Case Report

Delayed Multidisciplinary Management and Oral Rehabilitation of Multiple Traumatic Dental Injuries: A Case Report

Ahmad Nouroloyouni [1], DDS MSc; Avissasadat Meraji [2], DDS; Rouzbeh Javanshir Heidari [3], DDS; Omid Dianat [4], DDS MSc; Sara Noorolouny [5], DDS MSc; Sepehr Nouroloyouni [6], DDS;

[1] Dept. of Restorative Dentistry and Biomaterial Sciences, Harvard School of Dental Medicine, Boston, MA, USA.
[2] Dentist, Dept. of Periodontics, School of Dentistry, Ardabil University of Medical Science, Ardabil, Iran.
[3] Postgraduate Student, Dept. of Prosthodontics, Nova Southeastern University, Fort Lauderdale, FL, USA.
[4] Division of Endodontics, School of Dentistry, University of Maryland Baltimore, Baltimore, MD, USA.
[5] Dept. of Pediatric Dentistry, School of Dentistry, Ardabil University of Medical Science, Ardabil, Iran.
[6] Dentist, Dept. of Orthodontics, School of Dentistry, Islamic Azad University, Tehran, Iran.

KEY WORDS
Time-to-Treatment;
Tooth Fractures;
Tooth Injuries;
Tooth Luxation;
Treatment Outcome;

Received: 13 May 2026;
Revised: 13 July 2026;
Accepted: 25 July 2026;

ABSTRACT

Guidelines emphasize immediate management of traumatic dental injuries (TDIs), yet evidence for delayed presentations involving combined root fracture, luxation, endodontic infection, and soft-tissue defects remains limited. This case report describes multidisciplinary tooth preservation and oral rehabilitation in a 39-year-old female who presented 3 months after a motor vehicle accident. Clinical and radiographic examination revealed a cervical-third horizontal root fracture of tooth #9 with grade III mobility and negative pulp sensibility tests, and laterally luxated teeth #24 and #25 with pulp necrosis and periradicular radiolucencies; tooth #24 additionally exhibited external root resorption and hard- and soft-tissue fenestration. Management included staged endodontic disinfection, long-term calcium hydroxide medication, mineral trioxide aggregate apical barrier placement, extended semi-rigid splinting, periradicular surgery, and guided tissue regeneration using freeze-dried bone allograft and a resorbable collagen membrane. At 12 months after treatment initiation, all treated teeth remained in situ and functional. The patient reported no pain or functional limitation; no swelling, sinus tract, recurrent fenestration, or other adverse event was detected. Moreover, the radiographs demonstrated healing of the lesions associated with teeth #24 and #25 and radiographic findings consistent with healing at the fracture site of tooth #9. This case illustrates that selected delayed TDI presentations may still be managed conservatively by adapting acute-trauma principles to the clinical findings, defect morphology, and patient preference.

Corresponding Author: Noorolouny S, Dept. of Orthodontics, School of Dentistry, Islamic Azad University, Tehran, Iran. Tel: +989022232132 Email: s.noorolouni@gmail.com

Cite this article as:

Introduction

Traumatic dental injuries (TDIs) are common and may involve teeth, periodontal tissues, alveolar bone, and adjacent soft tissues [1]. A global meta-analysis estimated that more than 1 billion living people have experienced TDIs, most commonly after falls, collisions, physical activities, and accidents [2]. Crown fractures and luxation injuries remain among the most frequent traumatic injury patterns in the permanent dentition [1, 3-4].

Dental trauma references and the International Association of Dental Traumatology (IADT) guidelines emphasize immediate or urgent assessment because accurate diagnosis, repositioning when indicated, stabilization, endodontic decision-making, and follow-up strongly influence healing [5-6]. The IADT guidelines also state that recommendations must be applied with clinical judgment and patient-specific factors, particularly when the evidence is incomplete [5-6].

Delayed care is nevertheless common. TDIs may be overlooked when they accompany life-threatening injur-

Table 1: Clinical timeline, treatment sequence, and outcomes

Time point	Clinical event	Key finding or management decision
Trauma	Motor vehicle accident with maxillofacial trauma	Dental assessment was delayed for approximately 3 months.
Initial dental visit (3 months post-trauma)	Clinical and radiographic assessment	Tooth #9 (FDI: 21) had a cervical-third horizontal root fracture and grade III mobility; teeth #24 (FDI: 31) and #25 (FDI: 41) were nonresponsive to pulp sensibility testing with periradicular radiolucencies; tooth #24 also showed external root resorption and hard- and soft-tissue fenestration.
First appointment	Splinting and endodontic disinfection	Tooth #9 was stabilized with a semi-rigid splint; teeth #24 and #25 underwent access, working-length confirmation, chemomechanical preparation, and calcium hydroxide medication.
2 weeks	Continuation of endodontic treatment	Long-term calcium hydroxide medication was placed in tooth #24; tooth #25 was obturated.
4 months after treatment initiation	Reassessment and modified treatment	Tooth #9 mobility had improved but remained above physiologic mobility, so splinting was extended; tooth #8 (FDI: 11) was treated endodontically; tooth #24 received an MTA apical plug before planned surgery.
Three days later	Periradicular surgery for tooth #24	The setting of the MTA was confirmed; periradicular surgery, root-end resection, debridement, freeze-dried bone allograft placement, and resorbable collagen membrane coverage were performed.
Approximately 6 months after treatment initiation	Splint removal and definitive stabilization	Tooth #9 mobility had decreased to grade II; a fiber-reinforced composite semi-rigid splint was placed for functional stability and comfort.
12 months after treatment initiation	Clinical and radiographic follow-up	All treated teeth remained in situ and functional. The patient reported no pain or functional limitation. No swelling, sinus tract, recurrent fenestration, or other adverse event was detected, no additional intervention was required at that visit, and radiographs demonstrated healing of the lesions associated with teeth #24 and #25 and radiographic findings consistent with healing at the fracture site of tooth #9.

Abbreviations: World Dental Federation (FDI) notation; mineral trioxide aggregate (MTA)

ies, are initially asymptomatic, or are masked by analgesics or treatment of concomitant trauma; financial barriers and poor awareness of dental-trauma urgency may further contribute to late presentation [7-12].

Treatment delay is associated with more complex sequelae, including pulp necrosis, periradicular infection, external root resorption, malposition, occlusal interference, and greater treatment burden [7-11,13]. Recent data also show that delayed arrival remains a relevant problem even in triaged acute/subacute dental trauma pathways [9].

Evidence remains limited for delayed, combined injuries involving a cervical-third horizontal root fracture, lateral luxation with root resorption, pulp necrosis, periradicular radiolucency, and a hard- and soft-tissue fenestration. This report was prepared in accordance with the 2020 Preferred Reporting Items for Case Reports in Endodontics guidelines [14].

Case Presentation

In this report, tooth numbers are presented using Universal notation, with corresponding World Dental Federation (FDI) numbers provided where relevant. A 39-year-old female presented 3 months after a motor vehicle accident complaining of an "extruded lower tooth root, suppuration, and marked mobility of her upper anterior teeth." She reported no relevant medical history or medication use.

Extraoral examination showed mandibular deviation to the left, with non-tender temporomandibular joints and a maximum interincisal opening of 42 mm without functional limitation (Figure 1). Intraorally, hard and so-

Figure 1: Extraoral view showing deviation of the mandible to the left side

Figure 2: a: Pretreatment periapical radiograph showing a horizontal root fracture in the cervical third of tooth #9, **b:** Initial semi-rigid splinting of tooth #9 from tooth #6 to tooth #11, **c:** Twelve-month follow-up radiograph of tooth #9 demonstrating radiographic findings consistent with healing at the fracture site, **d:** Pretreatment radiograph showing external root resorption in tooth #24 and periradicular radiolucencies associated with teeth #24 and #25, **e:** Working-length determination for teeth #24 and #25, **f:** Twelve-month follow-up radiograph demonstrating radiographic healing of the periradicular lesions, **g:** Pretreatment intraoral view showing hard- and soft-tissue fenestration at tooth #24 and defective restoration on tooth #9, **h:** Twelve-month follow-up intraoral view demonstrating complete soft-tissue healing at tooth #24 and restored anterior aesthetics

ft-tissue fenestration was evident at tooth #24 (FDI: 31) (Figure 2G), and carious lesions were present on teeth #1 (FDI: 18) and #14 (FDI: 26). Pulp sensibility testing using cold and electric pulp tests elicited no response from teeth #9 (FDI: 21), #24 (FDI: 31), and #25 (FDI: 41), while control teeth responded within normal limits. Tooth #9 was slightly tender to percussion and palpation, had grade III mobility, and had periodontal probing depths within normal limits. Periapical radiographs showed a horizontal root fracture in the cervical/ coronal third of tooth #9 without obvious severe fragment displacement on the available two-dimensional images, external root resorption on tooth #24, and periradicular radiolucencies associated with teeth #24 and #25 (Figure 2A, D).

The treatment plan aimed to preserve the involved teeth while restoring anterior function and aesthetics. For tooth #24, occlusal adjustment, root canal treatment with an apical mineral trioxide aggregate (MTA) plug after long-term calcium hydroxide therapy, and possible guided tissue regeneration of the fenestration were proposed, with extraction and prosthetic or implant replacement discussed as alternatives. For tooth #25, root canal treatment with possible periapical surgery and intracoronal adhesive restoration was planned, with extraction and replacement as alternatives. Tooth #9 was scheduled for semi-rigid splinting and close review because the patient wished to retain the tooth and there was no isolated deep periodontal probing; extraction and replacement were discussed as contingency options. Although tooth #9 did not respond to sensibility testing, root canal treatment was not initiated because a negative sensibility response alone, without definitive clinical or radiographic evidence of pulp necrosis or infection, was

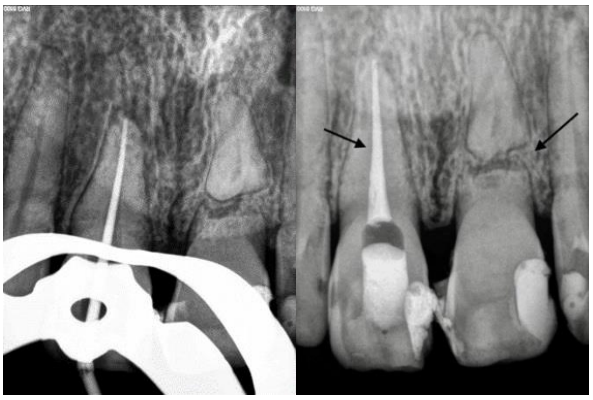
not considered sufficient to justify endodontic treatment. Teeth #1 and #14 were planned for restorative treatment. Written informed consent was obtained for all treatment procedures and for publication of the case report. The clinical course and treatment sequence are summarized in Table 1.

At the first appointment, a semi-rigid splint was placed from tooth #6 (FDI: 13) to tooth #11 (FDI: 23) to stabilize tooth #9 (Figure 2B). For teeth #24 and #25, local anesthesia with 2% lidocaine and 1:80,000 epinephrine was administered, access cavities were prepared, and canals were negotiated with #15 K-files. Working lengths were established with an electronic apex locator and confirmed radiographically (18 mm for tooth #24 and 20 mm for tooth #25) (Figure 2E). Tooth #24 was gently prepared with hand files and irrigated with 0.5% sodium hypochlorite and 17% ethylenediaminetetraacetic acid because of external root resorption; tooth #25 was prepared with a crown-down technique using rotary files to size 30/0.04 taper and irrigated with 5.25% sodium hypochlorite and 17% ethylenediaminetetraacetic acid. After final saline irrigation, creamy calcium hydroxide was placed in both canals and reinforced zinc oxide eugenol was used as a temporary restoration.

Two weeks later, calcium hydroxide was removed from tooth #24 and a high-viscosity calcium hydroxide paste was packed as a long-term intracanal medicament. Tooth #25 was obturated with gutta-percha and epoxy resin sealer using lateral compaction, and a temporary restoration was placed (Figure 3).

At the 4-month review, the semi-rigid splint on tooth #9 was removed. Mobility had decreased but remained

Figure 3: Postoperative periapical radiograph of tooth #25 following root canal treatment



a **b**

Figure 4: Root canal treatment of tooth #8: **a:** working-length determination; **b:** Postoperative periapical radiograph

above physiologic mobility; therefore, splinting was extended for a further 2 months. Tooth #8 (FDI: 11) then showed findings consistent with symptomatic irreversible pulpitis and symptomatic apical periodontitis and underwent root canal treatment (Figure 4). Radiographs demonstrated initial healing of the periapical radiolucency associated with tooth #25, but the soft-tissue fenestration at tooth #24 persisted (Figure 5). Calcium hydroxide was removed from tooth #24, the canal was irrigated with 0.5% sodium hypochlorite and saline, and an MTA apical plug was placed (Figure 6).

Three days later, the setting of the MTA was confirmed and the coronal canal space of tooth #24 was obturated with gutta-percha and sealer using lateral condensation (Figure 7). Periradicular surgery was then performed for tooth #24 under local anesthesia. A triangular full-thickness mucoperiosteal flap from tooth #26 FDI: 42) to tooth #22 (FDI: 33), with a vertical releasing incision, was elevated. Root-end resection was carried out, the integrity of the MTA plug was verified, and (the

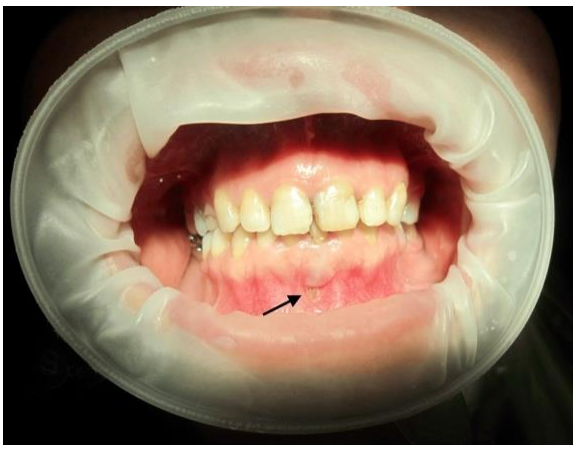


Figure 5: Persistence of the soft-tissue fenestration associated with tooth #24

Figure 6: Mineral trioxide aggregate apical plug placed in tooth #24

resected root surface was examined for additional canals (Figure 8). The fenestration margins were debrided; freeze-dried bone allograft was inserted into the osseous defect, and a resorbable collagen membrane was placed over the grafted defect and stabilized before flap closure with 6-0 nylon sutures (Figure 9). Sutures were removed after 1 week, at which time complete soft-tissue healing was observed.

After two additional months, the semi-rigid splint was removed; mobility of tooth #9 was grade II and considered acceptable in the context of the cervical root fracture and altered crown-to-root ratio. To further stabilize the tooth, a permanent fiber-reinforced composite semi-rigid splint was bonded from tooth #8 to tooth #9, providing functional stability and patient comfort.

The patient was reviewed at 6 months (Figure 10) and 12 months (Figure 2C, F, H) after initiation of treatment. At 12 months, all treated teeth remained in situ and functional. The patient reported no pain or

Figure 7: Postoperative periapical radiograph of tooth #24

Figure 8: Root-end resection and inspection of the resected root face of tooth #24 for an additional canal

functional limitation. No swelling, sinus tract, recurrent fenestration, or other adverse event was detected, and no additional intervention was required at that visit. Radiographs demonstrated healing of the lesions associated with teeth #24 and #25 and radiographic findings consistent with healing at the fracture site of tooth #9. Tooth #9 remained functionally stable with the fiber-reinforced composite splint.

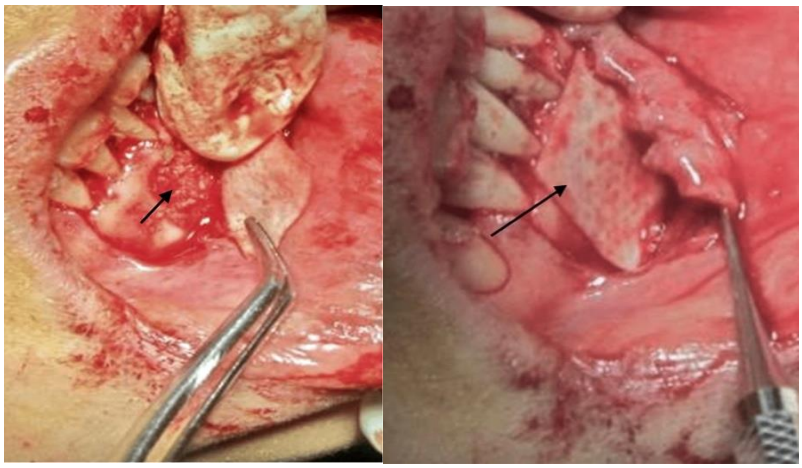
Patient Perspective

At the 12-month review, the patient reported satisfaction with retaining the involved natural teeth and with the functional outcome. She reported no pain or functional limitation.

Discussion

The time elapsed between trauma and treatment initiation is a critical prognostic factor in TDIs, particularly for luxation injuries and root fractures, because delay can increase the risk of pulp necrosis, inflammatory root resorption, and tooth loss [7-9]. Current IADT guidelines provide detailed recommendations for acute fractures and luxations but are primarily designed for immediate or urgent care; they do not provide a dedicated algorithm for teeth first presenting several months after trauma [5-6]. The present case is clinically relevant because it combined a cervical-third horizontal root fracture, delayed lateral luxation, necrotic infected root canals, external root resorption, and a hard- and soft-tissue fenestration.

For tooth #9, the decision to attempt preservation was based on the patient's preference, absence of isolat-



a **b**

Figure 9: Guided tissue regeneration at the fenestration site of tooth #24, **a:** Placement of freeze-dried bone allograft into the osseous defect; **b:** Positioning of the resorbable collagen membrane over the grafted defect. Arrows indicate the regenerative materials

a **b**

Figure 10: Six-month follow-up: **a:** periapical radiograph of teeth #24 and #25; **b:** Periapical radiograph of tooth #8

ed deep periodontal probing, absence of obvious severe fragment displacement on the available radiographs, and the possibility of achieving functional stabilization. This was still a guarded decision because the fracture was located in the cervical third and the tooth initially had grade III mobility. Recent evidence supports a conservative approach when feasible; a 2024 retrospective cohort of 125 permanent teeth with horizontal root fractures reported a 92% favorable outcome with appropriate diagnosis, treatment, and monitoring, although delayed presentation increased the likelihood of requiring endodontic intervention [15]. A 2025 Bayesian network meta-analysis found no clear superiority among splint types for horizontal root fractures and emphasized that fragment displacement and other case factors are more important prognostic variables than splint design alone [16].

The initial 4-month semi-rigid splinting period for tooth #9 was selected because IADT guidance allows longer immobilization, up to 4 months, when a horizontal root fracture is located near the cervical third [6]. The subsequent 2-month extension was not intended as routine acute-trauma management; it was a patient-specific modification because tooth mobility remained greater than physiologic mobility when the splint was first removed. The final fiber-reinforced composite splint was used to improve comfort and functional stability after mobility had decreased to grade II.

Management of tooth #24 required further modification of acute luxation protocols. In an acute lateral luxation, repositioning and short-term splinting are recommended [6]. In this delayed presentation, however, tooth #24 was clinically fixed 3 months after trauma and was associated with external root resorption, pulp necrosis, periradicular radiolucency, and established hard- and soft-tissue fenestration. Forceful repositioning at this stage was judged likely to aggravate periodontal and root-surface injury or increase resorptive risk. Therefore, occlusal adjustment, endodontic disinfection with calcium hydroxide, an MTA apical barrier, and periradicular surgery with guided tissue regeneration were selected as a preservation-oriented alternative [6, 13].

The regenerative component was also biologically plausible because the defect was non-contained and communicated with the soft tissue. A 2024 systematic review concluded that regenerative materials may improve the prognosis of apicomarginal lesions in periapical surgery but emphasized heterogeneity and the need for standardized criteria [17]. More directly relevant to the material used in the present case, a 2025 randomized controlled trial found that allograft plus a bioresorbable

collagen membrane significantly improved labial alveolar bone regeneration in apicomarginal defects at 1 year, although 3-dimensional periapical success was similar between groups treated with and without guided tissue regeneration [18]. These findings support guided tissue regeneration as a reasonable adjunct in selected non-contained labial defects, not as a universal requirement for all periapical surgery.

Tooth #25 was managed according to principles for a necrotic mature tooth with apical periodontitis, and it showed radiographic resolution at 12 months. Tooth #8 became symptomatic during follow-up and was treated endodontically when clinical findings changed. This sequence underscores the importance of prolonged surveillance after TDIs, especially when initial pulp sensibility testing is negative or equivocal.

The outcome assessment was strengthened by reporting tooth-specific mobility and clinical findings over time. Tooth #9 improved from grade III mobility at presentation to grade II mobility after extended stabilization; the patient reported no pain or functional limitation at 12 months; and the fenestration associated with tooth #24 did not recur clinically. Radiographs showed resolution or clear healing of the periradicular radiolucencies associated with teeth #24 and #25 and radiographic findings consistent with healing at the fracture site. These findings support a favorable short-term outcome, while acknowledging the guarded long-term prognosis.

This report has limitations. It is a single case with 12 -month follow-up after treatment initiation, and outcome assessment relied mainly on clinical examination and two-dimensional radiographs rather than standardized cone beam computed tomography volumetry or calibrated lesion-size measurements. The mobility grading and soft-tissue healing observations are clinically useful but semiquantitative. Longer follow-up is necessary because delayed complications after TDIs, including resorption, recurrent apical disease, and ankylosis-related changes, may occur after the first year.

The case also has a prevention and systems implication. Patient education and structured dental assessment after facial trauma may reduce delayed presentation, missed TDIs, and the need for complex multidisciplinary rehabilitation [5-6, 19]. An educational intervention has been reported to improve awareness of emergency management of TDIs [19].

Overall, this case illustrates that delayed presentation should trigger careful reassessment rather than automatic extraction. In selected cases, a preservation-oriented plan can be justified when the tooth is restorable or stabilizable, periodontal findings are acceptable, infection can be controlled, the patient understands the guarded prognosis, and long-term follow-up is feasible.

Delayed presentation does not necessarily require extraction. When patients prioritize tooth preservation and the clinical findings permit a conservative attempt, guideline-informed treatment can be adapted to the delayed biological situation. Regular review, tooth-specific mobility assessment, appropriate stabilization, endodontic infection control, and selective use of regenerative surgery for combined hard- and soft-tissue defects may support functional oral rehabilitation. Dental evaluation after facial trauma should be encouraged even when dental symptoms are initially mild or masked by other injuries.

Conclusion

Management of delayed TDIs is challenging because specific evidence-based protocols for late presentations and oral rehabilitation are limited. This case documents preservation and rehabilitation of complex injuries despite a 3-month delay, including a cervical-third horizontal root fracture with severe mobility and a laterally luxated mandibular incisor with pulp necrosis, external resorption, and hard- and soft-tissue fenestration.

A combined approach of endodontic disinfection, extended semi-rigid splinting, MTA apical barrier placement, periradicular surgery, and guided tissue regeneration using freeze-dried bone allograft and a resorbable collagen membrane enabled functional tooth preservation at 12 months. The findings support individualized, preservation-oriented decision-making in selected delayed trauma cases while emphasizing the need for longer follow-up and further evidence on delayed TDI protocols.

Acknowledgements

None

Declarations

Ethical Considerations

Written informed consent was obtained for all treatment

procedures and for publication of the case report.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors. This research was not performed as part of the employment of the authors.

Conflicts of Interest

The authors declare that they have no conflicts of interest related to this work.

References

[1] Andreasen JO, Andreasen FM, Andersson L, editors. Textbook and color atlas of traumatic injuries to the teeth. 5th ed. Hoboken, NJ: Wiley-Blackwell; 2019.

[2] Petti S, Glendor U, Andersson L. World traumatic dental injury prevalence and incidence, a meta-analysis-One billion living people have had traumatic dental injuries. Dent Traumatol. 2018; 34: 71-86.

[3] Kallel I, Douki N, Amaidi S, Ben Amor F. The Incidence of Complications of Dental Trauma and Associated Factors: A Retrospective Study. Int J Dent. 2020; 2020: 2968174.

[4] Spinas E, Pipi L, Mezzena S, Giannetti L. Use of Orthodontic Methods in the Treatment of Dental Luxations: A Scoping Review. Dent J (Basel). 2021; 9: 18.

[5] Levin L, Day PF, Hicks L, O'Connell A, Fouad AF, Bourguignon C, et al. International Association of Dental Traumatology guidelines for the management of traumatic dental injuries: General introduction. Dent Traumatol. 2020; 36: 309-313.

[6] Bourguignon C, Cohenca N, Lauridsen E, Flores MT, O'Connell AC, Day PF, et al. International Association of Dental Traumatology guidelines for the management of traumatic dental injuries: 1. Fractures and luxations. Dent Traumatol. 2020; 36: 314-330.

[7] Andreasen JO, Andreasen FM, Skeie A, Hjørting-Hansen E, Schwartz O. Effect of treatment delay upon pulp and periodontal healing of traumatic dental injuries: a review article. Dent Traumatol. 2002; 18: 116-128.

[8] Enabulele JE, Oginni AO, Sede MA, Oginni FO. Pattern of traumatised anterior teeth among adult Nigerians and complications from late presentation. BMC Res Notes. 2016; 9: 70.

[9] Šimunović L, Špiljak B, Vranić L, Negovetić Vranić D. Treatment priorities and arrival time of traumatic dental injuries-An 8-year retrospective study. Dent Traumatol. 2024; 40: 11-21.

[10] Alnaggar D, Andersson L. Emergency management of traumatic dental injuries in 42 countries. Dent Traumatol. 2015; 31: 89-96.

[11] Lam R. Epidemiology and outcomes of traumatic dental injuries: a review of the literature. Aust Dent J. 2016; 61 Suppl 1: 4-20.

[12] Abbott PV, Salgado JC. Strategies to minimise the consequences of trauma to the teeth. Oral Health Dent Manag. 2014; 13: 229-242.

[13] Abbott PV. Indications for root canal treatment following traumatic dental injuries to permanent teeth. Aust Dent J. 2023; 68 Suppl 1: S123-S140.

[14] Nagendrababu V, Chong BS, McCabe P, Shah PK, Priya E, Jayaraman J, et al. PRICE 2020 guidelines for reporting case reports in Endodontics: explanation and elaboration. Int Endod J. 2020; 53: 922-947.

[15] Sheikhnezami M, Shahmohammadi R, Jafarzadeh H, Azarpazhooh A. Long-Term Outcome of Horizontal Root Fractures in Permanent Teeth: A Retrospective Cohort Study. J Endod. 2024; 50: 579–589.

[16] Kowaltschuk TC, Gonçalves FM, de Araujo BMM, da Silva Cruz NT, Schroder AGD, Antoniazzi BB, et al. Splinting in horizontal root fractures: A Bayesian network meta-analysis. PLoS One. 2025; 20: e0326979.

[17] Attar-Attar L, Bernabeu-Mira JC, Cervera-Ballester J, Peñarrocha-Diago M, Peñarrocha-Diago M. Systematic review of surgical regenerative treatment for apicomarginal lesions in periapical surgery. Med Oral Patol Oral Cir Bucal. 2024; 29: e416-e422.

[18] Sharma R, Tewari S, Sangwan P, Gupta A. Effect of allograft and collagen membrane application on periapical and labial bone regeneration in apicomarginal defects treated with endodontic microsurgery: a randomized controlled trial. Oral Surg Oral Med Oral Pathol Oral Radiol. 2025; 140: 41-53.

[19] Alomari A, Hashim R, Walia T, Shetty R. Enhancing elementary school teachers' knowledge in managing traumatic dental injuries: The effectiveness of educational sessions. Dent Traumatol. 2024; 40: 410-417.