CASE REPORT

Journal of Otorhinolaryngology and Facial Plastic Surgery 2023;9(1):1-4.
https://doi.org/10.22037/orlfps.v9i1.45517

Large Spontaneous Frontoethmoidal Mucocele

Amirreza Zaker[1,2], Sadra Kiani[3], Mohsen Fazli[1,2], Nader Akbari Dilmaghani[1,2*], Narges Bazgir[1], Farzin Davoodi[1,2]

1. Hearing Disorders Research Center, Loghman Hakim Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran.
2. Department of Otorhinolaryngology, Loghman Hakim Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran.
3. Student Research Committee, School of Medicine, Alborz University of Medical Sciences, Alborz, Iran.

Article Info

Article Note:
Received: November 2023
Accepted: December 2023
Publish Online: December 2023

Corresponding Author:
Dr. Nader Akbari Dilmaghani

Email:
nadakbari@sbmu.ac.ir

Keywords:
Mucocele;
Frontoethmoidal;
Sinuse.

Abstract

Background: Mucoceles most commonly occur in the frontal sinuses and can expand the sinus cavity, invade surrounding tissues, and cause health problems like brain abscesses and vision loss. The common causes of mucoceles include previous sinus surgery, trauma, and chronic inflammatory diseases like acute and chronic rhinosinusitis.

Case presentation: A 38-year-old man with forehead and medial cantus swelling was admitted to Loghman Hakim Hospital. He reported no history of chronic inflammatory disease, trauma or surgery. patient had a satisfactory postoperative period and was discharged two days later with good cosmetic results.

Discussion: Mucoceles form when a sinus opening is blocked, causing a buildup of mucus. They are most commonly found in the forehead region and can cause symptoms such as headaches, eye swelling, visual disturbances, and difficulty breathing. CT scans are essential for diagnosis, but MRI is superior for distinguishing mucoceles from other masses. Endoscopic surgery is the preferred treatment with low risk of recurrence.

Conclusion: A middle-aged male patient was diagnosed with a large frontoethmoidal mucocele spontaneously with no prior surgery, trauma or chronic inflammatory disease history.

Conflicts of Interest: The Authors declare no conflicts of interest.
Please cite this article as:.Zaker A, Kiani S, Fazli M, Akbari Dilmaghani N, Bazgir N, Davoodi F. Large Spontaneous Frontoethmoidal Mucocele. J Otorhinolaryngol Facial Plast Surg 2023;9(1):1-4. https://doi.org/10.22037/orlfps.v9i1.45517

Introduction

Paranasal mucocele is caused by obstruction of the sinus ostium and consists of an enlarged, airless nasal mucosa filled with mucus (1). It is a benign, slow-growing epithelial line lesion that's bulging against adjacent anatomical structures, and it doesn't invade them (2). Mucoceles can cause different orbital and intracranial complications such as meningitis, brain abscess, and loss of vision. The superior orbital wall forms the floor of the frontal sinus, which explains the early displacement of orbit as a result of enlargement of the front mucoceles (1, 2). Frontal sinuses are the most common site for mucoceles and ethmoidal air cells comes after (3). In spite of the fact that a lot of cases are Idiopathic, etiological factors have been well described. A history of previous sinus surgery, trauma, chronic inflammatory disease, ARS or CRS have been reported as common causes in the literature (1). In general pain, swelling, diplopia, restricted mobility of eyeball, and loss of vision have been repeatedly reported as symptoms in the literature (1).

Despite all traditional management methods, in most cases, endoscopic endonasal marsupialization is the preferred approach. However, lesions that are not accessible by an endoscope or in which the drainage pathway is narrow and prone to stenosis are treated with

Journal of Otorhinolaryngology and Facial Plastic Surgery 2023;9(1):1-4.
https://doi.org/10.22037/orlfps.v9i1.45517

external approaches(1). Here we report a case of a 38-year-old man with a frontal sinus mucocele causing bone erosion with extension in the orbital spaces without any history of chronic inflammatory disease or surgery.

Case presentation

A 38-year-old man with significant swelling in the forehead and medial cantus was admitted to Loghman Hakim Hospital. The swelling started three months ago from medial cantus. The mass slowly grew in size and caused bulging in the forehead. His surgical history was insignificant. He reported no history of surgery, trauma or chronic inflammatory disease. He had a history of diabetes and consumed sitagliptin 50 and metformin 500 every day. On physical examination, the inferior and lateral displacement of the right globe and mild ptosis of the right eye were evident. A mass 2*2 cm in size, non-pulsatile, free from underlying skin, with a soft consistency, without tenderness, pain, and ulceration or discharge in the right medial cantus was observed. His eye movement and visual acuity were normal, although the patient had a complain of diplopia. The neurological examinations were otherwise insignificant.

A computed tomography (CT) scan of the paranasal sinus (PNS) showed a mass in the ethmoid sinus with well-defined borders that is of a uniform consistency and size with expansion, and erosion of the right medial orbital wall. There was no extension into the surrounding brain tissue (Figure 1).

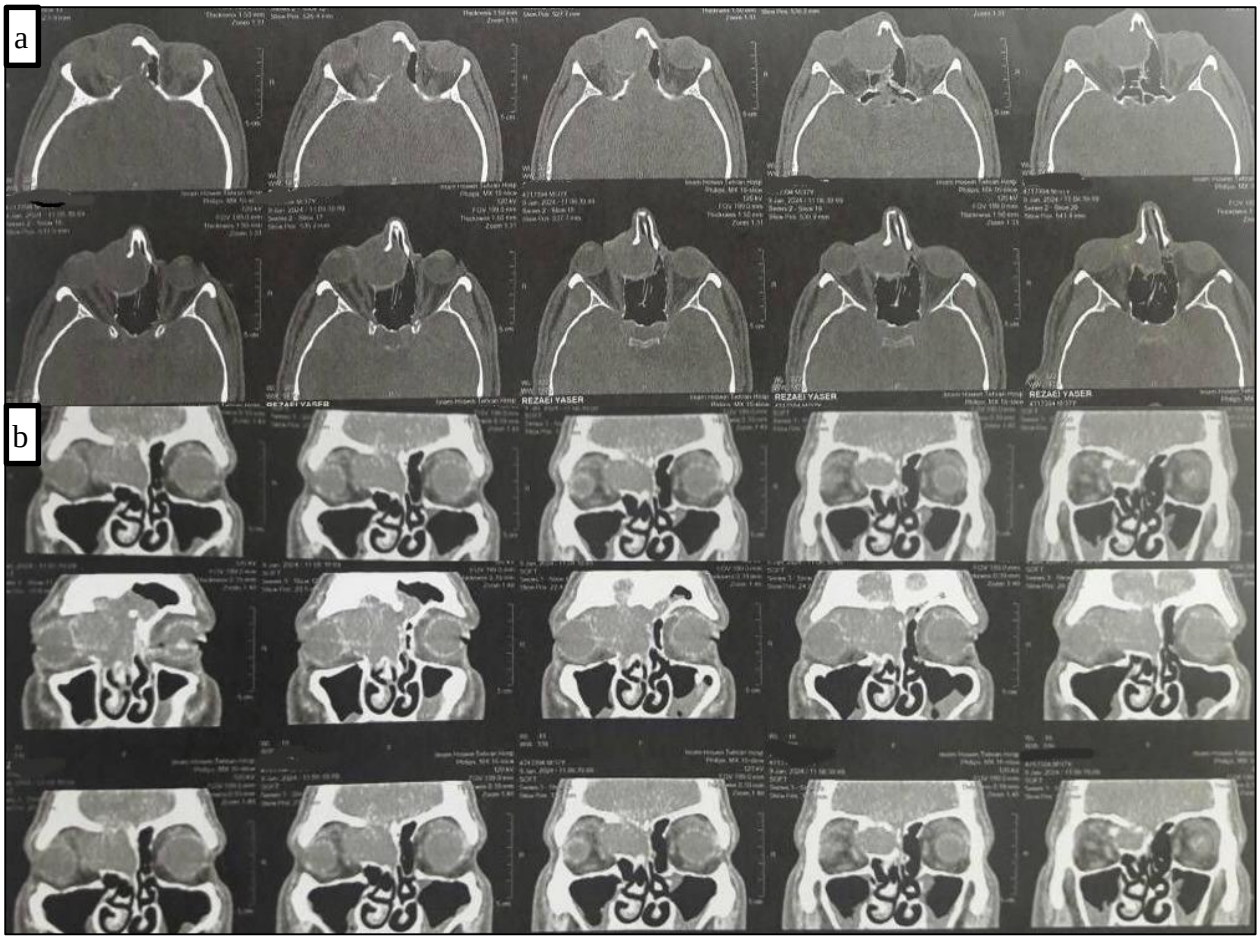

Figure 1. The (a) axial and (b) coronal CT scan of the patient.

The surgeon marsupialized the mucocele by removing its anterior, inferior, and medial walls, which opened it into the nasal cavity. Additionally, erosion of the lamina papyracea

Journal of Otorhinolaryngology and Facial Plastic Surgery 2023;9(1):1-4.
https://doi.org/10.22037/orlfps.v9i1.45517

left only periorbital and respiratory mucosa, separating the ethmoid and orbit (Figure 3). The patient had a satisfactory postoperative period and was discharged after two days with good cosmetic results. Subsequently, the patient's follow-up was normal.

Figure 2. The patient before the surgery.

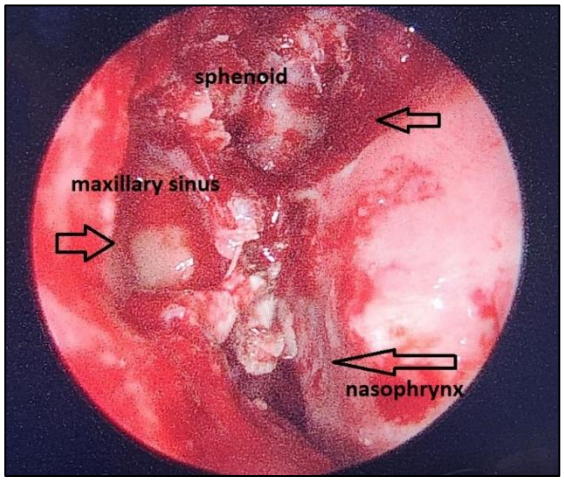

Figure 3. Microscopic view of the sphenoid, maxillary sinus and nasopharynx.

Discussion

Mucoceles form when a sinus opening is blocked by various factors, leading to a buildup of mucous in the sinus lining (1, 4, 5). Mucocele can expand by bone resorption and new bone formation, completely filling a sinus (1, 2). Mucoceles are most commonly found in the forehead region, followed by the sphenoid and maxillary sinuses (1, 4-6).

Mucoceles are more common in adults and may be caused by previous trauma, surgery and chronic or acute rhinosinusitis (CRS and ARS). In children, they are often associated with cystic fibrosis (7).

In this particular case, the patient had no prior history of surgery or chronic inflammatory disease. Mucoceles are typically found on one side only. The physical symptoms of mucoceles are caused by the mucocele itself, as well as by inflammation, and the compression of adjacent tissues. These symptoms may include non-specific headaches, painless swelling around the eye, visual field disturbances, double vision, eye displacement, and difficulty breathing through the nose (8-11).

The CT scan is essential for radiological assessment, but MRI is superior to CT in separating a mucocele from soft tissue neoplasms (2, 12, 13). In a CT scan, a mucocele may appear as an airless mass inside the sinus that has a similar density to the mucus. It may not show any enhancement (3). The CT scan imaging can identify the relationship between the mass and soft tissue of the brain and orbit, as well as signs of bone erosion(2, 13). In MRI, masses can exhibit varied intensities on T1 and T2 weighted images based on protein content and viscosity (2). The T2-weighted MRI imaging technique is primarily useful in distinguishing between mucoceles and neoplastic processes (13). Studies have shown that endoscopic endonasal marsupialization surgery (also known as ESS) is the preferred treatment for the type of mucocele we are reporting on, with the highest success rates and very low risk of recurrence. (2, 13).

In this case report, we present a mid-aged man with an ethmoidal mucocele, despite no history of surgery, trauma or chronic inflammatory disease.

Conclusion

Journal of Otorhinolaryngology and Facial Plastic Surgery 2023;9(1):1-4.
https://doi.org/10.22037/orlfps.v9i1.45517

We reported a middle-aged man with a substantial ethmoidal mucocele. It is noteworthy that this occurred in the absence of any history of surgery, trauma, or chronic inflammatory disease.

Acknowledgements
Not declared.

Conflicts of Interest
The authors declare no conflicts of interest.

Financial Support
The authors declare there is no funding support for this study.

Patients' Perspective
Written consent was obtained from the patient. The whole process of examination and the purpose of the article was thoroughly explained

Authors ORCIDs
Amirreza Zaker
https://orcid.org/0009-0000-3178-802X
Nader Akbari Dilmaghani
https://orcid.org/0000-0002-5473-1904
Farzin Davoodi
https://orcid.org/0000-0003-4609-3460
Narges Bazgir
https://orcid.org/0000-0002-6443-9448

References
1. Dhepnorrarat RC, Subramaniam S, Sethi DS. Endoscopic surgery for fronto-ethmoidal mucoceles: a 15-year experience. Otolaryngol Head Neck Surg. 2012;147(2):345-50.

2. Dey S, Agarwal M. Frontoethmoidal mucocele causing proptosis and visual loss. Natl J Maxillofac Surg. 2020;11(1):121-3.

3. Severino R, Severino P. Fronto-orbital mucocele with intracranial extension: a case report. J Surg Case Rep. 2017;2017(6):rjx107.

4. Gavioli C, Grasso DL, Carinci F, Amoroso C, Pastore A. Mucoceles of the frontal sinus. Clinical and therapeutical considerations. Minerva Stomatol. 2002;51(9):385-90.

5. Nicollas R, Facon F, Sudre-Levillain I, Forman C, Roman S, Triglia JM. Pediatric paranasal sinus mucoceles: etiologic factors, management and outcome. Int J Pediatr Otorhinolaryngol. 2006;70(5):905-8.

6. Hartley BE, Lund VJ. Endoscopic drainage of pediatric paranasal sinus mucoceles. Int J Pediatr Otorhinolaryngol. 1999;50(2):109-11.

7. Serrano E, Klossek JM, Percodani J, Yardeni E, Dufour X. Surgical management of paranasal sinus mucoceles: a long-term study of 60 cases. Otolaryngol Head Neck Surg. 2004;131(1):133-40.

8. Olze H, Matthias C, Degenhardt P. Paediatric paranasal sinus mucoceles. Eur J Pediatr Surg. 2006;16(3):192-6.

9. Djambazov KB, Kitov BD, Zhelyazkov CB, Davarski AN, Topalova AR. Mucocele of the Sphenoid Sinus. Folia Med (Plovdiv). 2017;59(4):481-5.

10. Moriyama H, Nakajima T, Honda Y. Studies on mucocoeles of the ethmoid and sphenoid sinuses: analysis of 47 cases. J Laryngol Otol. 1992;106(1):23-7.

11. Delfini R, Missori P, Iannetti G, Ciappetta P, Cantore G. Mucoceles of the paranasal sinuses with intracranial and intraorbital extension: report of 28 cases. Neurosurgery. 1993;32(6):901-6; discussion 6.

12. Alshoabi S, Gameraddin M. Giant frontal mucocele presenting with displacement of the eye globe. Radiology Case Reports. 2018;13(3):627-30.

13. de la Cour CD, Bilde A, von Buchwald C. Frontal mucocele in the developing sinus. International Journal of Pediatric Otorhinolaryngology Extra. 2015;10(4):91-3.