CASE REPORT

FRAGMENT RE-ATTACHMENT: A SERIES OF 2 CASE REPORTS

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ABSTRACT

Dental trauma to maxillary central incisors is a relatively common occurence in children. There are several modalities available for treatment of such teeth. One such technique is fragment re-attachment, also termed as Biological Restoration of the tooth. Its better than the conventional restorative techniques because its minimally invasive, esthetically pleasing, cost effective and a chairside method of restoration.[1,2,5] This manuscript presents two case reports of Ellis class 3 fracture of an anterior tooth treated endodontically followed by reattachment of the fractured fragment. The ease of technique and cost effectiveness are the two mainstays for this procedure to be popularly used in countries where access to dental health care facilities is difficult.

***Keywords**: Fragment re-attachment, trauma, Ellis class III fracture, endodontic treatment.*

INTRODUCTION

Traumatic dental injuries are very commonly seen in children and young adults. It constitutes about 5% of all the injuries and approximately 25% of all the school children experience some or the other form of dental trauma. In Primary dentition, luxation injuries are more commonly seen whereas crown injuries are more common i.r.t. permanent dentition. Among these crown injuries, anterior teeth specifically maxillary central incisors are most commonly affected.[1]

The present case report acknowledges fragment re-attachment of an anterior tooth along with the parental awareness about the procedure and its benefits over the conventional technique.

CASE REPORTS

CASE 1:

A 9 year 2months old girl came to our clinic with a chief complaint of trauma in school on the same day afternoon while playing. On Clinical examination, we found that the child had an Ellis Class III fracture i.r.t.11 with pin-point exposure to the pulp. No symptom of pain or tenderness on percussion was reported. Radiograhic examination was done using a IOPA which revealed that there was no signs of root trauma or any kind of periapical changes. So, a Cvek's pulpotomy was planned followed by rehabilitation using composite resin build up.

While having a reassurance counselling and a discussion with parents on the pros and cons of the chosen treatment, the awareness was brought up on the fragment re-attachment procedure (Biological restoration of the traumatised tooth). After which, the parents went back to the injury site to try and search for the broken tooth fragment. To our surprise, they actually found out the fragment and as instructed kept in cold milk and rushed back to us. After confirming that the fragment was in good condition and fits reasonably well with the fractured tooth, we planned for a Cvek's pulpotomy using MTA followed by fragment reattachment.

A thorough supragingival scaling was performed to remove the plaque and debris followed Cvek's pulpotomy using white MTA (MTA Angelus) and GIC (3M ESPE KETAC MOLAR) under local infiltration anesthesia (Lignocaine) using Insulin syringe. Isolation was achieved using a lip retractor, cotton rolls and high vaccum suction.

The fractured tooth and fragment were etched using 37% Phosphoric acid, rinsed with water and blot dried. Bonding agent (Prime and Bond NT, Dentsply) was applied using an applicator tip followed by air thinning using a chip blower and light cured. Using flowable composite resin the fragment was reattached to the fractured tooth and light cured for 40 seconds. While curing, a gentle yet stable pressure was applied over the coronal fragment to closely adhere it to the tooth. The flash was removed using diamond finishing bur and polished using soflex discs (3M ESPE). High points were checked using articulating paper.

Follow up examinations were carried out at 3 and 6 months interval. No clinical or radiographical signs of pain or swelling reported. The tooth remained sound in aesthetics and function.

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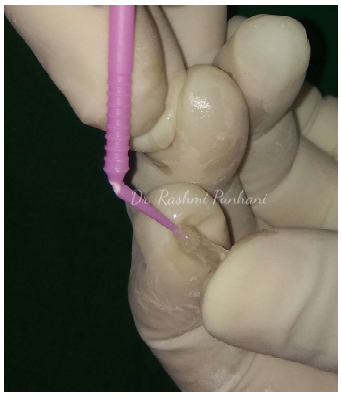
Acid Etching Fractured Tooth 11

Acid Etching -Fragment

After 6 month follow up

After Cvek's Pulpotomy



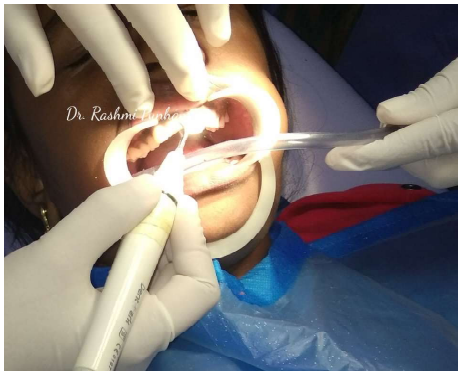
Application of Bonding agent over Fragment

Bonding Agent Application over Fractured tooth 11

Finishing

Fractured fragment

Immediate Post operativet



Intraoperative (Scaling)

Light Cure while Re-attachment

Light curing the fragment

Post op IOPA 11

Post operative (Palatal View)

Post Operative

Pre- operative!

CASE 2:

A 14 year old male child came to our clinic with a history of fall at home. The child had cerebral palsy (spastic) and was potentially cooperative. On clinical examination, child had an Ellis Class III fracture i.r.t. 21 with pulp exposure. Fortunately because the incident happened at home, the parents had the fractured fragment with them. After confirming that the fragment was in good condition and fits reasonably well with the fractured tooth, root canal treatment followed by fragment re-attachment was planned. The fragment was stored in Cold low fat milk before re-attachment.

Root canal treatment was perfomed immediately and restored using GIC. Fractured tooth and the fragment were etched with 37% phosphoric acid, rinsed, blot dried and bonding agent (Prime and Bond NT, Dentsply) was applied.

The fragment was carefully seated over the remaining fractured tooth using flowable resin and light cured. While curing, a gentle yet stable pressure was applied over the coronal fragment to closely adhere it to the tooth. Flash resin was removed using diamond finishing burs and polished using soflex discs(3M ESPE). High points were checked using articulating paper.

Follow up examination was done after 6 months interval. The tooth remained sound in aesthetics and function.

DISCUSSION

With the latest advances in restorative dentistry, its now possible to achieve great results in the fragment re-attachment procedure. The natural tooth re-attachment is always advantageous because it eliminates the issues with shade matching, contour and texture reproduction. Problems related to differential wear of the restorative resins are eliminated and its much more reassuring to the patient and parents.[5]

Proper case selection should be done after considering the periodontal,endodontic and occlusal status of the tooth. The factors that might affect the prognosis of this procedure are pattern of fracture, its extent and quality of fit between the fragments. Fragment hydration levels and its storage media should also be considered before the re-attachment.[5]

Different variety materials like dentin bonding agents, flowable composites and dual cure resins have been used for this procedure.[6]

If the fracture line is supragingival, the reattachment is easy and straight-forward. But in cases of sub-gingival fracture line, orthodontic extrusion with a post retained crown may be necessary. Alternatively, crown lengthing, tissue flap elevation, and electrosurgery are all equally good options for bonding the fragment.[7]

Baratieri et al suggested that whenever fracture line invades the biological width of that tooth, surgery should be performed with minimal osteotomy and osteoplasty. However. in cases where there is minimum invasion of biological width, our body restores itself provided the plaque control is efficiently maintained.[8]

The success rates of fragment re-attachment procedure has been reported upto 90% provided the case selection is done properly on the parameters of periodontal and pulpal harmony for upto 24 months of follow up.[5.6]

CONCLUSION

It can be concluded from the case report that fracture re-attachment is a viable, minimally invasive and aesthetic alternative for the treatment of crown fractures specially in children. The long term prognosis is still obscure but fragment reattachment is an immediate and cost effective chairside technique for esthetic rehabilitation. Awareness and positive reinforcement of this treatment option in general population needs to be addressed. The ease of technique and cost effectiveness are the two mainstays for this procedure to be popularly used in countries where access to dental health facilities is difficult.

DECLARATION OF PATIENT CONSENT

The author certify that she has taken the necessary patient consent for his/her images and the clinical information to be reported in the journal. The patients understands that their names and initials would not be published and their identification details will remain confidential.

FINANCIAL SUPPORT AND SPONSORSHIP

Nil.

CONFLICTS OF INTEREST

None.

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