

# **Ethmoid maxillary sinus: its features and clinical significance**

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# AIM OF STUDY

- To analyze up-to-date literature concerning the ethmoid maxillary sinus, its prevalence and possible clinical significance.

# MATERIALS AND METHODS

## Searching process:

- Articles in english - PubMed
- Articles in russian - Google Scholar
- requests were “maxillary sinus”, “ethmoid sinus”, “ethmomaxillary sinus”, “верхнечелюстная пазуха”, “решетчатая пазуха”, “решетчато-верхнечелюстная пазуха”
- Investigations with own results
- Publications between 2004-2024 selected

# RESULTS AND THEIR DISCUSSION

**18** articles mentioning ethmoidmaxillary sinus

**6** articles with own results

EMS prevalence **0,7-11,9%**

unilateral: **30-38,5%**

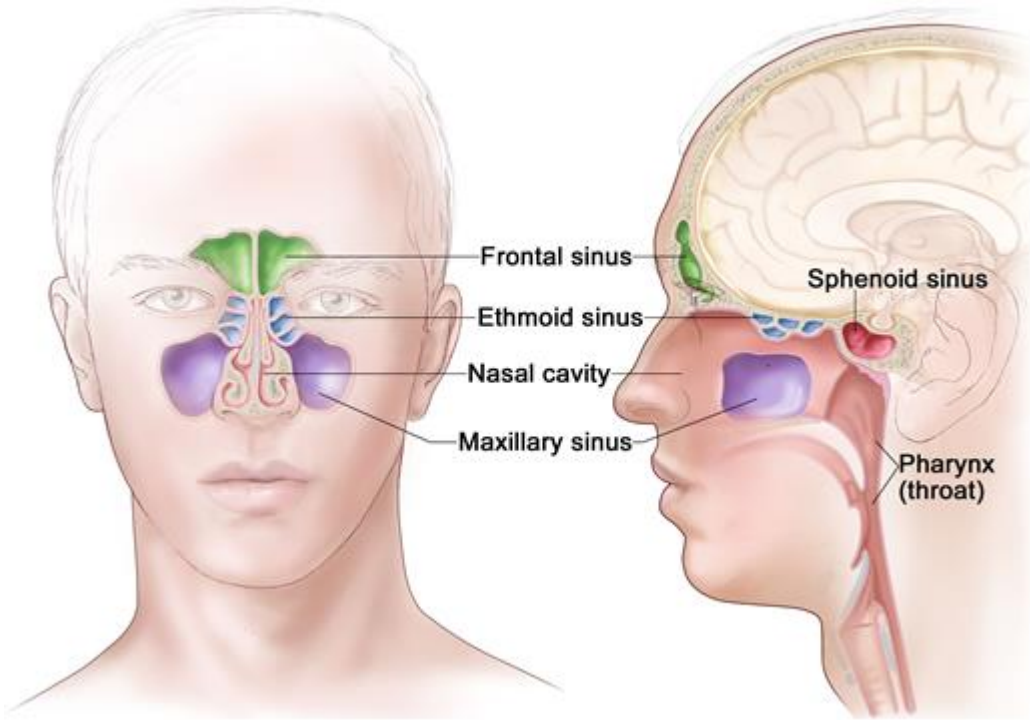
bilateral: **61,5-70%**

**1** article: vertical size of EMS **6,8-41,5 mm**

# ETHMOMAXILLARY SINUS (EMS, POSTERIOR ETHMOIDAL CELL)

- One of the ethmoidal cells, which extends in various degrees into to the maxillary sinus
- Always draining into superior nasal meatus
- Has prevalence between **0,7-11,9%** of patients in otolaryngological- and dental clinics

# PARANASAL SINUSES

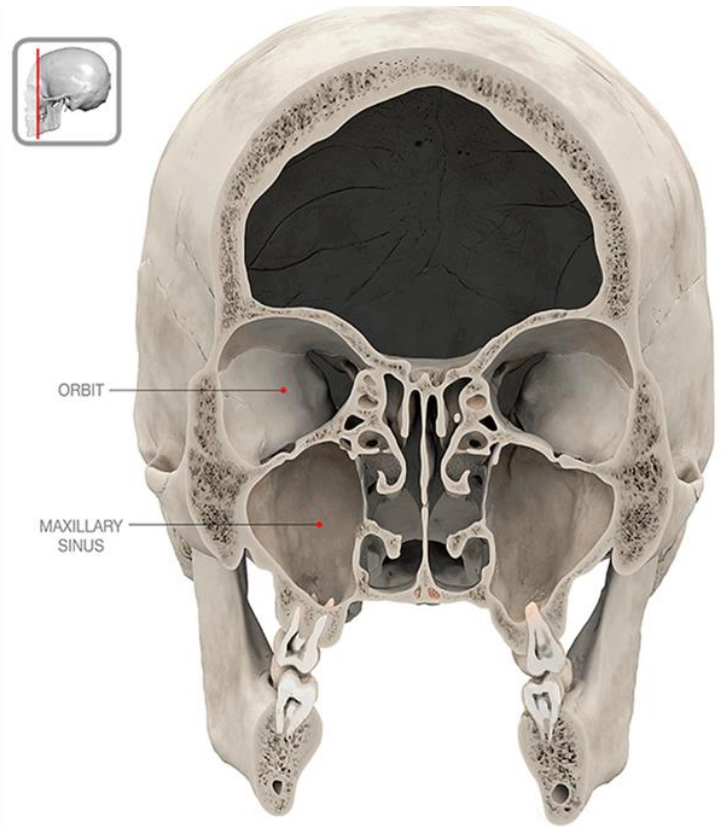


- Paranasal sinuses:
  - maxillary
  - ethmoid
  - frontal
  - sphenoid
- Air-filled cavities lined with mucosa
- Components of upper respiratory tract
- Warms, filters and humidifies the air
- Increase resonance of voice

*Figure 1. Paranasal sinuses-structure*

# MAXILLARY SINUS

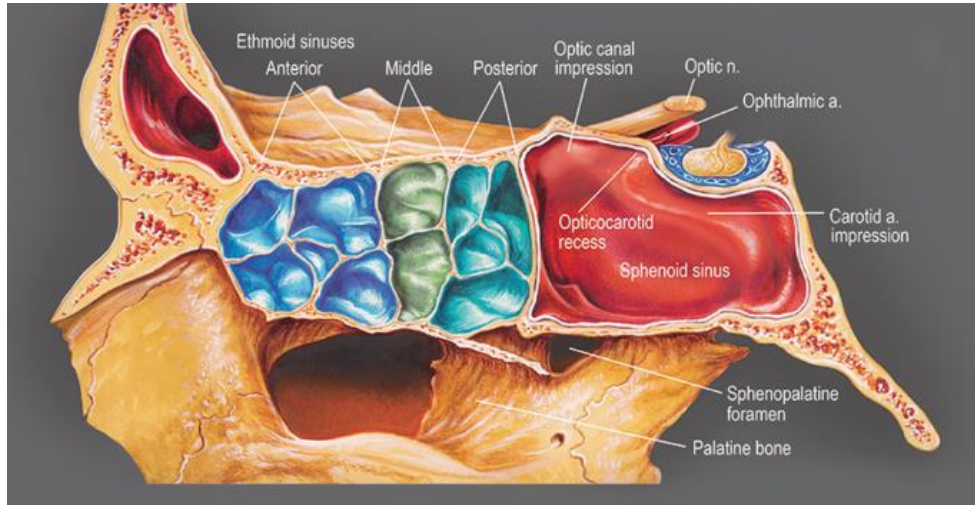
- Within maxilla
- Largest paranasal sinus
- Alveolar process of maxilla forming lower boundary of sinus
- Orbit forms upper boundary
- Middle meatus located superomedially



*Figure 2. Maxillary sinus*

# ETHMOID SINUS

- Labyrinths of ethmoid bone
- 2 sets of air cells (anterior and posterior)
- Ethmoidal air cells
- Affect drainage path of other sinuses
- Air-filled spaces extend into neighbouring sinuses



*Figure 3. Ethmoid sinus-anatomy*



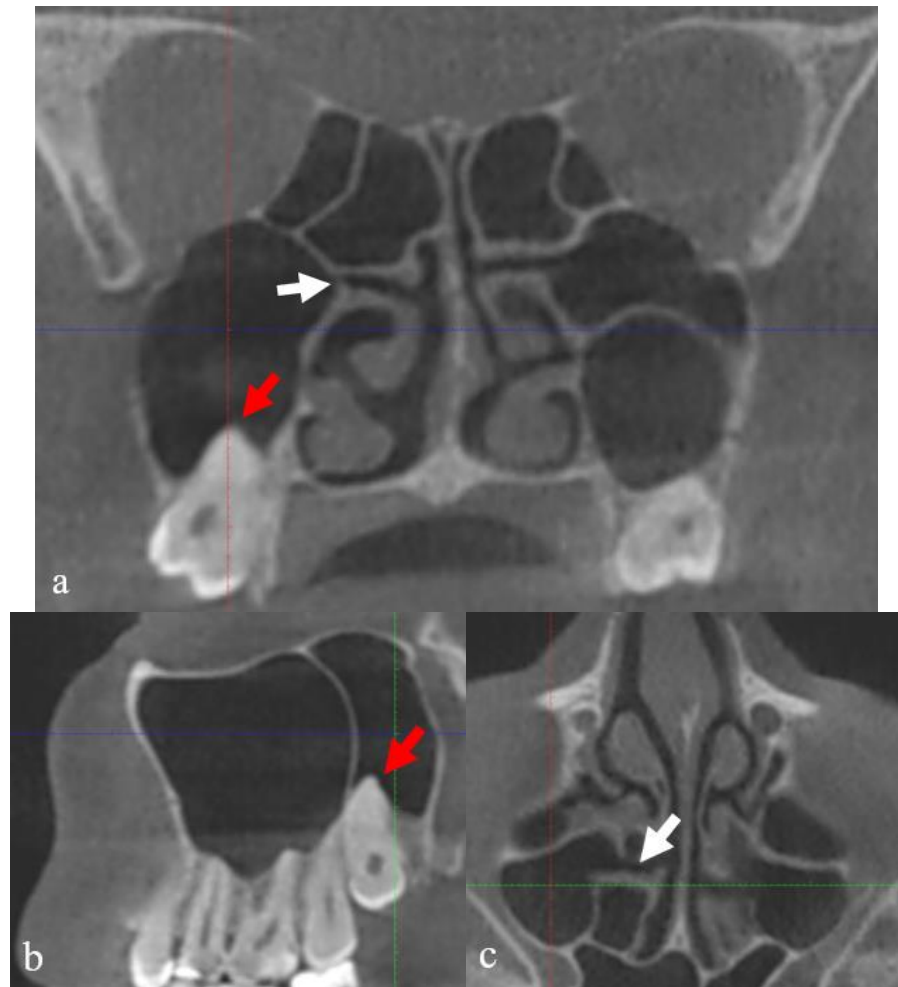
# ANATOMICAL VARIATION OF ETHMOID SINUS: ETHMOMAXILLARY SINUS (EMS)

- Rare paranasal sinus
- Result of: excessive pneumatization of posterior e.c.
- Drainage into superior nasal meatus
- Observed on CT and CBCT scans in craniofacial region with the relation to maxillary sinus
- Incidentally seen on paranasal sinus computerized tomography (CT) scans

# RESULTS AND THEIR DISCUSSION

- CBCT, coronal (a), sagittal (b) and axial (c) scans
- Demonstrates ethmomaxillary sinus extending to the alveolar process
  - white arrow shows drainage to superior nasal meatus, red arrow shows the root of third upper molar protruding into ethmomaxillary sinus

*Figure 4. CBCT, coronal (a) and sagittal (b) and axial (c) scans*

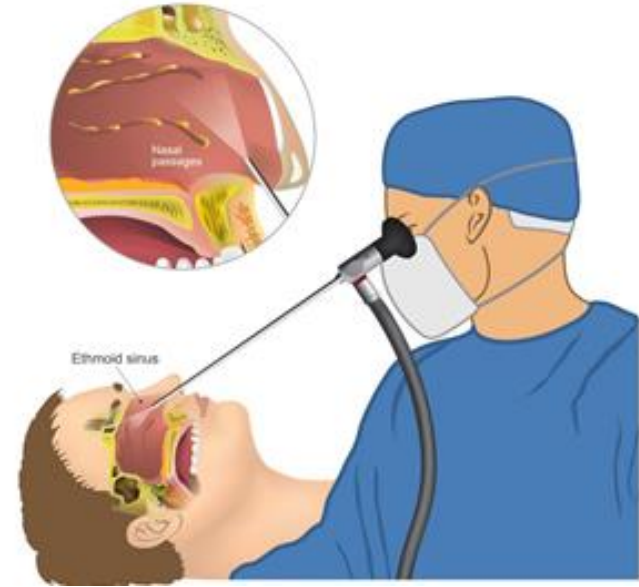


# CLINICAL SIGNIFICANCE OF EMS

- EMS confused with septate maxillary sinus (3 articles)
- EMS confused with Haller cell (1 article)
- EMS should be recognized prior to endoscopic surgery
- EMS observed in cases of hypoplasia of maxillary sinus (2 articles)
- Hindered nasal mucociliary clearance system -> rhinosinusitis (1 article)
- Risk for odontogenic ethmoiditis in case of apical periodontitis or traumatic removal of 3rd molar (1 article)

# CONCLUSION

- Posterior cells extending into MS = EMS
- EMS, rare anatomic variation
- Prevalence justifies importance of awareness
- Several clinical significances
- Sinus-related surgery with full sanitation



*Figure 5. Endoscopic sinus surgery*

**Thank you for your attention!**