

# Orthodontic-Surgical Management of Triple Impacted Mesiodens and Maxillary Incisors - A Case Report

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## Abstract

**Rationale:** Mesiodens are supernumerary teeth located in the pre-maxilla between the two central incisors with a prevalence rate of 0.15–1.9%. An impacted mesiodens may cause delayed eruption of permanent incisors, ectopic eruption, pathological disturbances and malalignment of teeth. **Patient Concerns:** The patient complained of missing upper front teeth associated with pain in the same region for two weeks. **Diagnosis:** Upon clinical and radiographic examination, it was diagnosed as triple impacted mesiodens with impacted permanent maxillary central incisors. **Treatment:** The clinicians in the study approached the issue by surgical removal of the impacted mesiodens and orthodontic treatment for extrusion of the impacted permanent maxillary central incisors. **Outcomes:** The patient was relieved of the pre-operative concerns and followed up regularly for the eruption of permanent maxillary central incisors. **Take-away Lessons:** The authors advocate the importance of timely diagnosis and proper management of such rare pathologies.

**Keywords:** Impaction, management, Mesiodens, supernumerary teeth

## INTRODUCTION

The variation in number from the typical complement set of teeth is referred to as hyperdontia. The extra tooth or teeth is classified as supernumerary tooth or teeth, which may occur in diverse forms, anatomical locations and shape.<sup>[1]</sup> Mesiodens are the most common supernumerary teeth seen along the midline of the maxillary arch, usually between the central incisors. They occur in 0.15–1.9% of the population and are approximately twice as frequent in men as in women.<sup>[2]</sup>

In general, only 25% of mesiodens erupt into the oral cavity, while the others remain asymptomatic and are detected incidentally during routine radiographic examination.<sup>[3]</sup> Delay in the eruption of permanent teeth and displacements of permanent maxillary incisors are more common complications.

Mesiodens usually occur as a single entity and their occurrence in multiples is referred to as mesiodens. Single supernumeraries occur in 76–86% of cases, double supernumeraries in 12–23% and multiple supernumeraries in <1% of cases.<sup>[3,4]</sup>

Our report describes the enigmatic experience with triple impacted mesiodens in the process of guiding the impacted permanent maxillary central incisors into occlusion.

## CASE REPORT

A 10-year-old boy presented to the outpatient department with a chief complaint of swelling in his upper front teeth region and pain in the same region for two weeks. On eliciting the history, he reported unerupted maxillary central incisors post-shedding of primary teeth [Figure 1]. He had previously sought medical advice for the same at various centres and was assured of the eruption of the teeth. No history of trauma or genetic predisposition was reported. Since the permanent incisors had not erupted, radiographic investigation was done, which showed deeply impacted permanent central incisors (with complete root formation) associated with bucco-oriented triple impacted mesiodens [Figure 2]. Simultaneous orthodontic treatment was initiated, and surgical extraction was

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planned. Under local anaesthesia (2% lignocaine with 1:80,000 adrenaline), a crestal incision with vertical release was given and a mucoperiosteal flap was raised to expose the impacted mesiodens. Minimal surgical guttering around the teeth was done and the mesiodens were extracted uneventfully [Figure 3]. The impacted permanent maxillary central incisors were exposed sufficiently and the orthodontic brackets (MBT 0.022 × 0.028 slot) were bonded for extrusion into the oral cavity. Suturing was done using 3-0 Vicryl and the patient was followed up regularly [Figure 4]. After 8-1/2 months, the permanent maxillary incisors erupted into the oral cavity [Figure 5]. Final levelling and alignment of the arch are under process.



**Figure 1:** Preoperative intraoral examination revealing swelling of the gingiva in the anterior maxillary region

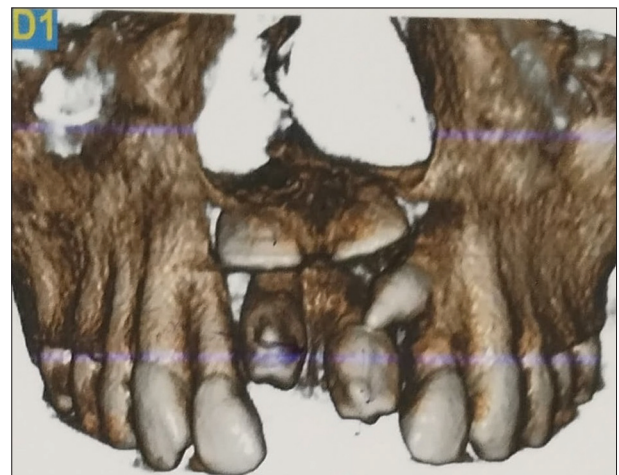


**Figure 3:** Intraoperative images: (a) Location of the triple impacted mesiodens, (b) Extracted supernumerary teeth

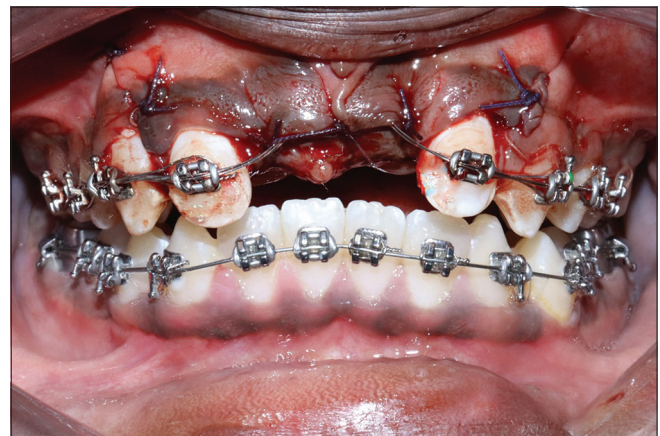
## DISCUSSION

Supernumerary teeth are a developmental anomaly that is defined as any tooth or odontogenic structure that forms from tooth buds more than the usual number for any given region of the dental arch.<sup>[1,3]</sup> The classification of supernumerary teeth is usually based on their morphology together with their location in the dental arches. According to the shape and size, it is classified as eumorphic (similar to normal-sized incisors) and dysmorphic (varied shape and size) which is further categorised into conical, tuberculate, supplemental and odontomes. Based on their appearance, mesiodens (supernumerary teeth arising in the midline between incisors) are classified as rudimentary mesiodens (permanent dentition) or supplementary mesiodens (primary dentition).<sup>[4]</sup>

There are several theories about the aetiology of supernumerary teeth; however, their origin is unknown to date. (a) Atavism (phylogenetic theory), which explains supernumerary teeth as an expression of a trait of our simian ancestors, who had more teeth. (b) The anomalous division of the dental germ,



**Figure 2:** Preoperative evaluation of the maxillary arch using cone-beam computed tomography (CBCT) showing triple impacted mesiodentes along with impacted permanent maxillary central incisors



**Figure 4:** Intraoperative image post-closure showing orthodontic therapy initiation of the impacted permanent central incisor





**Figure 5:** Follow-up image showing extrusion of central incisors

according to which the follicle is divided into two equal or different parts, giving rise to two equal teeth or one equal and another dysmorphic. (c) The theory of hyperactivity of the dental lamina; supernumerary teeth are formed as a result of alterations in the hyperactivity of the dental lamina and is the most accepted theory. Studies have shown the possibility of genetic transmission via an autosomal dominant trait (X-linked inheritance) which can explain sex dominance in this anomaly. However, there is evidence that they can be attributed to environmental factors as well as other factors such as heredity and family tendencies.<sup>[1,4]</sup>

Barbosa *et al.*, reported that the presence of mesiodens might cause delayed eruption in 26–52% of cases, displacement or rotation of adjacent teeth in 28–63% of cases.<sup>[5]</sup> Presence of mesiodens in abnormal location or multiple numbers hampers growth and development of the involved area.<sup>[6-8]</sup>

There have been literature studies showing variations at the time of removal (early/delayed) of any unerupted mesiodens,<sup>[9]</sup> but, in order to promote eruption and proper alignment of adjacent teeth, it is recommended to extract mesiodens in the early mixed dentition, which reduces the need for extensive orthodontic treatment.<sup>[6,10]</sup>

## CONCLUSION

Based on our experience and the literature review, we emphasise the early removal of the supernumerary teeth in

order to prevent complications (malalignment, cystic changes, ectopic eruption and spatial disorders) unless surgical treatment modality poses more threat over retaining the mesiodens.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that her name and initials will not be published and due efforts will be made to conceal her identity, but anonymity cannot be guaranteed.

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## Conflicts of interest

There are no conflicts of interest.

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