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Reasons of Functional Disturbances after Rhinoplastic Dependence on Surgical Access

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Abstract

We speak in this article about research of functional disturbances after rhinoplastic dependence on surgical access, technology and volume of operation. Open osteotomy was applied in 38 patients who needed correction of both the bone and cartilage sections of the external nose. In closed osteotomy (16 patients), we look lateral vestibular access. The study showed that to achieve a good result after endonasal intervention on the intranasal structures in combination with rhinoplasty, an important fact is the adequate management of patients in the postoperative period, with careful carrying out the necessary therapeutic and preventive measures.

Keywords: Rhinoplasty, Surgical Access, Septoplasty.

Introduction

Recently, many have shown interest in rhinoplastic operations, while at the same time trying to eliminate the deformity of the external nose and do not pay attention to the preservation or restoration of the functions of the nasal cavity and paranasal sinuses. It must be borne in mind that when performing rhinoplasty, in addition to cosmetic tasks, it is also necessary to solve more complicated task – restoration of the functions of the nasal cavity. Therefore, aesthetic operations in the area of the external nose should be performed by otorhinolaryngologists, who also have endonasal surgical procedures.



Abroad in many countries, this situation has been corrected, and now, for example, in the United States, about 85% of rhinoplasty is performed by otorhinolaryngologists, who simultaneously perform intranasal operations to restore respiratory function and restore the shape of the nose. Starting to master rhinoseptoplasty, the surgeon should master the skills of several related specialties: plastic surgery, maxillofacial surgery, thoroughly study the anatomy of both the bone and cartilage sections of the pyramid of the nose, know the features of reparative processes in the bone, cartilage tissue, skin and subcutaneous tissue. It is simply impossible to do rhinoseptoplasty badly, since repeated operations will be much more complicated. Under our supervision there were 68 patients who underwent rhinoplasty. When comparing the results of the examination of patients operated on with various surgical approaches, it turned out that nasal breathing disorders were significantly more frequent after the “endonasal” technique (65%) than after the “open” rhinoplasty.

We have found the connection of functional disorders after rhinoplasty with the volume of the operation. In order to assess the dynamics of the disease after the operation, we used the method of visual assessment of symptoms. To do this, patients before the operation were offered to fill in special cards in which they noted the severity of the main symptoms (nasal breathing, nasal discharge, headache) on a 10-point scale. When comparing patients in whom one stage with rhinoplasty was performed various intranasal interventions (conchoplasty, septoplasty) and patients who had exclusively rhinoplasty, the functional result of the intervention was significantly better in the first group (5.3 ± 1.5 points and 9.2 ± 1.3 according to the subjective assessment of patients, respectively). Functional impairment after rhinoplasty is usually associated with the size of the operation. When comparing patients in whom one-stage with rhinoplasty was performed various intranasal interventions (conchoplasty, septoplasty) and patients who had exclusively rhinoplasty, the functional result of the intervention was significantly better in the first group (6.2 ± 1.5 points versus 8.9 ± 1.3 by subjective assessment).

The main types of osteotomy are: lateral, medial, and paramedial. Depending on the tasks of the operation and the features of the structure of the bone pyramid of the nose, we use all these types of osteotomies, often combined in closed osteotomy (16 patients), we used lateral vestibular access. Traditionally, we performed an osteotomy with special chisels (2 mm) with stops, starting from the edge of the pear-shaped hole below the anterior end of the lower turbinate. In this case, the likelihood of damage to the nasal mucosa along the osteotomy line is minimal. When using 4 mm bits, the risk of intraoperative complications is markedly increased. So, 2 patients had damage to the nasal mucosa (which led to a slight narrowing of the anterior valve of the nose in one of them), in 1 – a step-like deformation of the nasal pyramid. A good cosmetic result was achieved in 50 patients. We believe that in patients with distortions of the osseous part of the external nose, closed osteotomy should be dominated by lateral vestibular access, open osteotomies are indicated with combined pyramid deformations. The main stages of the postoperative period. The final stage of rhinocorrection is the closure of the operative wound, immobilization and fixation of the intra- and extranasal structures. Stitching the wound was performed with frequent and accurate absorbable sutures, with careful adaptation of the edges. After precise suturing, there remains a thin scar that does not deform the skin and mucous membrane, the external valve structure of the nose in the postoperative period. After suturing, intranasal structures were fixed. Fixation of the nasal septum in a strictly medial position and hemostasis were achieved by installing plastic tubes of appropriate



diameter and length along the bottom of the nasal cavity with a non-lengthening tamponade with special hydrophilic spongy tampons made from self-expanding oxycellulose. Such a tamponade is more easily tolerated by patients, protects the wound from infection, contributes, due to light pressure exerted from the nasal cavity, gluing tissues, reduces the possibility of hemorrhages and hematomas, keeps the reconstructed structures in the right position. The presence of plastic tubes, in addition to fixation, provides air through the nose, protecting the oropharynx from excessive drying. After all corrective manipulations, a plastering bandage is applied to fix the skin on the reconstructed pyramid of the nose. Immobilization of extra-nasal structures was carried out by applying a plaster cast, modeling it so that it covered the entire nose from its root to the tip and wings, and it should be smooth from the inside and exert a uniform slight pressure on the nose. Analysis of the data of the observed patients and clinical experience revealed that the postoperative course after single-stage rhinoplasty and endonasal correction of the intranasal structures has important criteria and features that need to be discussed in more detail. Immediately after surgery, the period of recovery of the epithelium of the nasal cavity begins. This stage is crucial for the complete healing of defects of the mucous membrane, affects the results of endonasal intervention, and therefore requires close attention in the postoperative period. Inadequate management of patients in the postoperative period can cause new pathological changes in the nasal cavity, which can cause relapses that are worse to treat than the primary disease. As noted, immediately after the operation, a tampon of self-expanding cellulose is inserted into the middle nasal passage. At the same time, it is necessary, if possible, to separate all contiguous deepithelized wounded surfaces – the septum and the middle shell, or the middle shell and the lateral wall of the nose. Minor bleeding in the postoperative period, especially after removal of tampons on the third or fourth day after the operation, leads to the formation of blood clots in the nasal cavity, which then dry out, forming massive scabs. Most of the sero-mucous wound discharge accumulates at the bottom of the nasal cavity and in the paranasal sinuses. On the mucous membrane of the nasal concha, fibrinous deposits are often formed, significantly complicating nasal breathing. Until the mucociliary system begins to function adequately, the secretions of the respiratory epithelium will dry out and form crusts. Even small damage to the epithelium can lead to bleeding with the formation in the postoperative period of adhesions between the mucous membranes. After a few days there are sometimes quite extensive swelling. They are due to impaired lymphatic drainage and can last up to 4 weeks after the intervention. The edema of the mucous membrane, to a greater degree, is expressed in the region of the lower and anterior edges of the newly formed or expanded anastomosis in the middle nasal passage, may be similar to small polyps. In narrow places, edema can even cause occlusion of the anastomosis, accompanied by pain. X-ray examination to determine the tactics of further treatment, at this stage of the postoperative period, is impractical, since the inflamed edematous mucosa of the paranasal sinuses will darken the X-ray, and can lead to incorrect hyperdiagnostic conclusions. According to many authors, and based on clinical experience, the final results and the effectiveness of endonasal intervention should be more correctly based on the CT data of the study, moreover, carried out not earlier than 2–3 months after the intervention. Within a week after the intervention should be performed a thorough toilet of the nasal cavity; only lumps and mucus from the vestibule, the bottom of the nose and the middle nasal passage should be carefully removed. For this purpose, a straight metal suction is used, allowing the finger to precisely control the force of aspiration. Damage to the mucosa should be avoided by coarse insertion of the suction tip or aspiration from areas of the loose mucosa. To remove exudates dried in the form of crusts, scabs or fibrinous



plaque, cranked or bayonet-shaped tweezers are suitable. Already at this stage, it is recommended to carry out postoperative therapy under endoscopic control. The use of endoscopy helps prevent injury to the regenerating parietal mucosa, effective cleaning is provided by gentle aspiration, and a small retractor or exciting forceps are suitable for removing large patches of crusts and crusts. Care should be taken to avoid additional damage to the epithelium, since bleeding from the mucous membrane is the result of too rough manipulation. During the first week after surgery, the restoration of the epithelium is just beginning. During this period, all emerging cicatricial adhesions in the nasal cavity should be removed, sucking the contents and removing crusts and deposits. Particular attention should be paid to the formation of adhesions between the de-epithelized areas of the mucous membrane, namely, the middle turbinate and the nasal septum, the middle turbinate, and the lateral wall of the nose. It is here that the contiguous wound surfaces are often glued to each other by fibrin bridges, which within 10–12 days turn into fibrin cicatricial synechia. In many cases, these synechias lead to obstruction of even, sufficient in size, fistula of the maxillary sinus and, ultimately, to a violation of the outflow from the frontal and ethmoid sinuses. This leads to accumulation of secretions in these cavities. In addition, a pronounced narrowing of the labyrinth of the ethmoid bone leads to partial or complete cicatricial obliteration, fibrin bridges from these areas should be carefully removed by suction or cross them. After gentle removal of crusts and blobs and suction of secretions, to accelerate the recovery of the epithelium, and in order to facilitate the cleaning process, it is recommended that the nasal cavity be moistened with saline or isotonic saline. In special cases, it is recommended to use low viscosity ointments, gels or drops containing antibiotics and corticosteroids. All this helps cleanse and heal the wound, destroying the fibrin layer and clotted blood, and also has an anti-inflammatory effect on the edematous mucosa. Instilling a saline solution into the nose or using a nasal spray from an isotonic sea salt solution prevents the secretions from drying out and dissolves adhesions between the surfaces covered with mucous membrane, increases the level of secretion in the goblet cells, thus stimulating mucociliary clearance. After the early postoperative stage, which lasts approximately two weeks, there is a late postoperative period. Hyperplasia and granulation of the mucous membrane gradually begin to decrease, but the swelling may persist for several weeks or months.

Conclusion: Thus, to achieve a good result after endonasal intervention on the intranasal structures in combination with rhinoplasty, an important fact is the adequate management of patients in the postoperative period, with careful carrying out the necessary therapeutic and preventive measures. It should be noted that in the preoperative period, at the planning stage of the intervention and discussion with the patient of the plan and algorithm of surgical treatment, it is necessary to inform the patient in detail about the main stages of the postoperative period, the phases of postoperative wound healing, and his health during this period. Full mutual understanding and agreement between the patient and the operating surgeon will make it possible to successfully complete the difficult stage of the postoperative period and overcome all the difficulties of rehabilitation.

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