

## Cemento-ossifying fibroma presenting as subperiosteal abscess

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### Abstract

Cemento-ossifying fibroma arises from multipotential mesenchymal cells in the periodontal membrane and most commonly affects mandible and maxilla. Orbital and para-orbital involvement is rare and is usually asymptomatic. We report a case where 14 year old male patient was diagnosed clinically as left sinusitis with subperiosteal abscess. But CT scan showed an expansile mass with peripheral calcification involving various paranasal sinuses, thinning of lamina papyracea and soft tissue thickening in the medial extraconal compartment of left orbit with mild fat stranding. Thus, radiological diagnosis of ossifying fibroma or fibrous dysplasia with localised subperiosteal abscess was made. Then endoscopic resection of mass was performed. Histological examination of the resected mass showed fibrous stroma with bone trabeculae and associated variable mineralized material that resembled dental cementum. Hence diagnosis of cemento-ossifying fibroma was made. Based on these findings, we recommend that while evaluating patients of sinusitis with subperiosteal abscess, cemento-ossifying fibroma should also be considered in differential diagnosis.

**Keywords:** Cemento-ossifying fibroma, Subperiosteal abscess

### Case Report

A 14 year old male patient presented to our outpatient department with insidious onset of left sided nasal obstruction, left conjunctival chemosis, left lid edema, left proptosis, lateral deviation of left eye, diplopia in right gaze, pain, fever, headache, redness and watering of left eye of 22 days duration. Nasal obstruction did not improve with any medication. There was no history of decreased vision in left eye. There was no nasal discharge or epistaxis. No similar

family history was present. No history of any systemic illness was present.

General physical examination was unremarkable. Anterior rhinoscopy revealed a well circumscribed swelling which did not bleed on touch. The swelling completely blocked the anterior nares. Septum was deviated towards right side. Ophthalmic examination revealed mild proptosis of left eye, lateral deviation of eye and restriction in eye movement medially. Force duction test was positive for medial side. Best

corrected visual acuity was 6/6 in both eyes and color vision was normal. His visual fields were normal in both eyes. There was no RAPD. Lids and conjunctiva were inflamed and edematous. Cornea was clear. Pupil, anterior chamber and optic disc were normal.

Total WBC count was elevated with mild neutrophilia. ESR was elevated. Blood glucose levels and renal function tests were normal.

A diagnosis of left sided inflammatory swelling probably due to sinusitis with left subperiosteal abscess was made clinically and CT scan of skull and orbit was performed.

The CT scan showed expansile mass with peripheral calcification involving ethmoid, maxillary and sphenoid sinuses with complete obliteration of the left frontal recess, left osteomeatal complex and the left sphenothmoid recess. There was significant expansion of the left ethmoid sinus and the left nasal cavity. There was thinning of the left lamina papyracea/medial wall of left orbit (Figure 1). There was soft tissue thickening in the medial extraconal compartment of left orbit with mild fat stranding (Figure 2). These findings were suggestive of ossifying fibroma or fibrous dysplasia with localised subperiosteal abscess in left orbit.

Patient was admitted and followed by ophthalmology and ENT departments. Patient subsequently underwent endoscopic examination under general anesthesia followed by resection of the mass.

The endoscopic examination revealed a large expansile sinonasal orbital mass pushing the nasal septum to the right side and lamina papyracea towards left. Posteriorly, the mass was encroaching upon the nasopharynx and superiorly up to skull base. The mass was hard on probing with the endoscope and the mass did not invade any surrounding tissue. Macroscopic examination of the specimen consisted of multiple grey brown pieces of

tissue measuring 5×3×3 cm in aggregate. Representative sections were submitted in 3 blocks. Cartilaginous and bony tissue fragments were seen. Cut section showed focal cystic areas filled with thick mucoid material.



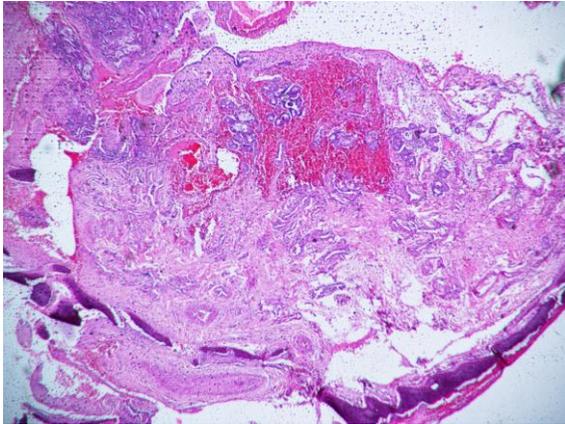
**Figure 1: CT Scan image depicting expansile mass with peripheral calcification in left nasal cavity and paranasal sinuses.**



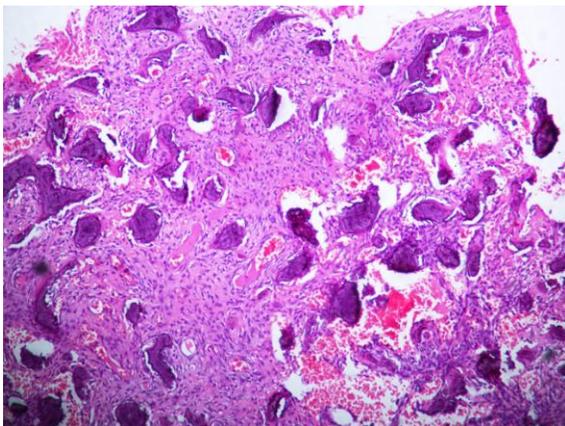
**Figure 2: CT Scan image showing soft tissue thickening (subperiosteal abscess) in the medial extraconal compartment of left orbit with mild fat stranding.**

Microscopic examination of the specimen showed well defined margins with peripheral calcification and fibrous stroma with bone trabeculae and associated variable

mineralized material that resembled dental cementum. These features were consistent with fibro-osseous nature of the lesion. Hence diagnosis of cemento-ossifying fibroma was made. (Figures 3 & 4).



**Figure 3: Microscopic examination (4X) shows well defined margins with peripheral calcification and fibrous stroma.**



**Figure 4: Microscopic examination (10X) shows fibrous stroma with bone trabeculae and associated variable mineralized material that resembled dental cementum.**

### Discussion

The cemento-ossifying fibroma arises from multipotential mesenchymal cells in the periodontal membrane (a layer of fibrous connective tissue surrounding the roots of teeth) and is generally regarded as one of a continuing spectrum of jaw tumours which

form bone, cementum and fibrous tissue.<sup>[9]</sup> When the lesion contains cementum it is known as cementifying fibroma while presence of bone within the lesion makes it ossifying fibroma. Lesions with a mixture of both cementum and bone matrix are known as cemento-ossifying fibroma.

Cemento-ossifying fibroma occurs more frequently in Caucasian race from 5-71 years of age. Females are more commonly affected than males. The mandible is the most common affected site, followed by maxilla. The actual cause for mandibular predilection is still unknown.<sup>[4]</sup> It has also been reported in the ethmoidal<sup>[1,3]</sup> and orbital regions.<sup>[7]</sup> The location of these lesions in areas not associated with periodontal ligament (like paranasal sinus and orbit), has been hypothesized to be due to ectopic periodontal ligamentous tissues or from primitive mesenchymal cells capable of differentiating into cementum, bone and fibrous tissue.<sup>[6]</sup> Orbital and para-orbital involvement is usually rare and it is usually an incidental finding on radiographic examinations.

Most of the cemento-ossifying fibroma was indistinguishable radiologically from cementifying fibromas or ossifying fibromas. Radiographically, the cemento-ossifying fibroma could present as a radiolucent, radiopaque or mixed density lesion, depending on the degree of maturity. The growth pattern of the mass is centrifugal so grows equally in all directions presenting therefore as a well circumscribed mass<sup>[4,8]</sup>.

The microscopic picture shows a mixture of droplet cementum and lamellar bone trabeculae randomly scattered throughout a fibrous tissue stroma. The cementum is usually in droplet form, acellular and darker staining than the bony trabeculae which are very cellular. In rare cases the cemento-ossifying fibroma can behave in an aggressive fashion and attain gigantic size.<sup>[4]</sup>

Our index case was unusual in many ways. First of all the history of our patient was

subacute and was simulating sinusitis with subperiosteal abscess and exophthalmos. Acute inflammatory clinical presentation as orbital cellulitis had been reported in sinonasal osseous-fibroma in three patients.<sup>[2,5]</sup> Secondly, centre of mass was located in the left ethmoid sinus and there are only few isolated case reports of ethmoidal cemento-ossifying fibroma presenting as exophthalmos.<sup>[1,2,5]</sup> No reports of subacute presentation of ethmoidal cemento-ossifying fibroma simulating as sinusitis with subperiosteal abscess and exophthalmos have been reported in to our knowledge.

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