

The Multidisciplinary Management of Fused Maxillary Central Incisor with Talon Cusp: A Case Report

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Abstract

Background: Tooth fusion involving supernumerary teeth is an uncommon developmental dental anomaly, particularly in the permanent dentition. It may present as an esthetic and functional concern, often requiring interdisciplinary management. Early diagnosis and a tailored treatment plan are essential to preserve oral health and achieve satisfactory cosmetic outcomes.

Case Presentation: A 9-year-old male presented with an esthetic complaint due to an abnormally shaped maxillary right central incisor. Clinical and radiographic evaluation revealed fusion of a supernumerary tooth with the permanent central incisor, accompanied by palatal displacement of the right lateral incisor. A multidisciplinary treatment plan was executed, including endodontic therapy, surgical hemisection, auto-transplantation of the lateral incisor, and reimplantation of the hemisectioned central incisor. Regenerative aids including platelet-rich fibrin (PRF) and platelet-rich plasma (PRP) were used. Esthetic rehabilitation was completed with a three-unit anterior fixed prosthesis.

Conclusion: Fusion involving supernumerary teeth presents a diagnostic and therapeutic challenge in pediatric patients. A multidisciplinary approach combining endodontics, surgery, regenerative therapy, and prosthetic rehabilitation can lead to successful functional and esthetic outcomes.

Keywords: *Tooth fusion, supernumerary tooth, hemisection, auto-transplantation, platelet-rich fibrin, esthetic rehabilitation*

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Introduction

Tooth fusion is a developmental dental anomaly resulting from the union of two adjacent tooth germs¹. When this occurs between a normal and a supernumerary tooth, it may result in abnormal crown morphology, altered eruption paths, or esthetic concerns.^{2,3} Although fusion is more common in the primary dentition, its

occurrence in the permanent dentition is rare and poses significant diagnostic and therapeutic challenges.¹ Early diagnosis, often radiographically aided, is critical for selecting the optimal treatment approach.⁴ When associated with esthetic or functional impairment, a multidisciplinary intervention including endodontics,

surgery, and prosthodontics is frequently warranted.^{2,5}

Case History

A 9-year-old male presented to the pediatric dentistry department with a complaint of esthetic dissatisfaction concerning his upper front teeth. The child had no significant medical history, trauma, or previous dental treatment. Physical and mental development was within normal limits.

Clinical examination revealed a conical supernumerary tooth fused lingually to the maxillary right central incisor (tooth 11), giving an enlarged appearance to the crown. Both teeth were vital and showed no tenderness, mobility, or periodontal concerns. The right lateral incisor (tooth 12) was observed to be palatally displaced, likely due to spatial hindrance by the fused tooth.

Radiographic analysis (IOPA and OPG) confirmed a fusion between tooth 11 and a supernumerary structure, with incomplete root formation. The supernumerary portion showed complete pulp canal calcification, while the central incisor retained a partially open canal. No periapical pathology was evident. Tooth 12 showed an otherwise normal morphology and root development. A treatment plan involving hemisection of the fused tooth, auto-transplantation of the displaced lateral incisor, and subsequent esthetic rehabilitation was formulated. (Fig 1,2)

Clinical Management

1. Endodontic Treatment: The canal of tooth 11 was prepared and obturated using MTA to achieve an effective apical seal.
2. Hemisection and Extraction: The fused structure was extracted, followed by surgical hemisection to remove the supernumerary component.



Fig 1: Preoperative and intraoperative images showing fusion of supernumerary tooth with central incisor



Fig 2: Postoperative view showing three-unit anterior fixed prosthesis

3. Auto-transplantation: A socket was surgically prepared to accommodate the displaced lateral incisor (tooth 12), which was then auto-transplanted into the prepared alveolus.
4. Reimplantation and Regenerative Support: The right central incisor (tooth 11) was reimplanted, and PRF was placed to promote periodontal healing. A splint from the right to the left premolars stabilized the teeth for 14 days.
5. Post-surgical Follow-up: Two weeks later, splints were removed and mobility assessed. Healing was satisfactory. Root canal treatment of the auto-transplanted lateral incisor was completed with MTA, and PRP was injected into the socket to stimulate bone regeneration.

Esthetic Rehabilitation: Due to disproportionate crown morphology, intentional root canal therapy was performed on the contralateral left central incisor (tooth 21). Crown preparation was done on teeth 11, 12, and 21. A three-unit fixed prosthesis was fabricated and

delivered. The esthetic outcome was highly satisfactory, with proper alignment and symmetry.

Discussion

Fusion anomalies involving supernumerary teeth are rarely encountered in the permanent dentition. These cases require individualized treatment depending on the vitality, root morphology, esthetics, and occlusion of the affected teeth.^{3,6} In this case, pulp canal obliteration in the supernumerary portion made endodontic access impractical, necessitating hemisection of the fused unit and retention of the functional segment.⁸

Auto-transplantation of the displaced lateral incisor was planned to restore the arch continuity, a method supported in the literature for young patients with incomplete root development and good periodontal status.⁷ The success of this technique depends on atraumatic extraction, appropriate socket preparation, and minimal extraoral time.^{5,9}

Biologic adjuncts like platelet-rich fibrin (PRF) and platelet-rich plasma (PRP) were used to enhance healing, given their documented efficacy in stimulating soft tissue repair and osteogenesis.^{2,6} Their use has shown improved periodontal outcomes and accelerated recovery in complex surgical cases involving pediatric patients. Final esthetic rehabilitation was achieved with a fixed prosthesis to address crown size discrepancies and maintain facial harmony. Literature supports early prosthetic intervention in pediatric cases to restore psychosocial confidence and functional integrity.^{4,10}

Conclusion

Successful management of fused teeth involving supernumerary elements necessitates a multidisciplinary approach. This case demonstrated the value of

combining endodontics, auto-transplantation, regenerative materials, and prosthetic rehabilitation in restoring both esthetics and function in pediatric patients.

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