

RE-ATTACHMENT OF SUBGINGIVALLY OBLIQUE FRACTURED INCISORS USING A CEMENTED METAL POST

Dr. G.D. Singhal
Professor & Head

Dr. Devvrat Singh
Senior Lecturer

Dr. Mohit Sharma
Senior Lecturer

Dept of Conservative Dentistry & Endodontics, Shree Bankey Bihari Dental College, Ghaziabad.(U.P)

Abstract

This case report presents a 23 year old male with an oblique fractured maxillary right central incisor & lateral incisor. The treatment of the fracture included removal of coronal segment followed by an endodontic treatment. Flap surgery with an crevicular incision & ostectomy was performed to access fracture line. Then fragments were bonded with dual cure resin luting cement using a prefabricated post. After six months, clinical examinations showed a stable reattachment of the fragments, good aesthetics and periodontal health.

Keywords: Dental trauma, Tooth fractures, metal post, dual cure resin cement, Fragment reattachment

Introduction

The treatment of complicated crown-root fractures in many cases is compromised by tooth fractures that are well below the gingival margin or crestal bone. After root canal obturation, proper isolation for a dry operation field is critical for successful restoration of fractured segments of tooth. In this respect, a wide range of treatment options have been advocated for repair of the fractured tooth, which include;

1. Orthodontic extrusion¹
2. Osteotomy/osteoplasty²
3. Intentional replantation³
4. Re-attachment of fragments⁴
5. Extraction.

Re-attachment of a tooth fragment have several advantages such as obtaining esthetic in a single appointment, being more conservative procedure, obtaining healthy periodontal attachment and it maintains the original tooth contours and translucence as the patient's own.^{5,6}

The present case report describes the re-attachment of an original tooth fragment using a prefabricated cemented post.

Case Report

A 23-year-old male patient was referred to the Dept of Conservative Dentistry & endodontics, with the complaint of a mobility & fractured right maxillary central & lateral incisor tooth because of a trauma one day back. The patient's medical history was non-contributory. The patient related pain during biting and closing mouth (Figure 1). The clinical and radiographic examinations showed an oblique crown-root fracture in the maxillary right central & lateral incisor extending labially from cervical third of crown to coronal third of root subgingivally in the palatal aspect (Figure 2).

After anesthesia, full thickness flap was raised and mobile coronal fragments of both the teeth were removed (Figure 3, 4, 5, 6). Pulp was extirpation and canal preparation was performed using the standard step-back method. The prepared teeth were dried with paper-points and obturated with lateral condensation technique. Now ostectomy of 4 mm was performed palatally to access fracture line (Figure7). Fragments were placed together to check approximation (Figure8). Now the gutta-percha was partially removed from the root canal using Gates glidden drills no 1, 2, 3, 4, 5, leaving 5 mm of the obturation at the apex to maintain a good sealing. A post hole within roots and coronal fragments were prepared using a passo reamer and posts were cemented using dual cure resin cement (Figure9). The fragments were etched with 37% Phosphoric acid for 15 seconds (Figure10) and rinsed with saline. The fragments were dried with cotton and two coats of bonding agent was applied and light cured for 10 seconds (Figure11). Now approximation was checked again and fragments were cemented with dual cure adhesive cement (Variolink II, Ivoclar Vivadent, Schaan, Liechtenstein). The excess resin was removed with hand instrument and coronal cement was light cured for 40 seconds from both buccal and palatal aspects. Final polishing of the crown-root interface was made with no 12 B.P. blade, cures and fine diamond points (Figure12, 13). Then flaps were sutured (Figure 14, 15). One week later, the sutures were removed and clinical examination revealed proper healing.

One month later, the clinical and radiographic examinations revealed a stable reattachment of the crown fragments (Figure 16). On follow up after 6 months, clinical examinations showed a stable reattachment of the fragments, good aesthetics and periodontal health.

Discussion

The present case report shows that the tooth fragment reattachment is an alternative to post core & crown for restoring esthetics and function of oblique fractured teeth.

Up to date, a lot of different approaches has been proposed for treatment of fractured teeth depending on location of the fracture.⁷ One of the options for managing crown root fractures is the reattachment of the fragments.⁴ Re-attachment of fragments achieves a good esthetic, decrease in operating time and cost. Contemporary resin adhesives and post systems that allow strong durable bonds to root enhance this option.^{8,9} In this case, a prefabricated metal posts were used to retain the coronal segments due to availability of material but fibre post can be a better option in place of it due to its modulus elasticity being same as dentin. The post interlocks the two

separate fragments and minimizes the stress on the remaining tooth structure.^{7,10}

The re-attachment of a tooth fragment is a viable technique that restores function and esthetics with a conservative approach. But each trauma case should be attempted to restore on an individual merit.

References

1. Bondemark L, Kurol J, Hallonsten AL, Andreasen JO. Attractive magnets for orthodontic extrusion of crown-root fractured teeth. *Am J Orthod Dentofacial Orthop.* 1997;112:187193.
2. Andreasen JO, Andreasen FM. Essentials of traumatic injuries to the teeth. 1. Copenhagen: Munksgaard; 1991. pp. 4762.
3. Wang Z, Heffernan M, Vann WF., Jr Management of a complicated crown-root fracture in a young permanent incisor using intentional replantation. *Dent Traumatol.* 2008;24:100103.
4. Baratieri LN, Monteiro S, De Andrada MAC. Tooth fracture reattachment: case reports. *Quintessence Int.* 1990;21:261270.

5. Arhun N, Ungor M. Re-attachment of a fractured tooth: a case report. *Dent Traumatol.* 2007;23:322326
6. Zorba YO, Ozcan E. Reattachment of coronal fragment using fiber-reinforced post: a case report. *Eur J Dent.* 2007;1:174178.
7. Trushkowsky RD. Esthetic, biologic and restorative considerations in coronal segment reattachment for a fractured tooth: a clinical report. *J Prosthet Dent.* 1998;79:115119.
8. Baratieri LN, Monteiro S, Jr, de Albuquerque FM, Vieira LC, de Andrada MA, de Melo Filho TC. Reattachment of a tooth fragment with a new adhesive system: a case report. *Quintessence Int.* 1994;25:9196.
9. Fidel SR, Sassone L, Alvares GR, Guimarães RP, Fidel RA. Use of glass fiber post and composite resin in restoration of a vertical fractured tooth. *Dent Traumatol.* 2006;22:337339
10. Greenfield RS, Roydhouse RH, Marshall FJ, Schoner B. A comparison of two post systems under applied compressive-shear loads. *J Prosthet Dent.* 1989;61:1724.

