Original article:

Ectopically placed mandibular posterior teeth & dentigerous cysts

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Abstract

Ectopic impaction is the one which is in unusual position or far from their anatomical position. Ectopic eruption of a tooth into dental structures is a common entity, while ectopic impaction of a tooth in other sites is infrequent. In literature there is limited knowledge about the ectopic impactions of mandibular posterior teeth with dentigerous cysts. Presence of multiple impacted teeth including supernumerary teeth is also not reported much. Most cases of ectopic impactions reported in literature are asymptomatic & are found during routine radiographic investigations. The aim of this article is to report the unusual ectopic impactions of mandibular posterior teeth i.e. mandibular third molars, 2nd premolars & supernumerary molar & which if left undiagnosed/untreated can lead to complications like large dentigerous cysts involving angle, ramus, subcondylar region & pathologic fracture of mandible.

Key words: Mandibular molars, Ectopic impactions, dentigerous cysts

Introduction

Ectopic teeth often impact in unusual positions or at a distance from their normal anatomic location. Ectopic teeth are located in the jawbones or regions other than the alveolar arch. Ectopic eruption of a tooth is rare; however, there have been few reports of tooth in the nose, mandibular condyle, coronoid processes and maxillary sinus. Ectopic position of molars also include ramus, sigmoid notch, lower border of angle of mandible, orbit nasal cavity or skin. Impacted mandibular third molar teeth occur in 20–30% of the population with higher prevalence in women. The majority of ectopic mandibular third molars are associated with cystic lesions, other causes are a lack of space between the second molar and ramus of the mandible, trauma and aberrant eruption. Most cases of ectopic third molars are asymptomatic and are usually found during routine clinical and radiographic investigations. Ectopic teeth may be supernumerary, deciduous, or permanent. The etiology of ectopic mandibular third molars has not yet been completely clarified. They may occur owing to a deviant initial position of the third molar germs or an aberrant eruption pattern. A lack of space between the mandibular second molar and the ramus of the mandible, or a disproportion between the base and the direction of growth of the third molar may contribute to the deviant position of the impacted third molar.

In the present study all the ectopic impacted mandibular molars & premolars were associated
with swelling, facial asymmetry, pain, intra oral discharge & one case had pathologic fracture also.

Materials & Methods

The present study was conducted in oral & maxillofacial surgery department of Indira Gandhi government dental college Jammu. 14 patients were selected from those patients who had come with history of facial asymmetry, swelling of lower face, pain, intraoral discharge & trismus. On examination all patients had tender soft cystic swelling in mandibular angle & condylar region. Facial asymmetry, retained deciduous & missing permanent teeth, one patient had pathologic fracture. There was no significant medical history. Diagnosis was made by orthopantomogram & aspiration of the cystic lesion. Small & moderate cyst were enucleated under local anesthesia where as large cystic cavities were treated under general anesthesia after admitting patients in hospital & thorough investigations. Fig 1,2,3, shows ectopic impaction of third molar with dentigerous cyst at sub condyle region Fig 4-7 ectopic impaction of third molar at angle of mandible with cystic lesion Fig 8,9 radiograph showing ectopic impaction of third molar at ramus of mandible with dentigerous cyst Fig 10 showing unusual impaction of mandibular third molar with cyst Fig 11, 12 radiograph & intra op photograph showing ectopic impaction of supernumerary mandibular molar & 2nd premolar with cystic lesion Fig 13 OPG showing ectopic eruption of 2nd molar associated with cystic lesion & pathologic fracture of angle Fig 14 showing impacted mandibular first premolar impaction with dentigerous cyst.
Fig 5 OPG showing third molar at base of angle

Fig 6 OPG showing ectopic impacted third molar in angle of mandible

Fig 7 Radiograph showing ectopic impacted teeth at base of angle

Fig 8 OPG showing impacted third molar in ramus on right side

Fig 9 Radiograph showing ectopic impacted third molar with large cyst

Fig 10 OPG showing unusual impaction of mandibular third molar

Fig 11 OPG showing ectopic impacted premolar & supernumary molar

Fig 12 Intra operative photograph showing impacted premolar & supernumary molar OPG showing
ectopic impacted third molar with dentigerous cyst Fig 12 showing

Fig 13 OPG showing Ectopic eruption of 2\textsuperscript{nd} molar perforating lower border of mandible

Fig 14 OPG showing dentigerous cyst with impacted first premolar

**Results**

All the cases presented with swelling, pain & facial asymmetry

Out of 16 patients 10 were males & 6 females

5 patients presented with trismis & intra oral discharge

3 patients complained of missing permanent teeth & retention of deciduous teeth

All the patients were treated by removal of impacted teeth, enucleation of cyst followed by primary closure using intra oral approach.

5 patients were admitted in hospital & done using general anesthesia where as 11 under local anesthesia

**Discussion:**

An impacted tooth is defined “as a tooth which is completely or partially unerupted & is positioned against another tooth, bone, soft tissue so that its further eruption is unlikely described according to its anatomic position.\textsuperscript{7} The incidence of mandibular third molar impaction has been reported up to 32\%..\textsuperscript{8}

Ectopic eruption of a tooth into dental structures is a common entity, while ectopic eruption of a tooth in other sites is infrequent.\textsuperscript{1} The present study was chosen for reporting unusual ectopic eruption of mandibular teeth only in unusual position.

According to the literature, the canine tooth was the most frequent non-third molar impaction identified, followed by premolars and second molars. Ahlqwist & Gröndahl, 1991 Milorom, Thilander & Myrberg 1973 \textsuperscript{9,10} found a 5.4\% prevalence of impacted teeth excluding third molars. Contrary to the present study ectopic mandibular posterior teeth were found more.

The incidence of occurrence is highest in females, Dachi and Howell\textsuperscript{11} pointed out that this condition is more than twice as common in girls as in boys where as in the present study most of the patients were males.

The aetiology of ectopic eruption is still unclear, and reaches have suggested many theories, including trauma, infection, pathologic conditions, crowding and developmental anomalies. Odontogenesis is a complex process, and abnormal tissue interactions between the oral epithelium and the underlying mesenchymal tissue during development, may potentially result in ectopic tooth development and impactions\textsuperscript{12}

Systemic factors, such as cleidocranial dysplasia, endocrine deficiency, febrile disease, Down Syndrome and irradiation, other systemic factors or/and local factors such as prolonged deciduous tooth retention, malposed tooth germs, arch-length deficiency, supernumerary teeth, odontogenic tumors abnormal eruption path and cleft lip and palate may influence impaction of permanent teeth (Jacoby et al.,
1983; Raghoebaer et al. (1991; Moyres) (1998; Miloro) Contrary to the present study in which all the patients had no systemic factors responsible for ectopic impaction. Condylar and subcondylar region had the most number of ectopically impacted teeth, as compared to mid ramus and coronoid process. It is probably because by the time they become symptomatic, these teeth would have remained for a long period until the time the lesion associated with it displaces the tooth in far places. In contrast with the present study which had ectopic impactions at angle, lower body of mandible, subcondylar region also. Impactions of first molars and incisors are relatively uncommon (Raghoebaer et al. 1990; 1991.) the present study reported similar cases of ectopic impactions of mandibular third molars. The impaction of first molars is often diagnosed as ectopic eruption, whereas impaction of second molars is usually associated with arch-length deficiency (Raghoebaer et al., 1991.). Normally, the gubernacular canals are said to guide erupting permanent teeth into their correct positions (Williams et al. 17)

Keros and Susic reported that the cause may be the primary and complete dislocation of the third molar tooth base posteriorly from the muscle process. They hypothesized that during the growth of the mandible, the base of the condylar process develops as a result of bone tissue apposition in the posterior segment of the ramus. The bone that forms the mandibular base in childhood may be shifted to the region beneath the coronoid process in adulthood. The base of the ectopic mandibular third molar becomes embedded in this tissue. Following the normal growth pattern, the third molar and its base moves upward, eventually reaching the condylar / coronoid process of the mandible. This may explain the fact of non inverted position of ectopic third molars at different unusual positions in the present study. A mandibular third molar may be displaced by a lesion such as a cyst or a tumor. The expansion of a cyst as it develops may result in pressure on the crown of a tooth and displace it in a direction opposite to the path of eruption. Usually when a tooth is dislocated high in the condyle, a large cyst occupies the entire ramus. In some of the reports in the present literature review, the cysts associated with the ectopic third molars were relatively small. In the present study we report ectopically impacted teeth with large as well as moderate dentigerous cysts. The severity of symptoms or the nature of the lesion associated with the tooth indicates the management of such teeth. Few cases have shown a spontaneous regression of symptoms without any treatment. This may be due to bone resorption, lining rupture and spontaneous decompression of cyst contents. Common indications for removal are (1) acute inflammation, (2) large lesions, (3) prevention of infection and osteolysis/osteomyelitis, (4) pathologic fracture/deformity of subcondylar region and (5) patients with underlying systemic problems where serious consequences are expected. However, infection secondary to an impacted third molar and dentigerous cyst can cause serious consequences. In the present study all the patients reported with symptoms with recurrent swelling, facial asymmetry, pain, intra oral discharge, trismis & cystic lesion where as one patient had pathologic fracture of angle of mandible.

The surgical removal of an ectopic mandibular third molar with acute inflammation or cystic lesions is recommended to prevent further complications such
as diffuse osteolysis, condylar process deformity, or bone absorption. Bruce et al\textsuperscript{22} stated that the association with odontogenic cysts, which is present in 6.7\% of cases of unerupted third molar, is an important indication for the removal of both the cyst and the tooth. In the present study all the cases cyst were large & required surgery in order to prevent further complications like pathologic facrture, bone resopotion, osteomyelitis & more severe complication like ameloblastoma.

The method of management depends on the extent & location of the lesion. The methods of surgical removal include extraoral approaches and the intraoral route. An intra-oral approach is always advised since it does not leave any scar on the face. However, access to subcondylar or condylar region may be difficult intra-orally. Tooth at condylar or subcondylar regions with cutaneous complications will invariably call for repair and/or reconstruction and done easily through extra oral approach. Submandibular or Hind's approach is advocated when tooth is located in mid ramus region\textsuperscript{23}. Preauricular incision though leaves an unacceptable scar and carries the risk of the facial nerve injury, is advised when reach to head of condyle region required. Alling et al introduced two techniques by intra oral approaches. One of them requires a sagittal split of mandibular posterior body & ramus to provide surgical access to the ectopic tooth. The other technique is the removal of a plate of lateral cortical bone with a bur & uni bevel chisel to give access to the cancellous portion of mandible.

In the present study ectopically impacted teeth with moderate dentigerous teeth were removed under local anesthesia where as large cystic lesions associated with ectopic impacted teeth at subcondylar region, at inferior border of angle & body of mandible with large cystic lesions were treated under general anesthesia. In all patients intra oral approach was used.

**Conclusion**

Presence of an ectopic tooth in the coronoid or condylar at base of angle & body regions associated with large dentigerous cyst is a rare phenomenon. Occurrence of ectopic eruption of premolars & supernumerary molar has been rarely reported in the literature.

Presence of ectopic impaction may be the asymptomatic initially, later adjacent structures are affected. The surgical approach must be carefully planned for the aim of choosing the most conservative technique that produces the minimum trauma to patients. In this study intra oral approach was found appropriate for smaller as well as larger cystic cavities under local or general anesthesia. Postoperative follow-up with radiographic examination at regular intervals is mandatory to rule out any recurrence.

**References**


