

Paranasal sinus mucocele

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Langenbach (1820) first described [paranasal sinus mucocèles](#) under the name of hydatids. Roulette (1909) introduced the name [mucocele](#). Paranasal sinus mucocele is the accumulation of mucus secretions and exfoliated epithelium in the sinuses, causing enlargement of the sinus walls. It is considered a cystic, dilatation-eroding lesion. However, the mucocele often occurs as a localized mass, causing bone erosion and displacement of surrounding structures. If left untreated, a nearby mucocele in the brain can become infected and lead to death. Frontal sinuses are often involved; sphenoid, ethmoid, and maxillary mucocèles are rare. Mucocèles usually result from sinus ostium obstruction due to infection, fibrosis, inflammation, trauma, surgery, or obstruction by tumors such as osteomas. Of all causes, patients most often present with craniofacial trauma (82.97%) and the most common mechanism is human aggression (90.85%).

Classification

Paranasal sinus mucocèles are classified based on their location and extent. The classification may include:

Simple Mucocele:

Confined to a single sinus without involving adjacent sinuses.

Complex Mucocele:

Involves multiple sinuses or extends beyond the boundaries of a single sinus.

Frontal Sinus Mucocele:

Specifically involves the frontal sinus.

Ethmoid Sinus Mucocele:

Specifically involves the ethmoid sinus.

Sphenoid Sinus Mucocele:

Specifically involves the sphenoid sinus.

Maxillary Sinus Mucocele:

Specifically involves the maxillary sinus.

Anterior Ethmoid Mucocele:

Primarily involves the anterior part of the ethmoid sinus.

Posterior Ethmoid Mucocele:

Primarily involves the posterior part of the ethmoid sinus.

Sinonasal Mucocele:

Extends beyond the sinus boundaries and involves adjacent nasal structures.

Inverted Papilloma-Associated Mucocele:

Develops in association with an inverted papilloma, a benign tumor of the nasal cavity and sinuses. The classification may vary slightly among medical sources, and additional details about the size, extension, and impact on surrounding structures may be considered for a more comprehensive categorization. It's important to note that the management and treatment approach for mucoceles depend on their specific characteristics and the symptoms they cause.

Frontoethmoidal mucocele

[Frontoethmoidal mucocele.](#)

Case series

Gokani et al. identified 60 patients with mucoceles, of which 35 (58%) were incidental findings from radiological investigations. The mean age was 58 years. Fifteen patients (25%) were managed surgically and one presented with recurrence following surgery. Overall, six patients (10%) had an intra-orbital extension of their mucocele and three (5%) had an intracranial extension. There was no difference in the rates of intracranial extension between conservative and surgical cases but surgical cases included a higher rate of intra-orbital extensions (27% vs. 4%, $p = 0.01$). The proportion of patients requiring surgical intervention in this study is low. Incidental and asymptomatic mucoceles have a relatively benign disease course and selected uncomplicated cases can be considered for conservative management with serial scanning at 12 months ¹⁾.

Case reports

Case presentation: This 30-year-old male patient presented with a frontal head swelling of one year duration that started after he sustained a stick injury on the frontal head one year ago, and he has had an associated frontal headache for one year. There was a 4x5cm frontal, firm, palpable, non-tender lesion extending from the nasion to the frontal head. On the brain CT scan, there was frontal bone erosion at multiple sites with partial frontal sinus opacity, an externally growing mass, and an old frontal sinus fracture noted. Bifrontal craniotomy and bilateral frontal sinus cranialization were done, and the patient was discharged on the third day and seen a month later with complete improvement from headache and swelling.

Conclusion: The incidence and pathophysiology of posttraumatic frontal sinus mucocoeles are not known yet. The surgical management of mucocoele demands a multidisciplinary team involving neurosurgeons, ear nose, and throat surgeons, oral and maxillofacial surgeons, ophthalmologists, and plastic and reconstructive surgeons. By treating the primary cause, frontal sinus fracture at contact, this case report aims to raise awareness of and prevent frontal sinus mucocoele and related complications ²⁾.

¹⁾

Gokani S, Kumaresan K, Adari S, Ergisi M, Oludeye O, Jegatheeswaran L, Philpott C. The Clinical Course of Paranasal Sinus Mucocoeles-A Retrospective Case Series. J Clin Med. 2024 Jan 11;13(2):397. doi: 10.3390/jcm13020397. PMID: 38256532; PMCID: PMC10816877.

²⁾

Ali EH. Post Traumatic Frontal Sinus Mucocoele with Subcutaneous Extension: A Case Report and Literature Review. Int Med Case Rep J. 2023 Sep 26;16:599-604. doi: 10.2147/IMCRJ.S436224. PMID: 37789831; PMCID: PMC10543422.

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