

A rare case of anterior ethmoidal mucocele encroaching upon supraorbital ethmoid cell

¹Dr. Bhavana. S, Resident, Department of ENT, Maharishi Markandeshwar Institute of Medical Sciences and Research, MMDU, Ambala, Haryana, India.

²Dr. Rajdeep Singh, Assistant Professor, Department of ENT, Maharishi Markandeshwar Institute of Medical Sciences and Research, MMDU, Ambala, Haryana, India.

³Dr. Ginni Datta, Head of Department and Professor, Department of ENT, Maharishi Markandeshwar Institute of Medical Sciences and Research, MMDU, Ambala, Haryana, India.

Corresponding Authors: Dr. Bhavana. S, Resident, Department of ENT, Maharishi Markandeshwar Institute of Medical Sciences and Research, MMDU, Ambala, Haryana, India.

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Abstract

Background: Mucocele is a benign lesion commonly encountered in the paranasal sinuses. They occur most frequently in frontal sinus, followed by the ethmoid sinus. The present study reports a case of a anterior ethmoidal mucocele with intra-orbital invasion which was treated with endo-scopic marsupialization

Case presentation: A 52-year-old female presented with left eye swelling. This was associated with visual impairment, diplopia, pain around the eye and left sided frontal headache. It was diagnosed as Anterior ethmoidal mucocele, intraoperatively it was found encroaching upon supraorbital ethmoid cell. Endoscopic marsupialization with anterior ethmoidectomy was performed.

Discussion: A mucocele is a mucus containing sac lined by epithelium and completely fills the sinus. It is locally destructive and capable of expansion. Endoscopic sinus surgery with drainage of the mucocele along sufficient sinus ventilation is the preferred treatment modality.

Conclusion: Endoscopic approach with marsupialization can be considered a safe and efficient procedure in therapeutic approach of anterior ethmoidal mucocele with orbital extension.

Keywords: mucocele, marsupialization, supraorbital cell

Introduction

The term mucocele was coined by Rollet in 1896. Mucocele is formed by obstruction of sinus ostium which results in blockage in drainage of mucus from one of the para nasal sinuses. Predisposing factors are

inflammation, trauma or repeated surgery in and around the nasal cavity and adjacent sinuses.^{1,2}It is a benign lesion commonly encountered in the paranasal sinuses. They occur most frequently in frontal sinus, followed by the ethmoid sinus.

Anatomically, the frontal and ethmoid region is close to the eyes and brain, and lesions here are prone to evoke complications of the eyeball or brain. Approximately 70% to 90% of Sino nasal mucoceles occur at this site. Unlike other tumors, the surgical approach for a Sino nasal mucocele does not seek to remove the entire lesion, and it is important that surgery is as effective as possible and without unnecessary risks.

Supraorbital cells are anterior ethmoidal cells. They invade the frontal orbital plate Due to its location, the surgical approach to the supraorbital cells are difficult. There are different endonasal and external surgical techniques for their management.³

We report a case of a anterior ethmoidal mucocele with intra-orbital invasion which was treated with endoscopic marsupialization

Case report

A 52-year-old female patient came to ENT OPD at Maharshi Markandeshwar Institute of Medical Sciences and Research, with complaints of swelling around left eye since 3 months. It was mainly present on inner canthal region (figure 1). It was insidious in onset, gradually progressive in nature. No aggravating and relieving factors. This was associated with visual impairment, diplopia, and pain around the left eye and left sided frontal headache. There was no history of trauma to eye and nose.



Figure 1: Preoperative image of patient

On examination, there was swelling at left medial canthal region, soft to firm in consistency and pushing the eyeball in fer olaterally. Anterior rhinoscopy suggestive of right sided deviated nasal septum with bilateral inferior turbinate hyper trophy, no discharge or polyps seen. Tenderness was present over left ethmoidal area. Visual acuity was 6/24 on the affected side and ocular move ments were normal. Ear and throat examination were normal.

Contrast enhanced computerized tomographic scan of Paranasal sinus and orbit revealed features suggestive of left anterior ethmoid mucocele (2 x 1.9 x 1.9 cm) with gross thinning and defects in its walls with resultant inferolateral displacement of left globe (figure 2, 3). Defects are seen in vertical lamella of cribriform plate and in left fovea ethmoidal is. It is causing obstruction of fronto nasal sinus drainage pathway with resultant secretion in left frontal sinus.

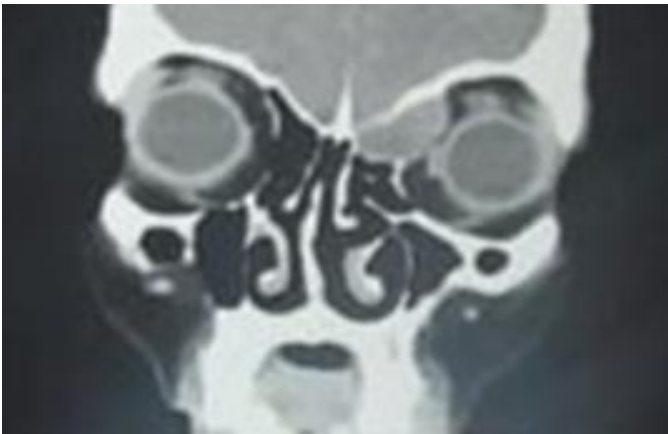


Figure 2: Coronal computed tomography image of anterior ethmoidal mucocele encroaching supra orbital ethmoid cell.

The patient was posted for endoscopic sinus surgery on following day. Endoscopy confirmed the findings of right sided deviated nasal septum with bilateral inferior turbinate hypertrophy and normal nasal mucosa. On medialization of middle turbinate of left side there was a cystic mass visualised in middle meatus. Intra operatively anterior ethmoidal mucocele encroaching supraorbital ethmoidal cell was identified. Endoscopic wide marsupialization of mucocele with anterior ethmoidectomy was done under general anaesthesia. Also, frontal recess procedure was done to drain the retained secretion. Post operatively there was rapid resolution of swelling (figure 4) and medicated nasal packing was done on the left side, which was removed after 48 hrs. Nasal douching was done regularly for the next one week. By the end of the first week postoperatively, the patient's eyeball returned back to completely normal position. Diplopia, pain and headache were also relieved and the patient was discharged. Regular follow-up was done in ENT OPD with no fresh complaints.

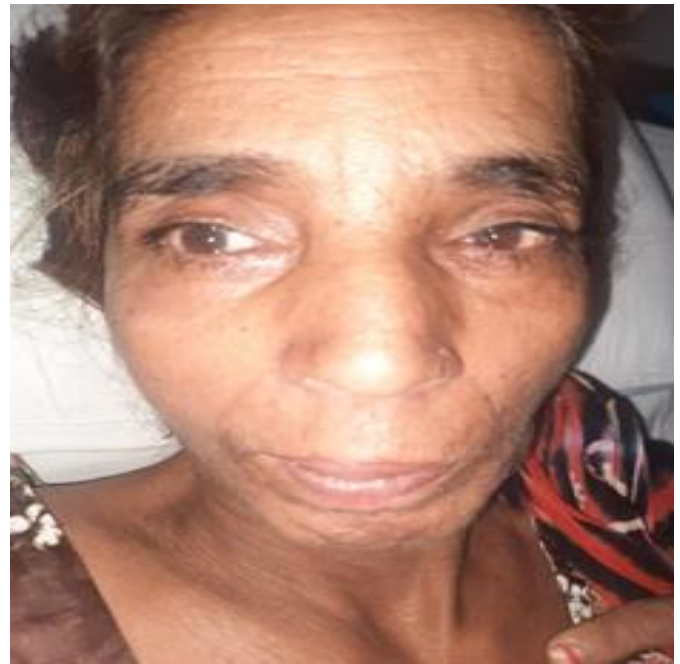


Figure 3: postoperative image of patient

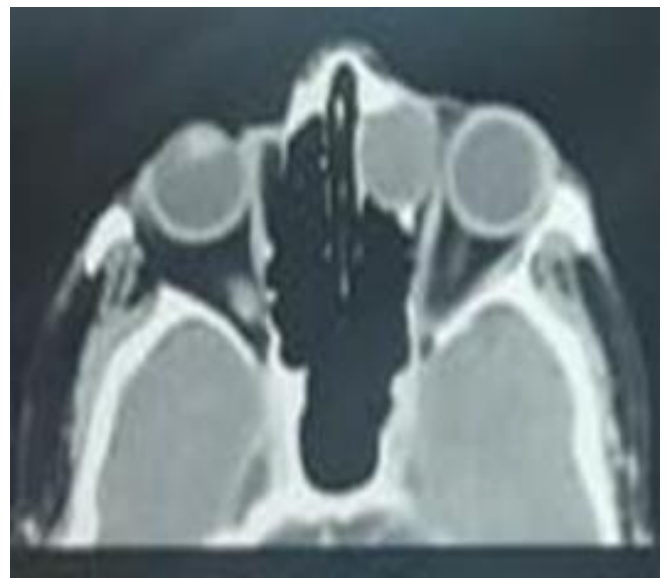


Figure 4: Axial computed tomography image of anterior ethmoidal mucocele

Discussion

The supraorbital ethmoid cell typically arises from the anterior ethmoid cell group. The cell develops by extending super laterally between the usual boundaries of the lamina papyracea and the roof of the ethmoid to pneumatize the orbital plate of the frontal bone. Its incidence has been reported in the range of 5–15% of

cadaver specimens in various anatomic studies. Mucocele is one of the most common inflammatory pathologies

of supraorbital cells. They can compromise the supraorbital cell alone or coexist with frontal sinusitis. A mucocele is a mucus containing sac lined by epithelium and completely fills the sinus. It is locally destructive and capable of expansion⁴ This is in contradiction to a chronic sinusitis with blocked sinus ostium with mucus in sinus.^{4,5} Frontal and ethmoidal sinuses are more prone to mucocele formation (89%) due to complexity of its drainage. Maxillary sinus is the least affected (1%). A mucocele is developed when drainage of mucus from one of the paranasal sinuses is blocked by obstruction of its ostium and inflammation. It slowly enlarges and fills the sinus cavity. This causes a slow expansion of the sinus space, with gross thinning and erosion of bone. Eventually there will be concomitant displacement of globe and oculomotor nerves, optic nerve, and the extraocular muscles are affected^{3,6} Even though mucocele originate in the paranasal sinuses, they may be associated with ocular symptoms and not rhinologic symptoms.⁶

Frontal and ethmoid sinuses are closely related to orbit and brain. Hence orbital and intracranial expansion and complications are more in case of these sinuses. Proptosis (83%) and diplopia (45%) are the most common symptoms. Decreased visual acuity and restricted eye ocular movements are also seen in frontoethmoidal mucoceles⁷. It can also present as a discharging sinus if it burst open or tried to drain externally⁸.

Except history and physical examination, diagnosis is mainly based on radiology. A CT scan is the most preferred investigation as it demonstrates a homogenous

mass, with clearly defined margins with expansion of the sinus and thinning or erosion of the bony sinus walls, also assess orbital and intracranial extension⁹.

Differential diagnoses of fronto ethmoidal mucocele are cholesterol granuloma, neuro fibroma, encephalocele, salivary adenoma, para Gan glioma, Angio fibroma, epidermoid cyst, meningioma, chordoma, and malignant neoplasms¹⁰.

Surgery is the treatment of choice for mucoceles. Since many of the mucoceles have an intraorbital or intracranial extension, it is preferable to operate on a non infected site no nasal status, unless the procedure is performed for acute symptomatic muco pyocele¹¹. With the advent of endoscopic sinus surgery technique, recent trend is towards trans nasal endoscopic management of mucoceles. Instead of radical procedures, endoscopic sinus surgery with drainage of the mucocele along sufficient sinus ventilation is the preferred treatment modality. A total endoscopic intervention reduce overall mortality rates, leaves no scars and preserves Architecture of sinus.

Conclusion

A mucocele is a mucus containing sac lined by epithelium and completely fills the sinus. It is capable of expansion and cause erosion of the surrounding bony walls. It often manifest with orbital complications and therefore they should be diagnosed and treated early. Endoscopic approach with marsupialization can be considered a safe and efficient procedure in therapeutic approach of anterior ethmoidal mucocele with orbital extension.

Abbreviations

ENT: Ear Nose Throat; OPD: Outpatient department; CT: Computed Tomography.

Ethics approval and consent to participate

Written consent for the publication for this case report was obtained from the patient. Approval for the case report by the institutional ethical committee is not required.

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