

Treatment of Patients with Chronic Sinusitis, Indications for Functional Endoscopic Sinus Surgery

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Annotation: In the treatment of patients with chronic sinusitis, conservative methods are mainly used. The purpose of this review is to provide an analytical and comparative assessment of methods for treating chronic sinusitis. The study material was an analysis of 25 articles devoted to the treatment of chronic sinusitis, published in the international databases PubMed, Scopus and e-library over the past 10 years. The review showed that in the treatment of chronic sinusitis, sinus lavage through natural openings is an anatomically safe and effective treatment method.

Keywords: chronic sinusitis, treatment, trepanopuncture, puncture, probing, physiotherapy, endoscopy.

Conservative methods are mainly used in the treatment of patients with chronic sinusitis.

Currently, one of the methods of treating chronic sinusitis is the method of probing through a natural hole. Endoscopy of the nasal cavity allows probing through the natural opening of the sphenoidal and forehead cavity. It should also be noted that from the anatomical and topographic point of view, this method is dangerous and rarely possible. Several scientists have pointed out that due to anatomical inconsistency and various topographic variants of the fronto-nasal canal, which do not allow access to the forehead cavity, it is often unsuccessful, and there is a risk of the probe entering the frontal fossa.

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Results and their discussion. A review of the literature shows that in 6% of cases, the failure to zone the forehead space is explained by a pathological process, less by the anatomical features of the sinus, so several scientists recommend following the following rules when zoning the forehead-nasal canal, that is, do not use violence, use all probe movements gently. method, if there is an obstacle in the path of the probe, to find the direction in which the probe can move freely, and not to continue probing the forehead cavity when bleeding is observed. When no purulent discharge from the forehead cavity is detected during probing and there is no effect of antibacterial therapy, it is necessary to consider extranasal drainage of the forehead cavity, the method of trepanopuncture of the forehead cavity can also be used. Trepanopuncture is recognized by many clinicians as a reliable and effective method for the diagnosis and treatment of inflammatory diseases of the forehead. There are three methods of trepanopuncture of the forehead cavity: its front, lower walls and endonasal approach. Trepanopuncture of the forehead from the orbital and frontal walls is a convenient method, given that the lower (orbital) wall of the forehead is thinner than the front. However, it was also noted that he should abandon cavity trepanation through the lower wall - due to the uneven surface of the bone, damage to the soft tissues of the upper eyelid, and easy infection entering the forehead cavity. This indicates discomfort for the patient, which is associated with the need to constantly wear a cannula during the piercing of the forehead cavity through its lower wall. Taking this into account, he performed trepanopuncture from the lower wall of the forehead cavity and the front walls of the forehead cavity. Using trepanopuncture, the author achieved recovery in a large part (up to 80-85%) of patients who underwent radical surgery before using this method. It should also be noted that some

scientists do not recommend trepanopuncture in order not to damage the brain wall of the forehead cavity.

Further improvement of the trepanopuncture method is related to choosing the optimal place for entering the forehead cavity, simplifying the instruments and preventing complications. Several scientists have performed trepanopuncture with boron in the upper inner angle of the orbit after preliminary excision of the soft tissues. When the bone is located directly above the lacrimal cavity, a 0.5 cm trepanat hole is made in the lower wall of the forehead cavity.

Trepanopuncture with a wide opening is called fragmented trepanation of the forehead cavity. The essence of the technique is to create a hole with a diameter of 0.5-0.7 cm, a height of 1.5 cm above the eyebrow, a drainage tube is inserted into it, and they are fixed to the skin with a single stitch. It is examined through the hole with the help of an ear funnel placed in the trepanation hole, ensuring continuous drainage of the sinus cavity.

The disadvantage of the described technique is the absolute complexity and reliability of the manipulations performed during the surgical procedure related to the fixation of the drain, after the removal of the scar formed in the cavity, it is observed that the pathological separation of the cavity penetrates into the surrounding tissues, their infection, as a result, suppuration and damage, and the appearance of a cosmetic defect. With this in mind, a device for trepanopuncture of the forehead cavity with a set of drainage cannulae, which has been most used in practical health care for several decades, was created.

Then, a method of drilling the front wall of the forehead cavity with a toothpick, inserting a short Dufot needle into the hole formed in the form of a drainage cannula was proposed. Later, a shorter Dufot needle was used, inserted into it in the form of a cannula using a drill.

The fundamental difference from other types of trepans is that the drill stops automatically when it enters the cavity of the forehead cavity. Stopping the drill is performed by a special automatic shutdown device; An electric brake is provided to reduce the inertia of the drill at the end of drilling. The authors divided the tools used in performing trepanopuncture of the forehead into five groups: mechanical drills, electric trepan, dental twistors, trocars, and various needles. Many clinicians prefer to use mechanical drills, electric trephines, and dental burs.

Other scientists recommended a mandrel cannula with a thread on the outside of the tube and a stop disk at the end. These scientists also performed trepanopuncture through the anterior wall of the forehead cavity. For the first time, the border of two sinus walls - the front and the bottom - was chosen as the place of application of the frontal cavity hole. The method of trepanopuncture with the help of a trocar cannula through the front wall of the forehead cavity was also used.

Along with the development of trepanopuncture devices, the nature of the material for drainage tubes and cannulas has changed: rubber, synthetic materials, including cellophane, and bioplastic tubes have also been used.

Many scientists use mechanical drills for bone. Accumulated experience revealed the significant disadvantages of these methods, namely multi-stage intervention: 1st stage - drilling the bone, 2nd stage - removing the drill from the bone trepanator channel, 3rd stage inserting the adapter and the drainage device (cannula) through it, removing the drill, adapter and during the insertion of the drainage device, the possibility of infection of the tissues of the trepanation channel with the pathological content of the forehead cavity, due to the impossibility of reliably fixing the cannula to the trepanation channel, when the cavity is washed with antiseptic solutions, the pathological separation may lead to increased inflammation and other complications due to the entry into the soft tissues of the frontal area.

The highlighted disadvantages of the given trepanopuncture methods required further research due to the large number of complications associated with the performance of this surgical procedure.

Later, the development of the technique of puncturing with a thin needle through the orbital wall by foreign scientists was an important step in this direction. Taking into account the anatomical and topographical and age-related features of the forehead cavities, the place for guaranteed needle entry into the forehead cavity is considered to be in the middle of the distance between the middle line of the forehead and the infraorbital ridge and 0.5 cm below the most protruding part of the eyebrow.

If the forehead cavity does not reach the supraorbital part, it is recommended to perform the puncture with the medial side. In several studies, various sizes of frontal sinuses were punctured, but small ones, i.e. only the rudemental sinuses, were not punctured. A "Record" needle or a blood transfusion needle with a diameter of 1.2 mm was used for puncture. Then a catheter made of synthetic materials is inserted into the cavity of the puncture needle to rinse the forehead cavity, the outer end is fixed to the skin with a leucoplaster. Based on their experience, foreign scientists developed a spatial mathematical model to determine the location of the puncture site of the forehead cavity in patients through the lower wall.

It should also be noted that the method of piercing the forehead cavity through the lower wall also has certain disadvantages, that is, a slight release of the drainage cannula prevents the independent evacuation of exudate from the forehead cavity, with the obstruction of the forehead-nasal anastomosis, it is difficult to effectively wash the forehead cavity, the spread of the pathological separation into the soft tissue the probability is high.

In acute and exacerbation of chronic sinusitis, conservative methods of treatment are used, including antibacterial drugs, the appointment of vasoconstrictors as nasal drops, pain relievers, nonspecific hyposensitizing therapy, and physiotherapeutic procedures. The main goal of this therapy is to fight against infection and restore the permeability of the natural channel of the nasal cavities, which leads to the elimination of the inflammatory process in the cavities.

Conservative treatment usually begins with antibiotic therapy. At the same time, they are based on the accumulated experience of the most common causative agents of the disease and their sensitivity to antibiotics. Antibacterial therapy can be adjusted after receiving the results of microbiological research.

In addition to the indicated effects, mucoactive drugs (chymotrypsin, trypsin), new antimicrobial agents (octenisept, bioparox), immunomodulators (ribomunil, IRS-19), herbal drugs (sinupret) are used.

Therapeutic measures that lead to a decrease in pressure in the nasal cavity and paranasal sinuses, i.e., washing the paranasal sinuses with drugs according to the Proetts method, and warning against the use of the YAMIK sinus catheter, because this reduces the pressure in the cavity, increases swelling of the mucous membrane of the nasal cavity, mechanical compression of blood vessels as a result, it disrupts its trophism, which can lead to the closure of the channel of the paranasal cavity.

Physiotherapy plays an important role in the conservative treatment of the forehead cavity. Thus, it has been noted that patients with sinusitis have better results in the treatment of sinusitis with ozokerite application. Aeration of nasal passages with oxygen accelerates the healing process, many patients do not need surgical intervention. UVCh is widely used in the treatment of sinusitis. Some scientists have successfully applied low-frequency local and acupressure bio-vibration massage in the forehead-nasal channel. It should also be noted that with electroaerosol therapy, the absorption of antibiotics into the blood increases: after inhalation, the therapeutic concentration of antibiotics in the blood is determined for a long time.

Laser radiation increases phagocytosis and reduces the inflammatory response.

Low-energy laser radiation has been successfully applied to the forehead. It is also recommended to use a helium-neon laser (wavelength 0.63 μ m) and infrared radiation. Thus, in the last 3-4 decades, the conservative treatment of sinusitis is constantly improving. This is achieved by implementing the latest

achievements of pharmacology, microbiology, and clinical medicine. But the number of patients for whom conservative treatment is not effective remains significant.

For the past decades, surgery for sinus disorders has involved external procedures, often requiring a facial incision. Since the early development of functional endoscopic sinus surgery (FESS), this minimally invasive procedure has become increasingly popular among otolaryngologists. Many studies have shown symptomatic improvement of sinus disorders with FESS in 76–87.5% of patients after surgery.

But there have been mixed reports of complications with this technique. Relative indications for surgical intervention are the presence of symptomatic nasal polyps and recurrent rhinosinusitis that does not respond to adequate conservative treatment. Absolute indications are the development of complications of rhinosinusitis, mucocele, allergic or invasive fungal rhinosinusitis and neoplasia.

Conclusion, it can be said that in the treatment of chronic sinusitis, washing the forehead cavity with the help of a natural hole and additionally using physiotherapeutic treatment is an anatomically safe and effective method of treatment.

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