Journal Homepage: - www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/19587
DOI URL: http://dx.doi.org/10.21474/IJAR01/19587

RESEARCH ARTICLE

A CASE REPORT OF RECURRENT FRONTAL MUCOCOELE

Dr. T. Satish Chandra, Dr. G. Sameera and Dr. G. Prathyusha
Department of Otorhinolaryngology and Head and Neck Surgery, DR. PSIMS&RF, Gannavaram, Andhra Pradesh, India.

Manuscript Info

Manuscript History
Received: 30 July 2024
Final Accepted: 31 August 2024
Published: September 2024

Key words:-
Recurrentmucocele, Post-Traumatic, Endoscopic Sinus Surgery, Frontal Sinus, Drainage Pathway, Facial Trauma

Abstract

Background: Paranasal sinus mucocele is the epithelium lined mucus filled sac causing enlargement of sinus wall. It can cause bone erosion and displacement of surrounding structures. Mucoceles usually occur due to infection, inflammation, trauma, previous surgeries, and tumours which can potentially obstruct the sinus ostium. Cranio facial trauma is the commonest cause for mucocele formation.

Case report: A 50yr old male patient came with chief complaints of swelling on forehead since 1yr. The patient had history of road traffic accident 13yrs ago for which he underwent facio-maxillary reconstruction along with right eye evisceration. Later he developed a swelling above right eye after 7yrs, which was diagnosed as mucocele and was treated by frontal cranioplasty. Now he came with complaint of swelling on forehead which was gradually increasing in size. MRI-PNS was done showing fluid filled space extending anteriorly from cutaneous plane in the frontal region going posteriorly over the orbit pushing the contents of the orbit inferiorly and medially and extending posteriorly up to orbital apex. Patient underwent endoscopic mucocele drainage and DRAF 3. Right orbital exenteration was done to prevent recurrence. Patient was on follow up since then and no symptoms or signs of recurrence is noted.

Conclusion: Facial trauma may be one of the reasons for development of mucocele where sinus drainage pathways are deranged. As in our case trauma not only led to development of mucocele, but new spaces also created by the treatment lead to extensive spread of the mucocele.

Introduction:-

Paranasal sinus mucoceles are epithelium lined cystic masses usually resulting from obstruction of sinus ostia[1]. Mucocele formation is an uncommon complication of chronic rhinosinusitis. While benign, considerable morbidity can result from local erosion, and the insidious clinical course often results in delayed diagnosis[2]. The frontal sinus is most involved, whereas sphenoid, ethmoid, and maxillary mucocele's are rare[3]. Frontal sinus mucoceles are prone to recurrences if not managed adequately[3]. Frontal sinus mucoceles develop secondary to a blockage of the nasofrontal duct which may be secondary to infection, allergy, trauma, tumors, congenitally narrowed ostium, or previous sinus surgery[4]. It can occur as late complication of trauma. A proper clinical evaluation including history, clinical examination, radiological investigations like computed tomography (CT) and magnetic resonance imaging (MRI). CT is used in determining bony anatomy and extent of the lesion, specifically the intracranial extension and

Corresponding Author:- Dr. G. Prathyusha
Address:- Vuyyuru, Krishna District.

erosion of bone. MR imaging is useful in differentiating mucoceles from neoplasms. Surgery remains the main stay of the treatment. External approaches that included: the Lynch–Howarth incision, frontal sinus osteoplastic sinusotomy and the Caldwell-Luc procedure. Endoscopic approach for marsupialization of mucocele and reestablishing drainage pathway[5] to prevent recurrence. Sometimes they may be combined for laterally located mucoceles.

In this case report we want to share our experience in managing a case of 50-year-old male patient diagnosed with post-traumatic recurrent extensive frontal mucocele. That was managed with endoscopic drainage of mucocele.

Case report

A 50-year-old male patient with a history of road traffic accident 13 years ago, sustained injuries over face and right eye for which he underwent faciomaxillary reconstruction with evisceration of right eye with partial tarsorrhaphy. Later, in 2020, he presented with a swelling above right eyebrow and was diagnosed with frontal mucocele. Patient underwent frontal cranioplasty at an outside hospital.

In June 2023, he came to ENT department at DR. PSIMS& RF with chief complaint of swelling on forehead which was insidious in onset gradually progressing from a small size to current size (fig.1), not associated with any pain or fever. He had history of mucopurulent discharge, frontal headache, postnasal drip. On examination facial asymmetry noted. A single ovoid swelling of size 4×3cms was seen on right side of forehead extending superiorly up to the level of frontal prominence, inferiorly up to medial part of right eyebrow, laterally up to medial 1/3rd of right eyebrow and medially up to medial end of left eyebrow.

A scar is seen along the medial border of the swelling (fig.1). The swelling is non tender. Nasal examination shows distorted normal anatomical structures and nasal discharge in the floor of nasal cavity. CT PNS (fig. 2) and MRI PNS (fig.3&fig4)

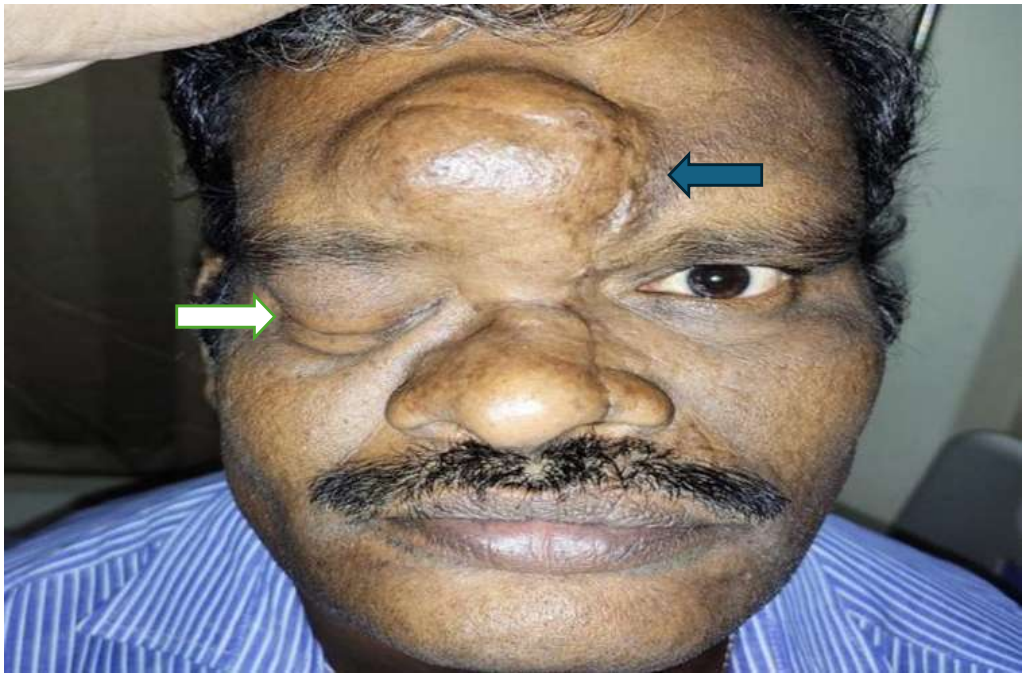

Fig. 1 swelling on forehead noted. blue arrow showing scar at medial border of the swelling. white arrow showing right eye which was eviscerated and closed with partial tarsorrhaphy.

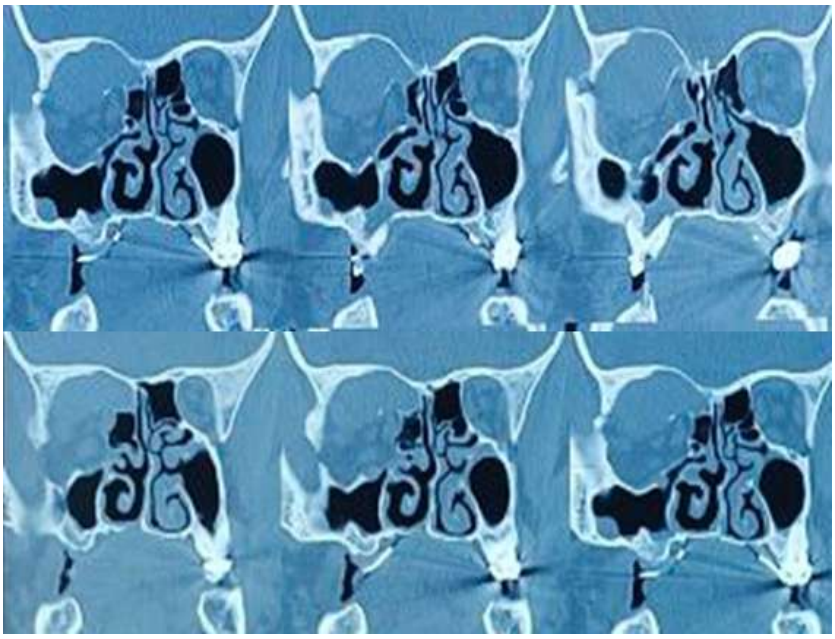

Fig. 2 CT-PNS A well-defined soft tissue density lesion seen in right orbital region extending medially into adjacent right ethmoidal air cells, superiorly in to both frontal sinuses. Bone defects seen in the superior and medial orbital wall and outer table of frontal bone. Shrunken globe seen at the floor of orbit.

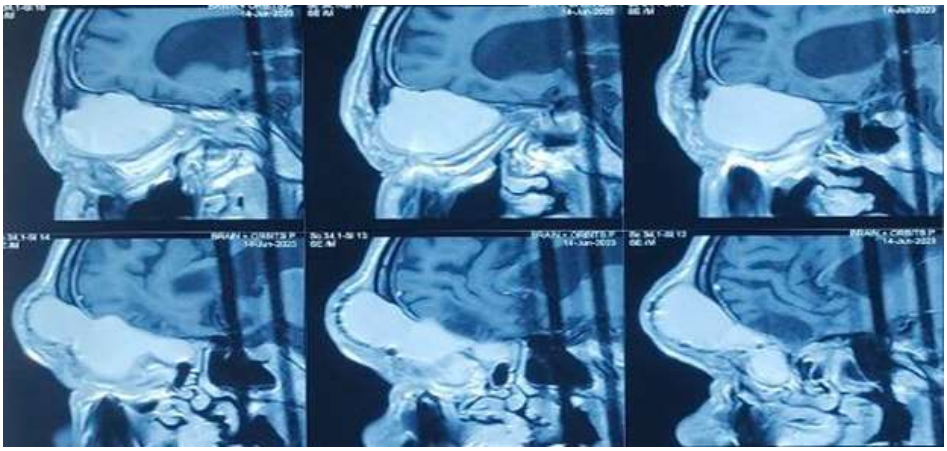

Fig 3 Contrast MRI PNS showing fluid filled space extending anteriorly from cutaneous plane in the frontal region going posteriorly over the orbit pushing the contents of the orbit inferiorly and medially and extending posteriorly up to orbital apex remodeling the bone pushing it superiorly.

Patient underwent endoscopic drainage of the mucocele. Mucocele seen at medial wall of orbit at frontonasal region which was opened at superior pole and drained. DRAF 3 procedure was done to access mucocele in frontal sinus and is drained completely by applying pressure on the swelling externally. We mobilized the medial wall of orbit inferomedial to access the retroorbital part and mucopurulent discharge was drained by pressing on the orbit. Right orbital exenteration was done to prevent recurrence.

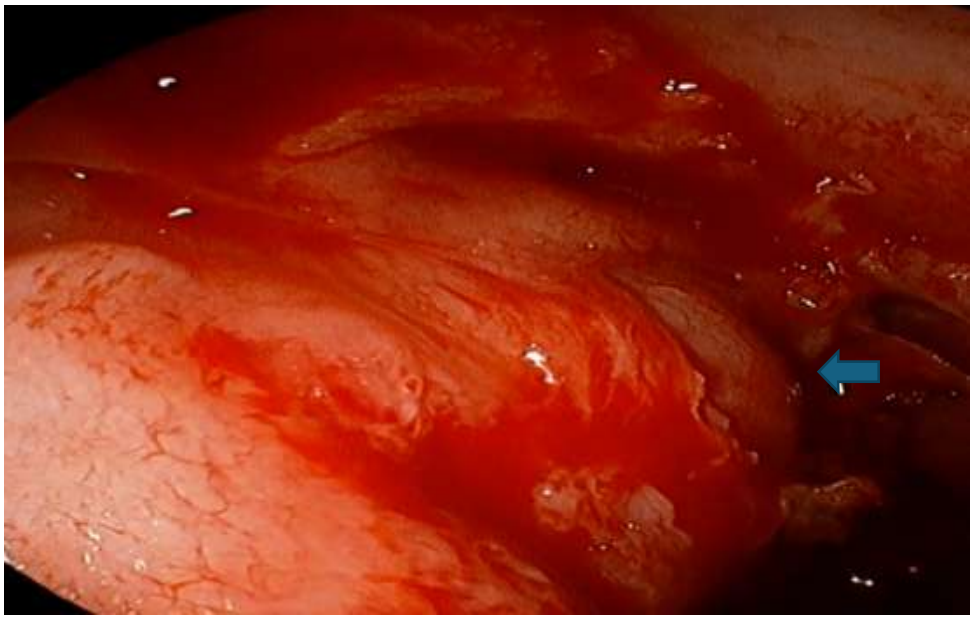

Fig 5 showing mucocele at medial wall of orbit.

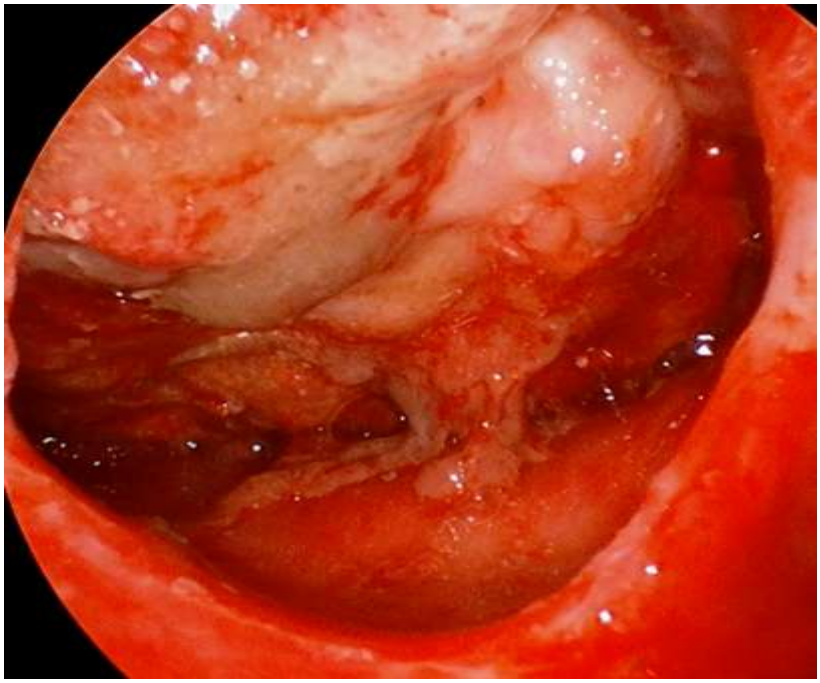

Fig. 6 showing an intraoperative picture of frontal sinus made into single cavity after DRAF-3 procedure and draining the mucocele. Bony defect of the frontal bone noted.

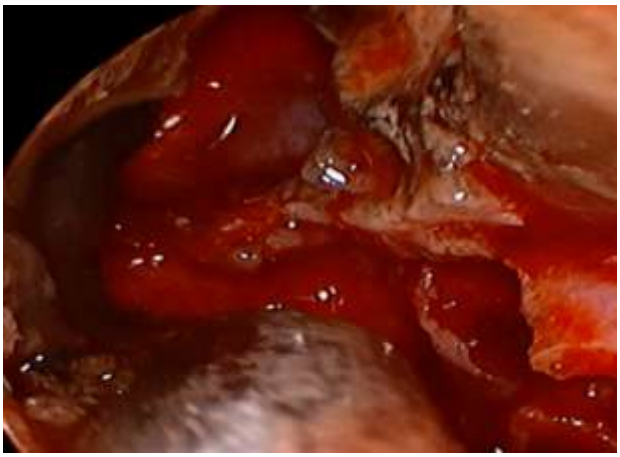

Fig. 7 showing intraoperative picture of defect in the medial wall of orbit.

Fig. 8 picture of post operative DNE showing healed mucosa in frontal cavity

Follow up: Patient was kept on follow up since 1yr. Patient had no complaints suggestive of recurrence

Discussion:-

Mucoceles were first described by Langenbeck(1890) with name hydatids. Rollet suggested the name mucocele in 1909[3]. Mucoceles occur as chronic complication of rhinosinusitis. They are slowly expanding lesion in any sinus that may result in bony erosion and can extend beyond the sinus. Mucoceles can act as real space occupying lesions causing bony erosion and displacing surrounding structures[3]. Most commonly arise in frontal and fronto-ethmoidal region because of its complex and narrow drainage pathway[4]. based on the etiology mucoceles can be classified as primary and secondary mucoceles. Primary mucoceles are seen in patients who doesn't have any known cause of mucocele or with no previous sinus surgery. Secondary mucoceles occur because of previous endoscopic sinus surgery or open procedures and facial fractures causing distortion of normal anatomy[7]. recurrence is not so uncommon. It may occur as a sequela of inadequate drainage or failure of creating a drainage pathway.

Computed tomography is the first radiological investigation to be done if mucocele is suspected. It demonstrates the anatomical extent of the disease, thinning or remodeling or erosions of sinus walls. Mucocele is seen as expansile, homogenous sinus mass without rim enhancement. Contrast is not required as it doesn't enhance with contrast[9]. Magnetic resonance imaging is done to know any intracranial extension or obstructive tumors.

Aim of the treatment is to drainage of the mucoceles completely and restoring a natural drainage pathway so that we can eradicate the disease and prevent the recurrence. Endonasal endoscopic sinus surgery is most appropriate surgical technique as it is minimally invasive, less traumatic, more conservative, and less aggressive than external approaches[10]. inaccessibility of the sinus through endoscope is the major limitation of endonasal endoscopic sinus surgery then a combined approach is employed, or exclusive external approach can be undertaken such as endoscopic modified Lothrop procedure (EMLP) or an osteoplastic flap surgery (OPF) with or without frontal sinus obliteration[10]. postoperative complications like orbital hematoma, abscesses and recurrence can be encountered.

In this patient initial facial trauma could have led to the entrapment of the mucopurulent discharge in the frontal sinuses and developed as mucocele as there was no proper drainage. In the frontal cranioplasty done in the past may have drained the mucocele but did not establish a proper drainage pathway from frontal sinuses into nasal cavity, it could be a reason for recurrence. The recurrent mucocele started growing in the frontal sinus eroding that part of the bone where the cranioplasty was done. Posteriorly into the orbit (as it was sunken due to previous evisceration) all across in to the level of the orbital apex.

Previous open procedures were able to drain the mucocele but cannot create a drainage pathway to prevent the recurrence. So, in this patient we have done DRAF 3 procedure for frontal component and latero-inferior displacement of the globe for the supra and postero orbital extension. We consider doing orbital exenteration as there is no vision in the right eye and it seems to be the major cause for the entrapment of postero - superior component of the mucocele in this patient.

Whenever dealing with the secondary mucocele simple drainage of the mucocele is not sufficient, creating a proper drainage pathway from the sinuses into nasal cavity is mandatory to prevent the recurrence.

Conclusion:-

Recurrent mucocele occurs when proper drainage pathway for involved paranasal sinus was not established during the primary surgery. While treating a mucocele, it is essential to create a drainage pathway into nasal cavity along with drainage of the mucocele. Endoscopic approach has been proved to be useful in clearing the mucocele along with establishing the drainage pathway. External approaches are considered in conditions where the mucocele cannot be accessed through endoscopic approach.

Declarations:
Funding:
There was no source of funding for the study.

Conflict Of Intrest:
The authors declare no conflict of interest.

Compliance with Ethical Standards:
The Ethics Committee at PSIMS & RF has confirmed that no ethical approval is required.

Financial Interests:
Authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

References:-

1. Capra GG, Carbone PN, Mullin DP. Paranasal sinus mucocele. Head Neck Pathol. 2012 Sep;6(3):369-72.
2. Bermúdez, Angélica, Amit S. Patel, and Edward D. McCoul. 2016. "Contralateral Orbital Mucocele as a Complication of Unilateral Nasal Polyposis" Sinusitis 1, no. 1: 99-104.

3. Aggarwal SK, Bhavana K, Keshri A, Kumar R, Srivastava A. Frontal sinus mucocele with orbital complications: Management by varied surgical approaches. Asian J Neurosurg. 2012 Jul;7(3):135-40.
4. SS MANN, S KUMAR, SK SINGH, GIRIRAJ SINGH, FRONTAL MUCOCELE AS A CAUSE OF GROSS UNILATERAL PROPTOSIS, Medical Journal Armed Forces India, Volume 57, Issue 4,2001, Pages 337-338.
5. Koudstaal MJ, van der Wal KG, Bijvoet HW, Vincent AJ, Poublon RM. Post-trauma mucocele formation in the frontal sinus, a rationale of follow-up. Int J Oral Maxillofac Surg. 2004 Dec;33(8):751-4.
6. Aghakhanyan G, Lupi G, Frijia F, Hlavata H, Lombardo F, De Cori S, Canapicchi R, Vannozzi R, Montanaro D. Delayed post-traumatic fronto-ethmoidal sinus mucocele evaluated with short and long TE MR spectroscopy. Neuroradiol J. 2013 Dec;26(6):693-8.
7. Magboul N A, Alzubaidi A A, Abumsmar L A, et al. (July 17, 2023) Mucocele of the Paranasal Sinuses: Retrospective Analysis of a Series of Eight Cases. Cureus 15(7): e41986.
8. Mark Herndon, Kevin Christopher McMains, Stilianos E. Kountakis,Presentation and management of extensive fronto-orbital-ethmoid mucoceles,American Journal of Otolaryngology,Volume 28, Issue 3,2007,Pages 145-147.
9. Liong R, Yap J, Sharifkashani S, et al. Frontal mucocele. Reference article, Radiopaedia.org.
10. Zainab Alhassan, Fadel Molani, Ali Almomen,Endoscopic management of bilateral frontal mucopyoceles: A Case Report and Literature review,International Journal of Surgery Case Reports,Volume 68,2020,Pages 208-213.
11.Kennedy RE. Indications and surgical techniques for orbital exenteration. Adv Ophthalmic PlastReconstr Surg. 1992; 9:163-73.