect are separated, shifted to the midline and stitched. Oval-shaped defects can be eliminated by tightening the edges of the skin after repainting or after additional arc-shaped incisions on the sides of the defect. A round defect can be closed with two crescent-shaped flaps or turned into a quadrangular one and closed accordingly.

Skin grafting with flaps on the leg is used in cases where the closure of the defect cannot be achieved by moving the skin by one or another method of local plastic surgery.

1. Single-layer flaps:

- on a more or less long and open leg;
- on a long, but narrower and hidden leg containing a trunk vessel in its thickness;
- bridge-shaped with two legs.

All these patches can be:

- musculoskeletal;

- skin-bone (taken simultaneously with the clavicle, rib, etc.)
- flaps with pre-transplanted cartilage or bone.

2. Doubled (double—layered) - are prepared from two single-layer flaps, spliced over a certain length with their exposed (wound) surface, with an open leg.

3. Flaps on a pre-prepared round stem (Filatov flaps).

Single-layer flaps are formed on a long and open leg, they consist of skin, subcutaneous fat, and in some cases muscle tissue. Feeding of the flap on the leg after moving is carried out through its base and is provided by a vascular network, which is more or less evenly distributed throughout the flap. The ratio of the length and width of this flap is 3:1.

An arterialized flap is a single—layer flap, in the thickness of which, when cut out, the main vessels (arteries and veins) are preserved, forming a separate circulatory system in the flap.

The bridge flap has the form of a strip of skin detached from the underlying tissues in the middle section and attached at the ends.

A double (double) skin flap is prepared from two single-layer flaps folded and spliced together by wound surfaces.

Reconstructive operations in the maxillofacial region using the Filatov stem.

Russian doctor V.P. Filatov developed plastic surgery of soft tissue defects of the maxillofacial region using a round stalk skin flap, which is currently successfully used by domestic and foreign surgeons.

Stages of plastic surgery Filatov stem	<ol style="list-style-type: none"> 1. formation 2. maturation 3. training 4. migration 5. straightening 6. formation of anatomical structures
---	---

Donor sites for stem formation: neck, deltopectoral region, shoulder, lateral surface of neck and abdomen, etc.

Indications – extensive defects of the middle and lower areas of the face.

The incision is made first only through the skin, and then, after its reduction, along the edge of the skin through subcutaneous tissue and superficial fascia. The length and width of the skin as a rule, there should be a ratio of 3:1 between them.

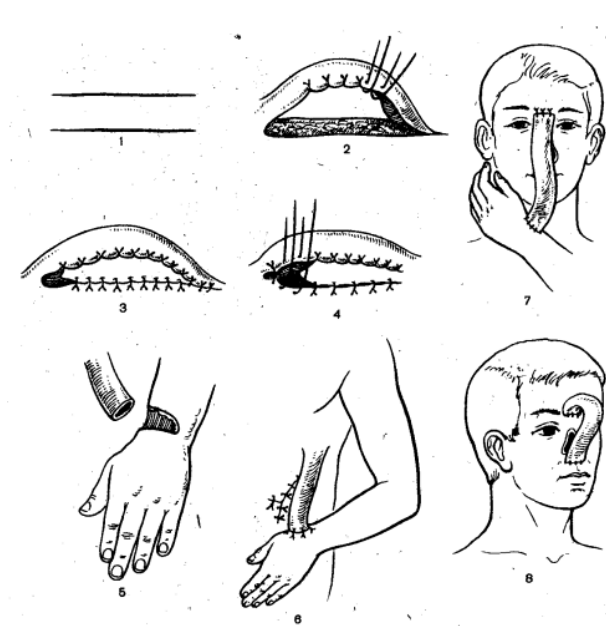
The skin tape with subcutaneous tissue is sewn into a tube, the defect at the site of taking the tape is sutured with nodular silk sutures.

After all wounds are healed, the stem is brought up by training.

A rubber flagellum is superimposed on the stem leg, which will be crossed when transferring it. By the 8th day on everything throughout the stem there is an anastomotic arterial network developing from the vessels of the stem legs.

Stem transfer (migration) begins with cutting off the leg and moving it to the hand, and then after another 2 weeks - from the hand to the facial defect. The stem transferred to the defect should be strengthened, for which the arm in the most convenient position is fixed to the head with a plaster bandage.

The "sharp" stem was proposed by V. P. Filatov in 1923 for the transfer of plastic material directly during wound closure. The formation of the "sharp" stem and its migration occur simultaneously. The nutrition of this stem is provided through one leg, since the second is transferred to the wound defect. In contrast to the usual ratio of the length and width of the skin band when forming for a "sharp" stem, the ratio of length and width is 1:1.5 or 1:2, not 1:3. After 16-18 days, the feeding leg is cut off and the final formation of the damaged area of the face is performed. Engraftment the "sharp" stem to the wound surface proceeds according to the type of skin flap on a long leg.



Free tissue transplantation.

Free skin grafting.

The most suitable donor sites for skin grafting on the face are the following areas of the human body: the behind-the-ear area, the inner surface of the shoulder and hips.

These areas are devoid of hair and are closer in color to the skin of the maxillofacial region.

There are skin flaps of the following types:

- split (thin, medium, thick)
- full-layer flaps in the entire thickness of the skin (without subcutaneous fat and with a thin layer of it).

Indications for free skin grafting:

- for the replacement of defects and elimination of scar deformations of the mucous membranes of the oral cavity and nose after surgery and neognestrel trauma, burns, inflammatory processes;
- to deepen the vestibule of the oral cavity with complete or partial atrophy of the alveolar process of the jaw;
- in order to form a bed for an eye prosthesis;
- to eliminate post-burn scar deformities of the face and contractures;
- in case of soft tissue injury accompanied by a skin defect;
- after removal of keloid scars;
- to close granulating wounds and cavities formed after removal of extensive capillary hemangiomas, pigmented nevi, malignant tumors, etc.;
- at the stages of treatment of thermal lesions or purulent wounds.

Contraindications to surgery are:

- presence of infection,
- foci of inflammation,
- intoxication,
- wound exhaustion,
- the surgeon has no experience in the application of free skin grafting of the entire thickness.

Thin split skin flaps (Tirsch flaps) consist of the epidermis and the papillary layer of the dermis. They are widely used to replace defects in the mucous membranes of the oral cavity and nose, eye sockets. Medium and thick split skin flaps are used to replace defects in the mucous membranes of the mouth and nose, the skin of the eyelids, with scalped wounds, as well as for temporary closure of extensive infected wounds in seriously ill or in the presence of granulating wounds.

Skin grafting in full thickness most fully replaces the missing skin. They begin with the formation of a bed. The skin to be replaced must be excised, the soft tissues around the resulting flaw are maximally released, straightened and moved to the correct position until the natural outlines of this part of the face and neck are fully restored.

Conditions for successful free skin grafting:

- asepticism of the plastic surgery site and the donor site;
- careful preparation of the bed (complete hemostasis, excision of scars to the full depth, there should be no irregularities, etc.)
- proper formation of the skin seedling
- correct placement of the skin seedling on the perceiver,
- ensuring rest and tight contact of the skin graft with the wound surface of the receiving bed during the entire period of engraftment of the seedling by applying a bandage.

Cartilage transplantation.

Due to its biological properties, cartilage is widely used in reconstructive facial surgery. Cartilage has no blood vessels, consists of strong and elastic tissue. Cartilage has great vitality and high resistance to infection, easily takes root even in unfavorable conditions.

Chondroplasty is used :

- to eliminate saddle deformity of the back of the nose
- to eliminate the deformation of the nose wing,
- with defects and deformations of the lower orbital edge of the maxillary
- with malar bone defects
- with defects of the lower jaw,
- for plastic surgery of the auricle, chin and lower eyelid,
- with congenital and acquired deformities of the facial skeleton
- to eliminate secondary and residual deformities of the face after surgical treatment of congenital non-fusion of the lip and palate.

Bone grafting.

Allocate:

- primary bone grafting
- secondary bone grafting (osteoplastic is performed after a certain period of time after the formation of the defect).

In maxillofacial surgery, flat bones are used for transplantation, i.e. bones formed by two plates of compact substance, between which there is a thin layer of spongy substance. Bone grafts should be transplanted only to healthy bone, fastening the ends with various metal fasteners.

Primary simultaneous bone alloplasty is indicated when:

- comminuted fracture of the lower jaw with a bone defect;
- a fracture occurring in the cyst area;

- improperly fused fracture of the lower jaw;
- removal of extensive sequestration in post-traumatic osteomyelitis.

Secondary bone grafting is indicated when:

- non-healed fractures (false joints);
- defects of the lower jaw with a length of no more than 5 cm in the absence of pronounced scarring changes in the soft tissues of the perceiving bone bed.

Combined are called such transplants, which consist of dissimilar tissues and are transplanted in a single block.

Topic: "Gnathic surgery".

Purpose: To know the methods of eliminating deformities of the jaws.

Questions:

1. Etiology of jaw deformities
2. Indications for surgical treatment
3. Operations for maxillary micrognathia or prognathia
4. Surgery for maxillary micrognathia or retrognathia
5. Operations for mandibular macrognathia or prognathia
6. Surgery for mandibular micrognathia or retrognathia.

Etiology of jaw deformities.

Endogenous factors: heredity, endocrine disorders, infectious diseases, metabolic disorders, abnormal fetal position due to physiological or anatomical disorders of the mother's genitals.

Exogenous factors: inflammation in the areas of jaw growth, trauma, including birth, radiation damage, mechanical pressure, bad habits – sucking a finger, pacifiers, lower lip or putting a fist under the cheek during sleep, pushing the lower jaw forward during the eruption of wisdom teeth, while playing the violin, dysfunction of the chewing apparatus, violation of the act of swallowing, nasal breathing.

The pathogenetic mechanisms of the development of jaw deformities are based on the suppression or partial shutdown of the jaw growth zones, loss of bone matter, impaired function of chewing or opening the mouth.

Classification of facial skull deformities.

There are the following main types of disorders that can be observed in various combinations:

- upper macro- or prognathia (hyperplasia — excessive development of the upper jaw);
- lower macro- or prognathia (hyperplasia — excessive development of the lower jaw);
- enlargement of both jaws;
- upper micro- or retrognathia (hypoplasia — underdevelopment of the upper jaw);
- lower micro- or retrognathia (hypoplasia — underdevelopment of the lower jaw);
- reduction of both jaws;
- open and deep bites.

Indications for gnathic surgery.

- Dissatisfaction of the patient (and often the people around him) with the appearance of the face. Girls and boys express this complaint especially insistently: they ask to eliminate the "disfigurement" of their face.
- Violation of one or another function of the dental-maxillofacial apparatus (chewing, speech, the ability to sing, play a wind instrument, smile broadly, laugh).
- Malocclusion complicates the process of chewing food, forcing you to swallow it hastily, without treating it with saliva.
- Discomfort (in the stomach area) after eating, which is explained by the adoption of rough, uneaten food.
- An aesthetic defect can cause the development of a secondary neurotic reaction.
- Some (especially those suffering from microgenia) patients complain of very loud snoring (during sleeping on your back).
- Changes in the dental-maxillary system (tooth decay, enamel hypoplasia, pathological erasability, abnormal position of teeth, periodontal tissue changes and impaired function of the chewing apparatus).

After a comprehensive examination of the patient, the methods of surgical intervention are determined (osteotomy or intercortical cleavage), fixation of bone fragments, immobilization of the jaw in the postoperative period and other technical details of the operation, as well as orthodontic, orthopedic therapeutic measures. It is necessary to make an individual treatment plan for the patient.

Surgical treatment is advisable to be carried out in people not younger than 17-18 years, since by this period of life the formation of the bones of the facial skeleton and soft tissues is mostly already legal.

In case of upper prognathia or macrognathia, the method of segmental osteotomy of the frontal part of the upper jaw is used.

Methodology:

- Under endotracheal anesthesia, an incision of the L-shaped mucosa and periosteum is made from the vestibular side of the alveolar process of the upper jaw at a level of 5/5 to the upper arch of the vestibule of the oral cavity.
- The muco-periosteal flaps are peeled off from both sides to the level of 3/3 of the teeth and their free ends are taken by holders.
- 4/4 is removed and osteoectomy and osteotomy are performed through the teeth holes by the planned amount, starting from the crest of the alveolar process vertically upwards to a level located 5 mm above the projection of the root tips.
- At this level, a soft-tissue tunnel is formed to the edge of the pear-shaped opening (the level of the bottom of the nasal passage).
- Osteotomy and osteoectomy are performed on both sides, connecting the top of the vertical cut with the bottom of the lower nasal passage.
- The muco-periosteal flaps are also exfoliated from the side of the hard palate towards the midline in the projection of the removed 4/4.
- Shoulder blades are inserted into the formed tunnel and osteotomy and osteoectomy are performed in the region of the palatine plate of the upper jaws and palatine bone.
- The bone fragment is fixed with wire sutures or mini-plates at the edges
- pear-shaped hole.
- The muco-periosteal flaps are placed in place and fixed.

With lower micro- or retrognathia, operations are performed in the area of the angle and branches of the lower jaw.

Advantages of planar osteotomies:

- significant areas of touching (wound) surfaces of bone fragments are created,
- the ratio of the temporomandibular joint is maintained, the treatment time is reduced,
- a good result is observed,
- the possibility of use in various pathologies: underdevelopment or excessive development of the lower jaw, open or deep bite, as well as a combination of forms of malocclusion.

The technique of planar osteotomy with intraoral access (according to the Obvegesser).

1. Under endotracheal anesthesia, an incision of the mucous membrane is made along the pterygoid-mandibular fold with a transition to the outer surface of the lower jaw body to the level of the lower arch of the vestibule of the oral cavity.
2. Dissection of the periosteum along the anterior edge of the lower jaw branch.
3. The outer surface of the lower jaw branch is skeletonized with a rasp to the posterior edge, which is also skeletonized with a curved rasp. A special hook is inserted into the wound, which, being fixed by the posterior edge of the branch, allows you to pull aside the soft tissues of the cheek, which provides a good overview of the operational field.
4. From the inner side of the lower jaw branch above the projection of the neurovascular bundle of the lower jaw, soft tissues are exfoliated in the form of a tunnel to the posterior edge of the lower jaw branch. Another special hook is inserted into the formed tunnel, which is also fixed by the posterior edge of the lower jaw branch above the first one.
5. With the help of boron, the inner compact plate of the lower jaw branch is cut through above the place of entry of the neurovascular bundle.
6. The osteotomy line is continued along the anterior edge of the lower jaw branch, passing to the outer one the surface of the branch.
7. A thin osteotome splits the branch of the lower jaw along the plane. A similar operation is performed on both sides.
8. The central fragment is shifted to the position of the normal bite, the position is fixed with a rubber rod.
9. Bone fragments are fixed with plates or wire sutures. Tubular drains are inserted into the wound.

Genioplasty or mentoplasty is a surgical correction of the shape of the chin, which is carried out in order to eliminate aesthetic defects and change the shape of the face.

Indications for the procedure:

- the asymmetry of the chin (underdeveloped or slanted to one side);
- congenital or acquired defects of the lower third of the face;
- massive section of the middle part of the lower jaw;
- disproportionality of the chin bone in relation to the rest of the face;
- the patient's desire to change his appearance.

The technique of performing the operation.

Depending on the purpose of the surgical intervention, the following techniques

of mentoplasty are:

- distinguished;
- reducing.

The choice of the technique of the procedure depends on the wishes of the patient, the characteristics of his body and the problem to be solved. The doctor gets access to the chin bone by cutting the mucous membrane of the lower lip or the skin under the chin.

Augmenting genioplasty is a method of surgical correction of an underdeveloped, beveled or injured chin, which is performed in two ways: implantation (correction with a prosthesis) or bone. For correction by endoprosthesis, smooth or perforated (with holes for enhanced fixation) silicone prostheses or implants that are made of the patient's rib or ear cartilage (autotransplantation) are used. Most surgeons prefer methods of correction with using silicone implants, because the operation to implant cartilage is associated with the risk of its subsequent resorption or rejection.

The bone method of augmenting genioplasty consists in the fact that the surgeon saws the lower jaw, shifts the chin bump forward and fixes it with titanium or collagen plates using screws (for titanium) or suture material. To fill the space that appears as a result of the displacement of the bone fragment, lipofilling is performed (transplantation of the patient's own fat cells from one area of the body to another). At the end of the procedure, the surgeon applies several cosmetic stitches. The operation is performed under general anesthesia. Duration: 1.5-2 hours.

Chin reduction surgery is a surgical method of removing part of the chin bump with the displacement of a fragment of the facial bone backwards. The displaced bone is fixed with circular sutures, after which the doctor stitches the surgical incision with absorbable or non-absorbable threads. The operation takes place under general anesthesia and lasts 2 hours.

With upper micrognathia or retrognathia, the principle of moving the osteotomized fragment of the maxillary complex anteriorly to the correct bite position is laid down.

- Anesthesia
- The incision of the mucous membrane and periosteum is 0.5 cm higher than the upper arch of the vestibule of the oral cavity from 7/7.
- The anterior surfaces of the upper jaw are skeletonized with a rasp to the level of the mandibular foramen, the edges of the pear-shaped foramen, the lower parts of the zygomatic bones and the tubercles of the upper jaws-to the pterygoid processes of the main bone.

- Skeletonize the bottom of the nose, lat.the walls of the nose and the septum are at the level of the lower.nasal passages.
- An osteotomy is performed with boron, starting from the pear-shaped opening, at an angle of 45-60 upwards to the level of the lower ocular opening.
- The osteotomy line is continued horizontally, skirting the lower orbital opening, to the zygomatic maxillary suture and grabbing the lower parts of the throat bone, heading to its lower edge.
- In the area of the zygomatic maxillary suture, a bone window is formed through which an osteotomy of the upper mound is performed.jaws to the pterygoid processes of the main bone. From the top of the triangle, the med.wall of the sinus is dissected to the bottom of the nose
- Then the osteotomy line is continued horizontally at the level of the bottom of the nose to the pterygoid processes.
- Last of all, the cartilaginous and bony parts of the nasal septum are crossed.
- The osteotomized lower part of the maxillary complex is separated from the base of the skull and moved down and forward.
- The fragment is fixed in the planned place.

Topic: "The use of implants in maxillofacial surgery".

Purpose: To know the classification of implants and their application.

Questions to study:

1. Types of implants.
2. Intraosseous implants. Indications. Contraindications.
3. Intraosseous implants. Technique of the operation
4. Transcendental implantation.
5. Complications during and after implantation.

The simplest and most convenient classification can be considered based on the relationship of the implant with soft and hard tissues of the body, according to which five types are distinguished.

- Endodonto-endossal implantation or endodontic, transdental or transradicular implantation. The implant is a pin with different elements for fixing it after it passes into the bone tissue through the tooth canal. It is used to strengthen individual teeth. It is often combined with resection of the root tip, removal of

granuloma. The design is made individually for each tooth. Strock was first used in 1943.

- Endossal implantation, intraosseous is the insertion of the implant directly through a muco-periosteal flap into the bone tissue. The implant can take the form of a spiral, cylinder, plate and is used on both jaws. Today it is the most widely used type of implantation with the best long-term results. The technique is based on the fundamental research of Linkow, which applied a plate-shaped implant design in 1967.
- Subperiosteal implantation – subcostal; at the first stage, an impression is taken from the bone and an individual implant is made, which at the second stage is placed under the mucous membrane - periosteal flap. This type of implantation is used for severe atrophy of the alveolar process. Planning and manufacturing of a rational implant design is complicated, which expands the indications for the use of a non-removable prosthesis. However, with all the thoroughness of the work, there is a considerable percentage of unsuccessful implantations. First described Goldberg and Gershkoff in 1949.
- Insert implantation or intramuscular (intramucous) is the introduction of a button-shaped metal implant (usually 6-8) into the mucous membrane on the alveolar processes for fixation of a complete removable prosthesis. Such implantation is indicated for atrophy of the alveolar process, increased gag reflex and defects of the thoracic nerve. The least risky type of implantation. Nordren was the first to produce it in 1940.
- Submucous implantation or submucosal implantation is the introduction of magnets into the transitional fold to achieve the valve zone and retention of removable prostheses. The simplest and least risky type of implantation, developed by Popov in 1973.

Indications and contraindications for implantation.

The primary task in secondary adentia is to determine the necessity and possibility of using intraosseous implants when choosing an orthopedic method of dental treatment of patients.

Indications for dental implantation are clinical variants of secondary adentia:

- the absence of one of the teeth in the frontal part;
- limited included dentition defects;
- complete absence of teeth, especially with a decrease in the height of the alveolar processes;
- intolerance of removable dentures due to hypersensitivity to acrylates or with a pronounced gag reflex;
- the absence of functional occlusion and (as a consequence) the occurrence of a pain syndrome of dysfunction.

In the process of collecting anamnesis, identifying patient complaints and examining the oral cavity, absolute and relative contraindications to dental implantation are determined.

Absolute contraindications are:

- diseases of the blood and hematopoietic organs;
- diseases of the central nervous system (congenital and acquired);
- malignant neoplasms of organs and systems in the patient;
- immunopathological conditions;
- systemic connective tissue diseases (rheumatic, rheumatoid processes, dermatoses, scleroderma, etc.);
- tuberculosis and its consequences;
- diseases of the oral mucosa (chronic recurrent aphthous stomatitis, lupus erythematosus, pemphigus, Sjogren's syndrome, Behcet syndrome, etc.);
- type I diabetes mellitus.

Relative contraindications are:

- poor hygiene and unsanitization of the oral cavity;
- periodontal diseases;
- malocclusion;
- osteoarthritis of the temporomandibular joints;
- pronounced atrophy or defect of the bone tissue of the alveolar process;
- bad habits (smoking, alcohol abuse, drug addiction);
- bruxism;
- pregnancy.
- chemotherapy and radiation treatment.

Topic: "Aesthetic surgery".

Goals: to know the goals and objectives of aesthetic surgery.

Questions to study:

1. Anatomy of the nose
2. Anatomy of the ear
3. Otoplasty. Stages of the operation
4. Rhinoplasty. Stages of the operation
5. Management of the patient in the postoperative period.

Aesthetic (cosmetic) surgery is a section of plastic surgery. The purpose of aesthetic surgery of the maxillofacial region is to eliminate noteworthy changes and defects (congenital or acquired). Indications for operations can be absolute and relative. Cosmetic surgery should be performed by practically healthy people. In the maxillofacial region, these operations should be performed in patients aged 17-18 years. The exception is persons with deformities of the auricles. Age-related changes in the face and neck are characterized by the appearance of certain clinical signs: wrinkles (furrows of the skin) and folds (sagging stretched skin). This is an indication for surgical intervention. All wrinkles should be divided into: dynamic and static.

Circular surgery or full lifting is performed in the presence of wrinkles and folds in the outer corners of the eyes, cheeks, parotid and post-ear areas, sagging tissues of the sub-chin area, excess skin of the upper and middle third of the neck.

- Surgical intervention is performed under general anesthesia, only in some cases — under infiltration anesthesia with premedication.
- The incision of the skin begins in the temporal region and lowers it to the upper edge of the auricle, and then smoothly skirting the auricle continue along the ear fold to the mastoid process with a turn to the neck.
- Peel off the skin-fat flap. Excess skin is excised.
- The skin-fat flap is held in a given position by fixing single sutures.
- The postoperative wound is sewn up with continuous or single sutures of non-absorbable threads.
- Apply a circular bandage pressure bandage for 3-4 days. Stitches are removed no earlier than 7-8 days.

Elimination of wrinkles and folds of the forehead skin is more often performed under infiltration anesthesia with premedication.

Indications:

1. deep horizontal wrinkles and wrinkles of the forehead skin

2. correction of lowered eyebrows.

- Peel off the skin-fat flap to the brow ridges, pull up
- Impose bridging stitches
- Excess skin is excised
- A continuous (winding) suture is applied to the postoperative wound.

Vertical forehead wrinkles are difficult to eliminate surgically, so to eliminate them, the introduction of gel under the base of this wrinkle is used.

The outer ear consists of the auricle and the external auditory canal (meatus acusticus ext). The auricle has a complex configuration and is a cartilaginous plate

covered with skin on both sides. Its basis, with the exception of the lobe area (lobulus), is elastic cartilage covered with cartilage and skin.

The most common form of deformities of the auricles are protruding ears (lop-eared).

- Infiltration anesthesia
- The skin is excised with two arcuate incisions on the back surface of the auricle
- Dissection of cartilage is carried out by 2 parallel incisions, the distance between which should be no more than 1 cm.
- In the upper part of the edges of the incisions, the projections of the legs of the countercurrent diverge accordingly and an additional cut in the form of a swallow's tail is made between them.
- The cartilage is separated from the skin of the anterior surface of the auricle.
- The cartilage is twisted into a tube or folded in half and sewn with a laced seam with dacron or silk thread.
- The skin is sewn with catgut.
- A pad of several layers of iodoform gauze is left in the ear area, which is removed for 2-3 days.
- The auricles are fixed with a circular gauze bandage, which is changed every 2-3 days.
- The bandage, stitches and gauze rollers are removed on the 10th-12th day after the operation.

Another type of change in the position of the outer ear is a rare pathology — ingrown auricles.

Treatment consists in releasing the ingrown part of the auricle and replacing the resulting defect on the inner surface of the ear and temporal region by local plastic surgery or free skin grafting.

Anotia is the absence of an auricle.

The restoration of the auricle is carried out with the help of local plastic surgeries, the formation of a skin mini-stem in the area of the defect, etc.

Cosmetic rhinoplasty should be performed after the completion of the formation of the facial skeleton, i.e. at the age of 17-18 years.

- Operative accesses you need to use only endonasal (intra-nasal).
- We use endonasal wing incisions, which can be anterior (passes immediately behind the edge of the nostril and along it), middle (in the middle of the lateral leg of the large wing cartilage), upper (closer to the upper edge of the large wing cartilage or between this cartilage and the lower edge of the lateral cartilage).

- A septum (intermediate) incision is made between the lower edge of the septum (quadrangular) cartilage and the upper edge of the medial pedicle of the large wing cartilage.
- After the incision is made, the cartilage and bone are detached (subcostally) from the skin all over the nose.
- The bone hump is removed using an osteotome followed by the treatment of the saw with a rasp.
- Reduction of the height of the bone back of the nose is performed by osteotomy. An osteotomy is performed. Median osteotomy is performed along the nasal septum, and lateral osteotomy (lower, upper and middle) separates the nasal process of the maxillary bone.
- The height of the cartilaginous part of the back of the nose (quadrangular cartilage) is shortened with scissors or a scalpel.
- By narrowing the bones of the back, the triangular shape of the nose is restored and its height is reduced.
- Shortening of the nose is carried out by resection of the distal sections of the quadrangular cartilage, correction of lateral and large wing cartilages.
- When the tip of the nose is erect, sections of cartilage are resected in the medial and lateral legs in the transverse direction.
- With a hanging tip, the medial legs of the large wing cartilage are isolated and sewn to the distal parts of the septum cartilage, and the upper edge of the lateral leg of this cartilage is resected.
- With a forked tip, the place between the medial legs of the large wing cartilages is resected.