

## CASE REPORT

## Huge Frontal Sinus Mucocele in an Immunocompromised Patient

Avinash Kumar<sup>1</sup>, Garima Sinha<sup>2</sup>, Mansi Sharma<sup>3</sup>, Ekta Yadav<sup>4</sup>, L. Rimasri Devi<sup>5</sup>

## HOW TO CITE THIS ARTICLE:

Avinash Kumar, Garima Sinha, Mansi Sharma et. al, Huge Frontal Sinus Mucocele in an Immunocompromised Patient. RFP J ENT Allied Sci 2025; 10(1): 25-28.

## ABSTRACT

Mucocele of the paranasal sinuses are defined as cystic expansile lesions (Lageback in 1820). Rollet in 1909 coined the term mucocele. Mucoceles are most commonly found in the frontal sinus (60-65%) but can also occur in ethmoid sinuses (around 25%), sphenoid sinus (1-2%) and maxillary sinus (10%). The etiopathogenesis of PNS mucocele is multifactorial with most common causes being allergy, inflammation and trauma or less commonly it can be secondary to neoplastic lesions in PNS which are obstructing the sinus ostia.

## KEYWORDS

• Mucocele • Frontal Sinus • Fess • Draf

## INTRODUCTION

A mucocele of PNS is accumulation of desquamated epithelium and mucoid secretion with in the sinus leading to distension of its walls, leading to formation of a cyst like expansile and destructive lesion. The frontal sinus is most common to be involved, whereas ethmoid, sphenoid and maxillary

mucoceles are rare. Frontal sinus shares its floor with the superior orbital wall hence displacement of orbit in enlarging frontal mucoceles. If not managed adequately Frontal sinus mucoceles are prone to recurrence.

Management of mucocele is only surgical. With two main approaches which includes endoscopic and external approach. Both

## AUTHOR'S AFFILIATION:

<sup>1</sup> Associate Professor, Department of Otorhinolaryngology, Head and Neck Surgery, Saraswathi Institute of Medical Sciences, Anwarpur, Hapur, Uttar Pradesh, India.

<sup>2</sup> Assistant Professor, Department of Anesthesia and Critical Care, Government Institute of Medical Sciences, Greater Noida, Uttar Pradesh, India.

<sup>3</sup> Assistant Professor, Department of Otorhinolaryngology, Head and Neck Surgery, Saraswathi Institute of Medical Sciences, Anwarpur, Hapur, Uttar Pradesh, India.

<sup>4</sup> Post Graduate Resident, Department of Otorhinolaryngology, Head and Neck Surgery, Saraswathi Institute of Medical Sciences, Anwarpur, Hapur, Uttar Pradesh, India.

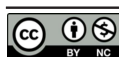
<sup>5</sup> Consultant, Department of ENT, SRS Hospital, Noida, Uttar Pradesh, India.

## CORRESPONDING AUTHOR:

**Garima Sinha**, Assistant Professor, Department of Anaesthesia and Critical Care, Government Institute of Medical Sciences, Greater Noida, Uttar Pradesh, India.

E-mail: garimasinha.doc@gmail.com

➤ Received: 27-03-2025 ➤ Accepted: 23-04-2025



Creative Commons Non Commercial CC BY-NC: This article is distributed under the terms of the Creative Commons Attribution NonCommercial 4.0 License (<http://www.creativecommons.org/licenses/by-nc/4.0/>) which permits non-Commercial use, reproduction and distribution of the work without further permission provided the original work is attributed as specified on the Red Flower Publication and Open Access pages (<https://rfppl.co.in>)

the approaches have their advantages and disadvantages so the decision to use a particular approach is based on the size, site, extent of mucocele and whether it is recurrent or not.

Small mucocele can be asymptomatic. Due to its expansile nature it can grow, and can lead to ophthalmic and intracranial complications. Sinusitis and mucous retention cyst may have similar presentation so they need to be differentiated. Computed tomography (CT) scan of PNS can help in this differentiation.

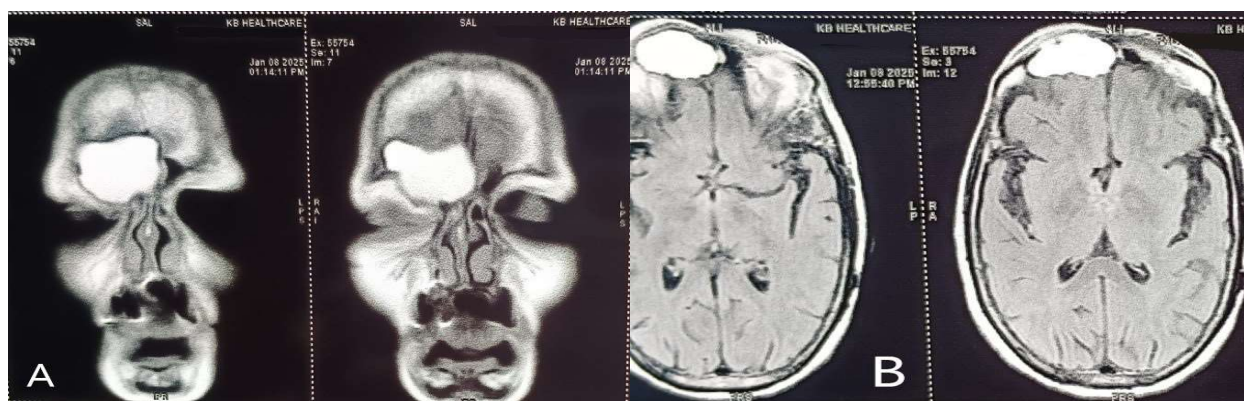
Management of mucocele is only surgical. With two main approaches which includes endoscopic and external approach. Both the approaches have their advantages and disadvantages so the decision to use a particular approach is based on the size, site,

extent of mucocele and whether it is recurrent or not.

## CASE REPORT

Here we discuss a case of a 70 yr old female who presented to ENT OPD with chief complaint of right side frontal region swelling and headache from last 2 yrs. The swelling was progressively increasing in size and was associated with pain. There was no history of fever and frequent sneezing. She was operated for cataract 3 months ago. She gave past history of Breast Cancer and was on chemotherapy and radiotherapy.

**MRI Nose PNS With Contrast** was done which was suggestive of mucocele in right frontal sinus. Figure 1 (A and B) showing frontal sinus mucocele.

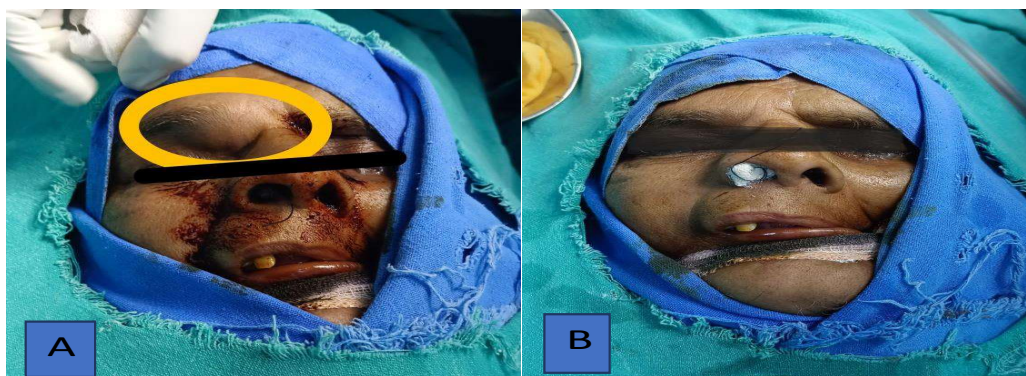


**Figure 1:** MRI PNS with contrast: in T1 axial section (A): T2 frontal section (B): Showing a well defined right frontal cystic formation in discrete hypersignal T1, hyper T2 signal. Right frontal sinus is expansile with internal variable signal intensity fluid contents with fluid level

Conservative management was given initially followed by surgery (FESS + DRAF1).

### Post-operative period was uneventful

Figure 2 shows the preoperative and postoperative picture of the patient.



**Figure 2A:** Shows the preoperative picture showing soft swelling in right frontal area.

**Figure 2B** shows the post operative picture after removal of the mucocele

## DISCUSSION

Mucocoeles are defined as collection of mucus enclosed in a sac like structure resulting from an obstruction to the sinus ostium which may lead to expansion of the sinus by resorption of bony walls.<sup>1</sup> These are benign, slow-growing lesions that most commonly occur in the frontal sinus or ethmoidal group of sinuses.<sup>2</sup> Due to chronic infection the sac may be filled with pus and it is known as chronic pyocoele.

Mucocoeles usually arise due to sinus ostium obstruction, which can occur due to inflammation, infection, fibrosis, surgery, trauma or blockage by tumors such as osteomas.<sup>3</sup>

Depending upon the anatomical site the clinical presentation of mucocoele varies. Onset of symptoms is usually insidious. Patients having frontoethmoidal mucocoeles may present with frontal headache, swelling, facial asymmetry as well as ophthalmological manifestations including impaired visual acuity, proptosis and reduced ocular mobility.<sup>4</sup> Clinical presentation may vary from being asymptomatic to incapacitating headache and visual disturbance.<sup>5</sup> Proptosis and diplopia are the most common complaints. On physical examination there can be swelling, periorbital tenderness, chemosis, restriction of extraocular movements and decreased visual acuity.<sup>6</sup> Intracranial extension can occur due to erosion of the posterior wall of the frontal sinus which may lead to meningitis or CSF fistula.<sup>7</sup> The posterior sinus wall is prone to erosion as it is inherently thin. The tendency for intracranial extension is seen more in the presence of infection. The diagnosis of a mucocoele is based on the proper history, physical examination, and radiological findings.

Basically there are three criteria for diagnosis of a mucocoele on CT SCAN.<sup>8</sup> Homogeneous isodense mass, having clearly defined margins and presence of patchy osteolysis around the mass. Another indicative finding is erosion of the sinus wall with marginal sclerosis.<sup>9</sup>

The treatment is mainly surgical. Main aim is to drain the mucocoele and ventilate the involved sinus along with removal of mucocoele with minimal morbidity and also prevention of recurrence.

Surgical approaches are based on the size, site, location and extent of the mucocoele. In presence of infection, first we

should give antibiotic treatment. Earlier, surgical management for frontoethmoidal mucocoeles involved an external approach (Lynch-Howarth frontoethmoidectomy) or osteoplastic flaps with obliteration of sinus cavity.<sup>10</sup> Presently, endoscopic drainage is the treatment of choice for frontal mucocoeles as preservation of the frontal sinus mucosa and maintenance of a patent frontal recess result in a better clinical outcome.<sup>11</sup> Endoscopic sinus surgery is minimally invasive, it preserves sinus architecture and leaves no facial scarring.<sup>12</sup>

**Competing interest statement by all the Authors:** The authors declare that they have no competing interest.

## REFERENCES

1. Alberti PW, Marshall HF, Munro Black JL. Fronto-ethmoidal Mucocoele as a cause of Unilateral Proptosis. *Br J Ophthalmol*. 1968;52:833. doi: 10.1136/bjo.52.11.833.
2. Tan CS, Yong VK, Yip LW, Amritj S. An unusual presentation of a giant frontal sinus mucocoele manifesting with a subcutaneous forehead mass. *Ann Acad Med Singapore*. 2005;34:397-8.
3. Weitzel EK, Hollier LH, Calzada G, Manolidis S. Single stage management of complex fronto-orbital mucocoeles. *J Craniofac Surg*. 2002;13:739-45. doi: 10.1097/00001665-200211000-00004.
4. Corey W, Chandra RK, Cohen N. Orbital mucopyocoele after the use of alloplastic materials in the management of frontal sinus fractures. *Otolaryngology*. 2006;135:974-976. doi: 10.1016/j.otohns.2005.09.011.
5. Edelman RR, Hesselink JR, Zlatkin MB, Cruess JV. *Clinical Magnetic Resonance Imaging*. 3rd ed. Philadelphia: Elsevier; 2006. pp. 2035-7.
6. Chobillion MA, Jankowski R. Relationship between mucocoeles, nasal polyposis and nasalisation. *Rhinology*. 2004;43:219-24.
7. Rinehart GC, Jackson IT, Potparic Z, Tan RG, Chambers PA. Management of locally aggressive sinus disease using craniofacial exposure and the galeofrontalis fascia-muscle flap. *Plast Reconstr Surg* 1993;92:1219-26.
8. Molteni G, Spinelli R, Panigatti S, Colombo L, Ronchi P. Voluminous frontoethmoidal mucocoele with epidural involvement. Surgical treatment by coronal approach. *Acta Otorhinolaryngol Ital* 2003;23:185-90.

9. Suri A, Mahapatra AK, Gaikwad S, Sarkar C. Giant mucocoeles of the frontal sinus: a series and review. *J ClinNeurosci* 2004;11:214-8.
7. Avery G, Tang RA, Close LG. Ophthalmic manifestations of mucocoeles. *Ann Ophthalmol* 1983;15:734-7.
10. Har-el G. Telescopic extracranial approach to frontal mucocoeles with intracranial extension. *J Otolaryngol* 1995;24:98-101.
11. Chew YK, Noorizan Y, Khir A, Brito-Mutunayagam S, Prepageran N. Frontal mucocoele secondary to nasal polyposis: an unusual complication. *Singapore Med J*. 2009;50:374-5.
12. Lund VJ. Endoscopic management of paranasal sinus mucocoeles. *J Laryngol Otol*. 1998;112:36-40. doi: 10.1017/s0022215100139854.

