

Removal of an Inverted Impacted Mesiodens Perforating the Nasal Floor via Labial Crevicular Approach- A Case Report

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Abstract

Case Report

A mesiodens is the most common type of supernumerary tooth which may remain impacted in the maxilla to cause a variety of complications such as failure of eruption or ectopic eruption and root resorption of associated permanent teeth, formation of cystic lesions or perforation of nasal floor and eruption into the nasal cavity. Cone beam computed tomography is the radiograph of choice for the exact localization of mesiodens and treatment planning. This case report presents a rare case of a seven year old boy in which a labially impacted inverted mesiodens was perforating the nasal floor and causing pain in anterior maxillary region. A labial crevicular approach was employed for the surgical extraction of the mesiodens with satisfactory outcome and no adverse effects.

Keywords: Mesiodens, nasal floor, labial crevicular approach.

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INTRODUCTION

Supernumerary teeth are a developmental anomaly characterized by excessive teeth in addition to the normal dental formula that can appear anywhere on the dental arch. They can occur singly, as a pair or multiple on one or both sides of the mandible and/or maxilla. The most common type of supernumerary tooth is the mesiodens which is located between the two maxillary central incisors [1]. The reported incidence of mesiodens is 0.15-2.2% in permanent dentition. Mesiodens are impacted either in the labial position, palatal or between the roots of central incisors. 55% of cases are impacted vertically, 37% are inverted while 7% are horizontal. Male to female predilection is 2:1 [2]. Mesiodens can cause numerous complications of adjacent teeth such as impaction or ectopic eruption, root resorption, rotation or dilacerations and crowding. They can also give rise to cystic lesions. Rarely, a mesiodens can involve the cortical bone of nasal floor or nasopalatine canal [3]. Mesiodens can often be asymptomatic and diagnosed as an incidental finding on imaging.

The radiographs usually employed for evaluation of impacted mesiodens are periapical, occlusal and panoramic views but the radiographic examination of choice for the exact localization of impacted mesiodens is cone beam computed tomography (CBCT) as it helps to visualize the exact

three-dimensional position of the mesiodens and its relation to the surrounding structures, thereby aiding the treatment planning [4]. The modality of treatment of mesiodens depends on its position, eruption status, relationship to vital structures and influence on adjacent normal teeth [5].

CASE REPORT

A male child of 7^{1/2} years of age reported to the outpatient department of Pediatric dentistry department, children hospital, Pakistan Institute of Medical Sciences, with a complaint of progressively increasing pain in the anterior maxilla over the course of a few months. Pain was dull, intermittent and not related to mastication. There was no history of trauma. Medical and family history was not significant.

Clinical examination showed mesially rotated right permanent central incisor. The right deciduous lateral incisor had exfoliated while the left was retained. The left central incisor was in its normal position in the dental arch. The complaint of pain was above the right central incisor region but the teeth were sound with no mobility and percussion test was negative. Periapical radiographs were taken which revealed an impacted inverted mesiodens between the two central incisors causing bone loss and slight root resorption of the right central incisor but its three dimensional position could not be confirmed (Figure 1). Therefore, CBCT was

done which showed a labially impacted and inverted mesiodens perforating the cortical bone of the nasal floor (Figure 2, 3).

First, cold testing of the erupted central incisors was done which was positive confirming its vitality. Surgical removal of the impacted mesiodens was planned under general anesthesia. Labial, crevicular approach was employed and a full thickness mucoperiosteal flap was elevated from canine to canine. Bone removal was performed judiciously to expose the mesiodens in accordance with CBCT and extraction was done while avoiding any harm to the root of right central incisor and the anterior nasal spine (Figure 4). Closure was achieved with simple interrupted sutures.

At the follow-up visit one week after procedure, sutures were removed as the wound had healed uneventfully. Pulp sensitivity testing was done which showed that the central incisors were vital. Patient was recalled after three months, cold test was performed again to confirm pulp sensitivity, which was positive and radiographic examination showed continuous root growth. De-rotation of central incisor would be performed once patient's compliance improves for fixed orthodontic treatment.



Fig-1: Intraoral periapical radiograph

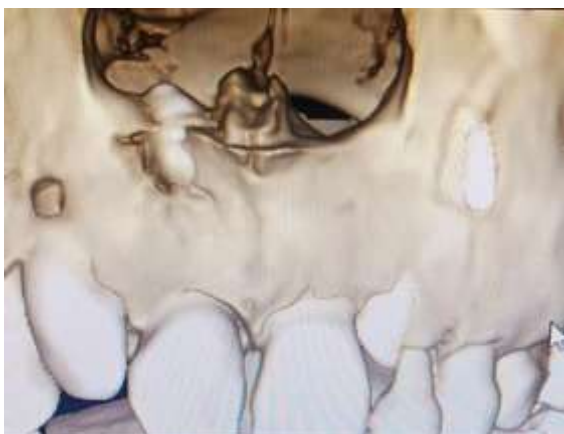


Fig-2: 3D section CBCT showing perforation of nasal floor by impacted mesiodens

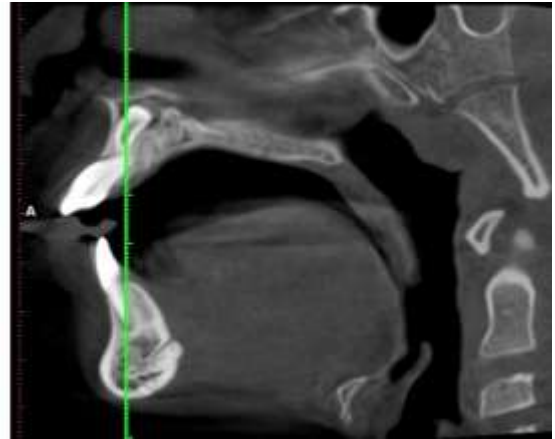


Fig-3: CBCT sagittal slice showing labially impacted mesiodens



Fig-4: Surgical exposure of mesiodens through labial crevicular approach and bone removal



Fig-5: Wound healing after suture removal

DISCUSSION

Impacted mesiodens with an inverted position are reported rare in the literature and may lead to certain unfavorable events. They can damage the cortical bone of the nasal floor, lead to oronasal fistulas or interfere with the nasal septum and can erupt in the nasal cavity as well [6]. The exact cause of mesiodens formation is not known. Certain theories have been proposed to explain this anomaly. The dichotomy theory states that a supernumerary tooth forms as a result of dichotomy of a tooth bud. Another well-established theory suggests

that conditioned and independent hyperactivity of the dental lamina leads to the formation of supernumerary teeth. Heredity might also play a role in this developmental anomaly [7]. The presence of mesiodens may be associated with craniofacial disorders such as cleidocranial dysostosis, Gardner syndrome, Down syndrome, cleft lip and palate and ectodermal dysplasia[8].

The indications for surgical extraction of impacted mesiodens include pain, delayed eruption of associated permanent teeth, root resorption of adjacent teeth, eruption into the nasal cavity, associated pathological lesion and interference with orthodontic treatment[9]. Several factors have to be taken into account before and during the surgical procedure. The age of the patient, the proximity of the mesiodens to the nasopalatine canal, anterior nasal spine and the associated permanent incisors has to be considered. Furthermore, the vitality status and the stage of development of the incisors should be determined before the procedure. The position of the impacted mesiodens whether it is labial or palatal, must be determined using CBCT to plan the appropriate surgical approach for its removal[10].

Only 6% of impacted mesiodens are in a labial position, 14 % are located between the roots of central incisors while 80% of mesiodens are impacted palatally, hence most of the impacted mesiodens are removed with a palatal approach[2]. When the supernumerary tooth is impacted labially and approaching nasal floor, a labial approach is usually preferable. This can be accomplished by crevicular or vestibular incision. The vestibular approach is short and allows sufficient exposure for intranasal dissection but there is disadvantage of loss of vestibular depth, postoperative edema and wound dehiscence as the vestibular tissue is non-keratinized. In contrast to it, the crevicular approach provides adequate exposure and is associated with reduced postoperative edema as there is minimal submucosal dissection performed. In addition, it provides excellent wound healing as suturing is through keratinized mucosa[11].

CONCLUSION

Impacted mesiodens is a rare and hidden anomaly that can lead to a variety of complications if not timely diagnosed and managed. There should be a high index of suspicion for the possibility of supernumerary teeth when there is failure of eruption or rotation of permanent teeth or when there is pain in the mixed dentition age without any clinical evidence of dental disease.

Conflict of interest

The authors declare that there was no conflict of interest

Ethics Approval

This case report is submitted for publication after taking written informed consent from the child's parents for his information and images to be published and after taking approval from the Institutional Review Board, IRB no. F.1-1/2015/ERB/SZABMU/577

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