

Anterior Esthetic Restoration Using Direct Composite Resin

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ABSTRACT

Anterior Crown fractures are common among schoolchildren. This will impact on their functional, aesthetic and psychological behavior. As aesthetic zone clinician must propose exact and minimally invasive treatment plan. Achieving promising result in both aesthetic and strength is the greatest desire for patient as well as for parents. This is the case of fractured permanent maxillary central incisors treated using Direct Composite Resin Restoration.

Keywords: Anterior Crown fractures; Aesthetic; Psychological behavior; Clinician; Treatment; Patient; Maxillary; Direct Composite Resin Restoration

INTRODUCTION

Coronal Fracture resulting from dental trauma most frequently occur to the maxillary anterior teeth of children and adolescents. Adult teeth may also suffer but less frequently than 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 /dentine acid etching technique with adhesive systems and one or more types of composite resins.

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

CASE REPORT

10 yrs old child presented first time to the dentist with broken upper front teeth due to trauma. O/E we found that there is Ellis class II # involving Enamel and little Dentine on upper 11,21. After clinical examination and X-ray (IOPA) there is no pulpal involvement and no periapical Pathology with above mentioned teeth. Both Vertical and Horizontal tender on percussion (TOP) test was negative for both 11, 21.

We decided to go with minimally invasive and best treatment option as "Composite Restoration." Explained all the procedure to parents Do's and Don'ts of the after procedure The chairside time and the steps in the procedure are more which is only concerned to Prashant's parents for his co-operation (Figure 1).



Figure 1: Before starting the treatment taken some Pre-operative photograph of patient where patient is not even ready to smile.

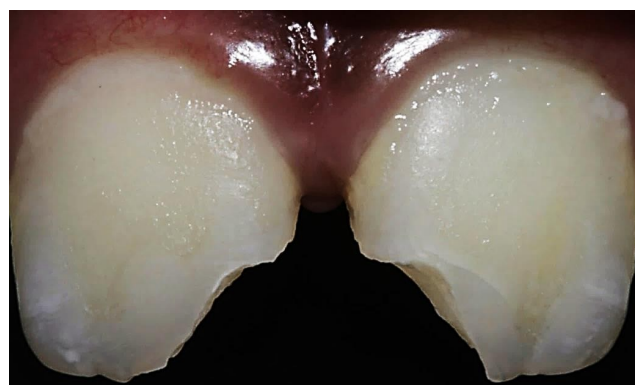


Figure 2: Intraoral fractured tooth photograph along with upper and lower Impression for wax up which is used for making palatal index

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Figure 3: From intraoral photograph, I started my treatment planning Saturation and brightness. We can see the detailed anatomy of the tooth

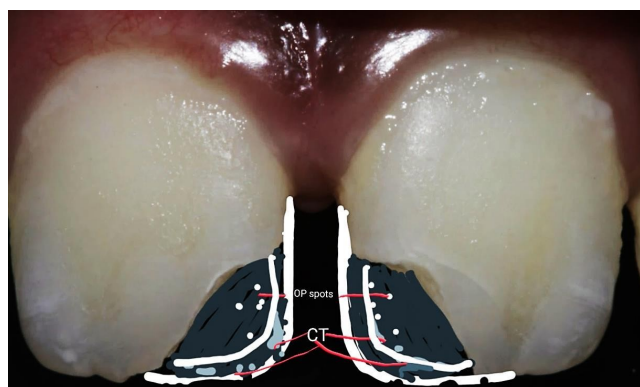


Figure 4: After study of internal anatomy of tooth, opaque spots, translucency and opacity. I planned my treatment digitally in this digital world with the help of mobile. Now my prescription for the composite build up is ready.



Figure 5: These are the materials used during the procedure.

DISCUSSION

Current direct adhesive restorative systems have numerous advantages such as reversibility, durability, low cost and speed of treatment. In the patient presented, the restoration was placed in two appointments including finishing and polishing.

Maximum tooth structure was conserved when the existing restoration was removed, thus preserving enamel at margins of the preparation and favoring the adhesion and longevity of the adhesive procedure. The dentist should choose the restorative system according to each situation. The system used for the present patient is from GC.

Natural tooth possess translucency, opalescence and fluorescence, all of which must be replicated by the restorative material to achieve clinical success. Enamel translucency varies from tooth to tooth and from individual to individual. The presence or absence of color, enamel thickness, degree of translucency and surface texture is essential component in determining translucency. Variable shades and opacities that allow the reproduction of the chromaticity and translucency/opacity of enamel and dentine. The correct characteristics of the dental structure to be reproduced in a simplified way, as presented in in this case.

The technique of intrinsic characterization of composite resin restoration with stains is routinely used in dental clinics. Several manufacturers offer stains that enable individualized and customized composite resin restoration. In this case the opaque and blue stains used. These stains should be applied carefully with fine instrument like Flowable art instrument from Tokuyama.

The dentine resin in the restorative systems used has a Micro hybrid composition, while enamel resin is Nano-hybrid, while in this resin(dentine and enamel) pre polymerized fillers are also present providing increased polishability for external layer of restoration. The composite resin should provide satisfactory treatment results for even young and adult patient. Initial planning is essential for the best esthetic and functional results from restorative procedure. The composite layering is the key to obtaining esthetically successful restorations. Young teeth show a naturally high value and thus require resin with such characteristics consequence, the reproduction of enamel should be done with composite resin that presents transparent characteristics (Figure 6).

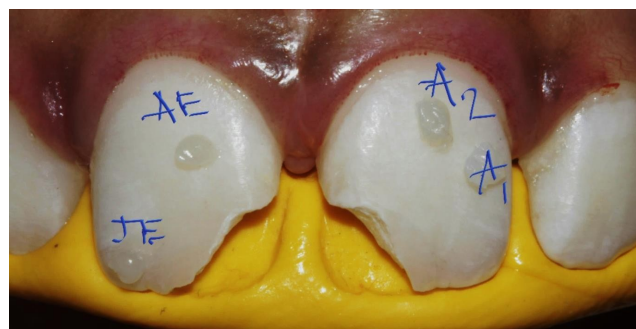


Figure 6: It is important to select the shade keeping all the dimension of color in mind after completion of scaling and polishing. Here we used button technique of cured composite Becoz there are chances of changing the color of composite after curing.

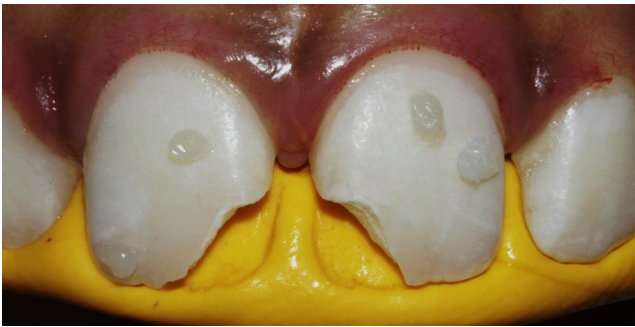


Figure 7: Hue the Basic color of composite

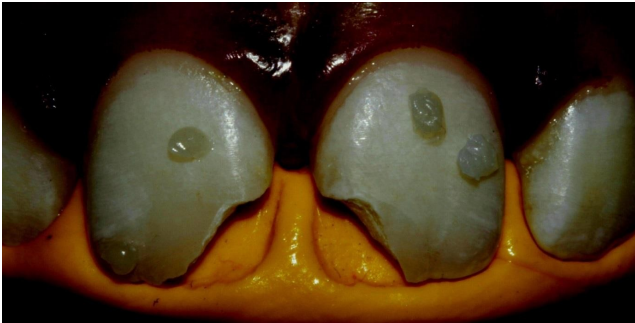


Figure 8: Chroma saturation of particular color

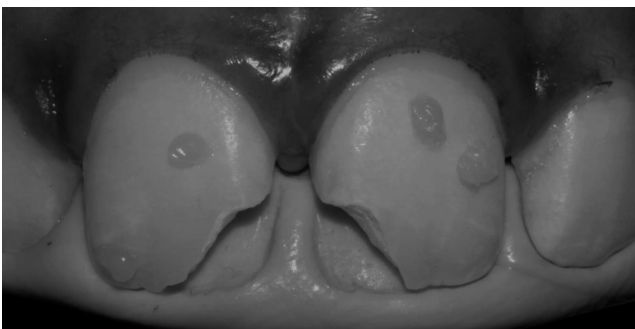


Figure 9: Value the amount of brightness & darkness. Value is most important entity because our eyes are sensitive to the value of color.

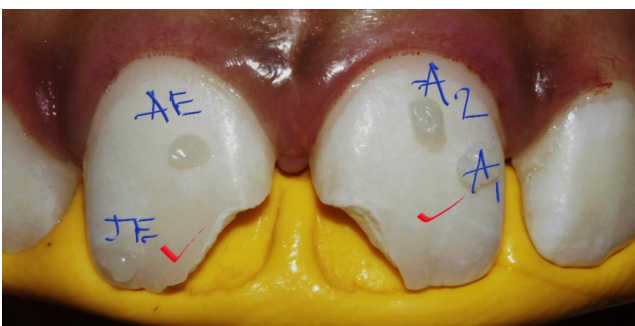


Figure 10: As a high esthetic demand, depending upon these dimension, We have selected A1 Dentine and JE (junior enamel) and CT for Translucent effect, as the closely matching Shade for the patient. We have also checked the palatal index.

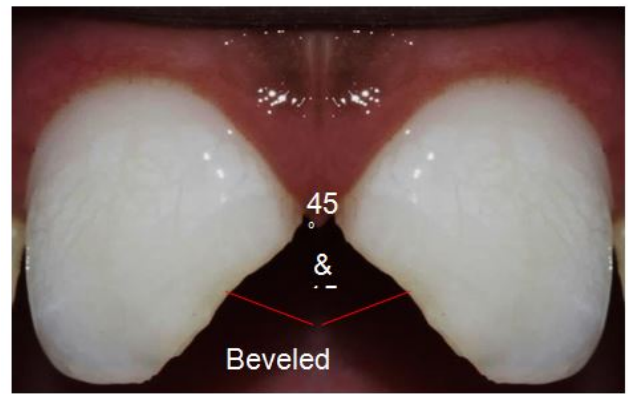


Figure 11: Started preparing the tooth surface by giving bevel of first 45° Then 15° with finishing & polishing of both buccal & palatal surface.

After the isolation of the area, Total Etching on both buccal and palatal surface for 15 sec and cleaning the etchant for 30 sec. Then proceeded for bonding with G-aenial premio bond. Applied a layer of bonding agent waited for 10sec, air dry for 5 sec and cured it with Bluephase curing light from Ivoclar for 10 sec on both buccal and palatal surface. By using the palatal silicon key, the palatal wall is built up with JE and cured it for 20sec after that remaining tooth surface is built up using A1 dentine shade and cured it for 20 sec. Here we also used opaque tint from Coltene to create white spots in the mesial middle third of the tooth and blue tint used in Incisal part of tooth to create Incisal halo effect and cured it for 20 sec. Incisal edge is free of A1 shade where CT (clear translucent) used for creating Incisal Translucency. As Final layer JE is applied on the complete surface of restoration and cured it for 20 sec. Finally Glycerin gel is applied on whole surface and cured it for 1 min to remove oxygen inhibition layer. Gross finishing and surface texture is done by using red and yellow burs from Mani. Composite finishing is done by using Shofu finishing kit. Polishing of the composite completed using Astropol from Ivoclar vivadent.



Figure 12: Using correct technique and proper instrument we completed only one tooth on one day due to lack of patient's co-operation



Figure 13: Now we can see the Incisal translucency and opaque spots in the mesial middle third of the tooth.

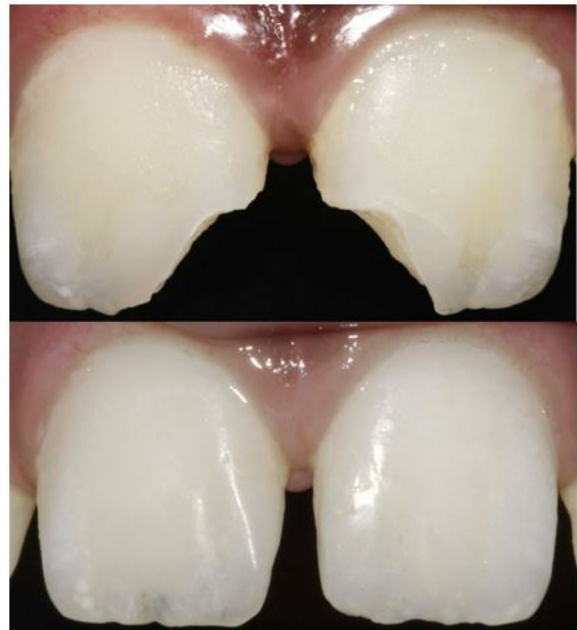


Figure 16: Finally created this beautiful & most important minimally invasive Life like composite restoration which is difficult to Identify.



Figure 14: This is the final restoration completed on day 2



Figure 17: Happy Patient

CONCLUSION

The recent advancement in composite materials enables us to reproduce the natural anatomic form with function in a beautifully conservative manner. When we implement conservative approach technique we are in fact allowing for the possibility of further aesthetic option in the future, which is particularly important for a young patient.

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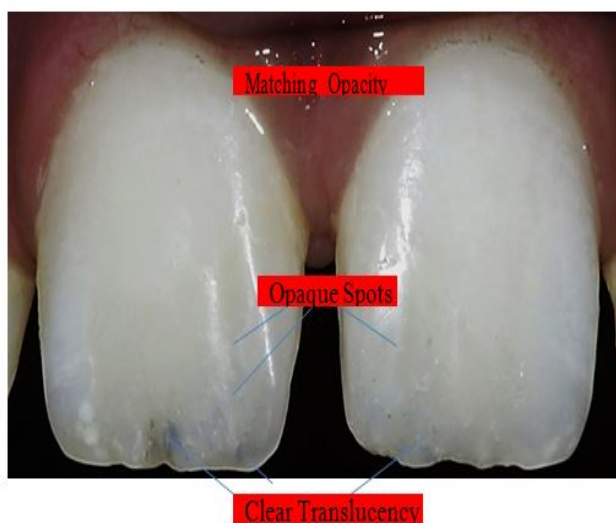


Figure 15: After final polishing we can see the beautiful internal anatomy of restoration like natural tooth.

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