Supernumeraries: The devils of the oral cavity. Their clinical management in pediatric dentistry: A report of three cases with literature review

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Abstract
Supernumerary teeth are defined as those in excess when compared to the normal series of deciduous or permanent dentition. Many complications such as crowding, impaction, delayed or ectopic eruption of adjacent teeth, diastema can be associated with supernumeraries. Treatment depends on the type and position of the supernumerary tooth and on its effect or potential effect on adjacent teeth. Surgical removal of the supernumerary tooth is indicated if it is associated with any complication. The present article will discuss the clinical management of an (i) impacted and erupted supernumerary tooth impeding the eruption of one maxillary central incisor and causing rotation of the erupted central incisor. (ii) Two impacted supernumeraries impeding the eruption of both the maxillary central incisors. (iii) Erupted supernumerary tooth with midline diastema.

Keywords: Delayed eruption, diastema impacted central incisors, supernumerary teeth

Introduction
Supernumerary teeth or hyperdontia is defined as an excess number of teeth when compared to the normal dental formula. The prevalence ranges between 0.3% and 0.8% in the primary dentition and 0.1-3.8% in the permanent dentition.[1-3] Males are affected twice than females in permanent dentition.[1-3] Males are affected twice than females in permanent dentition.[1-3] Supernumerary teeth can occur as singles or multiples, unilaterally or bilaterally, in the maxilla, mandible or both. They are estimated to occur in the maxilla 8.2-10 times more frequently than the mandible[4] and most commonly affect the premaxilla.[2]

Three main theories concerning the cause of mesiodens have been reported, but this subject remains controversial.[6] Phylogenetic reversion (atavism) and the dichotomy are the two main theories, which has now been largely discarded by embryologists.[7,8] Widely accepted theory involves hyperactivity of the dental lamina, according to which remnants of the dental lamina or palatal offshoots of active dental lamina are induced to develop into an extra tooth bud, which results in a supernumerary tooth. The occurrence of supernumerary teeth in several members of the same family has been observed, which indicates a familial pattern.[8,9] While there is no significant sex distribution in primary supernumerary teeth, males are affected approximately twice as frequently as females in the permanent dentition showing a sex linked pattern.[10,11]

Case Reports
Case 1
An 8-year-old child came with a chief complaint of hard swelling on the front region of the upper jaw. On clinical examination, maxillary left central incisor was partially erupted and was rotated due to one erupted supernumerary [Figure 1]. There was a firm bulge palpable in the maxillary right central incisor region. Intraoral radiographs were taken and on examination one another impacted supernumerary tooth along with an impacted central incisor was seen. An exploratory surgery was planned. On surgical exposure, impacted tooth was found palatally to the impacted central incisor [Figure 2a]. The erupted
and unerupted supernumerary teeth were extracted [Figure 2b, and c] and gingivoplasty was performed to expose the impacted central incisor [Figure 3a-c]. After about 1-month Z-spring appliance was delivered to the patient for the correction of rotation [Figure 4 and 5].

**Case 2**

A 10-year-old child came with the chief complaint of unerupted front teeth. On clinical examination both the maxillary central incisors were missing, and there was present thick fibrous mucosa over them [Figure 6a and b]. On palpation, slight elevations were felt palatally. On radiographic examination, two impacted supernumeraries were found which were blocking the eruption of both the central incisors [Figure 6c]. Palatal flap was raised under local anesthesia, and both the supernumeraries were extracted [Figure 7a-c]. Gingivoplasty was performed in the same visit and both the central incisors were exposed [Figure 8a and b].

![Figure 1: (a and b) Erupted supernumerary and radiograph](image1)

![Figure 2: (a-c) Impacted Supernumerary, supernumeraries extracted](image2)

![Figure 3: (a-c) Gingivectomy done, teeth exposed, after 1-month](image3)

![Figure 4: Z-spring appliance given](image4)

![Figure 5: Post-operative after 6 months](image5)

![Figure 6: (a-c) Pre-operative views](image6)

![Figure 7: (a-c) Supernumeraries extracted](image7)

![Figure 8: (a and b) Central incisors exposed](image8)
Case 3

A 10-year-old child came with a chief complaint of extra tooth in the upper anterior region and a rotated tooth. On clinical examination erupted mesiodens was present which was causing the rotation of left upper central incisor [Figure 9]. Radiographs were taken, and no extra impacted supernumerary was seen. It was decided to extract the mesiodens, followed by orthodontic correction of the rotation and for diastema closure [Figure 10a and b] Z- the spring appliance was given to correct the rotation [Figure 11a and b]. After the correction of the rotation, fixed orthodontic treatment was done to close the diastema [Figure 11c].

Discussion

Supernumerary is an adjective, which means “exceeding the usual number.” In general, multiple supernumerary teeth are associated with diseases or syndromes. Supernumerary teeth show strong association with developmental disorders such as cleft lip and palate, cleidocranial dysostosis, Gardner syndrome and less commonly with Ehlers-Danlos syndrome, Fabry Anderson’s syndrome, chondroectodermal dysplasia, incontinentia pigmeni and tricho rhino-phalangeal syndrome. Ectopic eruption of adjacent teeth, crowding, diceration, development of mid line diastema and eruption into the floor of the nasal cavity are the main complications associated with supernumeraries. Supernumeraries are often associated with follicular cysts, which lead to significant bone destruction and root resorption of the permanent incisors.[12-15] A supernumerary tooth may be discovered by chance as a radiographic finding with no associated complications. If supernumerary does not interfere with development and eruption of adjacent teeth and no evidence of formation of cyst exists, correct decision should be to observe the tooth until the child is old enough to tolerate the procedure better. Supernumeraries can be managed by either conservative method (removal of only supernumerary tooth), or by extraction of supernumerary along with the bone removal above the unerupted tooth with or without the traction with closed flap or open method.[10] Extraction should be performed carefully to prevent damage to the adjacent permanent tooth, blood vessels, nerves, perforation of the maxillary sinus, etc.
In the present Cases 1, 2 and 3 complications like impaction, delayed eruption of permanent central incisor, displacement and rotation of central incisors and diastema formation were associated with the supernumerary teeth. In Case 1 and 2 surgical extractions of supernumerary tooth lying palatal to the impacted permanent upper central incisor was performed. The crown of the unerupted incisor was also surgically exposed on the same visit. No orthodontic traction was performed, which should be applied when spontaneous eruption of the incisors do not occur even after surgical exposure, followed by a period of observation of 6 months. Majority of the unerupted teeth will erupt once the supernumerary tooth is removed.[16] If surgical exposure is necessary, the prognosis for spontaneous eruption is excellent.[17-19]

In Case 3 non-surgical extraction was performed to extract the mesiodens. In Case 1 and 3 rotations are corrected with Z spring appliance, whereas fixed treatment is done in case 3 to close the distema.

Conclusion
Complications to the developing dentition can easily be managed and prevented by early and careful diagnosis and treating the patients with supernumerary teeth.

Acknowledgment
Authors are grateful to all the children and their parents for cooperating with us and for their regular visits.

References