

# An Impacted Inverted Mesiodens and Its Surgical Intervention

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## Abstract

An inverted mesiodens is a rare complication of the developing dentition. This case report is of a 6-year-old female child in whom this mesiodens was discovered before the eruption of permanent incisors when radiographs were taken to ascertain the condition of her carious primary maxillary incisors. The inverted mesiodens were surgically removed, which was followed by eruption of the permanent central incisors within a few days.

**Keywords:** Early intervention, eruption, inverted mesiodens, supernumerary teeth

## INTRODUCTION

Supernumerary teeth or hyperdontia is defined as an excess number of teeth when compared to the normal dental formula.<sup>[1]</sup> The prevalence of the supernumerary teeth ranges from 0.10% to 3.6% in the permanent dentition and 0.02% to 1.9% in the primary dentition.<sup>[2]</sup> The supernumerary tooth in the premaxillary region is termed as a mesiodens. It usually has a conical crown and a single root, can occur singly or multiple, and may be responsible for the disturbances in the eruption of the incisors. Most of the mesiodens (55.2%) were found to be in vertical position (55.2%), followed by inverted position (37.6%) and horizontal position (7%).<sup>[3]</sup> The etiology of these teeth is still mysterious, although several theories have been suggested such as genetics, dichotomy (splitting) of the tooth bud, excessive growth of the dental lamina and atavism, or merely a leftover from the anthropoids who had more teeth than Homo sapiens. It may also be associated with specific developmental syndromes, such as cleft lip and palate, cleidocranial dysplasia, chorhinophalangeal syndrome, and Gardner's syndrome.<sup>[4]</sup>

An impacted mesiodens may cause a delayed eruption of permanent incisors, ectopic eruption, pathological disturbances, and malalignment of teeth. Hence, early detection and timely intervention are crucial to avoid any such problems.

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This case report presents an inverted impacted mesiodens in a 6-year-old female and its surgical removal before the eruption of the permanent incisors.

## CASE REPORT

A 6-year-old female patient reported to the department of pedodontics and preventive dentistry with the chief complaint of decayed primary teeth in the upper anterior region. There was no underlying medical history, and she presented with a good general health. Intraoral examination revealed grossly carious primary central and lateral incisors [Figure 1]. Intraoral periapical radiograph and orthopantomogram were taken to evaluate the extent of infection which disclosed the presence of an inverted impacted mesiodens [Figure 2]. The mesiodens appeared poorly calcified, and the root was dilacerated. An occlusal radiograph confirmed the position of the mesiodens to be on the crest of the buccal alveolar ridge of the maxillary cortical bone [Figure 3]. The mesiodens was obstructing the right maxillary central incisor and would not have allowed for its proper eruption, thereby necessitating the removal of

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**Figure 1:** Preoperative picture of the patient showing carious primary central incisors.



**Figure 2:** Orthopantomograph impacted mesiodens.



**Figure 3:** Occlusal radiograph confirming the presence of impacted inverted mesiodens and the proximity to the developing permanent incisors.



**Figure 4:** Mesiodens after removal.



**Figure 5:** Postoperative photograph where successful eruption of the permanent incisors can be seen.

the mesiodens. As the carious primary incisors needed to be extracted under general anesthesia, it was decided to extract the mesiodens also in the same visit.

### Treatment

Parents were explained and informed about the procedure, and written informed consent was obtained to carry out the entire treatment under general anesthesia. The patient was advised to be nil per oral 7 h before the procedure. Midazolam was used as preanesthetic, propofol was given intravenously for intubation, and anesthesia was maintained with O<sub>2</sub> and N<sub>2</sub>O. Vecuronium was administered as a muscle relaxant. Throat pack was placed,

and intermittent suction was maintained to prevent aspiration. Local anesthetic, 2% lidocaine with 1/100,000 epinephrine, was administered slowly through labial and palatal infiltration with a 30G needle. Using a primary anterior forceps, the decayed primary central and lateral incisors were extracted. With a #15 bisphosphonate blade, an incision was given at the alveolar crest in the midline. No releasing incision was given. The flap was slightly lifted to visualize the mesiodens. The mesiodens was then luxated with an elevator, taking care not to damage to the permanent teeth, and carefully extracted [Figure 4]. The extraction site was gently curetted, irrigated with saline, and the wound closed with interrupted silk sutures (3-0, 4-0). After completion of the procedure, the throat pack was removed, and the child was safely extubated. Home care instructions, including oral hygiene measures and diet counseling, were given to the parents. The patient was recalled after 1 week for suture removal, and the left permanent central incisor was found to have started to erupt. Follow-up after 6 months revealed normal eruption of both the central incisors [Figure 5].

## DISCUSSION

The prevalence of mesiodens in north India as per a study in 2012 was 1.4 with a boy to girl ratio of 1.8:1. The majority of the mesiodens were conical in shape and had a vertical direction of growth and 62.9% of the cases were unerupted.<sup>[5]</sup> In a study by Nagaveni *et al.*, out of 27 mesiodens, complications associated with mesiodens were 23% midline diastema, 14.8% occlusal interference, 7.4% root resorption, and 3.7% delayed eruption of permanent incisors.<sup>[6]</sup>

In the present case, the mesiodens was inverted and impacted and thus had no chance of eruption, directing toward the immediate removal of the supernumerary tooth. Various authors have stated that it is most likely that an inverted mesiodens will hamper the eruption of the permanent incisors, thereby causing malocclusion. Some authors recommend early removal of most supernumerary teeth, particularly those that are inverted and/or are unlikely to erupt.<sup>[1,7]</sup> This may prevent the need for orthodontic treatment or additional surgical procedures, such as surgical exposure or periodontal surgery at a later date. The supporters of early intervention feel that treatment would take advantage of the spontaneous eruption of the permanent incisors and increase the potential for self-correction.<sup>[8]</sup> The present case also provides evidence in favor of early extraction of mesiodens giving way to favorable eruption of the incisors.

A cautious approach is advised for inverted supernumerary teeth as they present a difficult surgical problem due to proximity to developing permanent teeth. In the present study, a conservative approach was carried out for the surgical removal. The most commonly used surgical approach is the palatal approach with full-thickness mucoperiosteal flaps. However, labial approach and apically repositioned flaps with releasing incisions are also practiced. A modified maxillary vestibular approach with subperiosteal intranasal dissection is done for impacted mesiodens in the floor of the nasal cavity.<sup>[9]</sup>

The diagnosis of mesiodens is done with the help of an intraoral periapical radiograph and orthopantomograph, the palatal and labial position of the impacted tooth is confirmed with occlusal radiographs, same lingual opposite buccal technique, and vertical tube shift technique.<sup>[10]</sup> Cone-beam computed tomography has proved to be an advanced radiographic technique to detect the exact location of an impacted mesiodens. The complications that might arise during removal of impacted mesiodens is iatrogenic damage to the developing permanent teeth, root malformation, which will call for future orthodontic treatment.<sup>[11]</sup> Some clinicians also recommend postponement of surgery until the root development of the neighboring permanent incisors is complete.<sup>[8]</sup> Hence, care should be taken to avoid any harm to the developing tooth bud while

removing an impacted mesiodens. Mesiodens located high in the alveolar bone, above the roots of the permanent incisors, might not need immediate removal as they do not interfere in the path of eruption of the permanent teeth. Whereas, those located at the alveolar crest, between the developing roots of permanent teeth and obstructing the eruption pathway, would be candidates for immediate removal to prevent malocclusion.

## CONCLUSION

This case report presents the successful removal of an impacted inverted mesiodens surgically without causing trauma to the developing tooth buds. Hence, the position of the mesiodens, proximity to the permanent incisors should be the determining factor while deciding the treatment plan. This case report also focuses on the fact that impacted mesiodens can be removed before the eruption of permanent incisors if done so with precision and care.

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## Conflicts of interest

There are no conflicts of interest.

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