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Case Report

Ossifying Fibroma of the Nasal Fossa: Case Report and Literature Review

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ABSTRACT

Ossifying fibroma is a rare, benign fibro-osseous tumor that primarily affects the jawbones, particularly the mandible. It is characterized by the replacement of normal bone with fibrous tissue and abnormal bone formation. Although slow-growing, ossifying fibromas can cause significant functional and aesthetic disturbances if left untreated.

We report a case of an 18-year-old male patient who presented with chronic nasal obstruction. physical examination revealed a hard mass filling the entire right nasal cavity. A CT scan of the facial sinuses helped orient the diagnosis of ossifying fibroma, which was only confirmed by pathological examination of the surgical specimen. The patient underwent surgical excision of the lesion and postoperative follow-up showed no signs of recurrence.

This case highlights the importance of early diagnosis and appropriate surgical management of ossifying fibroma to prevent complications and ensure optimal functional and aesthetic outcomes. A multidisciplinary approach involving oral and maxillofacial surgeons, radiologists and pathologists is crucial for accurate diagnosis and treatment planning.

Keywords: Ossifying fibroma; Fibro-osseous tumor; CT scan; Jawbones; Maxillofacial surgeons

Introduction

Fibro-osseous lesions cover a wide range of proliferative bone diseases, each type presenting a specific morphological model. The ossifying fibroma (OF) is a rare and benign fibro-osseous lesion that occurs mainly in children and young adolescents[1].

Classified as an odontogenic tumor, this lesion has no particular clinical specificities and the use of standard and modern imaging is essential. It can be found in diverse anatomical locations as nasal cavity, paranasal sinuses and orbit. Histologically, a number of subtypes have been described: juvenile, aggressive, active, psammomata's and cementifying[2-3].

It's aggressive in nature with a high risk of recurrence if not totally resected, so it requires early radiological detection and surgical intervention[1].

We report a case of cemento-ossifying fibroma of the right maxillary and ethmoidal sinuses treated surgically.

Case Presentation

We report the case of an 18-year-old patient with no specific pathological history, admitted to our department for a chronic right nasal obstruction that appeared 8 months ago, associated with purulent rhinorrhea and homolateral chronic tearing. The patient was in good general condition.

On rhinoscopy, a hard mass was noted in the right nasal fossa, occupying the entire nasal cavity, modifying the normal architecture of the nasal cavity, exerting a mass effect on the nasal septum and extending forward to the level of the nasal vestibule. The nasopharynx remains free **(Figure 1)**.

In the left nasal fossa, there was a huge deviation of the nasal septum, preventing exploration. The rest of the ENT examination was normal.

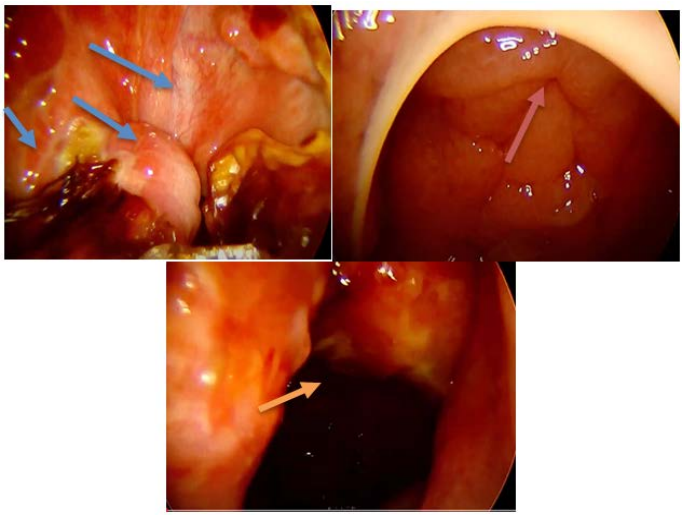

Figure 1: Rhinoscopy images showing the mass occupying the entire right nasal fossa (blue arrows) and reaching as far as the nasal vestibule (orange arrow). The nasopharynx remains free (green arrow).

A CT scan of the facial sinuses revealed a bony lesional process of heterogeneous density, measuring 5cm in long axis and filling the entire right nasal cavity **(Figure 2)**.

It developed at the expense of the medial wall of the right maxillary sinus, the right middle and inferior turbinate's and the right anterior ethmoid. It extends into the maxillary alveolar process and is responsible for a leftward deviation of the nasal septum **(Figures 3 and 4)**.

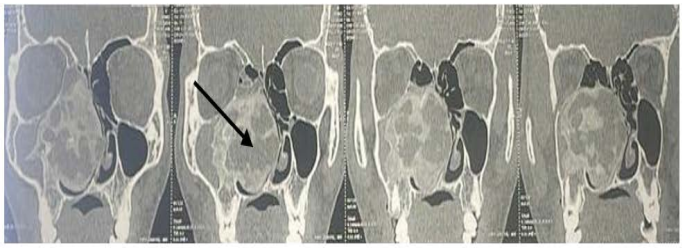

Figure 2: Coronal section CT scan showing the expansive process filling the entire right nasal fossa (black arrow).

A biopsy of the lesion by endonasal approach was performed, showing an aspect in favor of an ossifying fibroma **(Figure 5)**.

Following a multidisciplinary consultation meeting, an external surgical approach (lateral rhinotomy) was decided after obtaining patient agreement **(Figure 5)**.

The surgery was performed under General anesthesia with endotracheal intubation. Patient placed in a supine position with the head elevated (15-30 degrees) to reduce venous congestion. A vertical incision is made along the lateral aspect of the nose. Extends from the medial canthus to the level of the nasal ala. The incision is deepened through the subcutaneous tissue. The periosteum is elevated to expose the nasal bones and maxilla. The angular artery and facial vessels are cauterized. The lateral nasal wall and anterior maxillary bone are exposed. The nasal bones, maxillary and ethmoid sinus walls are carefully removed for access. The ossifying fibroma showed as well-demarcated with a bony consistency. The lesion is identified and separated from normal sinus structures. Using curettes and osteotomes, the ossified mass is excised. The lesion is removed carefully to avoid damaging adjacent structures specially the orbit and skull base. Bleeding is controlled with bipolar cautery **(Figure 6)**.

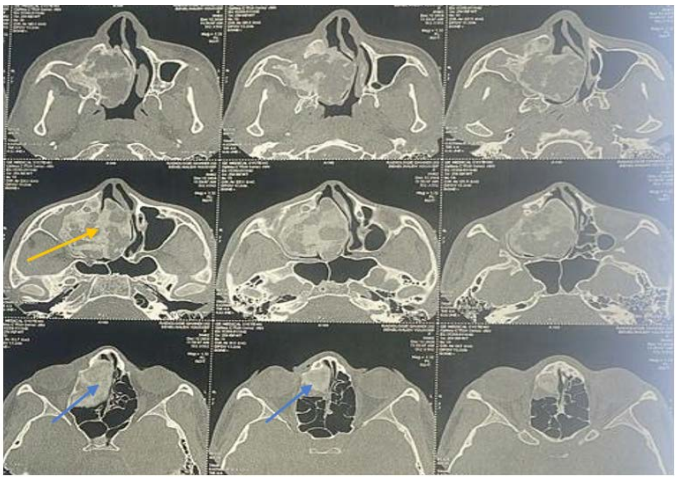

Figure 3: Axial section CT scan showing invasion of the medial wall of the right maxillary sinus, the right middle and inferior turbinate's (yellow arrow) and the right anterior ethmoid (blue arrow).

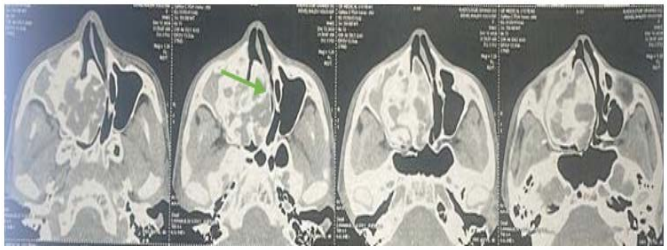

Figure 4: Axial section CT scan showing the mass effect on the nasal septum exerted by the mass.

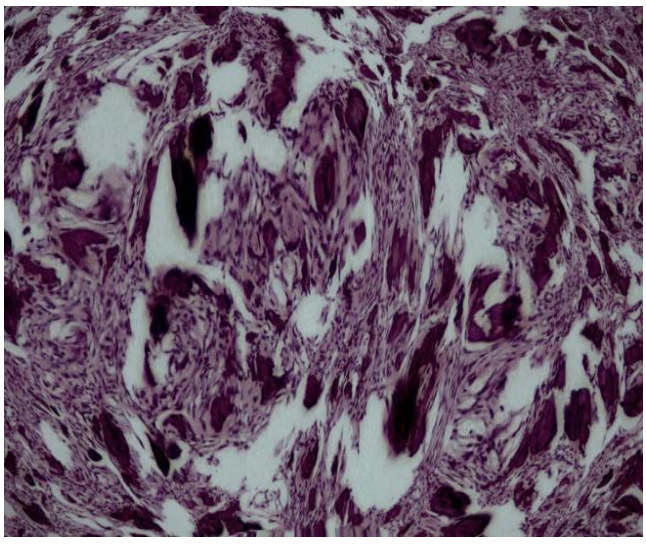

Figure 5: Histological section indicative of an ossifying fibroma.

In postoperative care, the patient stayed 72 hours for observation. And was under Antibiotics (Amoxicillin/clavulanic acid) to prevent infection. Analgesics for pain control. Nasal saline irrigation for sinus care.

The follow-up was based on regular nasal endoscopy, facial inspection to check for recurrence and imaging (CT-scan) at 6 and 12 months. This confirmed total resection of the tumor with no signs of recurrence or post operative complications specially no signs of orbital injury or breach of the skull base.

Figure 6: Per-operative image showing lateral rhinotomy procedure.

Discussion

In 1872, Manes was the first to identify OF as a rare benign bone lesion[4]. "Ossifying fibroma" has been used in 1927. A more precise definition was later established by the World Health Organization (WHO) in 1971, which categorized cement-containing lesions into ossifying fibroma, fibrous dysplasia, cementing fibroma and cemento-ossifying fibroma. Benign fibro-osseous lesions are also classified as osteogenic neoplasms and non-neoplastic bone lesions[5,6].

Makek's examination of 86 cases revealed an age range from 3 to 49 years, with a mean age of 17.7 years and a slight male predominance[7].

Most ossifying fibromas are found in the mandible or maxilla. Also, it affects the maxillary and ethmoid sinus; the frontal sinus and sphenoid sinus are rarely affected. Initial symptoms often involve bone expansion, frequently observed. Symptoms may include proptosis, nasal obstruction, headache, facial swelling, pain and recurrent sinus infections. Depending on the location of the disease, the circumstances in which it is discovered may vary. Paranasal sinus involvement may cause exophthalmos, reduced visual acuity or nasal obstruction. Large lesions may extend to the skull base[8,9].

Cement-ossifying fibroma is believed to originate in peri dental tissue, which has the potential to form cement and bone tissue. In the case of the mandibular region, this would be the result of a tooth extraction; in the case of the other regions, it would be of ectopic origin[10].

CT and MRI scans are the tools used to diagnose these lesions. The density of fibrous tissue and bone is the main determinant of the radiological appearance of these lesions. The center of advanced OF is filled with mature bone tissue, while in earlier stages, the center is usually soft and fibrous. Usually on CT, it's a thick, well-bounded mass of bone density, the fibrous center is of low density. On MRI, the calcified periphery of lamellar bone is hypo signal in T1 and T2, with homogeneous or heterogeneous enhancement. Also, calcifications can happen and usually have hypointense signals on T2[11,12].

The main differential diagnoses on imaging are osteoblastoma, osteoma, meningioma and fibrous dysplasia. The many subtypes described in histology are indistinguishable on imaging[13].

Histologically, the boundaries between damaged and healthy tissue. Conjunctive tissue is rich in fibroblasts and mineralized substance. Mineralized tissue is composed of a variable combination of mature and immature bone with osteoblast trabeculae excavated by osteocytic lodges[14].

The treatment is surgical with complete resection to avoid recurrence. In the absence of complete removal of the lesion, recurrence may occur between 6 months and 7 years after resection[15].

The strategy for managing OF differs according to the location of the lesion and its current stage of expansion. A radical surgical resection is the preferred treatment modality for lesions involving the sinonasal tract orbit and skull base. External approaches offer better tumor control and exposure than endoscopic approaches. External approaches include lateral rhinotomy, sublabial approach and craniofacial resection. There are some inconveniences associated with external approaches, notably the resulting facial scarring, affecting facial growth and symmetry[16,17].

Conclusion

The ossifying fibroma is a benign bone tumor that most often affects the mandible and maxilla. Diagnosis is based on correlation of clinical, radiological and histological findings. The treatment of choice is surgery, with total resection of the tumor to prevent recurrence. The importance of reporting cases such as ossifying fibroma of the nasal cavity is to think about other differential diagnoses of sinonasal masses, which are not commonly seen.

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