



Ethmoido-orbital Osteoma Concealed within Nasal Polyps: A Rare Case Report and Literature Review

Mohamed Amine Karmouch ^{a*}, Hamza Benghaleb ^a, Myriam Loudghiri ^a, Walid Bijou ^a, Youssef Oukessou ^a, Sami Rouadi ^a, Redallah Abada ^a, Mohamed Roubal ^a and Mohamed Mahtar ^a

^a Otorhinolaryngology and Head and Neck Surgery Department, IBN ROCHD University Hospital, Faculty of Medicine and Pharmacy, Hassan II University, Casablanca, Morocco.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Case Report

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ABSTRACT

Paranasal sinus osteomas develop slowly and are benign tumors. Most individuals don't have any symptoms, and a CT scan of the paranasal sinuses is used to identify them accidentally. Depending on where the mass is located, osteomas can produce a variety of symptoms. There are very few case reports of giant osteomas of the paranasal sinuses in the literature. The clinical manifestation and course of therapy for large osteomas remain unknown due to their rarity. This article includes a review of the literature and a case study of a massive ethmoid sinus osteoma that was surgically removed via an endoscopic endonasal technique.

Keywords: *Paranasal sinus; ethmoid osteoma; ethmoid sinus; osteoma; polyp.*

*Corresponding author: E-mail: hamza.gus7@gmail.com;

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1. INTRODUCTION

Paranasal sinus osteomas are benign tumors that develop slowly and stem from an osteogenic source [1,2]. These tumors are found in 3% of the general population [3]. Typically, osteomas are located in the frontal and ethmoid sinuses, with a higher occurrence in the frontal sinus [4]. They are usually without symptoms and are often incidentally identified during a paranasal CT scan. Typically affecting males aged between 30 to 60 years, osteomas are categorized as either small or giant depending on their size. Small osteomas, which are more common and smaller than 3 cm, are generally asymptomatic and necessitate only periodic CT scans to monitor their size [5]. Surveillance primarily concentrates on the tumor's dimensions to track any growth and potential complications. Giant osteomas, exceeding 3 cm in size, can lead to severe symptoms or complications if they infiltrate neighboring structures [6,7]. The clinical manifestation and management of giant osteomas remain uncertain due to their rarity. There are few documented cases of giant paranasal sinus osteomas. In the following study, we illustrate a scenario involving a giant ethmoid sinus osteoma that was excised using an endoscopic endonasal technique, alongside a comprehensive literature review.

2. CASE REPORT

We report the case of a 59-year-old male patient who presented to our department with 5-month history of nasal obstruction, rhinorrhea and posterior nasal drip. In addition to his chronic smoking, his medical history notes a FESS surgery in the private sector for bilateral nasal polyps 3 year before his admission. The initial intervention consisted only with a polypectomy. On clinical examination, the anterior rhinoscopy showed an inflammation of nasal mucosa with bilateral translucid polyps in both nasal cavities located in the middle nasal meatus (Fig. 1). The patient had a mild left exophthalmia with no limitation of ocular motility.

A facial CT scan was performed showing nasal and paranasal filling related to the recurrence of polyposis. There was a spontaneously hyperdense mass in the left nasal cavity, occupying the posterior ethmoidal cells and extending more significantly into the left sphenoid sinus, measuring 35 x 25 millimeters. The density of this mass is measured at 521UH. It's causing significant pressure on the inner wall of the left orbit, causing deviation without signs of rupture, and affecting the internal rectus muscle. There's a small safety margin (2mm) between the mass and the optic nerve (Fig. 2).

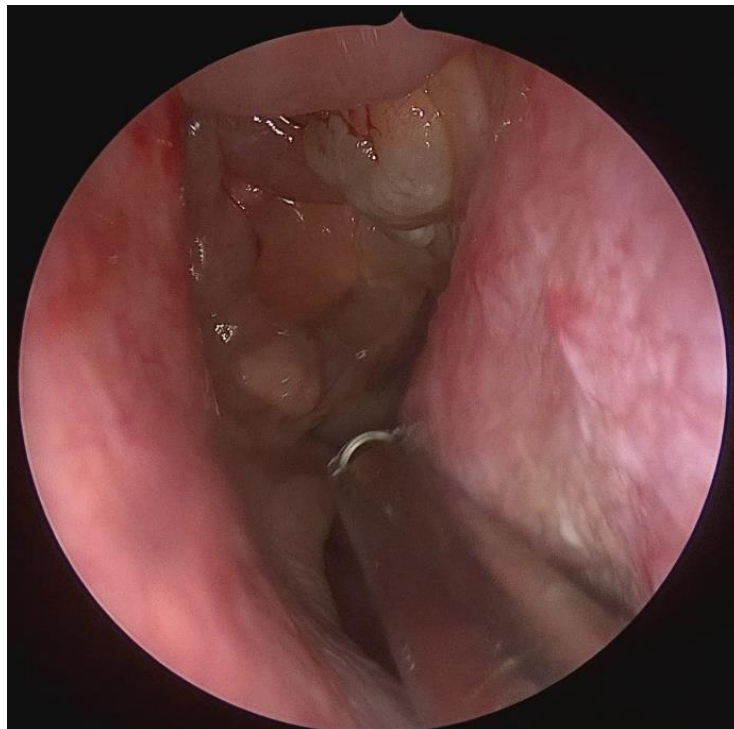


Fig. 1. Presence of translucid polyps in the middle nasal meatus

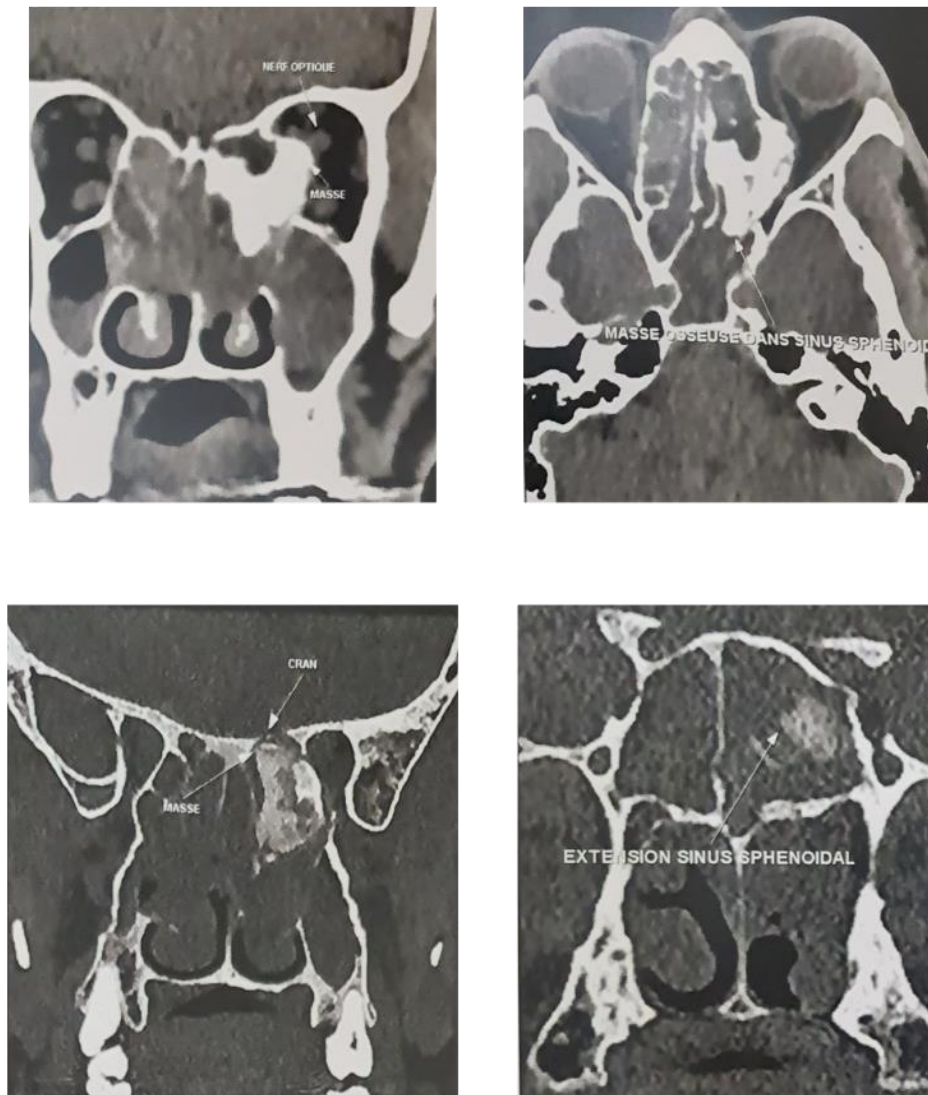


Fig. 2. Facial CT scan showing the extent of the osteoma

The patient was sent to the ophthalmology clinic for a visual assessment. Their visual acuity measured 20/20 in both eyes, with a normal fundoscopic examination revealing no abnormalities. Full range of extraocular movements tested normal, with a slight left proptosis. We explained to the patient the disease, its growth pattern, and its natural progression, as well as the surgical options and associated risks. Given the patient's age, the likelihood of orbital complications, and future challenges, endoscopic tumor removal was proposed. The patient consented to the surgery by signing the necessary documents.

Under general anesthesia, the procedure was conducted with neuronavigation guidance. Commencing in the left nasal cavity, a

polypectomy and anterior ethmoidectomy were performed using a 0-degree, 4-millimeter endoscope, and a microdebrider. A calcified mass, originating from the Lamina papyracea, was identified. Enlargement of the maxillary sinus ostium was undertaken to locate the angle between the medial and inferior walls of the orbit. Following exposure of anatomical landmarks, the mass was drilled. The medial portion of the osteoma was freed, and subsequently, the lateral portion was dislocated from the lamina papyracea. Intraorbital fat tissue was exposed, and posterior polyps were excised. Finally, the sphenoidal ostium was opened and enlarged. Transitioning to the right nasal cavity, a maxillary ostium enlargement, total ethmoidectomy, and sphenoidotomy were performed. All polyps were removed, and bleeding was effectively managed.

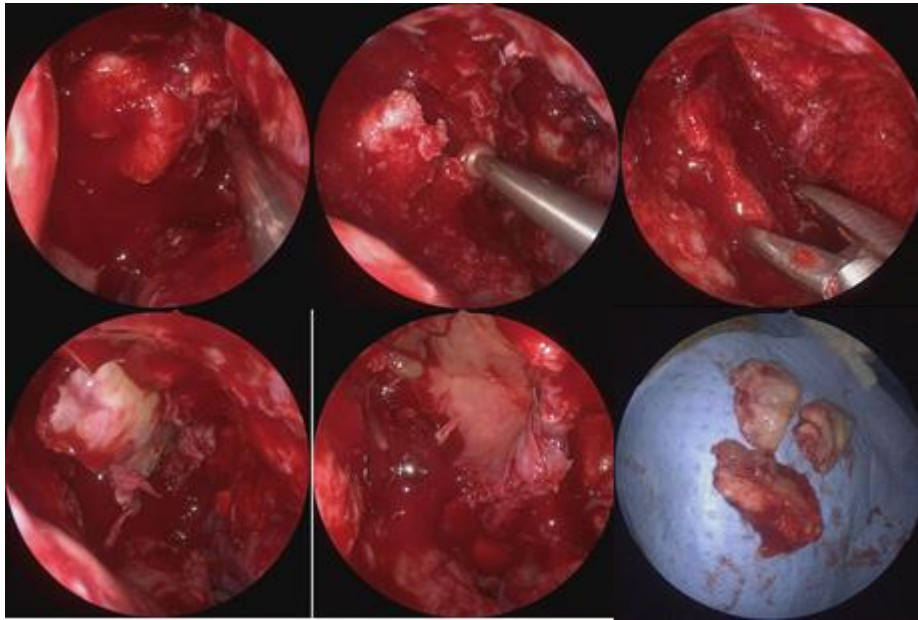


Fig. 3. Per-operative images of the osteoma

The post-operative course was insignificant, with no signs of ocular mobility deficiency. The patient was discharged the third day after surgery. The conclusive histopathologic report affirmed the clinical diagnosis of osteoma.

3. DISCUSSION

Osteomas, which are the most common benign tumors found in the paranasal sinuses, particularly in the ethmoid sinus, are typically slow-growing and often do not show symptoms in the majority of patients, with diagnosis usually occurring incidentally through sinus radiographs or more commonly through CT scans of the paranasal sinuses [8,9,10].

Depending on where the osteoma is located, various signs and symptoms can manifest. Symptoms such as headaches and facial pain are commonly reported due to sinusitis or the pressure on nearby tissues. When a giant osteoma is in proximity to the orbit or extends into it, it can lead to ocular manifestations like exophthalmia, diplopia, orbital cellulitis, epiphora, and proptosis [11-13]. Additionally, paranasal osteomas have been associated with cosmetic deformities and mucocoeles [11]. Furthermore, if the osteoma extends intracranially or is near the skull base and comes into contact with the dura mater, it can result in severe complications such as meningitis, seizures, or subdural or intracranial abscesses [14,15]. Moreover, nasal

obstruction and anosmia are common when the osteoma extends into the nasal passage.

The frontal and ethmoidal sinuses are the most common sites for paranasal sinus osteomas [16]. The majority of cases are incidentally diagnosed through CT scans of the paranasal sinuses. Routine imaging is often sufficient to monitor the growth of typical osteomas and prevent the development of complications. The use of paranasal sinus CT scans is crucial not only for accurate diagnosis but also to aid surgeons in planning the most appropriate surgical interventions.

The etiology of paranasal sinus osteomas remains under investigation, with various theories proposed to explain their formation. These theories include developmental, infective, and traumatic causes. Trauma and chronic sinusitis have been suggested to trigger osteoblast proliferation in the sinus mucoperiosteum, leading to tumor formation. The developmental theory posits that osteomas typically arise at the junction of the ethmoid and frontal sinuses, where cartilaginous and membranous tissues meet during early embryonic development. In the case of the patient discussed, although there was no history of trauma, chronic rhinosinusitis was present.

For symptomatic giant ethmoid osteomas, surgical intervention is the preferred treatment. However, the choice of surgical approach

depends on various factors such as the tumor size and location, associated symptoms, presence of complications, surgeon's expertise, and patient's consent. While a watchful waiting strategy is recommended for small asymptomatic osteomas in the frontal and maxillary sinuses due to their slow growth, surgical removal is advised for ethmoid and sphenoid sinus masses, regardless of their size or symptoms. In cases where an ethmoid sinus osteoma is small enough to be extracted through the nostril, an endoscopic nasal approach performed by an otolaryngologist is usually the optimal choice. The cavitation technique is commonly preferred for endoscopic excision of ethmoid sinus osteomas.

4. CONCLUSION

Massive ethmoid sinus osteomas are uncommon and unintentionally found on CT scans. Because of their intracranial or intraorbital expansion, they may produce severe symptoms. Ocular discomfort and headaches are often reported complaints. The most effective method of treating gigantic osteomas is surgery, either by an exterior route or an endoscopic one. Surgery for gigantic osteomas has good results, with very uncommon recurrences.

CONSENT

As per International Standards or University Standards, Patient written consent has been collected and preserved by the authors.

ETHICAL APPROVAL

As per International Standard or University Standards written ethical approval has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Boffano P, Roccia F, Campisi P, Gallesio C. Review of 43 osteomas of the craniomaxillofacial region. *J Oral Maxillofac Surg.* 2012;70:1093–1095. Available:<https://doi.org/10.1016/j.joms.2011.05.006>.
2. Cheng KJ, Wang SQ, Lin L. Giant osteomas of the ethmoid and frontal sinuses: Clinical characteristics and review of the literature. *Oncol Lett.* 2013;5:1724–1730.
3. Lee DH, Jung SH, Yoon TM, Lee JK, Joo YE, Lim SC. Characteristics of paranasal sinus osteoma and treatment outcomes. *Acta Otolaryngol.* 2015;135:602–607. Available:<https://doi.org/10.3109/00016489.2014.1003093>.
4. Osma U, Yaldiz M, Tekin M, Topcu I. Giant ethmoid osteoma with orbital extension presenting with epiphora. *Rhinology.* 2003;41:122–124. Available:<https://www.rhinologyjournal.com/Abstract.php?id=383>.
5. Izci Y. Management of the large cranial osteoma: Experience with 13 adult patients. *Acta Neurochir (Wien)* 2005;147:1151–1155.
6. Guedes Bde V, da Rocha AJ, da Silva CJ, dos Santos AR, Lazarini PR. A rare association of tension pneumocephalus and a large frontoethmoidal osteoma: Imaging features and surgical treatment. *J Craniofac Surg.* 2011;22:212–213. Available:<https://doi.org/10.1097/SCS.0b013e3181f76031>.
7. Frontoethmoid sinus osteoma as a cause of subperiosteal orbital abscess. Sahin A, Yildirim N, Cingi E, Atasoy MA. *Adv Ther.* 2007;24:571–574.
8. Miman MC, Bayindir T, Akarcay M, Erdem T, Selimoglu E. Endoscopic removal technique of a huge ethmoido-orbital osteoma. *J Craniofac Surg.* 2009;20:1403–1406. Available:<https://doi.org/10.1097/SCS.0b013e3181aee30e>.
9. Mansour AM, Salti H, Uwaydat S, Dakroub R, Bashshour Z. Ethmoid sinus osteoma presenting as epiphora and orbital cellulitis: Case report and literature review. *Surv Ophthalmol.* 1999;43:413–426.
10. Naraghi M, Kashfi A. Endonasal endoscopic resection of ethmoido-orbital osteoma compressing the optic nerve. *Am J Otolaryngol.* 2003;24:408–412.
11. Cokkeser Y, Bayarogullari H, Kahraman SS. Our experience with the surgical management of paranasal sinus osteomas. *Eur Arch Otorhinolaryngol.* 2013;270:123–128.

12. Arslan HH, Tasli H, Cebeci S, Gerek M. The management of the paranasal sinus osteomas. *J Craniofac Surg.* 2017;28:741–745.
13. Pons Y, Blancal JP, Vérillaud B, Sauvaget E, Ukkola-Pons E, Kania R, Herman P. Ethmoid sinus osteoma: Diagnosis and management. *Head Neck.* 2013;35:201–204. Available:<https://doi.org/10.1002/hed.22945>.
14. Frontal sinus osteoma presenting with meningitis and epilepsy. Kolcun JP, Richardson AM, Gernsback JE, Rosenberg A, Komotar RJ. *World Neurosurg.* 2019;123:216–220.
15. Osteoma of the middle turbinate presenting with frontal lobe abscess and seizure. Virk RS, Sawhney S. *J Clin Diagn Res.* 2017;11:0–3.
16. A rare cause of headache: Pneumatized nasal septum osteoma. Erdoğan O, Ismi O, Tezer MS. *J Craniofac Surg.* 2017;28:0–7.

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