

Case

Giant Paranasal Sinus Osteoma Endonasal Endoscopic Approach with Intranasal Drill Assistance

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Submitted at: 22.11.2025 - Accepted at: 01.12.2025 - Published at: 19.12.2025
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Avicenna Anatol J Med. Year; 2025, Volume: 2, Issue: 3

 [10.5281/zenodo.17949079](https://doi.org/10.5281/zenodo.17949079)

Abstract

Paranasal sinus osteomas are benign, slow-growing osteogenic tumors that are often detected incidentally but may cause significant symptoms when they reach large sizes. We report the case of a 53-year-old female patient who presented with progressive nasal obstruction and episodes of apnea during sleep for over one year. Anterior rhinoscopy revealed a rigid, immobile mass filling the right nasal cavity and deviation of the nasal septum to the left. Radiological evaluation demonstrated a large, well-circumscribed, lobulated mass with a mineralized internal structure and calcified wall measuring $52 \times 26 \times 48$ mm, extending into the right frontal sinus, expanding the maxillary sinus ostium, and abutting the medial orbital wall. Based on clinical and radiological findings, a diagnosis of paranasal sinus osteoma accompanied by chronic sinusitis was established. The patient was successfully treated via an endoscopic endonasal approach using 0-degree and 30-degree endoscopes, with volume reduction achieved using an intranasal drill followed by complete excision. Postoperative recovery was uneventful, and no complications were observed. This case highlights that giant paranasal sinus osteomas can be safely and effectively managed using an endoscopic endonasal approach, even in cases with extensive local extension, emphasizing the importance of careful preoperative imaging and surgical planning.

Keywords: Osteoma, Paranasal Sinuses, Endoscopic Surgical Procedures

INTRODUCTION

Osteoma is a benign osteogenic tumor that develops from the proliferation of compact or spongy bone. Craniofacial osteomas are particularly common in the paranasal sinuses. Osteomas typically grow slowly and remain asymptomatic; therefore, most cases are detected incidentally, accounting for approximately 3% of computed tomography (CT) scans and 1% of sinus radiographs (1). The pathogenesis of paranasal sinus osteoma (PSO) is not fully understood. It is thought that both embryological and developmental factors play a role in its etiology (2). Asymptomatic patients can be followed with imaging, whereas surgical treatment is indicated in symptomatic cases. In this study, we aimed to discuss a giant paranasal sinus osteoma treated with an endonasal endoscopic approach in the light of the existing literature.

CASE

A 53-year-old female patient was admitted to our clinic with complaints of difficulty breathing through the nose and episodes of breathing cessation during sleep. She reported that these symptoms had progressively worsened over the past year. On physical examination,

anterior rhinoscopy revealed deviation of the nasal septum to the left and a mass completely filling the right nasal cavity. On palpation, the mass was rigid and immobile. Calcified areas were observed in the right nasal cavity on a Waters radiograph performed at an external center (**Figure 1**).

Paranasal sinus computed tomography (PNCT) demonstrated a mass filling and expanding the right nasal cavity, involving the middle and superior turbinates. The superior margin extended into the right frontal sinus, the superolateral border was adjacent to the medial orbital wall, and the inferolateral border extended toward the right maxillary sinus ostium, causing expansion of the ostium. The medial border displaced the nasal septum leftward from the midline, and the inferior margin extended toward the inferior turbinate. The lesion measured $52 \times 26 \times 48$ mm and appeared as a well-circumscribed mass with a lobulated contour, mineralized internal structure, and calcified wall (ossifying fibroma?) (**Figure 2**). Based on the patient's history and radiological findings, a diagnosis of chronic sinusitis and paranasal sinus osteoma was established. Surgical treatment was recommended, and



Figure 1. Waters graphical x ray

informed consent was obtained from the patient.

Endoscopic endonasal surgery was performed under general anesthesia using 0-degree and 30-degree endoscopes for excision of the mass. An intranasal drill was used to reduce the volume of the lesion, creating a central cavity within the osteoma. The remaining portions were fragmented with the drill and removed using forceps. Hemostasis was achieved, and the nasal cavity was irrigated (**Figure 3**). A Merocel nasal pack was placed to prevent postoperative bleeding and was removed 48 hours later.

DISCUSSION

Osteomas are the most common benign bone tumor of the sinonasal region. Paranasal sinus osteomas (PSO) are most commonly localized in the fronto-ethmoidal region (95% of cases), involving 60-70% frontal sinus and 20-30% ethmoidal cells. Maxillary sinus osteoma accounts for 5% of all paranasal sinus osteoma (1). Osteomas can be seen at any age, but they are usually detected in the fourth and fifth decades and are more common in men than in women (3).

PSO is often asymptomatic, but depending on its size and location, it may show clinical symptoms such as headache, facial pain, nasal congestion, and snoring (1). Asymptomatic patients can be followed up with imaging methods, while symptomatic patients require surgical treatment. The surgical method to be chosen in paranasal sinus osteomas should be determined according to the size of the lesion, location and experience of the surgeon. These methods are endonasal endoscopic, external and combined approaches (4). The preferred

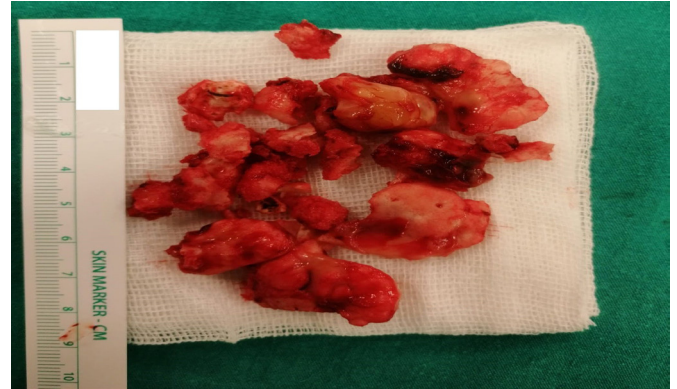


Figure 3. Osteoma fragments removed in the operation.

external approaches according to the localization of the tumor are osteoplastic flap (coronal or brow incision), frontoethmoidectomy (Lynch procedure), or Caldwell-Luc procedure (5). With the development of special instruments and the support of navigation systems, the popularity of the endonasal endoscopic approach is increasing and it has become more preferred. These systems allow the surgeon to achieve better intraoperative control, making the removal of paranasal sinus osteomas safer. Thus, it reduces possible complications and morbidity (4,5).

We preferred the endoscopic endonasal approach to our patient because the osteoma was accessible and did not spread to the orbit and intracranial region. An intranasal drill was used to reduce the osteoma because of its huge size. The entire mass was removed endoscopically, so an external approach was not required.

CONCLUSION

PSO is a slowly growing benign bone tumor. It may remain asymptomatic for a long time before causing deformation or compression of neighboring structures. It can also be diagnosed incidentally on paranasal CT. If patients have symptoms, they should be surgically removed. Endonasal Endoscopic approach is a surgical method that is increasing in popularity in the treatment of PSO.

DECLARATIONS

Conference: None

Funding source: No funding was received for this research

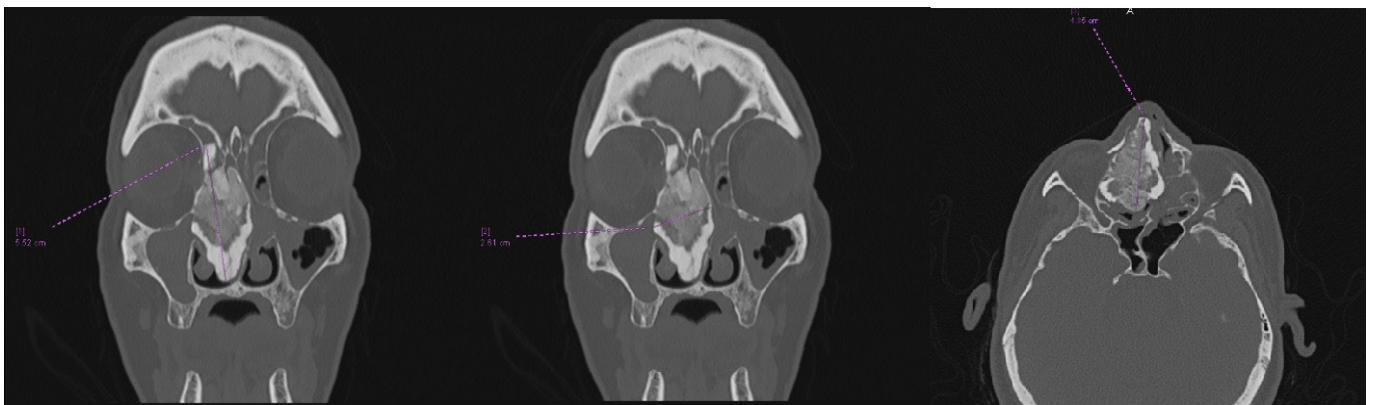


Figure 3. Paranasal Sinus CT Image

Conflict of interest: The author declares that he has no conflict of interest

Compliance with Ethical Standards

Ethical approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors.

Informed consent: Informed consent was obtained from all individual participants included in the study.

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