MANAGEMENT OF COMPLICATED CROWN-ROOT FRACTURE BY REATTACHMENT-A CASE REPORT

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ABSTRACT

Traumatic injuries of teeth involve varying degrees of damage to the supporting soft tissues or the teeth itself. Complicated crown root fractures in permanent teeth extending sub-gingivally present both endodontic and restorative problems. This paper describes immediate treatment of oblique crown root fracture of maxillary central incisor with reattachment procedure using metal post and glass ionomer cement. Reattachment of coronal tooth fragment offers a relatively simple and low-cost technique protocol.

Key words: Biologic width, Crown-root fracture, Reattachment.

INTRODUCTION

A Crown-root fracture is defined as a fracture involving enamel, dentin, and cementum and may be classified as complicated or uncomplicated. These fractures subsequently lead to esthetics, functional and phonetic problems. Restorative approach depends on the type of fracture, type of occlusion and the prognosis.¹

Owing to the high incidence of dental trauma, dental surgeons are confronted with managing and restoring fractured teeth on a regular basis. Hence the techniques that restore aesthetics, and improve long-term success are of potential value and should be considered. Various reports have been published in which cases of crown-root fracture have been treated by tooth fragment reattachment with or without surgical exposure [or] extrusion of the root depending on the site of fracture.²⁻⁵
Many articles have been published regarding a variety of preparations for tooth fracture secondary to traumatic injuries, but tooth fragment reattachment still offers a relatively simple and low-cost treatment protocol.\(^6,7\)

**CASE REPORT**

The patient was a 25 year old male who reported to the dental hospital with a chief complaint of a broken upper left front tooth due to a fall. He gave a history of trauma two days ago. His medical and dental history were noncontributory. Clinical and radiographic examinations were conducted. Clinical examination[fig 1]

This paper was to present the surgical reattachment of case of complicated crown-root fracture of maxillary central incisor using intraradicular support in the form of an endodontic post.

revealed a fracture in the cervical third of the crown of a maxillary left central incisor, exposing the pulp. The fracture line was oblique extending in apical direction from the labial to palatal surface[fig 2a].

The margin on the palatal surface was located 1.5mm from free gingival margin. Upon probing, it was found that the biological width was being encroached[fig 2b] on the palatal aspect. The fractured fragment was loosely attached to the root. Periapical radiograph[fig 3] reveals an intact
periodontal ligament space, without any root fracture.

Fig 3- Radiograph of 21 showing fracture line and periapical status

Of the various treatment options explained to the patient, he preferred to retain the fractured fragments. The fractured tooth fragment was removed and stored in distilled water to be used at a later stage. Isolation was achieved using check retractor, cotton rolls and saliva ejector. Single visit root canal treatment was done[fig.4] and the post space prepared.

Fig 4- Sectional obturation

A Prefabricated metal post was tried[fig.5] in the canal.

The fractured fragment in the distilled water was tried on the coronal end of the post. A groove[fig 6] was made on the fragment to provide space for the post to fit.

Fig 5- Post tried in root canal.

Fig 6- Internal groove made in fractured fragment.

After the proper fit was confirmed. The fragment was again placed in the distilled water. A full thickness mucoperiosteal flap was elevated to gain access the apical extent of the fracture[fig 7].
The Biological width was restituted by osteoplasty on palatal side. The metal post was luted using type ix glass ionomer cement. The coronal fragment was filled with the same cement and it was repositioned correctly and for held in position till the initial set of glass ionomer cement. Excess cement on the fracture site was removed[fig 8].

The surgical flap was secured in place with the help of suture[fig.9] which were removed after a week. To improve esthetic

, tooth preparation was done[fig 10 a&b] for direct composite veneering on the labial aspect.

followed by light cure composite veneering[fig 11].
Patient was asymptomatic, soft tissue healing was satisfactory after 2 weeks. Follow up radiographs were non contributory[fig 12]

A patient with fractured anterior teeth usually reports with pain and is emotionally upset about his or her appearance. Reattachment of the crown fragment to a fractured tooth influences esthetics by retaining translucency and surface texture and functions in single appointment while maintaining healthy periodontium. Today we have different approaches in treatment of fractured teeth depending on the location of the fracture.[8,9] If the fracture line is supragingival, the procedure is straightforward. However when the fracture line is subgingival, or intraosseous, orthodontic extrusion with a post retained crown may be necessary. Alternatively, surgical techniques such as electrosurgery, elevation of a tissue flap, clinical crown-lengthening surgery with removal of alveolar bone and removal of gingival overgrowth for access to the fractured site all are viable methods.[10]

The clinical importance of an intact biological width is in the maintenance of periodontal health. Once the biologic width gets compromised due to fracture, surgical correction must be performed to restitute the area.[11] In this case fracture line invaded biologic width on the palatal aspect but this was supraosseous. Hence it was decided to reflect a surgical flap and perform osteotomy of the localized area.

Type ix glass ionomer cement was chosen for reattaching fractured fragment. The biocompatibility of glass ionomer cement is attributed to their excellent biological response when applied to cavities with invasion of the biologic width which decreases bacterial penetration. It has the added advantages of having an antibacterial
effect, chemical adhesion to the tooth structure adequate sealing ability \citep{12,13} and promoting epithelial and connective tissue attachment \citep{14}.

The single visit, multidisciplinary approach to crown root fracture requires consideration of periodontal, endodontic, restorative and occlusal factors. Follow-up is of critical importance in such cases. During each follow-up visit the clinician should confirm the esthetics, tooth mobility, and periodontal status of the reattached tooth.

CONCLUSION:

1. The reattachment of a tooth fragment is a viable, conservative technique that restores function and esthetics.

2. However, it should be noted that the success of this technique is related to the clinician’s ability and the patient care.

3. So patients should be well informed about the possible failures before the treatment.

4. Also the treatment for subgingival coronal fractures would need the evidence of adequate longevity.

REFERENCES:


