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Case Study: Mucocele of the Frontal Sinus

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Abstract : The article describes a clinical case of a patient with recurrent mucocele of the frontal sinus. An extended endoscopic frontotomy of the Draf IIb type was performed, and a mucoperiosteal flap was used to prevent postoperative stenosis of the anastomosis. However, within a year after the intervention, stenosis of the anastomosis was formed with a recurrence of mucocele due to severe hyperostosis, which required repeated surgical treatment. The method of choice was an extended frontotomy of the Draf III type using a combination of nourished and free flaps to reduce the risk of restenosis of the frontal sinus anastomosis.

Key words: mucocele, frontal sinus, expanded frontomy, Draf III, Draf IIb, vascularized flap.

Introduction: Mucocele is a cyst–like formation of the mucous membrane of the paranasal sinuses, filled with mucin, with slow expansive growth, and has the ability to destroy bone structures. Mucocele most often affects the frontal sinus (up to 65% of cases, according to various authors), which is most likely due to the complex drainage system of the latter. According to etiological factors, mucocele can form as a result of obstruction of the drainage pathways of the frontal sinus (polyps, trauma, surgery and compression by neoplasm), chronic inflammatory process, as well as allergies. Mucocele may have a primary or secondary origin[1].

The most common symptoms of mucocele of the frontal sinus are facial pain, headaches, nasal congestion, diplopia, decreased visual acuity, swelling of the soft tissues of the face. In the process of formation, the mucocele fills the entire volume of the sinus and, with further increase due to increased pressure in the sinus cavity, can lead to remodeling and destruction of bone structures[2].

The mucocele of the paranasal sinuses is a kind of retention sac cyst of any one paranasal sinus, formed as a result of obliteration of the nasal excretory duct and accumulation of mucous and hyaline secretions inside the sinus, as well as elements of desquamation of the epithelium (1, 3, 6). Most often, the mucocele of the paranasal sinuses is localized in the frontal sinus (80%), then in the lattice labyrinth (15%) or on the border between them, which often leads to the penetration of a "cyst" into the eye socket, causing exophthalmos, a fact that explains the frequent detection by ophthalmologists. Very rarely, mucocele is localized in the sphenoid and maxillary sinuses (5%).

The pathogenesis and pathological anatomy of the mucocele are currently sufficiently studied (2, 5). According to most authors, the closure of the mouth or the entire excretory duct leading from the accessory cavity to the nose is the main cause of this disease. The question of the causes of blockage remains controversial: some believe that it is based on causes related to anatomical variants, others believe that this is due to an abnormality of development, according to others, obstruction of the

[1]Klimenko K. E., Borisova I. B., Shemyakin S. O. Surgical treatment of benign neoplasms of the frontoethmoidal region. Kremlin medicine. Clinical Bulletin. 2015; 3: 97-106. (In Russ.) http://kremlin-medicine.ru/index.php/km/article/view/875

[2] Dos Santos P. L., Chihara L. L., Azambuja Alcalde L. F., Masalskas B. F., Sant'Ana e., Pinto Faria P. e. Outcomes in Surgical Treatment of Mucocele in Frontal Sinus. J Craniofac Surg. 2017 Oct;28(7):1702-1708. https://doi.org/10.1097/SCS.0000000000003224.

excretory duct or its mouth is caused by inflammatory changes in the nasal mucosa, polyposis and its consequences, as well as moments leading to narrowing or complete closure of the duct lumen by cicatricial changes in syphilis, scleroma, etc. The consequences of injuries can also be attributed here (4, 7).

In most cases, mucocele of the paranasal sinuses is observed in patients aged 11 to 20 years and is relatively rare at a younger age – up to 10 years or in the elderly – 50-60 years. In this connection, we present our observation.

Analysis of the research results.

Patient T., 59 years old (ist.bol. No. 1413), was admitted to the ENT department of the SamSMI clinic with complaints of swelling in the left frontal sinus area, protrusion of the left eyeball, headache.

From anamnesis: considers herself ill for 3 years, she was treated for this disease in 2012 in the eye department of the SamSMU clinic, where an operation (dacryocystotomy) was performed, after which she observed swelling in the frontal region in the cold season. The patient turned to the optometrist again and was diagnosed with an orbital tumor and sent to the Russian Cancer Research Center for examination. Conclusion: MSCT shows signs of neoplasm in the structure of the left frontal sinus, in the cavity of the cells of the latticed bones on the left, with destruction of the medial wall of the left orbit, the base of the frontal sinus and the walls of the latticed labyrinth on the left. Secondary exophthalmos on the left. At the Russian Cancer Research Center, the patient underwent a full clinical and laboratory examination, as well as a puncture biopsy with a cytology check with the detection of neutrophilic leukocytes and the exclusion of cancer. With the diagnosis of "Mucocele of the left frontal sinus", the patient was hospitalized in the ENT department of the SamMI clinic.

St.praesens: Left eye: The eye slit is lower than on the right side. There is a dense, painless swelling under the upper edge of the orbit. The eyelid skin is not changed. The lacrimal organs are normal. Protrusion and displacement of the eyeball downwards and outwards (Fig.1 A)

The movements of the eyeball upward and outward are limited. The mucous membrane of the eyelids and eyeball is not changed. The cornea is transparent and shiny. The front camera is of medium depth, the iris pattern is clear. The pupil is well-shaped and reacts well to light. The lens and vitreous body are transparent. The fundus is normal. Visual acuity is 1.0. The right eye is not changed. During rhinoscopy: the nasal mucosa on the left is hyperemic, the lower shell is enlarged, there is purulent discharge in the middle nasal passage, the general nasal passage is narrowed, nasal breathing is difficult.

Figure 1. Patient T. Mucocele of the left frontal sinus before (A) and after surgery (B)

X-ray examination revealed an increase in the size of the left frontal sinus; its bottom is not differentiated, the inner wall of the left orbit is destroyed, the left lattice labyrinth is partially obscured, the parietal obscuration of the left maxillary cavity.

MSCT conclusion: signs of neoplasm in the structure of the left frontal sinus (indicated by the arrow), in the cavity of the cells of the latticed bones on the left, with destruction of the medial wall of the left orbit, the base of the frontal sinus and the walls of the latticed labyrinth on the left. Secondary exophthalmos on the left (fig. 2).

General blood test: Hb - 86; erythrocytes – 3.5; CP – 0.7; leukocytes – 6.3; ESR – 28 mm/s; coagulation according to Sukhorev beginning - 3.1; end – 4.2; platelets – 231; eos – 3; neutrophils: rod– 4; segmentonuclear – 60; lymphocytes – 27; mono – 6.

ECG: Sinus rhythm, heart rate-93, EOS deviation to the left.

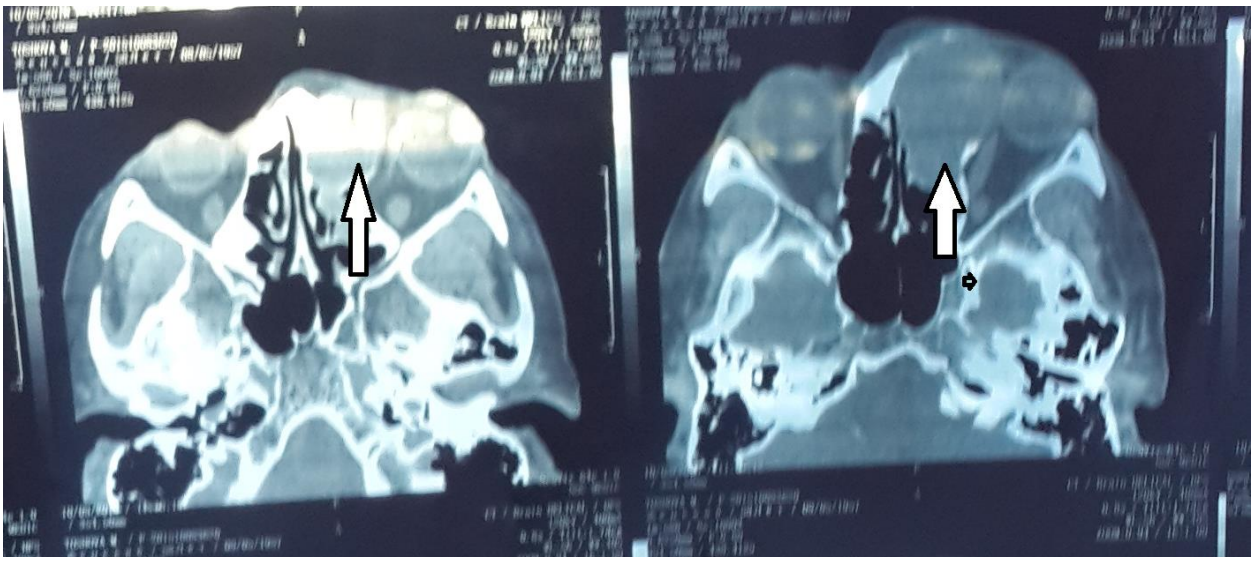

Figure 2. MSCT of patient T., the arrow indicates a pathological inclusion.

Clinical diagnosis: Mucocele of the left frontal sinus. Type II diabetes mellitus, moderate severity, stage of subcompensation. Coronary heart disease, angina pectoris, Anemia. Treatment: a left frontotomy was performed under general endotracheal anesthesia. The operation confirmed the diagnosis of mucocele and revealed the destruction of the anterior and lower walls of the left orbit. The entire left frontal sinus is filled with cystic fluid, which was removed along with the cyst capsule, penetrating into the bulbar tissue of the left eye socket. The left eyeball is in contact with the frontal sinus, due to the absence of the lower wall of this sinus. The left frontal sinus was washed with a solution of furacillin, the obliterated frontal-nasal canal was re-formed with the removal of part of the cells of the lattice labyrinth and the nasal bone on the left, into which a drainage tube was inserted and removed through the left nostril. The drainage tube is fixed with silk threads, and a skin wound is also sutured. Aseptic dressing.

In the postoperative period, ceftriaxone I / m of 1.0x2, analgesics were prescribed. On the 7th day after the operation, the patient was discharged home in a satisfactory condition.

During the control examination, after 2 weeks, it was possible to note a gradual return of the left eye to its normal position (Fig.1B).

Conclusion.

The use of vascularized flaps in extended endoscopic frontotomies is an effective method of preventing cicatricial stenosis of the frontal sinus anastomosis. However, this clinical case shows that in some patients, the use of only one method for the prevention of postoperative stenosis of the anastomosis does not always lead to the desired result, which determines the need for a combination of existing methods and the development of new methods for the prevention of postoperative scar complications after extended endoscopic interventions on the frontal sinus.

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