Fracture reattachment: A biological approach to crown fracture – A case report.

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ABSTRACT- Dental trauma often has a severe impact on the social and psychological well being of a patient. Traumatic injuries of teeth involve varying degrees of damage to the supporting soft tissues or the teeth itself. Over time numerous techniques and materials have evolved for the reconstruction of injured teeth. The fractured fragments can also be reattached with resin composite after completing root canal treatment. With the use of advances in adhesive dentistry fracture reattachment must be the choice of treatment depending upon clinical scenario.

KEYWORDS- Fragment reattachment, bonding, debonding and esthetic rehabilitation

INTRODUCTION

Anterior teeth are more prone to fracture due to their placement in oral cavity. Incidence of coronal fractures of permanent incisors is 18-22%, central incisors accounts to 85% and laterals to 16%. In 1964, first fracture reattachment was done by Chosack & Eidelman. In late 1970[s] adhesive restorations came to lime light which made further achievement steps in dentistry possible. Tennery was the first person to report reattachment of fractured fragment using acid etch technique[1]. Complicated crown fractures are quite common in anterior region which involve enamel, dentin and pulp[2].

Traumatized anterior teeth require quick functional and esthetic repair. Great skill is required to restore fractured tooth with direct composite restoration. We need to fulfil natural dental color, optical properties (such as translucency, opalescence, and fluorescence), shape and surface texture which are major corcerns of the patient. Therefore, when a tooth fragment is viable and

presents good adaptation to the remaining dental structure, fragment reattachment should be the first restorative option[3].

Case Report:-

A 27 year old female patient reported to the department of Conservative dentistry and Endodontics with the chief complaint of broken upper front tooth.

On examination the fracture line is extending apically from labial surface to palatal surface.[Fig 1] The fragment is attached to palatal gingiva. The fragment is gently removed with forceps and stored in saline to prevent dehydration. Surgical crown lengthening was done under LA for exposing the margins of the remaining tooth structure to facilitate bonding.[Fig 2]

Cleaning and shaping completed, cold lateral condensation technique was followed to complete obturation. Post space preparation was done removing gutta percha till 5mm from apex. Fiber post selected and inserted using dual cure cement (Relyx, 3M ESPE).

Space was created in the fractured fragment for post engagement using no.1/4 round bur.[Fig 3] Fragment was Checked for the aprroximation in oral cavity and when the fit was satisfactory its cemented using dual cure cement. [Fig 4] Patient is under two year follow up with satisfactory esthetics. [Fig 5]

ILLUSTRATIONS:

Fig 1:-Pre Operative view

Fig 2:- Surgical crown lengthening

Fig 3:- space created

Fig 4:- Crown cementation

Fig 5:- Post operative with satisfactory esthetic

DICUSSION

When planning to restore a traumatized tooth, depending upon the location of the fracture there are different approaches. If the fracture is supragingival and the fragment is available we can straight forward reattach it. If the fracture is subgingival, crown lengthening with osteotomy or osteoplasty, Orthodontic Extrusion has to be done. Fit of the fractured fragment, occlusion, esthetics further impact treatment option[4]. There are several advantages of reattachment like good and long lasting esthetics, functional rehabilitation, positive psychological response, simple

rapid and conservative procedure, less time consuming , more predictable long term wear than direct composite[5]. If all the conditions are satisfactory Reattachment is the best method of reinstating the fragment's natural shape, contour, surface texture, occlusal alignment and color. Fiber posts are considered preferable as modulus of elasticity is similar to dentin, esthetically pleasing, more flexible. Fibre posts require minimal preparation, and easy to remove when there is debonded fragment[6]. Some instructions should be given to store the tooth fragment in milk, water, saliva or saline immediately after trauma to avoid discoloration, dentin dehydration and breakdown of collagen fibers. If a tooth fragment is maintained in a dry state for more than one hour, it will achieve lower bond strength and must be rehydrated for at least 30 minutes before bonding[7].

Though there are many advantages for reattachment, we need to consider some limitations like incomplete fragment rehydration and color mismatch, possible fragment debonding due to repeated trauma or non physiological use of the tooth.

CONCLUSION

With the availability of modern adhesive materials reattachment of the fractured segment should be an alternative method for biological and functional rehabilitation while preserving maximum tooth structure.

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