

# Morphological Characteristics of the Cysts of the Maxillary Sinuses

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**Abstract:** Today, there are several diagnostic methods that allow you to determine the exact size and nature of periapical formations. In addition, there are studies that describe the thickening of the sinus mucosa in patients with periapical lesions and show a causal relationship. Objectives: This study was to study the morphological changes in the cysts of the maxillary sinus. Methods: 50 patients with maxillary sinus cysts were evaluated. A total of 50 maxillary sinuses (13 men and 12 women) were analyzed taking into account changes in density in the sinus cavity. The thickening of the sinus mucosa and periapical lesions was measured in the caudal-cephalic direction. The axial and sagittal axes were taken as a basis on the sagittal and coronal sections. The presence of opacities was not directly related to periapical lesions. Conclusions. Lesions of the maxillary sinus floor have been associated with chronic periapical lesions larger than 4 mm. Clouding or thickening of the sinus mucosa was not associated with periapical lesions.

**Keywords:** cyst, mucous membrane, stroma, infiltration, tissue, hyperemia.

## I. INTRODUCTION

Inflammatory diseases of the nose and paranasal sinuses in the last decade have firmly occupied the first place in the overall structure of the incidence of ENT organs, both in the analysis of accessibility to the polyclinic and in the group of patients undergoing treatment in inpatient conditions [1]. There was a significant increase in the number of diseases of the nose and paranasal sinuses both in absolute numbers and their share in the structure of the general ENT - morbidity, which annually increased by 1.5-2% and reached 52.7% [2]. The relevance of studying the problem of sinusitis is also due to the fact that it goes far beyond the scope of otorhinolaryngology and is closely related to bronchopulmonary pathology, allergization of the body and changes in local and humoral immunity [3]. Sinus cysts are one of the most common diseases in clinical practice. According to the classification of sinusitis, adopted in Ufa in 1997, cysts are a chronic form of sinusitis. Cysts of the maxillary sinuses are a very common disease that is often an incidental clinical finding on radiography and computed tomography of the paranasal sinuses [4].

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At the same time, there are isolated reports on the localization of cysts in the frontal and sphenoid sinuses [5]. The diagnosis of cysts of the sphenoid sinus is especially difficult, since the known X-ray packing does not allow them to be diagnosed. The problem of diagnosing cysts of the paranasal sinuses was resolved with the introduction of computed tomography into practice [6]. The nature of the headache and general complaints do not depend on the size of the cyst. Large cysts located in the lower parts of the maxillary sinus may be asymptomatic, while a small cyst located on the upper wall, in the area of the second branch of the trigeminal nerve, often causes headaches [7,8]. To date, only a few studies have been devoted to the morphogenesis of paranasal sinus cysts [9].

In foreign literature, the main attention is paid to odontogenic and dysontogenetic cysts [10,11]. Despite the important place occupied by paranasal sinus cysts in otorhinolaryngological practice, only a small number of works have been devoted to the issue of their modern methods of surgical treatment in recent years. The introduction of microscopic and endoscopic techniques into practice made it possible for the operating physician to analyze in detail all endonasal anatomical structures, assessing their relationship and role in the development of the pathological condition [12].

From the anatomical point of view, the nasal cavity is the most complexly structured organ; the functional significance of many endonasal anatomical structures is not entirely clear to this day. Before the development of endoscopic rhinosurgery, most rhin surgeons used the traditional external approach for operations for cysts of the maxillary sinuses - the Caldwell-Luc operation or its sparing options. With the advent of endoscopic methods of rhinosinus surgery, various options for endonasal and extranasal interventions began to be performed to remove cysts of the maxillary sinus: after puncture of the canine fossa, through the lower nasal passage, after expansion of the fistula in the middle nasal passage, by the method of posterior fontanelotomy [13]. However, there are no works that summarize the experience of treating a large number of patients with paranasal sinus cysts. Also, there are not enough reports on modern methods of surgical treatment of cysts of the sphenoid and frontal sinuses.

The purpose of this study was to study the histological structure of the cysts of the maxillary sinus.

## II. MATERIAL AND METHODS

For histological examination, the preparation of materials was carried out on a Thermo scientific STP 120, Histostar, Microm HM 325, the obtained material was carried out in stages as follows:



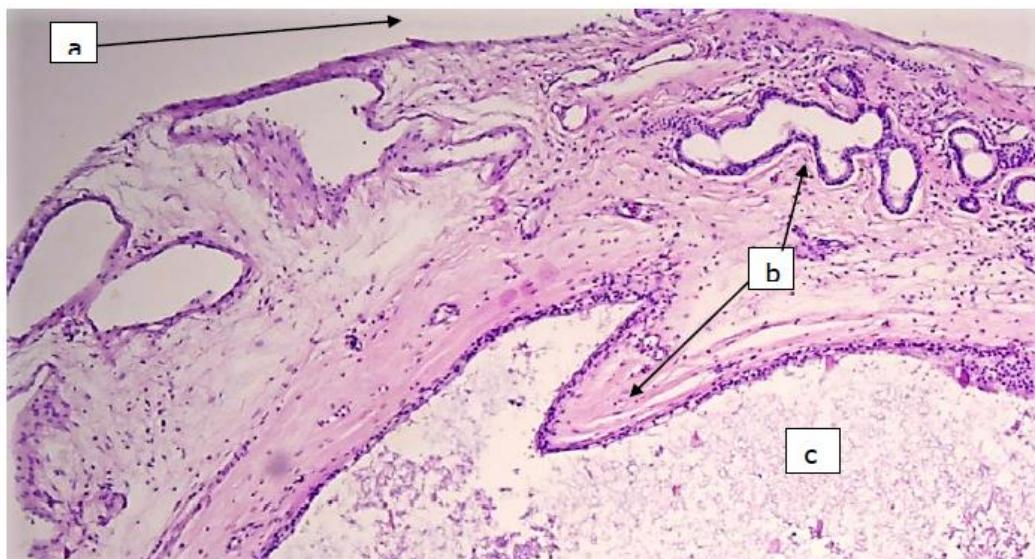
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registration of material, cutting, macrodescription, labeling of cassettes, distribution of material on cassettes, primary diagnosis, obtaining a preliminary diagnosis. Next comes the processing of the material, marking the glasses, obtaining the preparation and evaluating the results. Each finished micropreparation was photographed for further use in research work. In all cases, macroscopically, there was a polypoid proliferation of tissue from a light brown color to a whitish color with a smooth surface, in some cases with a bumpy uneven surface, a soft consistency, ranging in size from 1x0.5 cm to 3x2.5 cm.

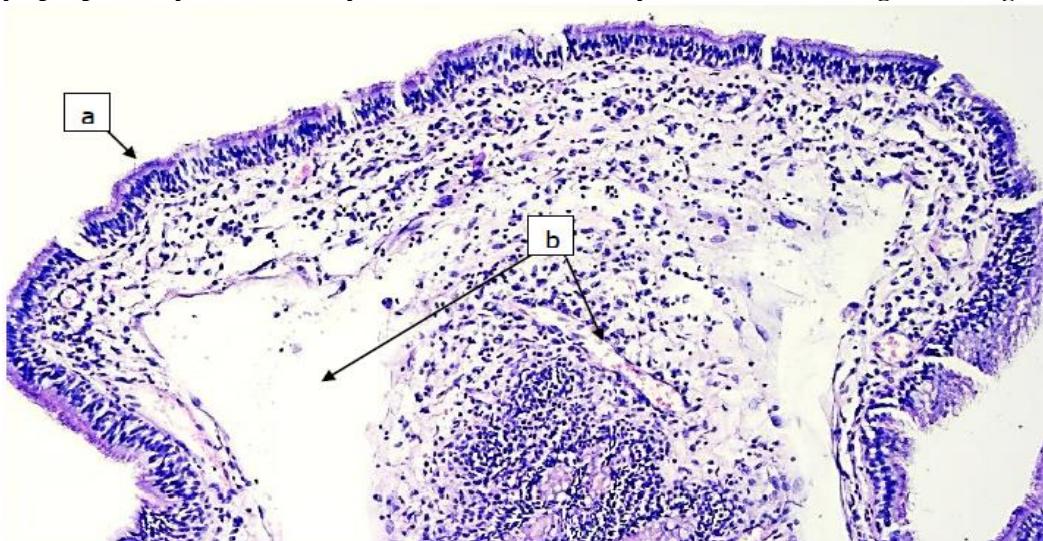
### III. RESULTS AND DISCUSSION

Microscopically different clinical and morphological forms were characterized by certain signs of chronic inflammation and changes in the integumentary epithelium. In the second group of observations in 18 patients in the mucous membranes, there was a cystic change in the lumen of the glands with the presence of secretions in the cavities, with atrophy of the epithelium, there are small glandular tubes with proliferation of epithelial cells, convoluted.

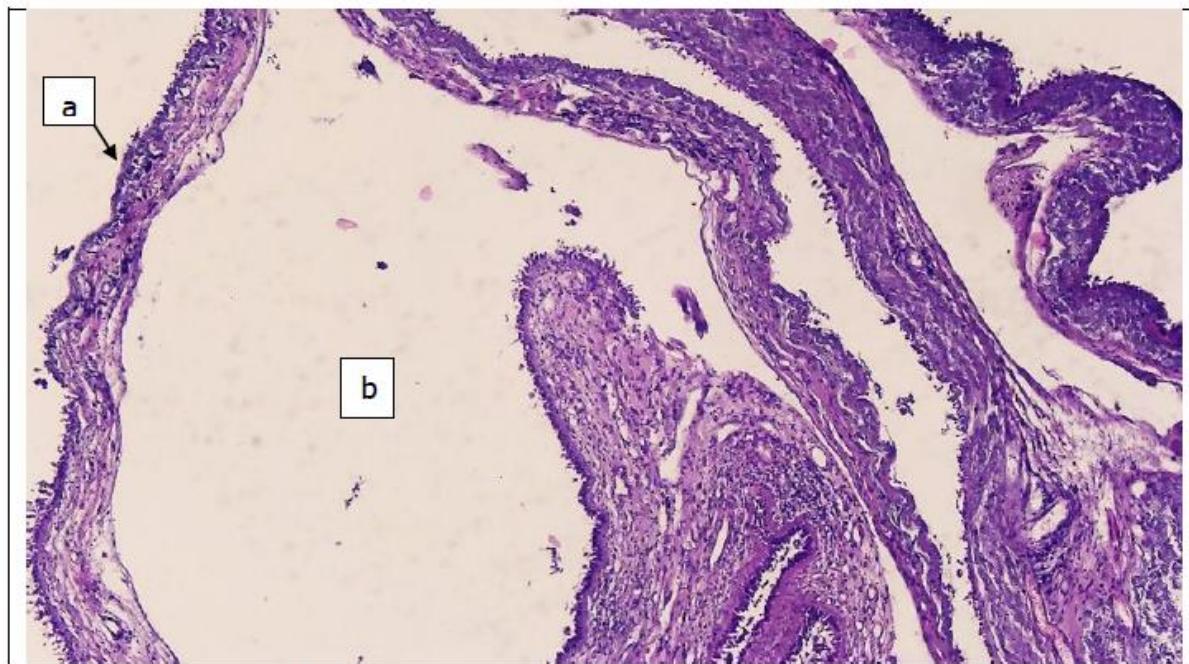
The integumentary epithelium is cystic and is represented by prismatic or columnar epithelium. The stroma is mostly displaced due to the expansion of the lumen of the glands, in places uneven inflammatory cell infiltration and myxomatous changes are noted (pic.1,2,3,4).



**Pic. 1. Glandular cystic nasal polyp with inflammation.** In the sections - a polypoid formation covered with a multilayer transitional epithelium (a), consisting of a large number of glands lined with proliferating prismatic epithelium (b). mucus (c) The stroma is edematous, represented by fibromyxomatous tissue with abundant lymphoplasmacytic and leukocytic infiltration. Hematoxylin and eosin staining. Lens mag. x10.0

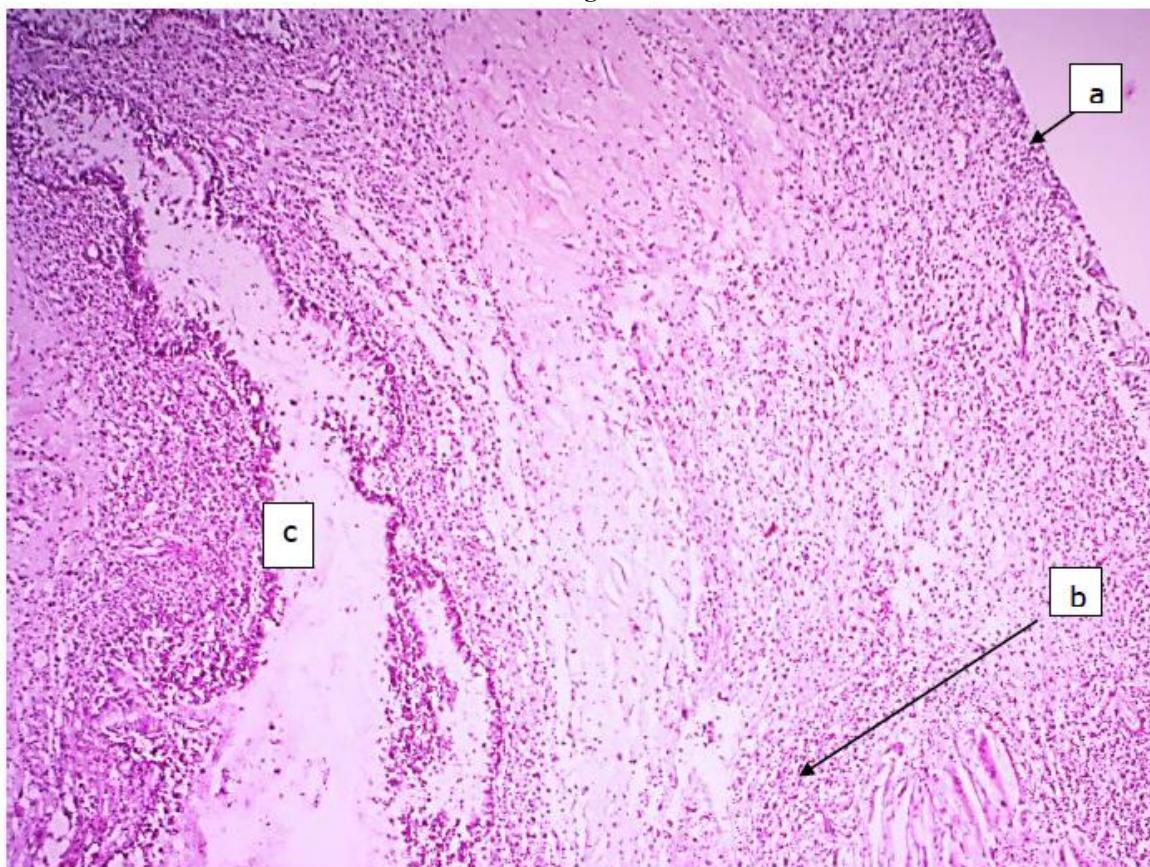


**Pic. 2. Respiratory cyst with foci of inflammation,** the cyst wall is lined with respiratory epithelium with foci of proliferation and desquamation (a). The stroma is represented by fibrovascular tissue with hyperemia, diffuse inflammatory infiltration of a mixed nature. There is also mucus in the cystic cavity (b). Hematoxylin and eosin staining. Lens mag. x10.0



**Pic. 3. Mucous cyst of inflammatory genesis.**

The wall of the cyst is lined with a cylindrical multilayer epithelium (a) with foci of desquamation, in the lumen of the cysts there is homogeneous, and in some places foamy, eosinophilic contents (b). Staining with hematoxylin and eosin. Lens mag. x10.0



**Pic. 4. Inflammatory cyst is a fibrous wall of a cystic formation covered with metaplastic multi-row epithelium (a).**

Elements of acute inflammation with its destruction are found in the integumentary epithelium. There is also leukocyte infiltration in the fibrous stroma (b). Cystic-altered gland (c). Hematoxylin and eosin staining. Lens mag. x10.0

According to the results of histological examination of the second group of patients, it can be noted that morphological changes are mainly characterized by cystic lesions of the mucous glands, as well as the integumentary epithelium with focal or diffuse inflammatory cell infiltration.

## IV. CONCLUSION

Thus, the above-described morphological changes in the nasal mucosa and paranasal sinuses, both in the first and second groups, characterize changes associated with a prolonged course of the inflammatory process, a violation of the structural architectonics of the nasal passages, associated with epithelial hyperplasia, mucosal outgrowth and cystic formations, as well as the presence of elements of inflammation, in some cases, abundant secretion, which is accompanied by a violation of natural respiration, leads to the development of prolonged hypoxia. All of the above disorders are accompanied by a decrease in the function of various systems against the background of hypoxia, especially the function of the brain. The obtained results of the morphological study give a detailed description of changes in the mucous membranes and clinical signs, make it possible to assess the risk of developing chronic polyposis rhinosinusitis, and also to prevent relapses of the disease.

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## AUTHORS PROFILE



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- In 1999 defended thesis on “Improving the effectiveness of re-treatment in operated patients for chronic stenosis of the larynx and trachea.”
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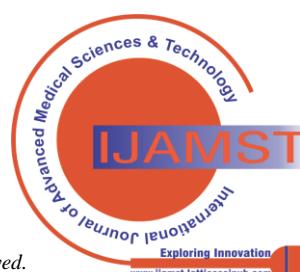
- Functional Endoscopic Sinus Surgery;
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### Main directions of scientific activity:

- Studies of clinical and genetic features of diseases of ENT organs

### Publications:

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### Education:

- 2004-2011 yy. — student of treatment faculty of Tashkent medical academy
- 2011-2014 yy. — graduate student of Otorhinolaryngology of Tashkent medical academy

### Labor activity:

- 2011-2014 yy. — general practitioner of 17th polyclinic of Almazar district
- 2011-2014 yy. — senior laboratory assistant, department of otolaryngology and dentistry TMA
- 2015-2019 yy. — assistant teacher, department of otolaryngology and dentistry TMA
- 2015-2016 yy. — deputy dean of treatment faculty of TMA
- 2016-2019 yy. — deputy dean of medical-prophylactic faculty of TMA
- 2019 г — at pr. — senior lecturer department of otolaryngology and dentistry TMA

### Scientific activity:

- 2019 y. doctoral thesis defense (PhD) – «Optimization of treatment of diseases of nose and paranasal sinuses in patients with myocarditis».

### Main areas of practice:

- Functional endoscopic sinus surgery

### Main directions of scientific activity:

- Study of clinical and genetic aspects of polypous rhinosinusitis

### Awards:

- 2019 y. certificate of Rector Tuychiev L.N. Tashkent medical academy.



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**Main scientific papers over past 5 years:**

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- Khasanov U.S., Djuraev J.A. Current approaches to diagnosis and treatment of diseases of the nose and paranasal sinuses in patients with myocarditis // European science, 1 (23), pgs: 44-49, 2017y.
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- Джураев Ж.А., Хасанов У.С., Вохидов У.Н. Current issues of the treatment of chronic polyposalrinosinusitis // Биомедицина и практика №7, 2019
- Джураев Ж.А., Хасанов У.С., Вохидов У.Н. Распространённость полипозного риносинусита // Биология и этиология аммомоларихалкаройлий журнал №3.1 (112) 2019 стр-31
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1. Djuraev J.A., Vokhidov U.N., Khasanov U.S. The prevalence of chronic inflammatory diseases of the nose and paranasal sinuses in patients with myocarditis / European Science Review. - №5-6, May-June, 2018. – P. 147-149
2. Shamsiev D.F., Vokhidov U.N., Karimov O.M. Functional and morphological features of wound healing process in the mucosa of the nose and maxillary sinuses in the patients with chronic inflammatory diseases of paranasal sinuses / European Science Review. - №5-6, May-June, 2018. – P. 229-231
3. Sharipov S.S., Vokhidov U.N., Khasanov U.S. Modern aspects of treatment of rhonchopathy / European Science Review. - №5-6, May-June, 2018. – P. 225-228
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5. Khasanov U.S., Vokhidov U.N., Juraev J.A. Condition of the nose cavity in chronic inflammatory diseases of the nose and central infrastructure sinus in patients with myocarditis / European Science. - №9 (41), November, 2018. – P. 50-52



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**Education:**

- 1997-2004 - student of the treatment faculty of the Second Tashkent State Medical Institute
- 2004-2007 - graduate student of Department of ENT diseases of the Tashkent Medical Academy

**Labor activity:**

- 2007-2010 - Assistant teacher of the Department of ENT of Diseases of the Tashkent Medical Academy
- 2010-2013 – PhD student of the Department of ENT of Diseases of the Tashkent Medical Academy
- 2013- 2016 - otolaryngologist, adult ENT department, Department of the second clinic of the Tashkent Medical Academy
- 2016 to present - assistant teacher of the ENT department of diseases of the Tashkent Medical Academy

**Scientific activity:**

- Clinical - experimental rationale for the use of xenograft in tympanoplasty

**Main areas of practice:**

- Septoplasty
- Rhinoplasty
- Tonsillectomy
- Uvuloplasty
- Adenoidectomy
- Vasotomy
- Tympanoplasty
- Radical Surgery
- Fess
- Atticoantrotomy

**Main directions of scientific activity:**

- The rationale for the use of auto and xenotransplant in chronic dry mesotympana

**Main scientific papers over past 5 years:**

- Botirov A.J., Hodjanov Sh.H., Rahimjanova G.A. Founding of efficiency of using xenograft in miringoplasty // Материалы IV съезда оториноларингологов Узбекистана «Современные направления в оториноларингологии» Ташкент 2015 стр 16.
- Ботиров А.Ж., Маткулиев Х.М., Исройлов Р.И., Ходжанов Ш.Х. Ксенотрансплантатни экспериментал қўйлашниг морфологик натижалари // Материалы IV съезда оториноларингологов Узбекистана «Современные направления в оториноларингологии» Ташкент 2015 стр34.
- Ботиров А.Ж. «Оториноларингология фанини ўқитишида модуль тизимини қўллашнинг аҳамияти»//The collection of materials of the XII educational conference 2016 стр 53-56.
- Ботиров А.Ж., Маткулиев Х.М. «Эффективность применения ксенотрансплантата при тимпанопластике» // Оториноларингологияда замонавий илмий-амалий технологиялар МАТЕРИАЛЛАРИ Бухоро 2017 стр34.
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- Ботиров А.Ж., Маткулиев Х.М., Исройлов Р.И. “Морфологические результаты с применением ксенотрансплантата экспериментальным тимпанопластике” // АВИЦЕННА научный медицинский журнал Выпуск № 20 Кемерова 2018 стр 49-54.
- Ботиров А.Ж., Вахобов А.А., Абдуохидов Б.Б. “Клинические особенности вестибулярного головокружения при синдроме Меньера” // INNOVATIONS IN MEDICINE: VIEV OF YOUNG SIENTISTS Tashkent 2018 стр 165.