Case Report

Ectopic tooth in maxillary sinus: Case series

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ABSTRACT

Ectopic eruption of a tooth within the dentate region of the jaws is often noticed in clinical practice and is well documented in the literature. But the ectopic eruption into the non dentate region is rare and scantly documented. The maxillary sinus is one such a non dentate region, apart from nasal septum, mandibular condyle, coronoid process and the palate, to accommodate such ectopic eruptions of teeth. Due to its rarity and lack of consensus over its management, the incidence deserves to be added to the literature and discussed. Early surgical intervention for removal of ectopic tooth along with enucleation of the associated cyst, if any, is the treatment of choice.

Keywords: Antral tooth, dentigerous cyst, ectopic tooth, maxillary antrum, tooth in sinus

INTRODUCTION

The development of deciduous tooth starts in the sixth week of intra-uterine life with the development of dental lamina. Then the ectodermal layer proliferation begins to form the permanent dentition between 5th and 10th post natal months.[1] It is a multistep event in which interaction between the oral epithelium and the underlying mesenchymal tissue plays a vital role. Abnormal interaction at any step may result in ectopic tooth development and eruption. Ectopic eruption of a tooth within the dentate region is often seen in clinical practice, which are more common in mandible, and among females. Incisors, canines and premolars are the most affected teeth.[2] But such a condition in a non-dentate area like maxillary sinus is very rare. Due to its rarity, the incidence deserves to be added to the literature and discussed. Maxillary teeth in maxillary sinus may precipitate sinusitis or sometimes result in ophthalmic symptoms also.[3] The condition may be undiagnosed for years until the patient undergoes radiographic examination for any reason. We present a series of 6 cases of ectopic teeth in maxillary sinus with their implications and management.

CASE REPORTS

Case 1

A 21 year old female reported to us with a complaint of pain and swelling over right cheek region since one month. She had a history of two courses of antibiotics prescribed by her physician. When the swelling increased and became noticeable in right buccal sulcus area, she was referred to us. Clinically, maxillary deciduous second molar was over retained and permanent second premolar was missing in that quadrant. Radiograph showed an ectopic tooth along with large cystic lesion occupying the entire maxillary sinus and resorption of the root of retained deciduous second molar [Figure 1]. A gingival sulcular/crevicular incision was made from lateral incisor to first molar including extraction socket of the retained tooth with anterior releasing incision and buccal mucoperiosteal flap was elevated. A part of antero-lateral wall of the sinus was found to be resorbed. The existing window was extended to access the tooth and the lesion. The ectopic tooth along with surrounding soft tissue was removed. The cystic lesion was attached to the tooth cemento-enamel junction (CEJ) [Figure 1d]. The specimen was then sent for histopathological examination which turned

out to be a dentigerous cyst. The patient is on a regular follow up for more than a year with no evidence of recurrence.

Case 2

A 48 year old female reported to us with a chief complaint of heaviness over left cheek with decrease in sensation in the area of cheek and upper lip of same side since four months. Clinically maxillary third molar of that quadrant was missing and there was hypoesthesia of infraorbital nerve. There was no swelling or pain. Computed tomography (CT) scan showed a well defined irregular opacity surrounded by a soft tissue mass in the right maxillary sinus [Figure 2]. CT Scan showed a fully developed ectopic maxillary third molar in the sinus about 14mm above the root apices of first molar. The surrounding soft tissue lesion was extending up to floor of the orbit. But there was no ophthalmic involvement. Through a maxillary vestibular incision a bony window of 15 × 20 mm was made on the antero-lateral wall of the sinus. The tooth along with surrounding soft tissue that was attached to the CEJ was removed through a Caldwell-Luc procedure [Figure 2c]. The histopathological examination of the specimen turned out to be dentigerous cyst. The hypoaesthesia of infraorbital nerve was resolved in six months time postoperatively. The patient was followed-up for one year and she was asymptomatic.

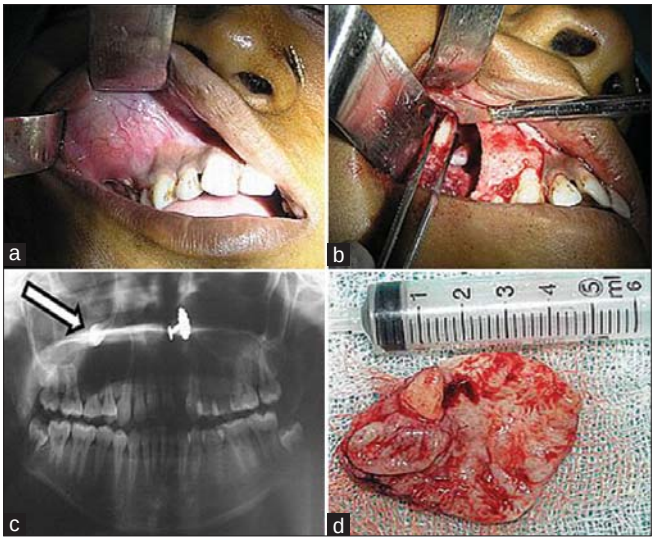

Figure 1: (a) Intraoral view, (b) Caldwell approach for enucleation, (c) Orthopantomogram revealing the ectopic tooth (arrow), (d) Specimen with ectopic tooth

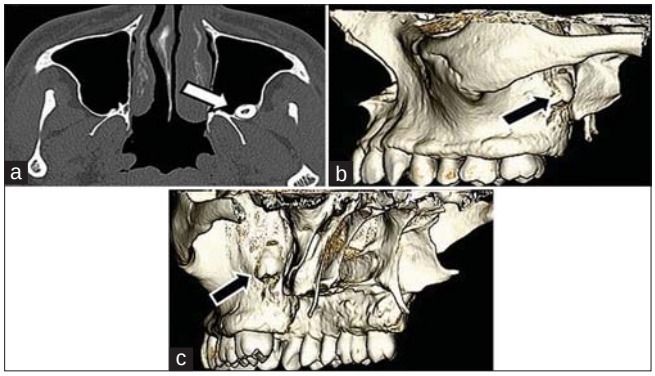

Figure 3: (a) Axial CT Scan showing the ectopic tooth (arrow), (b and c) 3D CT scan showing the position of ectopic tooth in relation to the second molar and lateral pterygoid plate

Case 3

A 22 year old male reported to us with occasional dull pain in left temporomandibular joint. On routine radiographic examination, an ectopic maxillary third molar was seen very high on the posterior wall of maxillary sinus as an incidental finding. On CT scan, the tooth was identified to be embedded in the maxillary sinus wall, lateral to the lateral pterygoid plate [Figure 3]. There was no clinical or radiological pathology detected in relation with the tooth. The patient was explained about the consequences of retaining the impacted ectopic tooth in the sinus and was convinced for surgical removal of the same. The postoperative recovery was uneventful and follow up of more than a year was symptom free.

Case 4

A 26 year old male reported to us with orthopantomogram for implant (bone plates and screws) removal. The orthopantomogram (OPG) and the Cone Beam Computed Tomography (CBCT) scan showed an incidental finding of impacted ectopic maxillary tooth in the second quadrant [Figure 4]. The ectopic tooth was inverted and the superior most cusp tip was about 18mm above and placed distal to the root apex of the second molar. There was no cystic pathology evident with the ectopic tooth. All the third molars were missing, but the ectopic tooth morphology did not match the size and shape of the

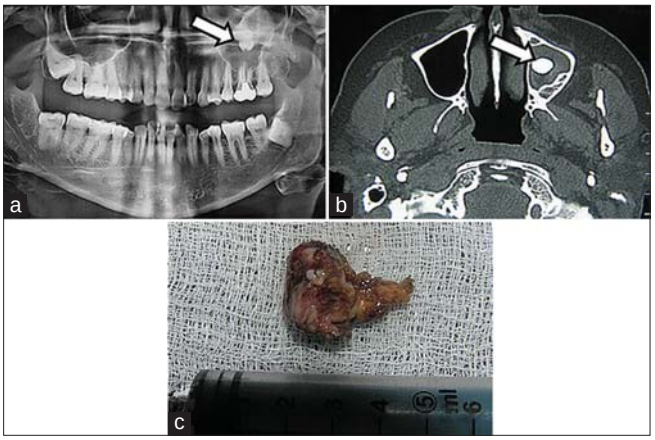

Figure 2: (a) Orthopantomogram revealing the ectopic tooth (arrow), (b) Axial CT Scan showing the ectopic tooth with the lesion (arrow), (c) Specimen with ectopic tooth

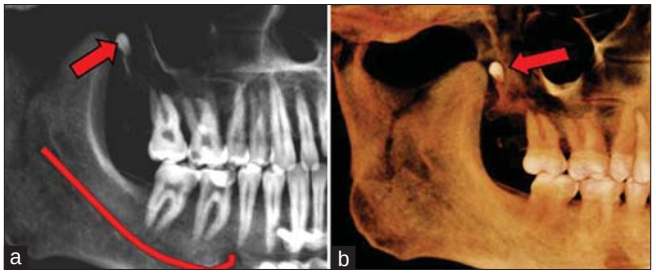

Figure 4: (a,b) Orthopantomogram and cone beam computed tomography showing the ectopic inverted position of the tooth

third molar. Patient was informed of consequences and followe up.

Case 5

A 24 year old male reported with a complaint of repeated dull pain in the region of left maxillary sinus since two months. The over retained left maxillary deciduous canine was evident clinically with missing permanent canine of the same side. The paranasal sinus (PNS) view radiograph revealed an ectopic canine within the maxillary antrum along with haziness of the entire antrum [Figure 5]. The tooth was found inverted, crown directing superomedially along the medial wall of the sinus. The tip of the crown was in contact with the medial portion of orbital rim. The morphology of the ectopic tooth revealed complete root formation with normal shape and size. Patient is being followed up.

Case 6

A 32 year old female reported with a complaint of continuous dull pain in the right cheek region since one month. History revealed that she had sustained trauma to the face two months back for which she had not obtained any treatment. On CT Scan examination, the axial and coronal views revealed fracture of right antero-lateral wall of the maxillary sinus along with ectopic maxillary third molar within the sinus [Figure 6]. Surgical removal of the tooth along with associated soft tissue and the bony fragments was carried out under general anesthesia.

DISCUSSION

The problem of a tooth or root in the maxillary antrum can be a perplexing one. An extensive dentigerous cyst may surround the tooth or root and a fistula, either antro-cutaneous,[4] or antro-oral,[5] can develop. Maxillary sinus abnormalities occur in asymptomatic individuals and only X-ray of the antra reveals a cyst or tooth or both.[6] However, most maxillary cysts arise as a result of defects in embryological development which occur either as abnormalities in the fusion of facial processes or abnormal development of the dental follicle.[7] Foreign bodies, metallic or non-metallic, may also lay dormant in the maxillary sinus.

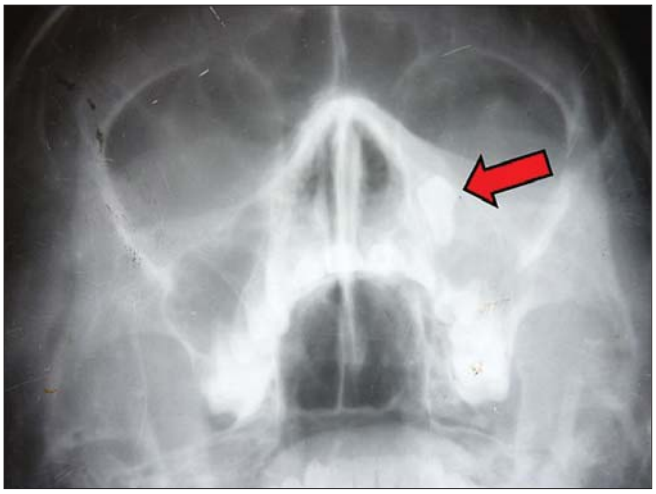

Figure 5: Paranasal sinus view radiograph illustrating the ectopic tooth in the maxillary sinus

Any abnormal tissue interaction during odontogenesis may result in ectopic tooth development and eruption. The ectopic sites may be nasal septum, mandibular condyle, coronoid process and the palate.[8] Very rarely the tooth may be present in the maxillary sinus with or without symptoms. The displacement of the tooth may be due to the pressure caused by the cystic enlargement. Other etiology may include developmental disorders such as cleft palate trauma causing displacement of the teeth, maxillary infection, crowding, genetic factors and high bone density.[9-11] Symptoms may include recurrent or chronic sinusitis or purulent discharge from the nose and sometimes elevation of the floor of the orbit.[12] A case of nasolacrimal duct obstruction due to ectopic canine has been reported by Ray *et al*.[3] in an eleven-year-old male child.

Dentigerous cyst is the most common of all dental follicular cysts. It always involves crown of a permanent impacted, embedded or unerupted tooth. But sometimes may be associated with odontoma or supernumerary tooth.[13] Rechard Haber reported a case of dentigerous cyst in a four year old girl.[14] The most common sites are mandibular and maxillary third molar area and maxillary canine region as these are the most commonly impacted teeth. About 70% cases occur in mandible and 30% in maxilla.[15]

On radiograph, it is usually a smooth unilocular lesion, but occasionally multilocular appearance may be found. There is no special microscopic characteristic which can be used reliably to distinguish this cyst from other odontogenic cysts. Other than recurrence due to incomplete removal, complications related to this cyst are development of an ameloblastoma or carcinoma either from the lining epithelium or from the rests of odontogenic epithelium in the wall of the cyst. There may be mucoepidermoid carcinoma, basically a salivary gland tumor, from the lining epithelium of the cyst, which contains mucous-secreting cells.[12] Therefore, the treatment of choice of ectopic teeth associated with the cystic lesion in maxillary sinus is surgical removal of the tooth

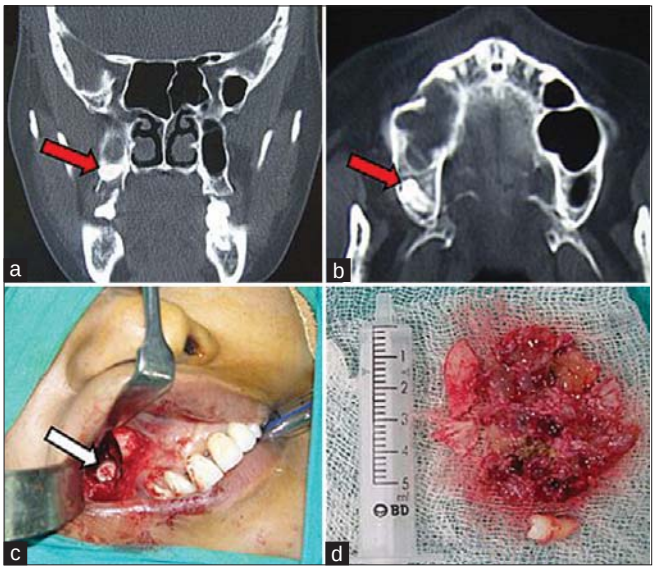

Figure 6: (a,b) Axial and coronal CT Scan showing ectopic position of the tooth in relation to maxillary sinus,(c,d) Surgical exposure and specimen with ectopic tooth

along with enucleation of the cyst. Many surgical approaches have been reported in the literature including the endoscopic removal of such ectopic teeth and associated lesions. Di Pasquale *P* and Shermetaro C,[16] used a nasal endoscope to create a middle meatal antrostomy and deliver the ectopic tooth and its cystic contents. The endoscopic techniques are being used for removal of an intranasal ectopic tooth[17] obstructing nasal cavity and ectopic maxillary third molar obstructing osteomeatal complex.[18] Postoperative follow-up with radiographic examination at regular intervals is mandatory to rule out any recurrence.

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