

Images of Geminated Maxillary Central Incisor with Mesiodens in Mixed Dentition

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An 11-year-old child reported to the Department of Paediatric and Preventive Dentistry with the chief complaint of irregularly placed upper anterior teeth and aesthetic concern. Medical and family history was non contributory, and there was no history of trauma. Intraoral examination revealed mixed dentition. The maxillary left central incisor (21) appeared enlarged mesiodistally with a bifid incisal edge suggestive of gemination [Table/Fig-1]. A mesiodens was present in the anterior maxillary region, contributing to spacing and altered eruption pattern. The possibility of a retained deciduous incisor was ruled out based on its morphology and eruption characteristics. Fusion was also excluded, as the overall tooth count was normal and there was no evidence of union between tooth germs. The permanent maxillary right central incisor (11) was partially erupted and displaced labially. The surrounding gingiva appeared healthy without signs of inflammation.

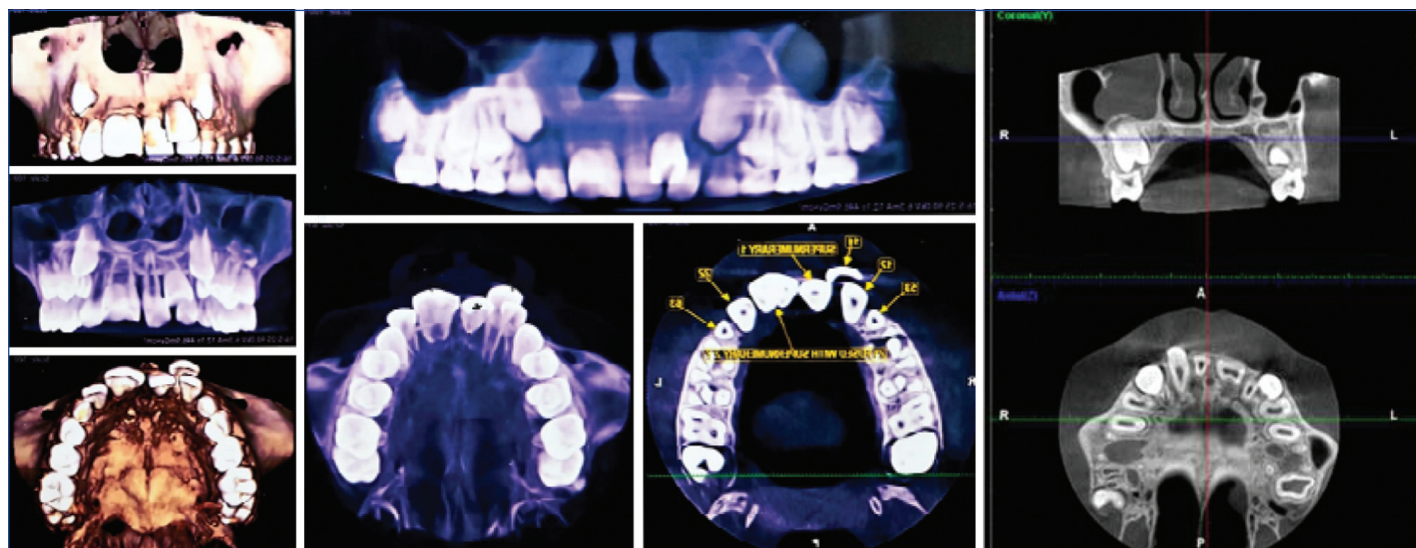


[Table/Fig-1]: Preoperative intraoral frontal view showing gemination in relation to maxillary left central incisor (21) with bifid incisal edge and presence of mesiodens in the anterior maxillary region.

Gemination is a developmental anomaly resulting from incomplete division of a single tooth germ, leading to an enlarged crown with a single root and usually a single canal system. The prevalence of gemination in permanent dentition ranges from 0.1-0.2% and is more frequently seen in anterior teeth [1,2]. Differential diagnosis includes fusion; however, the presence of a normal tooth count in the arch confirmed gemination in the present case. Supernumerary teeth, particularly mesiodens, are the most common developmental anomalies in the anterior maxilla, with a reported prevalence ranging from 0.15-1.9% [3,4]. They are commonly associated with delayed eruption, displacement, midline deviation, or impaction of permanent incisors [4].

Cone Beam Computed Tomography (CBCT) was performed to evaluate root morphology of the geminated tooth and the spatial orientation of the mesiodens [Table/Fig-2]. Intraoral Periapical Radiograph (IOPA) was initially performed for preliminary assessment; however, CBCT was advised for detailed evaluation. CBCT revealed single root and single canal morphology of the geminated tooth, with mesiodens positioned palatally. CBCT aids in accurate diagnosis and surgical planning, especially in cases involving developmental anomalies [5].

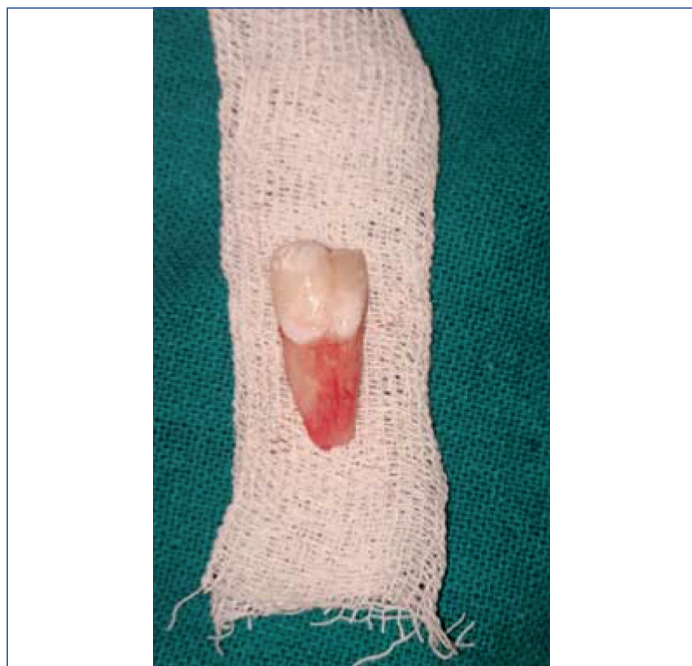
Management of geminated teeth depends on aesthetic concerns, occlusal interference, and arch space considerations. Conservative treatment options include selective grinding, recontouring, restorative build-up, and endodontic treatment followed by prosthetic rehabilitation in cases with pulpal involvement [2]. Surgical separation (hemisection) with orthodontic realignment has also been reported in selected cases [6]. In cases with significant crown malformation and eruption disturbance, extraction followed by orthodontic space closure or prosthetic replacement may be planned [1]. Autotransplantation of a suitable donor tooth is considered a viable biological option in growing patients, as it preserves alveolar



[Table/Fig-2]: Cone Beam Computed Tomography (CBCT) images (axial, coronal, and Three-dimensional (3D) reconstruction views) showing geminated maxillary left central incisor (21) with single root morphology and associated mesiodens in the anterior maxilla.

bone and maintains arch integrity [6,7]. In the present case as the patient was a minor, written consent for treatment and publication of images for academic purposes was obtained from the parents.

In the present case, due to significant crown enlargement, aesthetic concern, and interference with eruption of adjacent teeth, extraction of the geminated maxillary left central incisor (21) was performed under local anaesthesia [Table/Fig-3].



[Table/Fig-3]: Extracted geminated maxillary left central incisor (21) showing enlarged bifid crown with single root morphology.

The mesiodens present in the anterior maxillary region was selected as a donor tooth after careful evaluation of its morphology and root development. Atraumatic extraction of the mesiodens was carried out, and immediate autotransplantation into the recipient socket was performed. The extra-alveolar time was minimised to approximately five minutes to preserve the viability of Periodontal Ligament (PDL) cells and enhance the prognosis of the transplanted tooth. The transplanted tooth was repositioned appropriately within the socket and stabilised using a flexible wire-composite splint to ensure initial stability and promote periodontal healing. Postoperative instructions were given, and the patient was kept under regular clinical and radiographic follow-up. At the sixth-month follow-up, satisfactory

healing was observed with no signs of infection or abnormal mobility [Table/Fig-4]. Orthodontic treatment has not been initiated yet, as the case is currently in the healing phase. Orthodontic intervention is planned at a later stage to achieve optimal alignment and occlusion once adequate periodontal healing is confirmed.



[Table/Fig-4]: Postoperative intraoral view at follow-up showing autotransplanted mesiodens in the 21 region.

A multidisciplinary approach involving paediatric dentistry, orthodontics, and conservative dentistry has been planned to ensure long-term functional and aesthetic rehabilitation [1].

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