

Fronto-Ethmoidal Osteoma with Orbital Extension: Case Report

Laababsi Rabii*, Elkrimi Zineb, Boubzoub Anas, Ngham Hicham, Rouadi Sami, Abada redalah, Roubal Mohamed and Mohamed Mahtar

Department of Otolaryngology Head Neck Surgery, University hospital Ibn Rochd, Morocco

*Corresponding author: Laababsi Rabii, Department of Otolaryngology Head Neck Surgery, University hospital Ibn Rochd, Morocco.

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Abstract

Osteomas are benign bone tumors that can arise from any bone. They are the most common tumor of the paranasal sinuses, often small and asymptomatic. Secondary orbital extension of these tumors is considered an uncommon, while primary orbital osteomas are very rare, only appearing in literature as case reports. We report the case of an 18 years old man who presents with a fronto-ethmoidal osteoma with orbital extension, revealed by an orbital tumefaction, and who was treated with combined endoscopic and open surgery.

Keywords: Paranasal sinus osteoma; Orbital osteoma; Fronto ethmoidal osteoma

Introduction

Osteoma is the most common tumor of the paranasal sinuses, with an incidence rate of 0.014-0.43% [1-3]. Nearly 80% of osteomas originate from the frontal sinus. Symptoms include headaches, chronic sinusitis, proptosis and diplopia [2]. However,

it should be noted that osteomas are often small and therefore asymptomatic. Diagnosis is made based on clinical findings and CT imaging, though the final diagnosis of osteoma relies on anatomical pathology. Treatment is based on either open surgery or endoscopic surgery.

Case Report

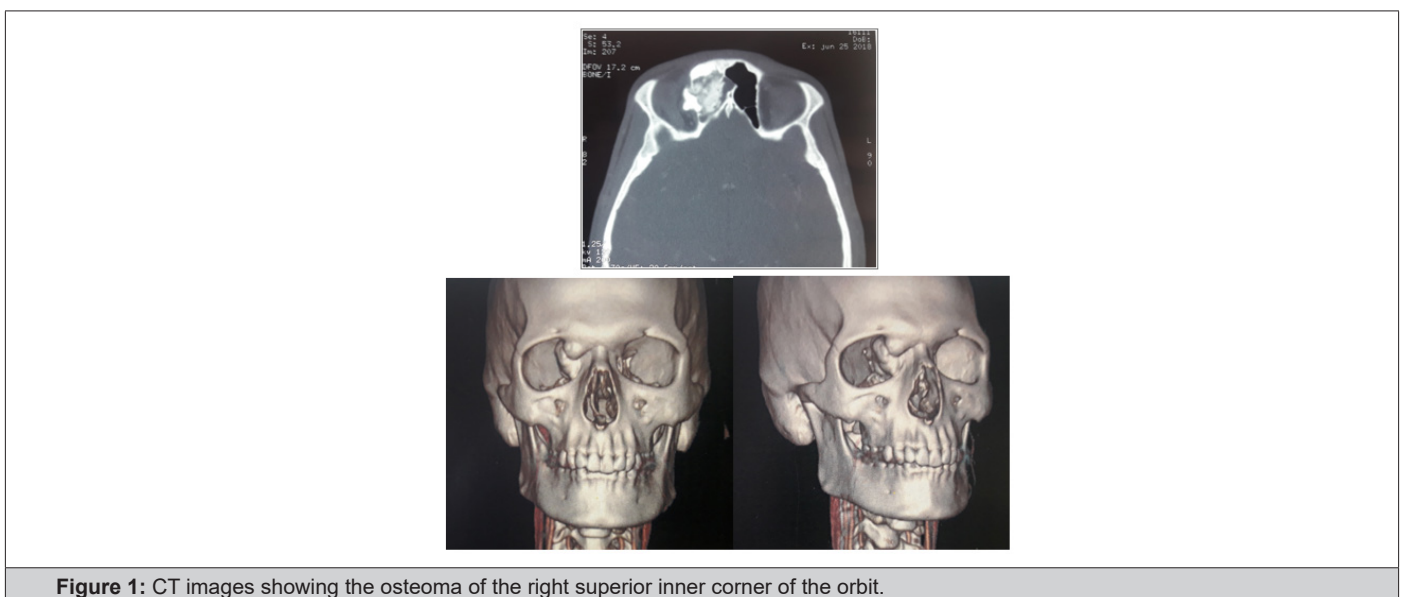


Figure 1: CT images showing the osteoma of the right superior inner corner of the orbit.

We report the case of an 18 years old male patient, without a prior medical condition, who presents with a mass of the right superior inner angle of the orbit, which grew slowly over a period of one year. There were no other symptoms, particularly no compressive signs such as headaches or diplopia. Clinical examination found a hard mass of the right superior inner corner of the orbit, seeming to be of an osseous nature, measuring approximately 20 mm in diameter, associated with a slight proptosis of the right eye. The examination of the nasal cavities found no particular anomaly. CT scan imaging revealed a right fronto-ethmoidal osteoma, protruding into the orbit, measuring 45x35x25 mm, repressing the right (Figure 1). The patient benefited from combined endoscopic and open surgery. We performed endoscopic exploration first. The osteoma was discovered in the middle meatus. We then proceeded to the complete resection of the tumor via a supra-brow incision combined to transnasal endoscopic drill cavitation. There were no post-surgery complications, with the disappearance of the tumor and the regression of the proptosis.

Discussion

Osteomas are rare slow-growing, benign bone tumors. It is the most frequent benign tumor of the paranasal sinuses [4,5], affecting in descending order of frequency: the frontal sinuses (50%), the ethmoidal cells (40%), the maxillary sinuses (6%), and the sphenoidal sinuses (4%) [5-7]. Orbital involvement is a rare occurrence, following the extension from the frontal sinus or the ethmoidal cells, that can lead to ocular symptoms [4,8,9]. Our patient had a fronto-ethmoidal osteoma with orbital extension. Osteomas can occur at any age [5], with most cases diagnosed during the 4th and 5th decade of life [10-13], and there seems to be a slight gender predilection, as 60% of the reported cases are males [10,12,14].

These tumors are often small and asymptomatic, though patients can present with proptosis, diplopia, headaches, nasolacrimal duct obstruction, or even loss of vision [15-17]. More serious complications include intracranial pneumatocele, meningitis, neumoencephalus, subdural abscesses and compressive neuropathies [1,2]. In our case, the patient presented with a process of the right inner angle associated with proptosis, with no other symptoms. Differential diagnosis is made mainly with other bone tumors, such as ossifying fibroma, osteoblastoma, fibrous dysplasia, osteosarcoma, and orbital metastasis [14,18].

CT scan is considered the golden standard for diagnosis [3,15]. Images show a dense, homogenous mass, with regular limits, arising from paranasal sinuses, well defined, and resembling the cortical bones in its ivory form or with a ground-glass appearance in its spongy form [5]. It is important to note that osteomas are discovered incidentally in 3% of CT scans [13,19-22]. For a small and asymptomatic osteoma, a conservative approach is usually adopted, with regular check-ups and eventually CT scans to survey its growth and extension. As for symptomatic osteomas, two surgical approaches are possible: endoscopic surgery and open surgery. Endoscopic surgery is actually considered to be the treatment of choice for paranasal sinuses osteomas [23-26]. It is

a safe and effective technique, offering cosmetic advantages and lower morbidity rates than open approaches [23,27].

Endoscopic surgery through an intranasal drill is often sufficient to remove small ethmoidal and frontal osteomas. In case of orbital extension, open surgery might be needed to complete the removal of the tumor after endoscopy is used to drill its center, creating a cavitation of the osteoma [23]. This was the case for our patient, who benefited from intranasal endoscopic drill cavitation first, completed by a suprabrow incision to completely remove the osteoma. There are many complications that may occur after surgery, including diplopia, iatrogenic paralysis, recurrent frontal sinusitis, meningitis, and enophthalmos [2,28]. Additionally, incomplete resection of the osteoma might result in a recurrence. No such complications were observed in our patient after surgery.

Conclusion

Although osteomas are the most frequent tumors of the paranasal sinuses and are often asymptomatic, they can present with a variety of symptoms, and orbital extension is a rare occurrence. CT scan imaging is necessary for the surgeon to make the diagnosis and to define the limits and extension of the tumor. Surgical treatment, when indicated, can resort to two techniques: endoscopic surgery, which is the treatment of reference, and open surgery, though sometimes a combination of both can be necessary.

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