Tooth Fracture in a 12-year-old Patient: A Case Report

Suhani Gupta1*
1Consultant, Dental Surgeon, Mint Leaf Dental Clinic, Gurugram, India

Citation: Suhani Gupta. Tooth Fracture in a 12-year-old Patient: A Case Report. ERWEJ. 2023;3(3):103-109. 10.54136/ERWEJ-0303-10058

© Author(s), 2023, Publisher and License: THB. Open Access. This article is distributed under the terms of the Creative Commons Attribution 4.0 International License, which permits unrestricted use, distribution, and non-commercial reproduction in any medium, provided you give appropriate credit to the original author(s) and the source.

*Corresponding Author: Suhani Gupta, Consultant, Dental Surgeon, Mint Leaf Dental Clinic, Gurugram, India. E-mail: gsuhani23@gmail.com

Keywords: Ellis Class III Fracture; Trauma; Tooth Restoration; Tooth Fracture

Abstract
The most frequent type of dental injury is anterior coronal fracture. After receiving endodontic care, fractured anterior teeth are often repaired using standard post, core, and crown methods. The natural tooth structures can be reattached using adhesive procedures if the original tooth fragment is kept after a fracture. We present a case report of a 12-year-old young patient having Ellis Class III fracture in anterior teeth treated endodontically and followed up by composite build-up of the crown.

Introduction
The most common type of injury to permanent teeth is external damage, which accounts for 25% of these patients, especially children and teenagers [1]. Injuries are classified as complicated crown fractures or Class 3 fractures (Ellis and Davey classification) if the fracture additionally exposes the dental pulp [2]. The maxillary central incisors are the teeth most frequently affected by difficult crown fractures, which comprise 2% and 13% of all dental injuries [3]. Injuries in children and adolescents require increased attention due to the physical and emotional impact on the patient and family [4]. Therefore, strategies for quick and easy treatment, beautification, and long-term success can be helpful and should be considered. In most cases, dental caries can be treated with back-and-forth procedures after endodontic treatment. The size of the bone, the type of bone, the ability of the tooth to be repaired, and whether it is broken or not, are some of the factors affecting the treatment of occlusion and aesthetic tooth [5].
Treatment will include simple procedures for healing and should be combined according to bone type. An adequate analysis must be done to arrive at the best possible estimate by constructing a true estimate. This case report describes the treatment of an Ellis grade III fracture of the right upper central incisor with combined post-endodontic therapy.

Case presentation

A 12-year-old young male patient reported to the dental clinic accompanied by his parents with a chief complaint of a broken upper front tooth and injury to the upper lip (Figure 1). The patient revealed that he was hit by a cricket ball on the upper tooth half an hour back. The extraoral clinical findings revealed a bruise on the upper lip. On palpation, no foreign particles were evident on the soft tissue of the upper lip.

Figure 1: The figure shows a broken upper tooth along with a lip laceration

Ellis Grade 3 fracture (fragile fracture) was detected. On clinical examination, the fracture line extends obliquely from the lip to the tongue. Intra-oral periapical radiography (IOPA) showed involvement of enamel, dentin, and pulp confirming the diagnosis of Ellis Class 3 fracture (Figure 2).

To rule out the fracture in the root, adjacent teeth, and surrounding bone areas, CBCT was done which showed coronal fracture only in 11 (Figure 3). The CBCT revealed no other fracture in the surrounding teeth and showed intact bone in the jaws. The treatment plan, which includes root canal treatment and combination therapy, was explained to the patient in detail.
Figure 2: Figure shows IOPA of the right central maxillary incisor
Figure 3: Figure shows CBCT of the patient
Following local anesthetic, Root canal treatment (single visit) was done and gutta percha obturation was done. Following isolation, the etching of the residual tooth structure, two coatings of dentine bonding agent (Single Bond 3M ESPE) were applied, and the material was then dried for 10 seconds. Dual cure composite resin cement (3M RelyX Adhesive Resin Cement, 3M ESPE) was used to repair the two worn-out parts. 40 seconds of light curing in different directions were applied to the margins. Marginal regions were polished using silicon-based polishing discs with a decreasing degree of coarseness (Soft-Lex, 3M ESPE). Results were up to par in terms of fragment stabilization and aesthetics at the 12-month follow-up [Figure 4].

**Figure 4: Figure shows post-operative results**

**Discussion**

Tissue loss in the outer region of the patient can cause serious aesthetic and emotional problems [6]. The functional, aesthetic, and biological treatment of fractured incisors often faces great challenges in clinical practice. A number of methods have been proposed to treat broken teeth, including removal of remaining fragments and subsequent restoration; reconnecting the remaining parts; gingivectomy and osteotomy (crown lengthening); orthodontic extrusion with/without gingival esthetics; root flood; forced surgical extrusion; The teeth were then extracted. or partially fix the teeth [7-8].

Rebounding of crown fragments on broken teeth affects aesthetics by preserving natural transparency and surface beauty and is one of the main options for anterior crown fractures. When old things are restored, normalcy is quickly restored.

In addition, the process is simple, non-invasive, and inexpensive. The procedure requires a thin layer of composite material that helps restore the original shape and color of the tooth and provides a beautiful aesthetic result. Some reports suggest that subgingival dental caries can be effectively treated [9]. Studies have shown that 85% of traumatic incisors have a sloping fracture line from the labial side to the lingual side and the fracture line continues in the apical
direction. Therefore, this type of bone healing may be less able to withstand the force of the lip (including the force of the injury itself) but more resistant to the horizontal force generated when cutting or breaking food.

In our case, we have done the root canal treatment followed by crown build-up using composite resin, shade A3, A2, and A1 respectively. However, in order to achieve long-term treatment, the absence of damage must be guaranteed. Re-examination at 1, 6, and 12-month intervals will allow evaluation and provide feedback on treatment outcomes. Figure 4 shows the postoperative results after a gap of one year.

**Conclusion**

Preserving the importance of beautiful teeth is beneficial for the patient. Effective results have been improved with remarkable results due to chemical advances in dentin adhesives and composites. Although not supported by laboratory studies or many clinical studies, results from various clinical studies show that results are better when dentists are aware of the clinical situation and report developments in the scientific literature.

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his/her consent for his/her images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published, and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

**Conflict of Interest:** Nil

**Financial Disclosure:** None
References


