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**ДИФФЕРЕНЦИАЛЬНАЯ ДИАГНОСТИКА
ДОБРОКАЧЕСТВЕННЫХ
ОБРАЗОВАНИЙ ШЕИ**

**DIFFERENTIAL DIAGNOSIS
OF BENIGN TUMORS OF THE NECK**

Учебно-методическое пособие



Минск БГМУ 2018

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Содержит план изучения темы и блок современной информации по диагностике, клинической
картине и профилактике гнойно-воспалительных процессов в тканях около нижней челюсти.

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MOTIVATIONAL CHARACTERISTICS OF THE SUBJECT

Total lessons: 6 hours.

Benign cystic soft tissue formations of the maxillofacial region and neck do not represent a genetically homogeneous group. Some of them refer to congenital formations that arise as a malformation of embryonic development: dermoid cysts, medial and lateral cysts of the neck, cysts of the parotid region and the root of the tongue. Others are referred to as acquired: retention cysts of sebaceous glands (atheromas), traumatic cysts, cysts of salivary glands. Ranulas, cysts of large salivary glands, and cystic changes in the excretory ducts may be congenital, but more often they result from disorders in the post-embryonic period. The manifestation of the disease in adulthood may be due to the development of more frequent inflammatory complications, as well as the activity of the endocrine glands during this period. Characteristic of cysts is their slow growth.

Knowledge of the clinical picture of benign cystic formations of the maxillofacial region and neck, the use of modern diagnostic methods will allow the maxillofacial surgeon in an inpatient setting and the dental hygienist on an outpatient visit to correctly diagnose tumor data, to timely provide qualified and specialized assistance to the patient, which will shorten the rehabilitation.

Aim: to learn to diagnose benign cystic soft tissue formations of the maxillofacial region; to conduct differential diagnosis with other soft-tissue benign and malignant formations, inflammatory diseases of the maxillofacial region; to make an examination and treatment plan for this pathology on the basis of the clinical and morphological classification of the results of the examination by special methods.

Objectives:

1. To learn to draw up an examination plan for patients with benign soft tissues cystic formations of the maxillofacial region.
2. To learn to identify the clinical features of the inflammation of maxillofacial cystic formations.
3. To learn how to make a plan treatment for patients with benign soft tissue cystic formations of the maxillofacial region.

Initial knowledge requirements. To fully master the subject, one needs to know:

- the maxillofacial anatomy;
- anatomy of the neck;
- morphological characteristics of benign tumors of soft tissues of the maxillofacial region and neck.

Checklist on related disciplines:

1. Topography and anatomy of the maxillofacial region.
2. Topography and anatomy of the neck.

3. The lymphatic system structure of the maxillofacial region and neck.
4. Morphological characteristics of benign soft tissues tumors of the maxillofacial region and neck.

Test questions:

1. Clinical morphological classification of benign cystic lesions of the maxillofacial region and neck.
2. Clinical features of cysts arising from the developmental defect of the ectoderm.
3. Clinical features of cysts arising from embryogenesis abnormalities.
4. Classification of the medial and lateral fistula of the neck.
5. Topographical and anatomical characteristics of complete and incomplete medial and lateral fistula of the neck.

Classification of cystic lesions of the maxillofacial area and neck.

Congenital cysts are divided into two groups:

- resulting from embryogenesis abnormalities: medial and lateral cysts of the neck, parotid gland and tongue, and cysts of the sublingual salivary gland;
- cysts resulting from the developmental defect of the ectoderm: dermoid and epidermoid cysts.

Acquired cysts are retention cysts of sebaceous glands (atheromas), traumatic cysts, and cysts of salivary glands. Ranulas, cysts of large salivary glands, cystic changes in excretory ducts.

DERMOID AND EPIDERMOID CYSTS

Dermoid cysts develop from embryonic crevices formed by ectoderm folds from dystopic elements of ectodermal tissue during the development of the embryo. *Morphologically are distinguished dermoid and epidermoid cysts.* The wall of *dermoid* cysts consists of all layers of the skin and its derivatives (sebaceous, sweat glands, hair). The *epidermoid* cyst wall includes the epidermis and does not contain any skin derivatives. It is very difficult to differentiate them clinically. The localization of the dermoid cyst can vary: on the lips, eyelids, in the nasolabial folds, on the bridge of the nose, next to the ears, on the nape, in the upper parts of the neck, in the floor of the mouth where many important organs are laid during embryogenesis.

The shell of the *dermoid* cyst is dense, with a pronounced papillary layer and sebaceous glands and hair bulbs located in it. The inner surface of the shell is lined with multilayer flat epithelium. The contents of the dermoid cysts are a mushy mass of gray color with an unpleasant odor.

The wall of the *epidermoid* cyst consists of a dense fibrous connective tissue, and does not contain dermal appendages. The inner lining is a multi-layered flat epithelium. The contents of cysts are horny flakes, locally

degenerated, especially in secondary inflammation. The secretion is opalescent transparent liquid of yellow color, containing cholesterol crystals.

CLINICAL CHARACTERISTICS OF DERMOID AND EPIDERMOID CYSTS

Dermoid cysts grow slowly asymptotically. The reason for the patient's treatment is an aesthetic disadvantage when reaching a large size and/or cyst suppuration. With large sizes of cysts in the floor of the mouth, there is a marked disturbance in the mobility of the tongue, the act of swallowing, and speech. The consistency is elastic or doughlike, the surface is smooth, the edges are distinct. Such cysts appear along the medial above the diaphragm of the oral cavity floor between the chin-lingual and maxillofacial muscles. When the cyst is attached to the hyoid bone, it manifests as a hemispherical protrusion in the submandibular area.

On the neck, congenital dermoid cysts are localized between the anterior margin of *m. sternocleidomastoideus* and posterior belly of *m. digastricus*.

Dermoids of the parotid region often lie deep, under the main trunk *n. facialis* or its branches, attaching to the surrounding bone formation, causing a soft tissue deformation hardly visible outside.

Diagnosis of the dermoid/epidermoid cyst is assisted by computer tomography in combination with puncture biopsy and subsequent microscopic examination of the punctate. In addition to leukocytes, it contains depleted epithelial cells, cornified unstructured inclusions, cholesterol crystals, skin derivatives (sebaceous glands and their secret, hair) in dermoid cyst; layered masses of epidermal scales in epidermoid cyst.

DIFFERENTIAL DIAGNOSIS OF DERMOID AND EPIDERMOID CYSTS

Differential diagnosis of dermoid and epidermoid cysts are:

– lymph node involvement in tuberculosis. There are signs of a clinical picture of the underlying lung injury. If the submucosal lymph nodes are involved, the diagnosis is established by puncture and pathomorphological examination of the punctate and of a specimen of the lymph node removed by excision biopsy;

– malignant tumors of the reticuloendothelial system (lympho-, reticulosarcoma), characterized by rapid tumor growth with multiple involvement of lymph nodes, as well as by the formation of distant metastases;

– tumors of the hematopoietic apparatus in the absence of the symptomatic generalized lesion. The emphasis lies on the differentiation of punctate on the basis of cytomorphological investigation;

– adenolymphomas of the salivary glands. To clarify the diagnosis, sialography, NMR-CT and computed tomography are made. When performing a puncture biopsy in a cytological smear, it is possible to see tumor cells that are absent in the cyst;

– lateral and medial cysts of the neck. Contrast cystography and puncture are made. With Rn-contrast substances in the cystic cavity, the dermoid cysts, in contrast to the medial cysts, are filled evenly and do not have lateral branches nor the fistulous pathway towards the floor of the mouth. The punctate of dermoid cyst is like lard oil or atheromatic with flakes. Microscopically it reveals cholesterol crystals and lean epithelial cells.

It is difficult to macroscopically distinguish punctate of festering dermoid and epidermoid cysts from the contents of an abscessed lymph node. To clarify the diagnosis, anamnesis of the disease and the findings of a puncture biopsy may help. Clinically, dermoid and epidermoid cysts are very similar to atheroma, but, unlike the latter, they are not soldered to the skin.

TREATMENT OF DERMOID AND EPIDERMOID CYSTS

When the cyst is localized in the hyoid area and it is protruded into the mouth, it is advisable to remove it from the oral cavity.

During the operation, the head of the patient should be raised and tilted upward so that the chin of the lower jaw almost touches the sternum.

Dermoid cysts of the floor of the mouth and the submandibular are removed under intubation endotracheal anesthesia. During the operation, the assistant presses the tumor against the tongue from the outside into the oral cavity and thus helps the surgeon to localize of the tumor when it is removed. An incision in the mucosa in the form of an arch parallel to the curvature of the inner surface of the chin is carried in front or behind the submaxillary salivary gland ducts, depending on the location of the most convex part of the cyst. The length of the incision depends on the size of the tumor: usually it is carried out from the level of premolars on one side to the level of premolars on the other side.

After a careful dissection of the mucosa, the wall of the cyst is found. The edges of the wound are mobilized, and the flap of the mucosa on the side of the salivary ducts is peeled together with the ducts.

With a raspatory or closed Cooper scissors, the tumor is dully determined, which can be done without much difficulty. After hemostasis, several immersion sutures are applied. To eliminate the cavity, rare stitches are made on the mucous membrane, avoiding damage or seaming of the salivary ducts.

It should be borne in mind that dermoid cysts protruding toward the oral cavity are sometimes located not along the medial line, but near or deeper than one of the sublingual glands. The procedure for their removal is the same as for medium cysts. The incision of the mucosa is made on the side of the location of the tumor.

In cases of localization of dermoid and epidermoid cysts in the chin region, closer to the hyoid bone between the muscular fascicles of the chin-lingual and chin-sublingual muscles with penetration into the chin triangle, surgical intervention is advisable to conduct through the external incision.

MEDIAL CYSTS OF THE NECK

Medial cysts of the neck refer to the malformations of the gill apparatus and its derivatives, as well as the thyroid and thymus glands. Some authors believe that the medial cysts and fistulas are an embryonic dysplasia associated with the unfused thyroid duct (N. A. Gruzdev, 1965; L. R. Episheva, 1972; Bethmann, 1971, et al.). In favor of this hypothesis, the connection of the medial cysts with the hyoid bone and the blind ostium of the root of the tongue is indicative, as well as the correspondence of the course of the complete medial fistula of the topography of the rudiment of the thyroid gland (V. S. Dmitrieva et al., 1968). Sometimes histological examination of the medial cysts and fistula of the neck in their wall shows inclusions of the thyroid gland tissue. This confirms their origin from the tissues of the unfused thyroid duct.

CLINICAL CHARACTERISTICS OF MEDIAL CYSTS OF THE NECK

The lesion grows slowly, manifesting in the form of a circular protrusion along the midline between the hyoid bone and the upper edge of the thyroid cartilage, painless on palpation. With atypical localization, the medial cyst is located in the submandibular triangle, maintaining a connection with the hyoid bone. The skin above the cysts is not changed, freely moving, the boundaries of the lesion are clear, the consistency is doughlike, the lesion is quite well shifted up and to the side. Downwards mobility is limited due to the connection with the hyoid bone, but with the act of swallowing the cyst is shifted upward along with the hyoid bone. In case the cyst is connected with the oral cavity through the surviving thyroid-tongue duct, its dimensions decrease after the discharge of the contents into the oral cavity.

Inflammation of the medial and lateral cysts occurs in 60 % of patients (V. S. Dmitrieva et al., 1968), which is due to catarrhal diseases or infection through a blind ostium in the root of the tongue with stomatitis (fig. 1). Clinically, this is manifested by pain on swallowing and a painful infiltration in the tongue without clear boundaries. In case of spontaneous rupture and non-radical surgical intervention, after elimination of inflammation, a medial fistula of the neck remains.

Medial fistulas are divided into complete and incomplete, the latter being external and internal.

The external ostium of the complete medial and incomplete external fistula opens on the front surface of the neck along the midline between the sublingual bone and the top notch of the thyroid cartilage, at the level of the bone or above it. The inner ostium opens in the area of the blind orifice of the root of the tongue.



Fig. 1. Patient M. Inflammation of the medial cyst of the neck, medial fistula. Condition after surgery, rubber drainage in the wound

The complete fistula passes from the outer ostium through the subcutaneous fat, the wide subcutaneous muscle of the neck and the superficial leaf of the cervical fascia, without lateral branches. Further, it most often attaches to the front or upper edge of the hyoid bone and perforates it. Behind the hyoid bone the complete fistula continues through the muscles of the floor of the mouth and tongue obliquely upward and breaks out into the root of the tongue at the blind orifice. On this site, the fistula can have blind lateral branches, which is often the cause of recurrences after non-radical removal.

The incomplete medial internal fistula of the neck arises from unfused remains of the thyroglossal duct, is located above the hyoid bone, with its ostium in a typical site — the area of the blind orifice of the tongue. Such fistulas clinically do not manifest, because the outflow of the contents occurs freely in the oral cavity through the blind orifice (fig. 2).



Fig. 2. Patient B. The medial cyst of the neck. The probe is located in the outer ostium of the incomplete external medial fistula of the neck

Complete and incomplete external fistulas clinically manifest in the form of a granulating wound of small dimensions covered with bloody crust, after removal of which and compression of the fistulous path, a mucopurulent discharge can be obtained. The skin in the area of the external fistula is cicatricially altered and inverted. On palpation it is determined by a tight cord, going from the fistula to the hypoglossal bone, which is displaced with it on swallowing. When the ostium is closed, there is pain and swelling in this area.

TREATMENT OF MEDIAL CYSTS OF THE NECK

Medial fistulas and cysts of the neck require surgical treatment, i.e. radical excision of the fistulous path all the way to the root of the tongue. Incomplete excision of the fistulous path always leads to a relapse, which explains the frequent repeated admissions to hospital.

The position of the patient during surgery is on the back, the cushion is placed under his shoulders, the head is thrown back in the middle position. The operation is preferably performed under endotracheal anesthesia, since the patient is being severely injured, and in some cases, surgical intervention is prolonged to isolate the fistulous path.

Before the incision, in order to avoid losing the fistulous path, a solution of methylene blue is poured into it. The incision is made at the lower edge of the fistula parallel to the skin fold of the neck. The skin, subcutaneous fat, and superficial fascia with the subcutaneous muscle are dissected. Tissues from the bottom up are dissected. The fistulous path is gradually excised to the hyoid bone, through the body of which it usually passes and follows further into the depth. The body of the hyoid bone at the site of passage of the fistula is resected. It is important not to lose the further path of the fistula. If the direction of the fistula is not determined above the hyoid bone, the fistula is to be re-filled with methylene blue solution before partial resection of the hyoid bone.

To facilitate further excision of the fistula, the anterior belly of the digastric muscle is dissected. The edges of the wound are hooked to the sides. Gradually, the fistula is separated. It is necessary not to lose its path. Sometimes the fistulous path can be felt by its compaction. Excision often ends at the root of the tongue in the region of the blind ostium of the fistula, where it sometimes has a funnel-like shape.

When isolating the fistula in the area of the mandibular-sublingual muscles, one should remember the proximity of the lingual arteries. After isolation and excision of the fistulous path, the final hemostasis is carried out throughout its length, the tissues of the floor of the mouth are infiltrated with antibiotics, impregnated catgut stitches are applied. A rubber graduate is left between the edges of the skin.

In the presence of significant cicatricial adhesions in the path of the medial fistula, its isolation sometimes presents great difficulties and leads to a large trauma of the tissues of the floor of the mouth and the tongue. In these cases, taking into account the subsequent development of postoperative edema, it is sometimes advisable to perform a tracheotomy for prophylactic purposes (fig. 3).



Fig. 3. Patient B. Condition after surgical removal of the medial cyst of the neck

LATERAL CYSTS AND FISTULAS OF THE NECK

K. I. Cherenova (1963), V. M. Bezrukov (1965) suggest a bronchial gene theory of the origin of the lateral cysts and fistula of the neck, according to which the named formations are the second pharyngeal pocket between the external and internal carotid arteries and open with an internal ostium in the region of the palatine tonsil. There are lateral cysts on the neurovascular bundle of the neck, more often at the bifurcation level of the common carotid artery. The name “bronchial” means that these formations develop from the remains of globular pockets.

CLINICAL CHARACTERISTICS OF THE CYSTS OF THE NECK

These lesions are much more common in young people. Initially, cysts are formed, their further suppuration resulting in fistulas. In typical cases, the posterior part of the lateral cyst is located under *m. sternocleidomastoideus*, upper apex under posterior belly *m. digastricus* and the ankle-sagging muscle; medially, cysts are adjacent to the internal jugular vein at the level of bifurcation of the common carotid artery. A cyst is palpated in the form of a tumor-like formation rounded in shape with a smooth surface, not welded to surrounding tissues, of a tight elastic consistency, occasionally fluctuating (fig. 4). In case of cyst inflammation, dysphagia with speech disorder usually develops.



Fig. 4. Patient K. Clinical picture of the lateral cyst of the neck on the left

K. I. Cherenova (1979) found that the wall of the lateral cysts, in contrast to the dermoid and medial, consists of a dense connective tissue with a clump of lymphoid tissue in the form of nodes that are subepithelial. In case of suppuration of the lateral cysts of the neck, metaplasia and thickening of the epithelial lining and its keratinization occur. On this basis, K. I. Cherenova referred the lateral cysts to extraorgan benign tumors of the neck, of which bronchogenic cancer may develop in 2.7 % of patients.

Classification of the lateral and medial cysts and fistulas of the neck is similar.

The external ostium of the lateral fistulas is localized at the inner edge of *m. sternocleidomastoideus* in the middle third of the neck. The internal ostium of the complete lateral and incomplete internal fistula is localized behind *arcus pharyngopalatinus* at the base of the palatine tonsil. From the outer ostium, the fistulous path moves under the broad subcutaneous muscle of the neck to the large horn of the hyoid bone, adjacent to the inner and jugular vein, then turns sharply inward and upward toward the pharynx between the external and internal carotid arteries, then attaches to the styloid process and continues toward the lateral wall of the pharynx. Its length from the bifurcation of the carotid arteries to the pharynx is 3.5 cm.

DIFFERENTIAL DIAGNOSIS OF LATERAL AND MEDIAL CYSTS AND FISTULAS OF THE NECK

Differential diagnosis of **lateral and medial cysts** are:

- chronic specific and nonspecific lymphadenitis of the neck. The objective diagnosis, CT, NMR-CT, puncture biopsy and morphological examination will help to clarify the diagnosis, and the positive dynamics of anti-inflammatory therapy is evidence of septic lymphadenitis (fig. 5);
- dermoid cysts of the maxillofacial region;
- salivary gland tumors: the important diagnostic data are the findings of contrast sialography, NMR-CT and computer tomography (fig. 6);

– a carotid chemodectoma arising from *nodulus caroticus* embedded in the adventitial carotid artery bifurcation layer and located behind or at the inner edge of the internal carotid artery. The tumor can also occur from the chemoreceptor tissue of the vagus nerve node, which is in close proximity to the jugular foramen. In this case, the chemodectoma is fairly tightly attached to the internal carotid artery, the sublingual (XII pair), and the glossopharyngeal nerves (IX pair) (fig. 7, 8);

– metastatic tumors of the neck, lympho- and reticulosarcomas, hemangiomas and lymphangiomas.



Fig. 5. Patient I. Clinical picture of the lateral cyst of the neck on the right, resembling the picture of nonspecific lymphadenitis of the neck

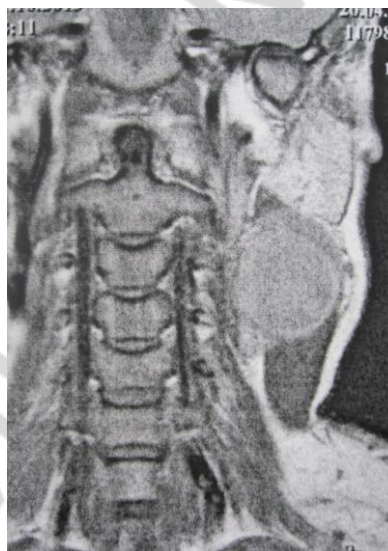


Fig. 6. A lateral cyst of the neck on the left on NMR-CT



Fig. 7. Carotid chemodectoma (online photo site [www. Rafrzayev.lact.ru](http://www.Rafrzayev.lact.ru))

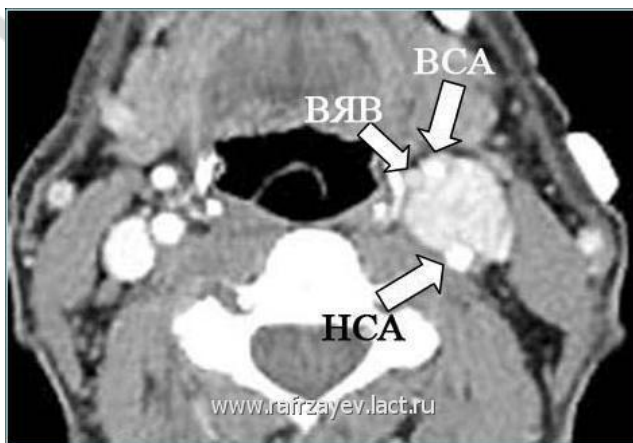


Fig. 8. MRI with angiography identifies the topography of the tumor (online photo site www. Rafrzayev.lact.ru)

The lateral fistulas of the neck are differentiated from the fistulas resulting from suppuration of the lymph nodes of the neck.

Cysto-, fistulography, puncture of the cyst with subsequent cytological examination allow to clarify the diagnosis (fig. 9).



Fig. 9. Gross specimen of the lateral cyst of the neck: a dense shell of the cyst. The contents are yellowish opalescent liquid

TREATMENT OF LATERAL CYSTS OF THE NECK

Lateral cysts of the neck are treated only surgically. Under the endotracheal anesthesia, an incision is made along the anterior margin of *m. sternocleidomastoideus*. Dissected are the skin, subcutaneous fat, the wide subcutaneous muscle of the neck, the superficial, and tracheal sheets of the fascia of the neck; the cyst shell is exposed and then released it in a blunt way (fig. 8).



Fig. 8. Surgical cystectomy on the neck on the left. Isolation of the cyst shell

To reduce the cyst volume and facilitate its excretion, it is possible to aspirate part of the contents with a syringe needle and to apply a hemostatic clamp in place of puncture. In the area of the cyst attachment to the jugular vein, the preparation is most difficult, as the sheath of the neurovascular bundle

of the neck is dissected, and the cyst is detached from the internal jugular vein and bifurcation of the common carotid artery.

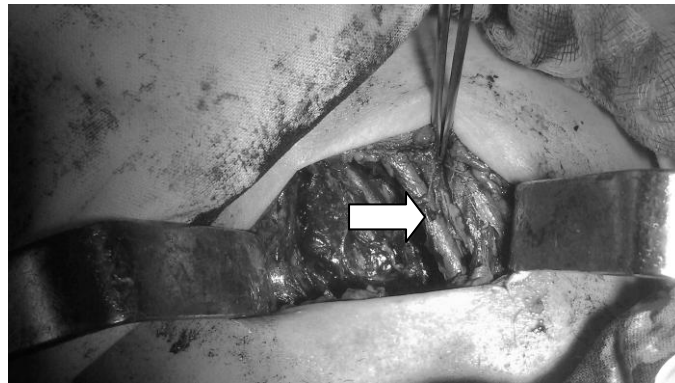


Fig. 9. Surgical wound after cystectomy. The external jugular vein is visible under the sternocleidomastoid muscle to the right

If the patient has history of festering cysts, a partial resection of *m. sternocleidomastoideis* is indicated with a dressing and intersection of the internal jugular and facial veins.

In surgery for the lateral fistula of the neck, an incision is used that fringes the fistula along the sternocleidomastoid muscle, followed by tunneling of the fistula. After excision of the cyst and fistulous path, a thorough haemostasis is performed, external stitches are applied, a rubber graduate is inserted between the skin edges, and a pressure bandage is applied.

To prevent complications, e. g. bleeding, inflammatory infiltrates, reliable hemostasis is required, as well as the wound drainage for a day, and a course of complex anti-inflammatory therapy.

CYSTS AND FISTULAS OF THE PAROTID AREA

V. M. Bezrukov (1965), V. S. Dmitrieva (1968) et al. consider cysts and fistulas of the parotid area as a developmental defect of the first gill slit. They have a typical topography and are located above the muscles that attach to the styloid process, lateral to the trunk of the facial nerve. Cysts are connected with the external auditory meatus in the transition area of its cartilaginous branch to the bone.

Microscopically (K. I. Cherenova, 1963), the cyst wall consists of dense fibrous and lymphoid tissue, in the thickness of which there are epithelial islands. The inner lining is represented by a cylindrical and ciliary epithelium of the embryonic type.

Differential diagnoses of cysts of the parotid region are cysts and tumors of the parotid salivary gland and lateral cysts of the neck. A puncture biopsy helps to verify the diagnosis. Its treatment is surgical, with careful preparation of the branches of the facial nerve.

CYSTS OF THE ROOT OF THE TONGUE

Cysts of the root of the tongue are malformations of the thyroglossal duct. However, they are more often isolated in a separate group, as having peculiar localizations, clinical picture, and methods of treatment. These formations in newborns are quite rare. Large cysts, located in front of the epiglottis, can interfere with food intake and cause respiratory failure.

Cysts located between the blind orifice of the root of the tongue and the sublingual bone are difficult to clinically diagnose, and the suppurated cyst clinically resembles the abscess of the root of the tongue.

CYSTS OF THE SUBLINGUAL SALIVARY GLAND (RANULAS, PTYALOCLE)

Cysts of the sublingual salivary gland are more often observed in young people. Rauch (1959) classifies these cysts as dysontogenetic and believes that they develop from the diverticula of the submandibular (varton) duct located near its orifice. Congenital ranulas most often manifest in puberty, when dysontogenetic formations are activated.

Such lesions are slowly growing without causing trouble to the patient. Sometimes the cyst disrupts into the oral cavity and then slowly replenishes with the contents again. Ranulas can be localized in the middle and posterior parts of the hyoid gland. The outflow duct of the submandibular salivary gland is thus freely passable for the probe, the saliva outflow is not disturbed, the compression of the duct occurs only with large cysts.

Treatment of such formations is only surgical. For sublingual salivary gland cysts (ranulas) the following operations are used: cystotomy, cystectomy, and cystosialoadectomy.

Cystotomy. The purpose of the operation is to transform the cyst into an additional incisure in the floor of the mouth, which subsequently disappears completely. In the operation, the position of the patient is on the back, with the head elevated and bent to the chest. The operation is performed under infiltration anesthesia.

Carefully, to spare the cyst from disruption, the incision of the mucosa is made through the bulge of the cystic tumor along the duct of the salivary gland closer to the base of the tongue. A narrow raspator on the sides of the section separates the mucous membrane from the cyst wall, after which the edges are taken on the ligature. The cyst protruding above the surface of the floor of the mouth is cut off with scissors, forming a wide window into the cavity. The contents of the cyst are drained with gauze tampons. Excess mucosa of the floor of the mouth is cut off, after which the edges of the mucous membrane and the walls of the cyst are sewed together by knotty stitches with catgut.

The ends of these stitches are not temporarily cut off. In the cavity of the cysts, a iodoform swab is introduced and fixed with a few absorbable stitches, which are made from above. The ends of the remaining stitches are cut. The tampon is removed from the cavity of the cysts after 3–4 days.

Cystectomy is much less common and is used only for small cysts, since the removal of the entire cyst shell without tearing it is a known difficulty and requires great care. In the case of rupture of the cyst and its emptying, the operation should be reduced to cystotomy (as described above), since it is very difficult to isolate and completely remove the collapsed cyst wall. If it is possible to enucleate a cyst, the wound is closed in layers. When applying stitches, trauma and capture of the salivary gland duct in the seam should be strongly avoided.

Cystosialoadenectomy is the most radical operation, preventing the possibility of relapses. But, since relapses of the sublingual salivary gland cysts after the operation of cystotomy are very rare, and cystosialoadenectomy is a more traumatic and technically more complex operation, it may be advisable only in those rare cases when the surgeon is dealing with a recurring ranula.

The operation is as follows. Initially, a cystic membrane is isolated in a blunt way, then the parenchyma of the salivary gland is revealed, which is also bluntly released from the muscles of the floor of the mouth. During the operation, the assistant pushes from the outside on the tissues of the floor of the mouth, thus facilitating the surgeon's isolation of the cyst and salivary gland. The operation ends with the application of stitches and the introduction of topical antibiotics.

If the ranula has germinated into the submaxillary triangle, the operation is divided into two stages. At the first stage, a typical incision is made in the submaxillary triangle, the skin, subcutaneous fat and platism, leaving an inner leaf of the superficial fascia. Here, a cyst wall is found and carefully, mostly bluntly, isolated up to the mylohyoid muscle. At this point the cystic cavity narrows, having a comparatively thin isthmus. The isthmus is bandaged with silk thread, and the cyst is cut off. Submerged stitches with catgut are applied, and the edges of the cutaneous wound are seamed. A rubber drainage is left in the wound. The second stage of the operation is performed from the oral cavity in the form of the typical cystotomy described above.

CYSTS OF THE SEBACEOUS GLANDS OF THE SKIN (ATHEROMAS)

On palpation, atheroma is painless, mobile, densely elastic in consistency, with clear smooth borders. Festering atheromas should be differentiated with the epidermoid cysts, lipomas, soft fibroids, chronic lymphadenitis, and retention cysts. The pathognomonic sign of atheroma, which distinguishes it

from all the pathological processes listed, is the presence of a point-like retraction of the skin (crater) in the region of the excretory duct of the gland and the adhesion of the skin to the cyst shell in the same place.

Radical removal of the atheroma with the capsule is the only method of treatment. Above the atheroma, two semilunar incisions are made, which, converging at their ends, enclose the most prominent part of the skin, usually closely welded to the tumor emanating from it. The tumor is isolated and removed, being held for the cut out skin. The suture is made in layers.

SELF-ASSESSMENT

TEST QUESTIONS

1. Classify soft tissue cysts of the maxillofacial region and neck.
2. Pathogenesis of dermoid cyst development.
3. Indicate the location of dermoid cysts of the neck.
4. Describe the morphological differences in dermoid and epidermoid cysts.
5. What are the main methods of diagnosis and differential diagnosis of dermoid and epidermoid cysts?
6. Give the classification of the medial fistula of the neck.
7. Pathogenesis of the medial cysts of the neck
8. Describe the clinical picture of the medial cysts of the neck.
9. Topographical and anatomical characteristics of the complete medial fistula of the neck.
10. Topographical and anatomical characteristics of the incomplete medial fistula of the neck.
11. Describe the clinical picture of the lateral cysts of the neck.
12. Topographic and anatomical characteristics of the complete lateral fistula of the neck.
13. Topographical and anatomical characteristics of the incomplete lateral (both external and internal) fistula of the neck.
14. Name the lesions for the differential diagnosis of the medial and lateral cysts of the neck.
15. What are the treatment methods of benign cystic formations of the soft tissues of the maxillofacial region and neck?
16. Name the cystic soft tissue formations of the maxillofacial area resulting from disorders in the post-embryonic period, which may also be congenital.

Answer keys

1. Congenital cysts resulting from embryogenesis anomalies: medial and lateral cysts of the neck, parotid area and the tongue, cysts of the sublingual salivary gland; as a defect in the ectoderm development: dermoid and

epidermoid. Acquired cysts are: retention cysts of sebaceous glands (atheroma), traumatic cysts, cysts of salivary glands. Ranulas, cysts of large salivary glands, cystic changes in excretory ducts.

2. Cysts develop from embryonic crevices formed by ectoderm folds from dystopic elements of ectodermal tissue during the embryonic development of the embryo.

3. Cysts localize between the anterior edge *m. sternocleidomastoideus* and posterior belly *m. digastricus*.

4. Contents of the dermoid cyst include leukocytes, depleted epithelial cells, cornified non-structural inclusions, cholesterol crystals, skin derivatives (sebaceous glands and their secret, hair); layered masses of epidermal furfur in epidermoid cysts.

5. Data of objective investigation, computed tomography in combination with puncture biopsy and subsequent microscopic examination of the punctate.

6. Complete and incomplete, the latter being external and internal.

7. Relate to anomalies in the development of the gill apparatus and its derivatives, as well as thyroid and thymus glands.

8. It appears as a round protrusion along the midline between the hyoid bone and the upper edge of the thyroid cartilage, which is painless on palpation. Downwards mobility is limited due to the connection with the hyoid bone; on swallowing, the cyst is shifted up along with the hyoid bone.

9. It passes from the outer ostium through the subcutaneous fat, the wide subcutaneous muscle of the neck and the superficial leaf of the cervical fascia, then it attaches to the front or upper edge of the hyoid bone and perforates its body, continues through the muscles of the floor of the mouth and the tongue, and breaks off into the root of the tongue at its blind orifice.

10. It is located above the hyoid bone with its ostium in a typical place — the area of the blind orifice of the tongue. It does not manifest clinically.

11. In typical cases, the posterior part of the lateral cyst is located under the *m. sternocleidomastoideus*, the upper pole is under posterior belly *m. digastricus* and the stylohyoid muscle. Medially cysts are adjacent to the internal jugular vein at the level of bifurcation of the common carotid artery. The cyst is palpated in the form of a tumor of a rounded shape with a smooth surface, not welded to surrounding tissues, of a tight elastic consistency, may fluctuate. In cyst inflammation, dysphagia with speech disorder frequently develops.

12. The external ostium of the lateral fistulas is localized at the inner edge of *m. sternocleidomastoideus* in the middle third of the neck. From the outer ostium, the fistulous course goes under the broad subcutaneous muscle of the neck to the large horn of the hyoid bone, adjacent to the internal jugular vein, then towards the pharynx between the external and internal carotid arteries, then attaches to the styloid process and continues towards the side wall

of the pharynx. Internal ostium opens behind the palatopharyngeal arch at the base of the palatine tonsil.

13. From the large horn of the hyoid bone, adjacent to the internal jugular vein, it turns toward the pharynx between the external and internal carotid arteries, then it attaches to the styloid process and continues towards the side wall of the pharynx.

14. Chronic specific and nonspecific lymphadenitis of the neck, dermoid cysts of the maxillofacial region, salivary gland tumors, carotid chemodectoma, metastatic neck tumors, lympho- and reticulosarcomas, hemangiomas and lymphangiomas.

15. Cystotomy; cystectomy; cystosialoadectomy.

16. Cysts and fistulas of the parotid region, cysts of the root of the tongue, cysts of the sublingual salivary gland (ranulas, ptyalocoele), cysts of sebaceous glands of the skin (atheromas).

CASE STUDIES

Case 1. Patient M., 23, presented to a dental surgeon in the local polyclinic with complaints of swelling in the submandibular region to the right and pain that had appeared after hypothermia a day prior to the symptoms. The swelling increased the next day, the pain intensified. Body temperature was 37.2.

Clinically, in the submandibular region on the right, edema and infiltration of soft tissues are determined, the skin is hyperemic, the submandibular lymph nodes are not palpable. In the oral cavity no inflammation revealed. On orthopantomogram of the upper and lower jaws, no foci of chronic odontogenic infection were detected.

The patient was prescribed a course of complex anti-inflammatory therapy (antibiotic, antihistamine, compresses with dimexide), follow-up the next day. Ultrasound of the neck. During the follow-up the next day, there was a decrease in pain, the soft tissue tension in the submandibular region decreased.

US findings: enlarged lymph nodes in the submandibular region to the right.

Make the diagnosis and differential diagnosis of this pathology, determine the examination and treatment plan.

Case 2. Patient A., 42, turned to a dental surgeon with complaints of the presence of a tumor-like formation in the upper part of the neck in front, which had appeared about a month ago and began to increase in size. The formation was causing discomfort, with no complaints of pain.

Clinically, in the anterior upper part of the neck, is determined a formation 4.0 cm in diameter, painless on palpation, skin color over the formation

unchanged. The formation is associated with the hyoid bone and is shifted on swallowing.

Make the diagnosis, determine the plan for examination and treatment. Make a differential diagnosis of this pathology.

Answer keys

1. Acute serous lymphadenitis of the submandibular region to the right. Differential diagnosis is carried out with tumors of submandibular salivary glands, lateral cyst of the neck, dermoid cyst, carotid chemodectoma. If necessary, the diagnosis is verified by a puncture biopsy and CT. The course of complex anti-inflammatory therapy is 7–10 days.

2. Congenital medial cyst of the neck. To verify the diagnosis, a puncture biopsy, ultrasound of the neck, CT diagnostics, an NMR study can be performed. When the diagnosis is confirmed, surgical treatment is indicated: cystectomy with resection of the body of the hyoid bone.

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