

Impacted Inverted Mesiodens – A Case Report with Radiological Evaluation and Surgical Management

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Abstract

Mesiodens is the most common supernumerary tooth found in the oral cavity. However, there are only very few case reports of inverted impacted mesiodens. In this article we have reported such a case of inverted impacted mesiodens at the level of nasal floor, evaluated using CBCT and managed surgically. The aim of this article is to share knowledge about the etiology, classification, importance of CBCT that might assist the surgeon in treatment planning and surgical management of mesiodens.

Keywords: Mesiodens, Inverted impacted, CBCT, Surgical approach.

Introduction

Hyperdontia, is a term/condition used to denote presence of excess number of teeth than the normal [1]. Such supernumerary tooth can occur in maxilla or in mandible, in single or multiple numbers [2]. Presence of excess dental lamina is found to be the cause for formation of supernumerary tooth. The supernumerary tooth may or may not resemble the morphology of the normal tooth [3]. Various other theories have been postulated about the

etiology of supernumerary teeth formation such as Genetics, Dental lamina hyperactivity, Tooth bud dichotomy, Combination of environmental and genetic factors, a mere leftover from anthropods who had more teeth than homosapiens [1,8]. Out of various types of supernumerary teeth, the most common type is mesiodens [2]. These mesiodens occurs in the maxilla in between the central incisors [4]. The prevalence range of mesiodens is 0.15%- 1.90% [5]. The occurrence is more in males than in females with a ratio of 2:1 [6,7]. Among the mesiodens, 55.2% were vertically positioned, 37.6% were inverted and 7% were horizontally positioned [1,9]. The mesiodens may erupt or remain impacted within the bone without any noticeable signs and symptoms. But at times it may result in complications such as disturbance in the eruption pattern of the adjacent tooth, resorption of adjacent roots, ectopic eruption, tooth malalignment, midline diastema and pathological cyst formation [1,2,6,8,9]. So it is important to evaluate the impacted mesiodens periodically and if such complications are anticipated, early removal of mesiodens is preferred. This

article describes a case of inverted mesiodens at the level of nasal floor and its surgical management.

Case report

A 13-year-old boy reported with complaint of excess spacing between his teeth in right and left upper front teeth region. Patient was examined by orthodontist and orthodontic correction was planned and advised for OPG. Radiograph revealed impacted inverted mesiodens (Fig 1) at the level of nasal floor and since the root of the impacted mesiodens could interfere with the orthodontic movement of central incisors, surgical extraction of impacted mesiodens was advised. CBCT was advised to obtain the detail information about the position of the tooth and its relation to the neighboring anatomic structures in multiplanar sections.

CBCT revealed impacted mesiodens positioned in inverted direction above the apices of 11,21 at the level of nasal fossa (Fig 2) with 2/3rd of coronal portion above the level of nasal fossa in the anterior nasal spine region and the apex of root is dilacerated and is in close proximity to the mesial surface of root of 11 (Fig 3). In respect to buccal cortical bone, crown is seated deeper from the buccal cortex whereas apex is closer and its distance to the buccal cortical bone was measured as 0.56mm. After evaluation, intra oral surgical removal of mesiodens via buccal approach was planned.

Using 2% Lignocaine with 1:80,000 Adrenaline, bilateral Anterior Superior Alveolar nerve block and Nasopalatine nerve block was administered. Since the position of the tooth was far superior from the crest, vestibular incision was given from canine to canine region. Full mucoperiosteal flap was elevated up to Anterior Nasal Spine and buccal cortex was visualized. After sufficient guttering of the buccal bone the root was exposed, around which guttering was continued superiorly around the buccal aspect of root to create a space to facilitate its

luxation and removal. The tooth was sectioned and removed in two

Figure 1: Panoramic Radiograph

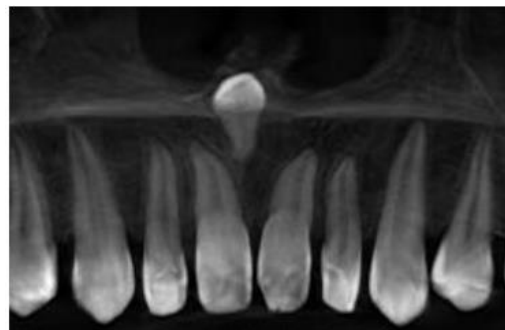


Figure 2: Sagittal sections

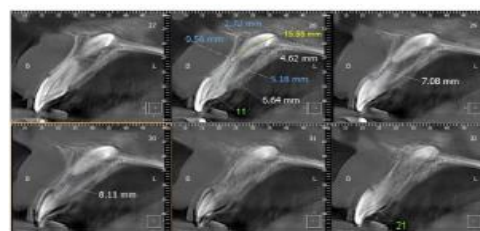
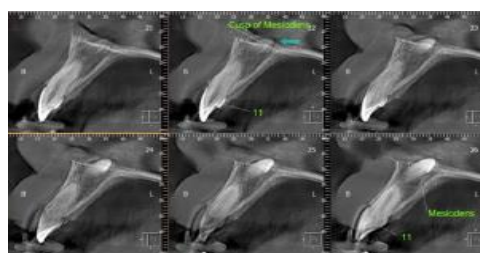


Figure 3: Coronal section

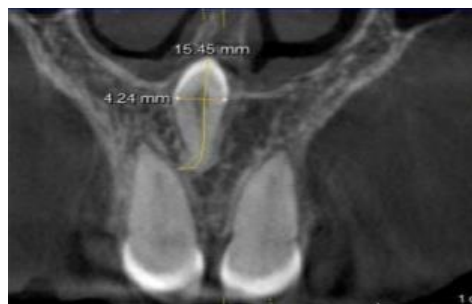


Figure 4: Intraoperative post extraction



Figure 5: Extracted mesiodens



fragments (Fig 4,5). After sufficient irrigation of the surgical site, absorbable gelatin sponge was placed within the socket to aid in hemostasis and sutured using 3-0 silk. Medications such as Amoxicillin 500mg TDS, Metronidazole 400mg TDS and combination drug of aceclofenac 100mg, paracetamol 325mg, serratiopeptidase 15mg BD were prescribed for 3 days. Patient was recalled after a week for review and suture removal. On examination healing was satisfactory.

Discussion

Mesiodens is the supernumerary tooth that occurs in maxilla between central incisors in the maxillary region. In general, supernumerary teeth are developmental anomaly characterized by excess teeth in addition to the normal dental formula.

Supernumerary teeth are classified into [2]

1. Based on morphology: Conical, Tuberculate, Supplemental
2. Based on location: Mesiodens, parapremolar, paramolar, distomolar
3. Based on position: Buccal, Palatal, Transverse
4. Based on orientation: Vertical/normal, Inverted, Transverse, Horizontal

In our case report, the type of tooth is inverted conical mesiodens. In Indian subcontinent, prevalence of mesiodens is 0.69 to 3.18% and maximum reported cases

were at the age of 8 to 10 years whereas age of our patient is 13 years.

Classification:

Mesiodens are of three different types [3]. They are:

1. Conical: Conical crown with fully formed root
2. Tuberculate: Barrel shaped with several cusps and incomplete root formation
3. Molariform: Crown resembling premolar with completely formed root

Depending on the direction of mesiodens, it is of 3 types: Normal, Inverted, Horizontal. Mupparapu et al have given classification for mesiodens depending on the long axis of impacted mesiodens to the normal eruptive pattern of maxillary central incisor and are as follows:

CLASS 1: Impacted mesiodens is 0 degrees or parallel to the normal eruptive pattern of maxillary central incisor.

CLASS 2: Impacted mesiodens is between 0 and 90 degrees from the normal eruptive pattern.

CLASS 3: Impacted mesiodens is perpendicular or 90 degrees to the normal eruptive pattern.

CLASS 4: Impacted mesiodens is between 90 and 180 degrees from the normal eruptive pattern.

CLASS 5: Impacted mesiodens is inverted or 180 degrees from the normal eruptive pattern.

The case we have described in our case report belongs to class 5 of Mupparapu et al. classification.

Ruchi et al., have stated that in almost 78% of the reported mesiodens cases, only one mesiodens was found in each patient and in 22% of cases, 2 mesiodens teeth were found in each patient and no cases were reported with 3 or more mesiodens in a same patient [8]. There were few incidences in which mesiodens is found to be associated with various craniofacial deformities such as Cleft lip and palate, cleidocranial dysostosis and Down's syndrome.

According to the literature, most of the reported cases were found to be fully impacted followed by partially impacted and then fully erupted types. Most of the impacted mesiodens does not cause any complications (60%) as per the reports of Colak et al. Among the reported complications, midline diastema and displacement of adjacent tooth were the commonly reported complications [6]. Occasionally dentigerous cyst formation may occur (11% of cases in 11-year retrospective study of Asami et al). There is a controversy about the timing of the surgical removal as there are various opinions, one is the removal of tooth as early as it is diagnosed, second one is to leave the supernumerary tooth until the development of roots of adjacent teeth is complete [2] and also no removal is necessary if no pathology/ no ortho treatment is planned in the region of supernumerary tooth. In our report, we proceeded with surgical removal as the root apex of the mesiodens is found in close proximity to the right maxillary central incisor which could interfere with the orthodontic movement of teeth.

When surgical removal is planned, careful examination is very important to assess the relationship of the impacted mesiodens to the adjacent important anatomical structures such as nasopalatine canal and also to locate the exact position and distance of the tooth from buccal / palatal cortex. CBCT is preferred over traditional radiographs as it provides complete picture of supernumerary tooth in all the three planes and can assist the surgeon in planning the surgery and also helps the surgeon in choosing the approach.

Various approaches have been reported for surgical removal of mesiodens depending on the position. They are: Maxillary vestibular approach for buccally positioned mesiodens (6%), Palatal approach for palatally placed mesiodens, palatal approach is the most preferred

approach as 80 % of mesiodens are impacted palatally [10], Transnasal approach for the tooth that are proximal to the nasal floor [11]. Hauer et al., modified maxillary vestibular approach with intranasal dissection for mesiodens impacted near nasal floor. In our case even though the cusp is at the level of nasal floor, nasal floor was intact and also the buccal aspect of the root is closer to the buccal cortical bone, buccal vestibular approach was preferred and this approach have showed satisfactory healing which makes it an ideal approach for buccally impacted mesiodens which is present high near the nasal floor.

In our case, gelatin was placed inside the socket to facilitate hemostasis and to eliminate dead space. There were reports that have used PRF inside the socket and is found to stimulate and accelerate wound healing[11].

Conclusion

In this case report, an inverted impacted mesiodens at the level of nasal floor was diagnosed and radiographically evaluated using CBCT and surgery was planned and executed accordingly with significant postoperative healing.

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