



Editorial

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Unlocking the sinus vault: Endoscopic marsupialization of frontoethmoidal mucocele

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Mucoceles are cyst-like lesions found within the paranasal sinuses, most commonly the frontal (70%-80%)followed by ethmoid sinus (25%) and frontoethmoidal region (10%-15%) are affected, unlike true cysts, these mucoceles are lined with respiratory mucosa and are primarily caused by impeded normal physiological drainage of the paranasal sinus.¹ This obstruction can occur due to various factors, including chronic sinusitis, anatomical variations, post sinus surgery or nasal polyps. As a result, mucus accumulates within the sinus cavity, leading to the formation of a fluid-filled lesion.

The frontal and frontoethmoidal being the most frequently affected sites for these lesions. As the mucocele develops, it can expand significantly, exerting pressure on the surrounding structures. A characteristic manifestation of this expansion is the thinning of the sinus walls, which may lead to visible swelling above the medial canthus of the eye. This swelling is often asymptomatic and can persist for months or even years, frequently going unnoticed by the patient until it becomes more pronounced. Other significant findings can be exophthalmos or enophthalmos, proptosis, pain, visual disturbances.^{2,3}

Patients may present with subtle symptoms, including mild visual disturbances or a sensation of pressure in the affected area, although many remain completely asymptomatic. The diagnosis is typically confirmed through imaging studies, such as Computed Tomography scans, which reveal the extent of the mucocele and its effects on adjacent anatomical structures, they are usually non enhancing soft tissue density lesion (isodense to brain parenchyma) with significant bony erosion, expansion of involved sinus and intracranial or intraorbital extension.⁴

The management of frontoethmoidal mucoceles primarily involves surgical intervention. The two main treatment options include surgical excision and marsupialization. Surgical excision entails complete removal of the mucocele, while marsupialization involves creating an opening in the mucocele to allow drainage and ventilation of the sinus.⁵ In some cases, obliteration of the sinus may be performed to prevent recurrence.

The choice of surgical approach depends on various factors, including the size, location and extent of the mucocele. A careful surgical technique is crucial, particularly to avoid manipulation of the sinus ostium, as this can lead to further narrowing (stenosis) and increase the likelihood of recurrence. The primary goals of these surgical

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interventions, are to effectively drain the mucocele, restore normal sinus ventilation and minimize morbidity associated with the procedure.

In this article, we will provide an in-depth discussion of the endoscopic marsupialization technique employed in a specific case of right frontoethmoidal mucocele, highlighting the surgical technique, outcomes and postoperative management strategies.

1. Pre- operative evaluation

During pre-operative assessment, patient underwent thorough clinical examination, the only significant finding was tenderness over right frontal region and right eye swelling just below the right supraorbital region, cystic in consistency, non reducible, tender, no warmth, ill defined borders, extending from medial canthus to lateral canthus, along with reduced eye opening (Figure 1).



Figure 1: Pre- operatively, swelling noted over right medial canthus region, just below supraorbital region, cystic consistency,non reducible, tender, ill defined borders, extending from medial to lateral canthus, associated with reduced eye opening, range of movements normal

Diagnostic nasal endoscopy which showed a bulge between middle turbinate and uncinate on the right side.

Plain Computed Tomography of Paranasal sinuses done, which showed Right frontal sinus suspected mucocele/ large polyp/ giant retenion cyst protruding into superior extraconal space of the right orbit with thinning and focal areas of breakdown of the right orbital roof. Inferior displacement of right globe. Occlusion of the right frontal sinus drainage pathway, extension of the mucocele into the right ethmoid sinus. Focal thinning of posterior wall and superior wall of the right frontal sinus without definite intracranial extension. Bilateral type 3 ethmoid roof, left



Figure 2: Intraoperatively Mucopus Drained From Right Frontal Sinus

sided Onodi cell with type 4 optic nerve canal and canal wall dehiscence, right sided type1 optic nerve canal.



Figure 3: Cyst wall peeled off from the frontal sinus

Routine blood investigations done and anaesthetic fitness obtained.

2. Steps

Patient underwent Endoscopic marsupialisation of right frontoethmoidal mucocele under general anaesthesia are as follows:

1. Patient was put in supine position with orotracheal intubation under general anaesthesia

- 2. Temporary nasal packing and diagnostic nasal endoscopy done.
- 3. Bulge noted between the uncinate and middle turbinate on the right side
- 4. Sickle shaped incision given over uncinate and middle meatal antrostomy done
- 5. Anterior and posterior ethmoidectomy done
- Right frontal sinus opened and around 4ml 5ml of mucopus drained and sample taken for histopathology (Figure 2).
- 7. The frontal sinus was widened due to extensive disease
- 8. Unhealthy, diseased mucosa removed (Figure 3).
- 9. Nasal cavity packed with antibiotic soaked nasal pack.



Figure 4: Post-operatively, significant reduction in the swelling over medial canthus noted, patient symptomatically better.

3. Post- operative period

In the post operative phase, patient was treated with intravenous antibiotics. On post operative day 1, nasal pack removal was done, bilateral nasal cavity was minimally blood stained, no active bleed or clot noted. Review ophthalmology examination was done and found to be normal. Patient was discharged on post operative day 5 as she was symptomatically better and there was a significant reduction in the swelling over the medial canthus region (Figure 4).

4. Follow up

Patient had come for review on week later with no specific complaints. Bilateral nasal cavity was clear and both eyes were normal in movement and vision. Culture sensitivity reports were sterile. It is important to have regular follow with these patients to prevent recurrence.

5. Patient Consent

Consent from patient taken before publication.

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