

# Frontal Sinus Mucocele Mimicking Sphenoorbital Tumor: A Very Rare Case Report

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## ABSTRACT

**Introduction:** The Paranasal sinus mucocele is a slow growing mass that contains mucous. It can grow vary in size, well defined border, and fluctuative

**Case Description:** A 51 Years old male with the chief complaint was mass in his left eye 9 months before. The complaint began with small swelling and it became bigger. He had no complaint with his vision or his hearing. The mass as big as eight centimeter in diameter. The physical examination revealed that his left eye was protruded with left eye acuity was 6/6/. He had paresis with upwarding gaze in his left eye. At the palpation examination, it was soft, elastic, fluctuative, well defined border with bony in its surrounding, and no pain sensation.

**Discussion :** In this case, frontal sinus mucocele can make the eyeball was protruded because downward development. It does not impair visual function, because it does not disturb the optic nerve. The impairment was difficult to gaze upwardly.

**Conclusion:** Given that the lesion came from the frontal sinus, it could grow outwardly and made the eyeball protrude. Histologically, mucocele had spreading of inflammatory cells, and macrophage, debris cells, and necrotic mass

**Keyword :** Frontal sinus; mucocele; sphenoorbital tumor; paranasal sinus



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## 1. Introduction

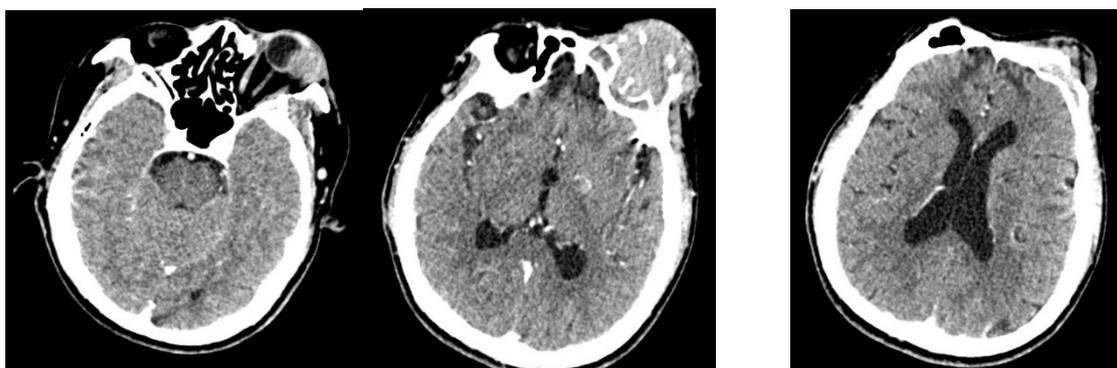
The mucocele of paranasal sinus is a cystic mass lined by epithelium, filled with mucus, and caused by obstruction of the sinus opening. The accumulation of mucus causes mass expansion associated with expansion of the bony wall of the sinus, which is considered an essential condition for this condition. Prostaglandin and collagenase contribute to bone resorption and further enhance the expanding of the cysts [1–3]. They are usually benign and slowly growing, potentially causing local morbidity of adjacent structures through mass effect [1,4,5].

Mucocele of paranasal sinus most appeared in the third or fourth decade of age, with a 3.5% lower incidence in males. The frontal sinuses are most commonly affected, followed by the ethmoid sinuses, with reports showing 70 up to 90% of mucoceles occur in these locations. Ten percent of

mucocoeles in the maxillary sinus and the sphenoid sinus rarely included [3–6]. The common mechanism of cyst development is inflammation, trauma, or tumoral deformation of the sinus drainage tract. In addition to inflammatory obstruction of the opening sinus, the main causes include engorgement of mucous glands or polyp breakage. Secondary causes are often previous surgery of sinus or trauma in face. Other risk factors include cranial dysplasia, long standing sinusitis, and manifestations of systemic disease [3,4,7]. In cystic fibrosis, 16% of patients with long standing rhinosinusitis also have mucocele [3].

## 2. Case Description

A 51 years old male with the chief complaint was mass in his left eye 9 months before. Initially, the complaint began with small swelling and its color was same with his skin color and it became bigger along with the time. There was no itchy in its surrounding, no inflammation, or no discharge. Eleven years ago, he had an accident in his left frontal, so he had lacerated wound and he underwent debridement operation. He had no chronic flu-like syndrome previously. He admitted that he had no complaint with his vision or his hearing. At the neurosurgery clinics, the mass as big as eight centimeter in diameter. The physical examination revealed that his left eye was protruded with left eye acuity was 6/6. He had paresis with upwarding gaze in his left eye because the mass pushed left eyeball away to downward. At the palpation examination, it was soft, elastic, fluctuative, well-defined border with bony in its surrounding, and no pain sensation. Then he underwent a contrast CT head examination and the result was left orbita tumor and he was ready for undergoing an operation.



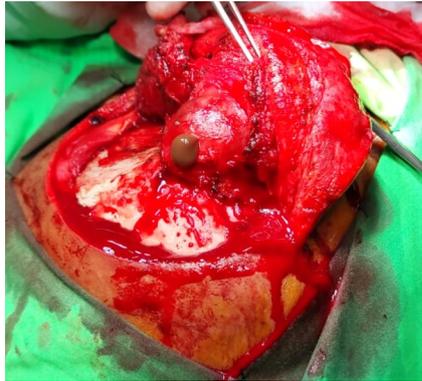
**Figure 1. Contrast CT head shows left orbita tumor. Seen in the picture the left eye was protruded and N. II was intact**

The patient was supined with generally anesthetized. Head was slightly rotated to the right and fixed with head frame. The incision line was in right temporofrontal. The tumor was pierced to the orbital roof. The capsule tumor was incised and greenish slime was seen, called mucocele (Figure 2). The tumor capsule was dissected from normal tissue. The tumor had been spread from frontal sinus to the orbital cavity that pushed the eyeball inferiorly. The tumor had been removed entirely. Craniectomy was done in orbital roof. The eyeball was in a good condition. Histologically, there were seen spreading of inflammatory cells and macrophag, debris cells, and necrotic mass (Figure 3).

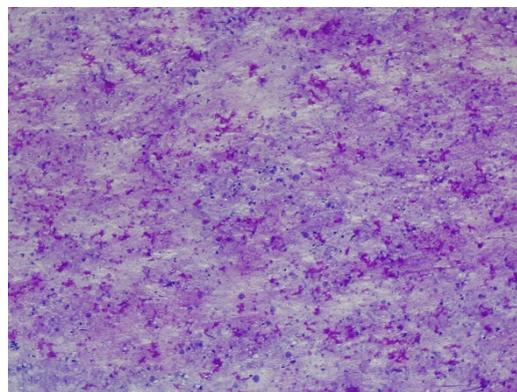
## 3. Discussion

The complaints vary depending on the location of the disease and can be categorized as nasal, neurological or, most commonly, ophthalmic symptoms [5,7]. In common, involvement of frontoparietal causes major impact on the orbit leading to proptosis, hypophthalmia, diplopia, and periorbital edema. In contrast, visual impairment is more common with posterior ethmoidal and

sphenoidal mucocele because the thin-walled mucous membrane can be displaced into the optic canal by the expansion of the mucocele [9].



**Figure 2. Greenish slime from mucocele**



**Figure 3. Hematoxylin and eosin stain X10, demonstrating non-specific suppurative inflammatory process**

In histology, mucocele in the paranasal sinuses exhibits features of respiratory mucosa with cyst walls showing one-layered, pseudostratified, ciliated columnar epithelium [2,3,8]. Although dysplastic changes are rare, chronic cases will show signs of squamous metaplasia. Reactive bone formation may also occur in neighbouring areas to the wall of cyst [2]. As slow-growing disease, mucocele can remain complaints-free for a long period [10,12,13]. Mucocele usually manifests clinical symptoms by destructing the bone of the sinus wall and exerting pressure on neighbouring anatomical structures [12]. Because of their anatomical involvement, orbital symptoms are frequently appeared. Mucocele accounts for four to eight half percent of the enlarged orbital mass [12]. Mucocele with involvement of orbita often presents with a non-infiltrative mass effect leading to eyeball protrusion, diplopia, eyelid swelling, palpable masses, ptosis, and decreased visual acuity [11,12]. CT is used because of its advantage in visualizing bone, providing data in all planes and allowing three-dimensional study [13,14].

In this case, frontal sinus mucocele, which was mimicking sphenoorbital tumor, was slow growing lesions that can make the eyeball was protuded because downward development. It did not impair visual function, because it did not disturb the optic nerve. The impairment was difficult to gaze upwardly. The histology result was expansion of inflammatory cells and necrotic center that indicates mucocele.

#### 4. Conclusion

Mucocele of paranasal sinus was lined by mucous epithelial that slow growing lesion and benign. The characteristics were fluctuative, pain free, and slow growing disease. Given that the lesion came from the frontal sinus, it could grow outwardly and made the eyeball protrude, which mimicking sphenoorbital tumor. Histologically, mucocele had spreading of inflammatory cells and macrophag, debris cells, and necrotic mass.

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