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## **ETHMOMAXILLARY SINUS: FEATURES AND CLINICAL SIGNIFICANCE**

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**Relevance.** There are four sets of paranasal sinuses: the maxillary, ethmoid, frontal, and sphenoid. These are air-filled cavities lined with mucosa located in the facial region of the skull, centered on and connected to the nasal cavity. The maxillary sinus is situated within maxillary bone and is the largest and earliest-developing of the paranasal sinuses. Ethmoid sinus on the other hand is a structure formed by the labyrinths of ethmoid bone. It contains two sets of air cells, an anterior and posterior one, also known as ethmoid sinuses or ethmoidal air cells. Variations in the anatomy of ethmoid sinuses may occur when air-filled spaces extend into neighboring sinuses like frontal and maxillary.

An important anatomical variation that holds significance for daily clinical practice is the ethmomaxillary sinus (EMS). This variation results from excessive pneumatization and extension of the posterior ethmoid cells into the maxillary sinus. The EMS forms during development of ethmoid cells and drains into the superior nasal meatus. It is a rare paranasal sinus anomaly that has occasionally been observed on paranasal sinus CT scans. With advancement of cone-beam computed tomography (CBCT), it is now possible to obtain three-dimensional (3D) images with high spatial resolution in combination with relatively low radiation exposure compared to traditional CT scans in the craniofacial region.

**Aim:** to analyze up-to-date literature concerning the ethmomaxillary sinus, its prevalence and clinical significance.

**Materials and methods.** There has been conducted a searching process for articles using following searching requests (“maxillary sinus”[Title], “ethmoid sinus”[Title] OR “ethmomaxillary sinus”[Title] in international scientometric database PubMed (<https://pubmed.ncbi.nlm.nih.gov/>). While searching for articles in russian the additional database Google Scholar (<https://scholar.google.com/>), was used with the combination of different terms “верхнечелюстная пазуха”, “решетчатая пазуха”, and “решетчато-верхнечелюстная пазуха”. Excluded from the searching process was the systematic literature reviews, only investigations with own results were selected. In both databases the results of publication of articles were restricted between 2004 to 2024 with latest update in march 2024.

**Results and their discussion.** As a result of selected publications, totally 18 articles met the primary requirements. After checking the titles and reading abstracts, the number of articles decreased to 6. The researchers came to the conclusion that the ethmomaxillary sinus in general has prevalence between 0.7%-2.4% of patients. These were aged between 12-60 years, including both males and females.

Two of the 6 studies compared presence of EMS as a unilateral, ranging between 30%-38,5%, versus bilateral structure ranging between 61,5%-70%, ending in the same conclusion as of bilateral EMS being more prevalent.

A single article submitted results including measurements of the investigated ethmomaxillary sinuses. The maximum vertical size of the sinus varied between 6.8-41.6 mm.

Almost all articles present clinical significancies of EMS and the importance of clinicians to be aware of the particular anatomical variation.

**Conclusion.** According to the literature, the extension of posterior ethmoid cell into the maxillary sinus results in ethmomaxillary sinus. Its prevalence justifies importance of awareness of EMS. There are various clinical significancies, one of which is playing a crucial role while performing sinus-related surgery with the aim of providing full sanation of affected sinuses.