

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.e-jds.com

Correspondence

Successful autotransplantation using a mature impacted third molar: A case report

KEYWORDS

Calcium-enriched mixture cement;
Autogenous tooth transplantation;
Clinical dentistry;
Endodontics

Autogenous tooth transplantation (ATT) has emerged as a noteworthy and cost-effective treatment modality,¹ especially in addressing severe dental problems among young patients. This alternative procedure proves valuable in situations where osseointegrated implants may not be optimal due to ongoing alveolar bone development. Successful ATT offers advantages such as enhanced aesthetics, dentofacial development, and masticatory function. This case report illustrated a distinctive instance of utilizing a mature impacted molar to replace an adjacent unrestorable second molar, showcasing the effectiveness/durability of this treatment approach.

A 29-year-old male patient presented with localized pain/swelling in his lower right second molar. The radiographic assessment revealed minimal changes compared to a radiograph taken three years prior, except for recurrent caries in the mesial aspect of the tooth (Fig. 1A and B). However, further cone-beam computed tomography (CBCT) evaluation exposed an endodontic lesion in the buccal aspect of the fused roots, likely resulting from a vertical root fracture (Fig. 1C and D). The adjacent impacted third molar was fully developed, and horizontally positioned within the mandibular bone but deemed a feasible candidate for ATT. Subsequent CBCT analysis confirmed the practicality of this option (Fig. 1E, F, G and H), presenting an opportunity for simultaneous extraction during the removal of the second molar. After obtaining informed consent and explaining the treatment procedures, the patient underwent the transplantation

procedure. Unfortunately, due to the COVID-19 pandemic, he did not seek prompt treatment, returning two years later. A periapical radiograph revealed extensive destruction of the tooth crown (Fig. 1I).

The treatment commenced with oral rinsing using a 0.2 % chlorhexidine solution, and local anesthesia was administered. The unrestorable second molar was atraumatically extracted, followed by the atraumatic extraction of the third molar. Root-end resection and preparation of the mesial and distal canals were performed using appropriate Gates Glidden burs.² The canal was filled/sealed with calcium-enriched mixture (CEM) cement.³ Subsequently, the third molar was transplanted into the recipient socket, fitting well. The entire procedure, from extraction to transplantation, was completed within an impressive 10-min extraoral time. The immediate post-operative radiograph confirmed the excellent transplantation/replacement of the wisdom tooth (Fig. 1J).

The patient attended scheduled follow-up appointments for one day/week/month/year postoperatively; all of them were uneventful. Clinical/radiographic assessments during the one-year follow-up revealed a symptom-free patient with the transplanted tooth in normal occlusion, physiological mobility, and effective masticatory function. Periodontal probing indicated no pathological signs and radiographic evaluation demonstrated bone regeneration, normal periodontal ligament, and absence of root resorption as successful outcomes (Fig. 1K).⁴

<https://doi.org/10.1016/j.jds.2024.01.014>

1991-7902/© 2024 Association for Dental Sciences of the Republic of China. Publishing services by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

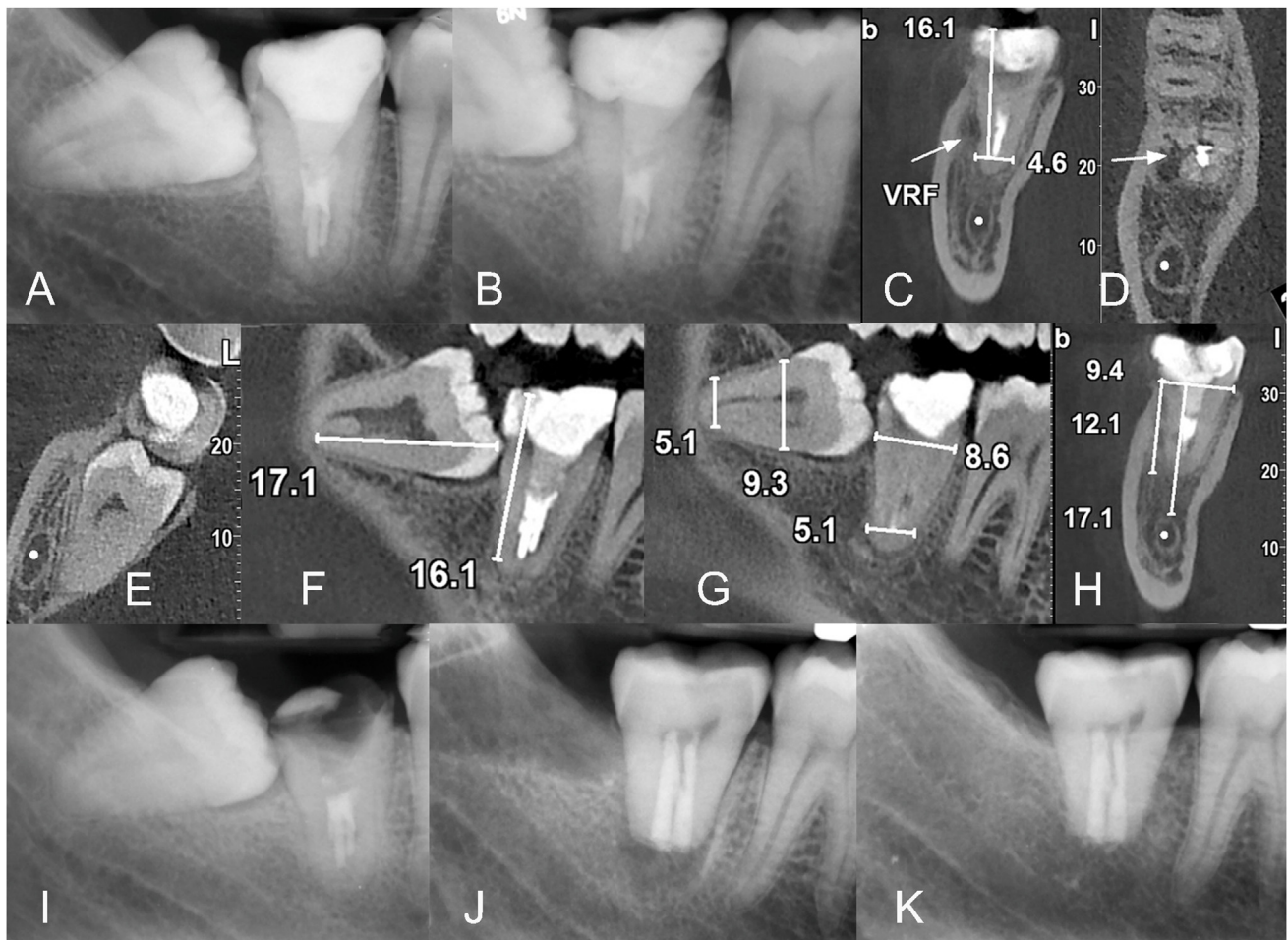


Figure 1 Clinical radiographs of our case. (A) Periapical radiograph taken 3 years ago, depicting a root-treated tooth 47 without any lesions and the impacted third molar positioned obliquely behind it. (B) Initial diagnostic periapical radiograph illustrating the right lower second molar with recurrent caries in the mesial aspect and no visible endodontic lesion. However, further CBCT evaluation revealed an endodontic lesion in the buccal aspect of the fused roots, suggesting a possible vertical root fracture (C and D). (E, F, G and H) CBCT analysis confirmed the practicality of ATT; three-dimensional lengths highlighted the potential similarity between the impacted third molar and the unrestorable second molar. (I) Periapical radiograph taken two years later, revealing extensive destruction of the crown of the second molar. (J) Immediate post-operative radiograph confirming the successful replacement of the third molar into the recipient socket. (K) Radiographic evaluation during the one-year follow-up showing bone regeneration, a healthy periodontal ligament, and an absence of external root resorption, indicating the success and stability of the autotransplantation procedure.

This case report underscored the success and potential of ATT in replacing severely compromised teeth; it offered benefits beyond traditional tooth replacement. The utilization of impacted teeth, coupled with root-end filling using CEM cement, has proved to be an efficient, cost-effective, and promising approach. The one-year follow-up results indicate the viability of this technique in restoring health/functionality. Successful ATT hinges on meticulous patient selection, appropriate donor teeth, and adherence to biological principles, underscoring the importance of careful case consideration in implementing this procedure.⁵ Further research and long-term trials are essential to solidify its position as an effective/innovative approach in dentistry.

Declaration of competing interest

The author has no conflicts of interest relevant to this paper.

Acknowledgments

None.

References

1. Cheng FC, Chang HH, Tsai YL, Chiang CP. Auto-transplantation of tooth 18 to tooth 47 socket under the coverage of national health insurance system of Taiwan. *J Dent Sci* 2023;18:947–9.

2. Asgary S. Autotransplantation of a third molar to replace an adjacent unrestorable tooth: a case report. *Cureus* 2023;15: e48133.
3. Asgary S. Autogenous transplantation of mandibular third molar to replace tooth with vertical root fracture. *Iran Endod J* 2009; 4:117–21.
4. Asgary S, Parhizkar A. Management of external inflammatory root resorption following tooth autotransplantation using a modified combination of triple antibiotics. *Case Rep Dent* 2022; 2022:5178339.
5. Chai HY, Lin KH, Huang YW, Fang CY. Use of three-dimensional-printed tooth replica for autogenous tooth transplantation at an anatomically challenging site. *J Dent Sci* 2023;18:472–4.

Saeed Asgary
Iranian Centre for Endodontic Research, Research Institute
of Dental Sciences, School of Dentistry, Daneshjoo Blvd.,
Evin, Shahid Chamran Highway, Tehran 1983963113, Iran
E-mail address: saasgary@yahoo.com

Received 11 January 2024
Final revision received 12 January 2024
Available online 24 January 2024