



## RESULTS OF MORPHOLOGICAL CONDITION OF THE MUCOSA OF NASAL CAVITY AFTER SIMULTANEOUS SURGERY

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### Abstract

*A significant deviation of the nasal septum is one of the most common local factors that accompanies PN pathology and requires single-stage surgical correction with other anatomical structures. The nasal septum, consisting of the anterior cartilaginous and posterior bone segments, is one of the anatomical structures that occupy a central position in the nasal cavity. The bony part of the septum consists of a perpendicular ethmoidal bone graft and the vomer, while the cartilaginous part consists of a rectangular cartilage. Deformation of the nasal septum causes hypertrophy of the nasal turbinates, vasomotor changes, creates conditions for the development of acute rhinitis and the formation of chronic rhinitis and sinusitis.*

### Keywords

*Rectangular cartilage, chronic rhinitis and sinusitis, vasomotor changes, wings (alae vomeris).*

### INTRODUCTION

Chronic rhinitis develops in the mucous membrane during nasal septum deviations. There is no information about the pathophysiology of this process in the literature. Apparently, the reason for the development of chronic rhinitis is the physiological role of the nasal septum. The normal position of the nasal septum is understood as the position of its body along the midline in accordance with the sagittal line. Numerous scientific studies and clinical practice show that there is no ideal straight nose septum in nature. Injuries, disproportionate growth of the nasal septum and facial bone of the head, hereditary predisposition

and general diseases are the causes of nasal septum deviation. According to some authors, 2% of nasal septum deviations are increased in the neonatal period during the rotation of the fetal head in the birth canal,[1] indeed, nasal septum deviations after cesarean sections are less common than births through the natural birth canal.[2]

The nasal septum divides the nasal cavity into two parts. The vomer (vomer) consists of a thin bone plate with an irregular rectangular shape, resembling an obtuse triangle. On the upper side, the plate divides, forming two wings (alae vomeris), between which the middle groove is located. This belongs to the rostrum sphenoidale. The wings occupy a large part of the lower surface of the main bone body and reach the transverse processes of the palatine bone, the lower edge of the vomeris is located close to the crista nasalis of the maxillary and palatine bones. The posterior edge of the vomeris serves as the boundary between the two choanaes. Along the two surfaces of the vomeris from the back to the front and from the top to the bottom are ledges, in which the nasopalate of the vomeris is located (Scarpa) [4-9].

The perpendicular plate of the ethmoid bone (lamina perpendicularis ossis ethmoidalis) forms the upper part of the nasal septum. Its upper edge protrudes into the cranial cavity in a crescent-shaped (crista galli) shape, raised from the front, to which a crescent-shaped tumor of the dura mater is attached. The anterior edge of this plate is located perpendicular to it, and it holds the groove in its composition. It is located on the foramen caecum of the forehead with a short process (processus alaris) separating it from the lower two sides and closes from the back. Below the laminae cribrosae, the anterior edge of the perpendicular plate adjoins the nasal part of the forehead and the nasal bones. The lower border is adjacent to the vomeris and the nasal septum, while the posterior border is adjacent to the crista sphenoidale. In the upper part of the laminae perpendicularis, there are several grooves and canals through which the branches of the olfactory nerve (fila olfactoria) pass.

The ridge of the nasal septum (cartilage septi nasi) is located in the angle between the perpendicular plate of the ethmoid bone and the humerus. It also emerges between the wing-shaped condyles of the external nose [2,11].

The bones and condyles of the nasal septum consist of a multi-layered cylindrical ciliated epithelium on both sides, covered by a mucous membrane tightly attached to the periosteum. In the upper part of the septum, there is a vestibular epithelium. The rudimentary Jakobson organ is located in the anterior-lower part of the nasal septum, where the tibia terminates. It is a small channel with an open front side and a closed back side, turning forward along the barrier. In the medial wall of the canal, the ciliary epithelium is located, while on the lateral side there is a multi-row cylindrical ciliary epithelium. The channel is surrounded by a large number of acinous mucous glands, as well as lymph nodes, small cavernous spaces, and smooth muscle bundles. Before and above the Jacobson's organ, there is a locus Kiesselbachi (locus Kiesselbachii) - a meshwork of small vessels, the rupture of which often causes bleeding from the nose. From the anterior side, the ciliated epithelium of the septum is gradually replaced by a multi-layered flat epithelium, which penetrates the skin of the vestibulum nasus [7,12].

The purpose of the study is to assess the morphological state of the mucous membrane after various surgical interventions for nasal septum incisors.

## RESULTS

Pathomorphological examination of the mucous membrane removed from the injured stump revealed pronounced edema, vascular dilation, diffuse stromal infiltration with leukocytes and eosinophils (Figs. 1, 2, 3)

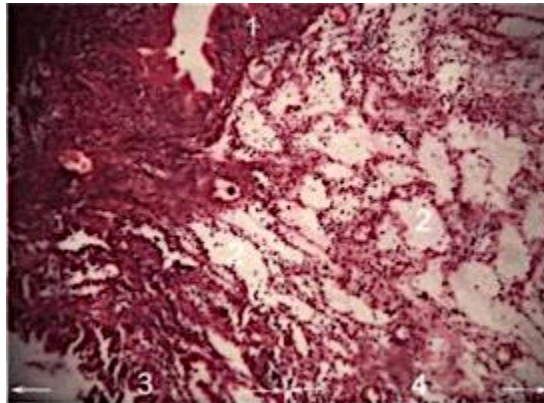


Figure 1. The area of the mucous membrane of the middle nasal concha: 1 - respiratory epithelium; 2- diffuse infiltration with leukocytes and eosinophils; 3-zone of strong edema of the mucous membrane; 4-compact stroma, no edema, leukocyte infiltration, vessels dilated with leukocytes on the surface

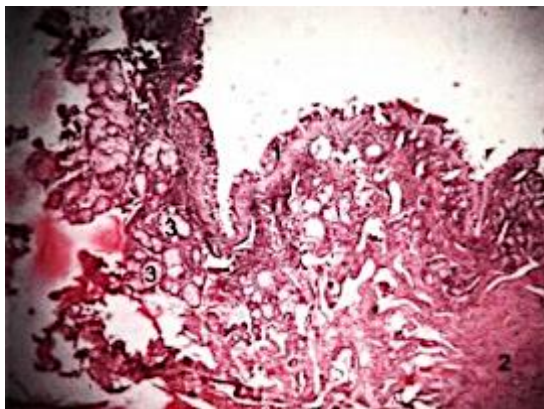


Figure 2. The part of the mucous membrane of the middle nasal condyle, covered with respiratory epithelium - 1, 2 - development of fibrous tissue in the stroma; 3 - multiple glands

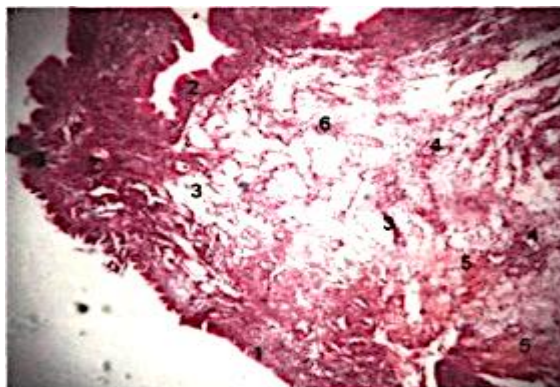


Figure 3. The anterior part of the middle nasal condyle is a part of the polypoidally altered mucous membrane, covered with both respiratory epithelium - 1, and multi-layered squamous epithelium - 2; pronounced edema in the stroma - 3; multiple vessels - 4 and hemorrhage - 5; diffuse infiltration with leukocytes and eosinophils - 6.

In the observed case, based on the analysis of the developed changes in the nasal cavity, the need arose to achieve sanitation of the maxillary sinus and concha bullosa affected by the purulent process, to perform limited septoplasty in combination with surgical intervention in order to correct the middle nasal concha.

The second type of barrier deformation, located in front of the ostiomeatal complex, closes the common nasal passage, not only causing a violation of aerodynamics, but also returns from the anatomical structures of the ostiomeatal complex, where the anterior group of adjacent cavities opens natural holes. It also participates in the formation of "narrow spaces," ensuring secretion retention, activation of viral or bacterial infection, and the development of an exudative form of mucosal inflammation of the paranasal sinuses, which is the most common in clinical practice.

## CONCLUSION

Therefore, in cases where there is a need for endovascular surgical interventions for purulent involvement of the paranasal sinuses, in the first stage of the combined operations to be performed, with the aim of opening the ostiomeatal complex and its correction, septoplasty is performed, and in the next stage, with the involvement of the injured sinuses, sanitation operations are performed. The method of performing these operations was developed by A.S. Lopatin, F.3. The works of Piskunov and S.Z. Piskunov are described in detail. Depending on the extent of the inflammatory process in the adjacent cavities, their volumes may vary.

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