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Research article – Human anatomy case report

Ectopic third molar tooth on the infratemporal surface of maxilla

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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. Diverse anatomical locations such as nasal cavity, nasal septum, mandibular condyle, coronoid process, the palate and the maxillary sinus can infrequently be non dentate sites of ectopic eruptions of teeth. While conducting an anthropometric study on 100 skulls an incidental and interesting case of ectopic maxillary third molar tooth was found. The tooth was partially erupted with the unerupted part lying impacted in the posterior wall of maxilla. The case is reported and discussed for its significant clinical implications.

Key words

Dentigerous cyst, ectopic tooth, maxilla, maxillary antrum, root, third molar

Introduction

Ectopic tooth eruption may result owing to one of three processes: developmental disturbance, iatrogenic activity, or pathology such as a tumor or a cyst [Abdollahifakhim and Mousaviagdas, 2013]. The development of deciduous teeth starts in the sixth week of intra-uterine life with the development of dental lamina followed by ectodermal layer proliferation to form the permanent dentition between 6th and 33th post natal months [Thesleff and Nieminen, 1996; American Dental Association, accessed 2015]. Third molar emergence normally occurs between 18-24 years but eruption is not uncommon outside these limits [Garcia, 1989]. The interaction between the oral epithelium and the underlying mesenchymal tissue plays a vital role in the development of tooth. 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, more commonly in mandible. The incidence is higher in females. Incisors, canines and premolars are most often affected [Erkmen et.al., 1988]. But ectopic tooth in a non-dentate area like maxillary sinus, nasal cavity, nasal septum, mandibular condyle, coronoid process, the palate is rare. The patient may present with variable signs and symptoms like pain and numbness and the condition may result in complications like dentigerous cysts, maxillary sinusitis, fistula [Setiya, 1965; Fascenelli, 1969; Agarwal, 1996; Ray, 2009].

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Figure 1 – Ectopic upper third molar (red arrow) on the infratemporal surface of right maxilla.

Case report

While conducting an anthropometric study on 100 human skulls an interesting case of ectopic tooth in maxilla was seen in the Department of Anatomy, GSVM Medical College Kanpur, Uttar Pradesh. The ectopic tooth was the upper third molar located on the infratemporal, *i.e.* posterior surface of maxilla in a female skull. The topographic study of the tooth was conducted with a digital vernier caliper with a precision of 0.1 mm. The upper end of the tooth was at the distance of 11 mm from the superior alveolar arch, while the lower edge of the tooth was 2 mm from that arch. The distance between the anterior margin of tooth and mid sagittal plane was 46 mm and its distance from the posterior border of maxilla was 14 mm. The tooth was partially erupted. The maximum erupted length of the tooth was only 5.09 mm in the posterior part while it was impacted in the anterior most part lying embedded in the maxillary wall (Figure 1).

Discussion

A tooth is considered ectopic when it is malpositioned. Infrequent ectopic tooth eruption may be seen in the nasal cavity, nasal septum, mandibular condyle, coro-

noid process and palate [Gadre and Waknis, 2006]. The maxillary sinus is also reported as a very rare site for an ectopic tooth. The etiology is not very clear but many theories explain it to be either due to developmental factors or pathological displacement because of trauma, tumors or cysts. Any abnormal tissue interaction during the process of odontogenesis may result in ectopic tooth development and eruption. Other predisposing etiological factors are cleft palate, trauma, tooth crowding, genetic factors and high bone density[Smith et al., 1979; Spencer et al., 1985; Carver et al., 1990].

The patients may present with variable signs and symptoms depending on the location of ectopic tooth, including complaint of pain and swelling over cheek, heaviness over cheek with decreased sensations in the cheek upper lip of same side, occasional dull pain of temporomandibular joint. Chronic recurrent mucopurulent discharge from retromolar area may also be the presenting symptom [Shandilya et al., 2013]. On clinical examination a maxillary tooth of that quadrant will be found missing with or without associated hypoaesthesia of infraorbital nerve.

In the present case the third molar was partially erupted on the infratemporal surface of maxilla with the anterior-most part unerupted. It is reported that the length of maxillary third molar teeth ranges from 14 to 22 mm with an average of 17-19 mm [Guerisoli, 1998]. Therefore in this case it is suspected that the root of the tooth might be invading the mucosa of the maxillary antrum resulting in unilateral sinonasal symptoms . In the presence of persistent unilateral symptoms affecting the sinonasal cavity the rare possibility of ectopic tooth should be considered as a differential diagnosis [Abdollahifakhim, 2013]. Maxillary teeth or root in maxillary sinus may precipitate sinusitis or even result in ophthalmic symptoms [Setiya, 1965]. In rare cases occlusion of the sinus ostia may predispose a patient to develop a maxillary sinus mucocele. An ectopic tooth in the mandibular condyle has been reported as a rare cause of osteomyelitis [Lambade, 2013]. In some cases the condition may remain undiagnosed for years until the patient undergoes radiographic examination for any reason.

The diagnosis can be made by radiographic examination like orthopantomogram or computed tomography (CT). Only X ray of maxilla can reveal an ectopic tooth and the surrounding dentigerous cyst, if any. Dentigerous cyst is the most common of all dental follicular cysts. It always involves the crown of a permanent impacted, embedded or unerupted tooth [Shandilya, 2013]. A similar case of ectopic maxillary canine tooth located below the floor of the right maxillary sinus associated with dentigerous cyst was reported [Dagistan, 2007]. Thus the situation of a tooth or a root in the maxillary antrum can be a perplexing one leading to a wide range of complications like maxillary sinusitis, chronic mucopurulent discharge, ophthalmic symptoms, mucocele, dental follicular cysts. The treatment is based on removal of ectopic tooth which resolves the symptoms completely [Shandilya, 2013]. The close relationship between the third maxillary molar tooth and the maxillary antrum requires utmost care during the removal [Patel and Down, 1994] since the distance between the root apex and the sinus mucosa is reduced to millimeters or might be invaded as in the present case. The transposition of the upper third molar tooth and other dental elements to the maxillary sinus during surgery would lead to further complications.

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