

Conservative Management of a Fused Maxillary Lateral Incisor with a Supernumerary Tooth Associated with Chronic Periapical Abscess: A Case Report

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ABSTRACT

Fusion is an uncommon developmental anomaly resulting from the union of two adjacent tooth germs during odontogenesis, producing variations in crown and root morphology that can complicate diagnosis and treatment. The intricate root canal anatomy associated with fused teeth presents significant challenges for endodontic therapy, often necessitating meticulous treatment planning. This case report describes the diagnosis and multidisciplinary management of a fused maxillary lateral incisor and a supernumerary tooth presenting with pulpal and periapical involvement. This report emphasizes the importance of accurate diagnosis, individualized treatment planning, and a conservative approach in achieving predictable outcomes when managing fused teeth.

Keywords: Tooth fusion; Developmental dental anomaly; Supernumerary tooth; Endodontic treatment; Restorative management.

INTRODUCTION

Dental fusion is a rare developmental anomaly that produces an enlarged tooth with altered morphology due to the union of two developing tooth germs. Although it is encountered more frequently in the primary dentition, its occurrence in permanent teeth is uncommon and may present diagnostic and therapeutic challenges. The anomaly is more common in the primary dentition than in the permanent dentition, and fusion involving a permanent maxillary lateral incisor and a supernumerary tooth is particularly uncommon.^{1, 2}

The complex external and internal anatomy of fused teeth may predispose them to plaque accumulation, dental caries, periodontal problems, and pulpal involvement. Variations in the pulp chamber and root canal configuration often make endodontic treatment technically challenging, emphasizing the importance of careful diagnosis and treatment planning.^{2, 3} This report presents the endodontic and restorative management of a fused permanent maxillary lateral incisor with a supernumerary tooth associated with periapical abscess, highlighting the clinical challenges and considerations involved in its successful management.

CASE PRESENTATION

A 36-year-old female patient presented to the Department of Conservative Dentistry and Endodontics, Krishnadevaraya College of Dental Sciences, Bangalore, Karnataka, with a chief complaint of intermittent swelling in the upper left anterior region for the previous two weeks. Her medical history was non-contributory, and there was no history of trauma or systemic illness.

Extraoral examination revealed no facial asymmetry or lymphadenopathy. Intraoral examination demonstrated an enlarged

decayed clinical crown in relation to the maxillary left lateral incisor (tooth #22) associated with periapical swelling, suggestive of fusion with a supernumerary tooth. A developmental groove was evident extending along the crown, which was associated with plaque accumulation. The tooth was non tender on percussion, while mild tenderness was elicited on palpation over the periapical region. There was no abnormal mobility or periodontal pocketing. The tooth failed to respond to cold, heat, and electric pulp vitality tests.



Figure 1: Pre - Operative image of upper left decayed fused Lateral Incisor

An intraoral periapical radiograph revealed fusion of the maxillary left lateral incisor with a supernumerary tooth. Two distinct root canals were evident within the fused tooth, along with a well-defined periapical radiolucency associated with tooth #22, suggestive of a chronic periapical abscess. Based on the clinical and radiographic findings, a diagnosis of pulpal necrosis with chronic periapical abscess in a fused maxillary left lateral incisor was established. After explaining the treatment plan and obtaining written informed consent, nonsurgical root canal treatment was initiated. The tooth was isolated with a rubber dam secured with wedjets, to achieve adequate moisture control. Endodontic access was prepared through the labial aspect using a round diamond bur followed by an Endo-Z bur under copious water coolant. Careful exploration of the pulp chamber revealed two separate canal orifices corresponding to the fused anatomy. Working length was determined using an electronic apex locator and also confirmed

radiographically. Biomechanical preparation was carried out using the step-back technique up to a master apical file size of #45 K-file. Throughout instrumentation, the canals were irrigated copiously with 2.5% sodium hypochlorite. A final rinse with normal saline was performed, and the canals were dried with sterile paper points.



Figure 2: Working length Radiograph

An intracanal medicament, Metapex (Meta Biomed Co., Ltd., Cheongju, South Korea), was placed into both canals using the manufacturer's delivery tip for 4 weeks. The

access cavity was temporarily sealed with a temporary restorative material, and the patient was recalled after a month.

At the second appointment, the patient was asymptomatic, with no tenderness to percussion or palpation. The temporary restoration was removed, and the Metapex dressing was flushed from the canals using copious irrigation with 2.5% of sodium hypochlorite and saline. After confirming clean and dry canals, obturation was completed using gutta-percha cones and an endodontic sealer (AH Plus, Dentsply DeTrey, Konstanz, Germany) by the cold lateral condensation technique. A postoperative radiograph confirmed dense and satisfactory obturation extending to the established working length.



Figure 3: Master Cone Radiograph



Figure 4: Lateral Condensation Obturation

The access cavity was restored with a direct composite resin restoration. A two-step self-etch adhesive system, Clearfil SE Bond (Kuraray Medical Inc., Okayama, Japan), was used according to the manufacturer's instructions. The primer was actively applied to the prepared cavity walls for 20 seconds, gently air-dried for approximately 5 seconds, and followed by application of the bonding agent. The adhesive was light-cured for 20 seconds using an LED curing unit. The cavity was restored incrementally using a nanohybrid composite resin (Clearfil Majesty Esthetic, Kuraray Medical Inc., Japan), with each increment not exceeding 2 mm and light-cured for 20 seconds. Finishing and contouring were performed using fine-grit diamond finishing burs, and polishing was completed with Sof-Lex polishing discs (3M ESPE, St. Paul, MN, USA) to obtain a smooth and esthetic surface. Occlusion was carefully evaluated and adjusted where necessary.



Figure 5: Post-Operative Image

At the one-week review, the restoration remained intact with satisfactory esthetics and function. At the one-month follow-up, the patient was completely asymptomatic, with no tenderness to percussion or palpation, and the tooth remained functional. Periodic clinical and radiographic follow-up was advised to monitor periapical healing and the long-term prognosis of the treated tooth.

DISCUSSION

The extent of fusion depends on the stage of odontogenesis at which contact occurs. The reported prevalence is approximately 0.5% in the primary dentition and 0.1% in the permanent dentition, with fusion between a permanent tooth and a supernumerary tooth being particularly uncommon. The etiology remains uncertain; however, physical pressure between adjacent tooth germs, hereditary influences, and environmental factors have all been implicated.^{1, 5}

Fused teeth frequently present with esthetic concerns, malocclusion, deep developmental grooves, increased susceptibility to dental caries, periodontal involvement, and pulpal disease. These grooves provide a favourable environment for bacterial colonization and may allow early communication with the pulp, eventually resulting in pulpal necrosis and periapical pathology. In the present case, caries involving the developmental groove most likely contributed to bacterial invasion and subsequent development of a chronic periapical abscess. Similar clinical findings have been reported in previously published case reports involving fusion between permanent teeth and supernumerary teeth.^{2, 3, 5}

One of the greatest challenges in treating fused teeth is the highly variable root canal anatomy. The pulp chambers and root canals may be completely separate, partially fused, or interconnected, making accurate diagnosis essential before initiating treatment. Although CBCT is considered the imaging modality of choice for evaluating complex canal morphology because it

provides three-dimensional visualization without anatomical superimposition, conventional intraoral periapical radiography may be sufficient when the canal anatomy is clearly distinguishable, as observed in the present case. Thorough knowledge of root canal morphology and careful exploration of the pulp chamber are critical for successful treatment.²⁻⁶

Complete elimination of microorganisms is fundamental to successful endodontic therapy. Sodium hypochlorite remains the irrigant of choice because of its antimicrobial activity and ability to dissolve organic tissue. Calcium hydroxide intracanal medicaments maintain a highly alkaline environment that inhibits bacterial growth and neutralizes endotoxins. Metapex is a calcium hydroxide-iodoform paste, which combines the antibacterial effects of calcium hydroxide with the antimicrobial activity of iodoform and has been commonly used in teeth with periapical lesions. In the present case, placement of Metapex for two weeks resulted in complete resolution of clinical symptoms before obturation, supporting previous reports on its effectiveness as an interappointment medicament.^{6, 8}

Cold lateral condensation remains one of the most predictable obturation techniques because it provides satisfactory adaptation of gutta-percha to the prepared canal walls when combined with an appropriate endodontic sealer. Equally important is the establishment of an adequate coronal seal, as coronal leakage has been recognized as a major factor influencing the long-term prognosis of endodontically treated teeth. Adhesive composite restorations restore both function and esthetics while minimizing bacterial reinfection of the root canal system.^{9, 10}

The achieved outcome in the present case demonstrates that conservative endodontic treatment can be an effective treatment option for fused teeth despite their complex anatomy. Careful diagnosis, meticulous chemo mechanical preparation, appropriate intracanal medication, three-dimensional

obturation, and an adequate coronal restoration are essential for achieving favourable outcomes. Long-term clinical and radiographic follow-up is recommended to evaluate periapical healing and monitor the long-term prognosis of these uncommon developmental anomalies.^{1, 5}

Declaration by Authors

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REFERENCES

1. Akitomo T, Kusaka S, Usuda M, et al. Fusion of a tooth with a supernumerary tooth: A case report and literature review of 35 cases. *Children (Basel)*. 2024;11(1):6.
2. Arora S, Tewari S, Sangwan P, Duhan J. Fusion of a supernumerary tooth to right mandibular second molar: A case report and literature review. *Case Rep Dent*. 2015; 2015:1-7.
3. Ghogre P, Umale H. Non-invasive endodontic management of fused mandibular second molar and a paramolar using cone-beam computed tomography as an adjunctive diagnostic aid: A case report. *J Conserv Dent*. 2014;17(5):483-486.
4. Farhad A, Mohammadi Z. Calcium hydroxide: A review. *Int Dent J*. 2005;55(5):293-301.
5. Sadaf D, Ahmad MZ. Endodontic flare-ups: An update. *Cureus*. 2023;15: e. (Discusses the use of calcium hydroxide and Metapex

as intracanal medicaments in teeth with periapical lesions.)

6. Ray HA, Trope M. Periapical status of endodontically treated teeth in relation to the technical quality of the root filling and coronal restoration. *Int Endod J*. 1995; 28:12-18.
7. Farhad A, Mohammadi Z. Calcium hydroxide: A review. *Int Dent J*. 2005; 55:293-301.
8. Mohammadi Z, Dummer PMH. Properties and applications of calcium hydroxide in endodontics and dental traumatology. *Int Endod J*. 2011; 44:697-730.
9. Mohammadi Z, Abbott PV. The properties and applications of chlorhexidine in endodontics. *Int Endod J*. 2009; 42:288-302.
10. Ray HA, Trope M. Periapical status of endodontically treated teeth in relation to the technical quality of the root filling and coronal restoration. *Int Endod J*. 1995; 28:12-18.
11. Ng YL, Mann V, Gulabivala K. Outcome of primary root canal treatment: Systematic review of the literature. Part 2. Influence of clinical factors. *Int Endod J*. 2008; 41:6-31

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