ANTERIOR AESTHETIC RESTORATION USING DIRECT COMPOSITE TECHNIQUE

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ABSTRACT :

Crown fractures are common among school children. They create serious functional, aesthetic and psychological problems. The clinicians must propose high aesthetics in the front part and the choice of exact treatment plan. Repeated reconstructions are needed in many cases because of compromised results as time passes by. Achievement of promising restoration that preserves its aesthetics and strength is the greatest desire for both children and their parents. This paper reports a case of a permanent maxillary central incisor with incisal crown fracture treated using composite resin restoration.

Keywords: Fractured teeth; Composite resin; Class IV; Aesthetic

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INTRODUCTION :

Coronal fracture of anterior teeth may jeopardize esthetics, function, tissue biology and occlusal physiology, thus endangering tooth vitality and integrity. Coronal fractures resulting from dental trauma most frequently occur to the maxillary anterior teeth of adolescents and less frequently to mandibular teeth. Adult teeth may also suffer traumatic fracture, although less frequently than for adolescents. Direct and indirect restorations are clinically successful treatment options for fractured anterior teeth. Direct restorations are performed without laboratory phases. They usually involve enamel/dentin acid-etching techniques with adhesive systems and one or more types of resin composites . Indirect restorations require multiple visits and expense due to laboratory procedures. Resin composites, porcelain and metal-ceramics are materials from which a practitioner can choose to perform these anterior tooth restorations. These restorations can be bonded to teeth via enamel/dentin acid-etch techniques and resin adhesive systems. Crown fractures have been documented to account for up to 92% of all traumatic injuries to the permanent dentition. Coronal fractures of permanent incisors represent 18-22% of all trauma to dental hard tissues, 28-44% being simple (enamel and dentin) and 11-15% complex (enamel, dentin and pulp). Of these 96% involve maxillary central incisors.

In the treatment plan the initial option considered should be the most conservative one that will achieve all the desired objectives of both the patient as well as the dentist . Direct composite restoration technique is minimally invasive, economical and successful in repairing tooth fracture with excellent longevity in carefully selected cases and with superior matching ability.

This paper reports a case of a permanent maxillary central incisor with incisal crown fracture treated using composite resin restoration.

CASE REPORT :

A 21 years-old male patient was referred to the dental clinic of our institution, reporting a dental trauma of the permanent maxillary right central incisor. Dental history revealed that he had a trauma as the result of a fall while playing at college , patient complained of sensitivity since two weeks when the tooth came in contact with a cold beverages.

Clinically, a fractured tooth was seen in upper anterior region and patient was asymptomatic. Extension of fracture line was seen in the dentin only and not extending in the pulp.

The involved tooth was 21. Pain on percussion test showed negative response. On performing cold test under proper isolation , patient gave

positive response to the test and pain receeded on removal of stimulus.
(Endo-frost or endo-ice F (−50°C) (coltène/whaledent) was used which contains **30-50% propane, 30-50% butane, and 10-20% isobutane**.)
Radiographically, fracture line was seen extending to the dentin without involving the pulp.
The diagnosis was Ellis and Davey's Class 2 Fracture (Extended crown fracture with dentinal involment without pulp exposition) and the planned treatment was Composite Restoration w.r.t. 21 using Direct composite technique.
STEP 1 –
The tooth was isolated using a rubber dam following proper protocol.Split dam technique was used for isolation.Gingival dam was used to seal the cervical area so that isolation was not hampered due to saliva or gingival crevicular fluid. (Fig. 1)

FIGURE 1

STEP 2 :
Composite shade buttons of corresponding body shade composites to confirm shade match was used to get a desired aesthetic result. (Fig. 2)

FIGURE 2

STEP 3 :
Starburst appearance bevel was given.It is the bevel given which creates a transition zone where the light characteristics of the two materials are blended in an attempt to “fool” our visual perception. (Fig. 3)

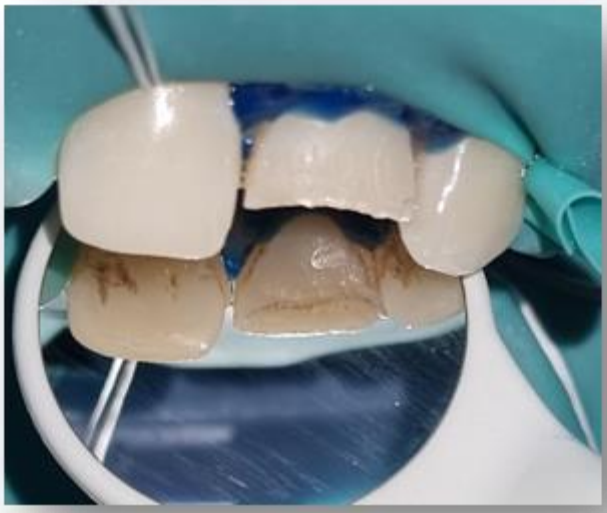

FIGURE 3

STEP 4 :
Tooth surface was bonded using a self etch bonding agent by (Dentsply Sirona - Universal adhesive – prime and bond)
Composite restoration was done using Spectra composite by (Dentsply Sirona- Nanohybrid composite)

Composite was placed in increments and palatal area was build first using flowable composite with the help of a mylar strip. (Fig. 4)

FIGURE 4

STEP 5 –
Finishing And Polishing :
After removing excessive composite contouring and finishing was done using TR-25EF diamond bur. Polishing was done using Shofu snap kit. (Fig. 5)

FIGURE 5

RESULT :

FIGURE 6

PRE-OPERATIVE :

FIGURE 7- POST-OPERATIVE :

DISCUSSION :

Composite resins provide satisfactory treatment outcome for even young and adult patients, but it is indicated for adults when the volume, length or number of composite restorations is limited. Initial planning is essential for the best esthetic and functional results from restorative procedures. The use of some planning strategies enables greater dental structure preservation and result predictability. The choice of resin composite should be focused on aspects related to the strength and aesthetics , within this context, the composite layering technique is the key to obtaining esthetically successful restorations. If handled properly, prognosis of the tooth, after traumatic crown fracture, is satisfactory. A good polishing system including polishing paste, cups and wheels is recommended to achieve appropriate luster. In the present case, the location and aspect of the fracture combined with a balanced occlusion may have favored the clinical success. Limitations of the adhesives restoration techniques can be attributed to detachment of the restoration by a new trauma or the restoration does not recover its original color. With regard to the restorative procedure, the applied technique has facilitated the obtaining of dental contours and convexities, which would be more labored and lengthy in a direct restorative technique.

CONCLUSION :

The composite resin restoration of permanent incisors with crown fractures is a simple procedure that should be planned and executed with attention to dental contours and convexities, facilitating the re - establishment of function and aesthetics.

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