International Journal of Science and Research (IJSR)
ISSN: 2319-7064
Impact Factor 2024: 7.101

# Management of Delayed Eruption by Surgical Removal of a Supernumerary Tooth: A Case Report

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**Abstract:** ***A supernumerary tooth is outlined as an additional tooth in distinction to traditional series of the dentition. Mesiodens may cause permanent incisor eruption to be delayed or ectopic, altering occlusion and appearance. As a result, it is essential for a dentist to diagnose mesiodens early in its development stage in order to provide optimal and minimal management. Interceptive therapies should be started as soon as possible after the clinical diagnosis of an irregular eruption pattern. Surgical removal of the mesiodens should be planned to avoid unfavourable outcomes. This case report highlights the problem of delayed eruption of permanent maxillary right central and lateral incisor in a 10-year old child due to supernumerary tooth.***

**Keywords:** Supernumerary tooth, Delayed Eruption, Maxillary right central incisor

## 1. Introduction

Hyperdontia is the condition of having supernumerary tooth or teeth which seem in addition to regular number of teeth.[1] Supernumerary teeth can be defined as "supplementary" if they closely resemble the teeth of the group to which they belong and as "rudimentary" if they are teeth of abnormal shape and smaller size. [2] It commonly occurs in maxilla but rarely in mandible. The prevalence reported in the general population ranges between 0.15% and 1.9% and is seen as more common in males than in females.[1]

The topographical classification of a supernumerary tooth is mesiodens, paralateral, paramolar, distomolar, and parapremolar and according to orientation as vertical, inverted, and transverse.[1]According to Alberti et al., the most common type of supernumerary tooth is mesiodens. Supernumerary teeth often block the eruption path of permanent teeth, particularly upper central incisors also leads to crowding, malocclusion may result, including open bites, overbites, or crossbites. Anterior teeth play an important role in maintaining esthetics and phonetics, Impaction of the maxillary central incisor may cause rotation, shifting, and root resorption of the adjacent teeth, loss of eruption space, underdevelopment of the anterior part of the maxilla, and crossbite. Management of supernumerary teeth depends on the type and position of the tooth. Although the intraoral radiographs will give a preliminary assessment, newer imaging modality like CBCT reveals the more accurate positioning and spatial relationship of the structure.[4] Considering the multiple complications, management of supernumerary teeth usually remains surgical removal.

The present case report highlights the management of an impacted maxillary central and lateral incisor in a 10- year old child caused due to a supernumerary tooth.

## 2. Case Presentation

A 10 –year old male patient reported to the Department of Pediatric and Preventive Dentistry with the chief complaint of a missing upper front tooth. On examination and history taking, there was missing 11,12. The intraoral examination showed the absence of permanent maxillary right central and lateral incisor with no evidence of eruption. [Figure 1] There was no history of trauma, cleft of alveolus, or swelling in that region. Intraoral Periapical Radiograph (IOPAR) revealed impacted 11,12 with a supernumerary tooth which was also impacted [Figure 2]. The tooth was seen as protruding from the labial sulcus at the mucogingival junction, positioned in the upper part of the alveolar bone. It was surrounded by a thick layer of soft tissue and oriented vertically in the cone-beam CT (CBCT) scan [Figure3]. On radiograph, Nolla's stage 6 was seen, i.e., 1/3$^{rd}$ of root development has been done with right central incisor. The impacted tooth with the crown height at the middle third of the adjacent incisor. The cause of impaction was established as an obstruction to the path of eruption due to supernumerary teeth.



**Figure 1:** Initial Intraoral view showing missing maxillary right central and lateral incisor

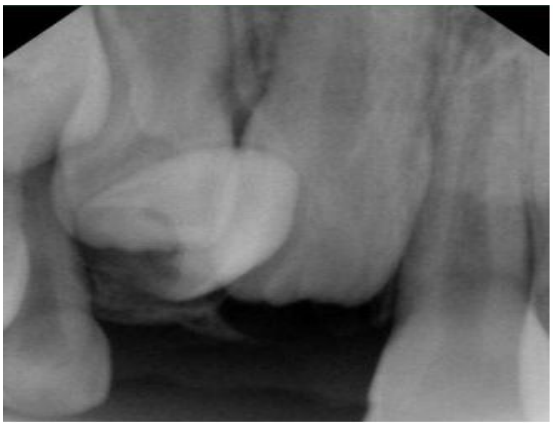


**Figure 2:** Intraoral radiograph showing unerupted 11,12 and impacted supernumerary teeth of supplemental type

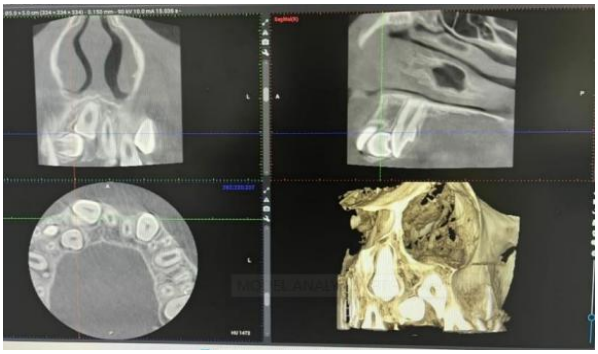


**Figure 3:** CBCT image showing a) coronal plane image b) sagittal plane image c) horizontal plane image d) Three dimensional reconstruction image

## 3. Treatment

The treatment planned for this case was surgical exposure and extraction of supernumerary teeth. Treatment procedure was initiated by administering local anaesthesia in the upper labial sulcus and palatal area in the region of 13 to 23. Palatal mucoperiosteal flap was raised using no.15 blade. The impacted supernumerary tooth was exposed and removed. The palatal mucoperiosteal flap was repositioned, sutured with 3-0 black braided silk and haemostasis was achieved. Patient was kept on antibiotic, anti-inflammatory and analgesic regimen for 5 days. After 8 days, the healing was uneventful the sutures were removed and radiograph was taken. After 3 months of follow up intra oral radiograph showed evidence of erupting maxillary right central and lateral incisors. Six months post operative clinical examination revealed erupting permanent right maxillary central and lateral incisors.

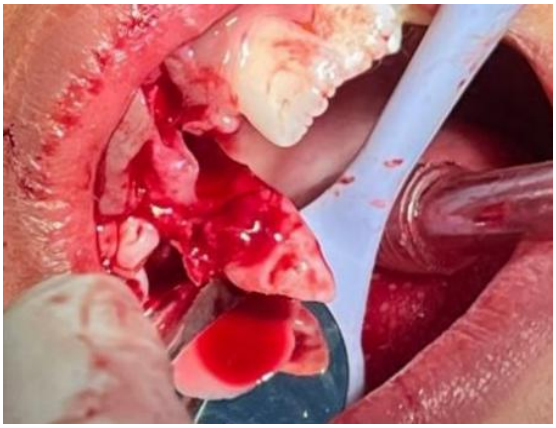


**Figure 4 (a):** Impacted supernumerary tooth visible after surgical exposure



**Figure 4 (b):** Supernumeray teeth after removal



**Figure 4 (c):** Surgical site after extraction of supernumerary tooth



**Figure 5:** Intraoral radiograph showing erupting central and lateral incisors.

## 4. Discussion

Supernumerary teeth frequently interfere with the eruption and alignment of the maxillary incisors. They can delay or prevent eruption of central incisors in 26 to 52% of cases; cause ectopic eruption, displacement or rotation of a central incisor in 28 to 63% of cases; and labially displace incisors in 82% of cases. Less common complications involving the permanent incisors include dilaceration of the developing roots, root resorption and loss of tooth vitality. Complications involving the supernumerary tooth itself include eruption of the supernumerary tooth into the nasal cavity and development of a dentigerous cyst which has been reported in 4 to 9% of cases.[2] Most mesiodens are identified between the ages of 7 and 9 during the eruption of permanent central incisors. Mesiodens are most oftenly identified during a radiological evaluation of upper central incisors that are unerupted or axially rotated, or in cases with diastema.

Extraction is the main treatment of supernumerary teeth, and the timing of extraction should be personalized according to the characteristics of each case. The prognosis is excellent after extraction and postoperative orthodontic treatment .[3]Timing of surgical removal of supernumerary teeth has also been contentious. Two alternatives options exists as the first option involves removal of the supernumerary as soon as it has been diagnosed. This could create dental phobia problems for a young child and has been said to cause devitalization or deformation of adjacent teeth. Second, the supernumerary could be left until root development of the adjacent teeth is complete. The potential disadvantages associated with this deferred surgical plan include; loss of eruptive force of adjacent teeth, loss of space and crowding of the affected arch, and possible midline shifts.

According to Solares,[4] extraction during the early mixed dentition stage allows normal eruptive forces to promote spontaneous eruption of the permanent central incisors following extraction. Hogstrom and Andersson[5], suggested that early interventions are preferable to take advantage of the spontaneous eruption potential of the permanent incisors and to prevent anterior space loss and midline deviation. Extraction of supernumerary tooth at a time appropriate for promoting self-eruption in the early mixed dentition may result in better alignment of the teeth and may minimize the need for orthodontic treatment. Management of the delayed eruption of a tooth due to a supernumerary can be approached by any one of the following three methods: First, by conservative management, by removal of the supernumerary only. Second, by removal of the supernumerary tooth together with the bone overlying the unerupted tooth with or without placement of a bonded attachment for orthodontic traction and replacement of the flap (closed exposure). And third, by removal of the supernumerary and exposure of the unerupted tooth, with or without placement of a bonded attachment for orthodontic traction (open exposure). Close monitoring of the dentition is required after the extraction of a supernumerary tooth.

Traditional X-ray examination, such as periapical radiography has played an important role in the diagnosis and treatment of supernumerary teeth in the past but CBCT can determine the three-dimensional position, shape, and axial angle of supernumerary teeth, as well as their relationship with adjacent tissues. Hence, CBCT has gradually become an essential preoperative examination for supernumerary teeth removal. Through preoperative CBCT examination, we can assess the characteristics of supernumerary teeth accurately and thereby design an appropriate surgical approach. The palatal gingival margin approach (PGMA) is the most common surgical approach in the extraction of mesiodens in maxilla in children. In this case the local palatal approach (LPA) is used when the major axis of the mesiodens is basically parallel to the major axis of the adjacent normal deciduous tooth or permanent tooth (that is, the direction of the crown of the mesiodens is consistent with that of the adjacent normal deciduous tooth or permanent tooth, or the mesiodens is inverted), moreover, the mesiodens is far from the alveolar process, and especially the mesiodens is located at the horizontal of the hard palate, that is, the applicable condition. The advantages include less tissue damage, less bleeding in the surgical area, and smaller range of flap surgery. [3]

In the case presented, the possibility of spontaneous eruption after removal of supernumerary teeth was explained to the parents and their consent was taken. After initial follow-up of 3 months, a monthly follow-up was planned. Three months postoperative clinical examination reveals erupting permanent maxillary right central and lateral incisor (Fig. 4) and in the radiographic examination occlusal movement of this tooth is evident with still immature roots.

## 5. Conclusion

As maxillary anterior teeth hold important role in esthetics, function, phonetics, its delayed eruption should be investigated at proper time followed by prompt management. Since impacted maxillary anterior teeth are not most commonly caused due to presence of verlying supernumerary teeth,timely removal of the obstacle wil clear the eruption pathway and facilitate the proper alignment as in the reported case.

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