Case Report

Esthetic rehabilitation of fractured permanent incisors in a 12 year old child

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Abstract:
A 12 year old girl reported to the department of Paedodontics and Preventive Dentistry with the chief complaint of broken upper front teeth since 2 years. The upper front teeth were fractured when she fell down while playing in the school playground. The patient gave history of undergoing dental treatment before 1.5 years. A diagnostic intraoral periapical radiograph was taken and it revealed root canal treatment was done in 12, 21 and temporary restoration in 11. A treatment plan was made which was completed in three stages. In the first stage, root canal treatment was completed in 11. In the second stage, crown build up of all three fractured teeth was done with composite resin followed by crown cutting and finally in the third stage esthetic rehabilitation was completed by cementing self cure bis-acrylic crowns.

Key Words: Permanent teeth fracture, Esthetic rehabilitation, Bis-acrylic crown.

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Introduction

The traumas involving anterior teeth are frequently the cause of esthetic and psychological problems in children and their parents.[1, 2] Dental trauma is presently on the increase in dental clinics. This can be verified by all dentists, and with even more frequency among pediatric dentists, being that the traumatic dental lesions appear with more frequency between children and adolescents than adults because of their exposure to sports and games.[3] Incisor teeth play a critical role in aesthetics, phonetics, and functional activities. Unfortunately, the morphology and location of these teeth make them susceptible to a range of traumatic injuries.[4] Trauma to the teeth may result in emotional distress for both parents and affected children. In addition to pain and possible infection, the consequences of incisal trauma include alteration in physical appearance, speech defects and psychological impact, thus affecting the child's quality of life.[5] After considering all the above factors, it becomes imperative for a dentist to provide paramount treatment to a child who reports with fracture of anterior

teeth. The present case demonstrates the esthetic rehabilitation by bis-acrylic crowns, an effective treatment option for an adolescent having fractured permanent anterior teeth.

Case Report

A 12 year old girl reported to the Department of Paedodontics and Preventive Dentistry with the chief complaint of broken upper front teeth since 2 years. (Figure 1)

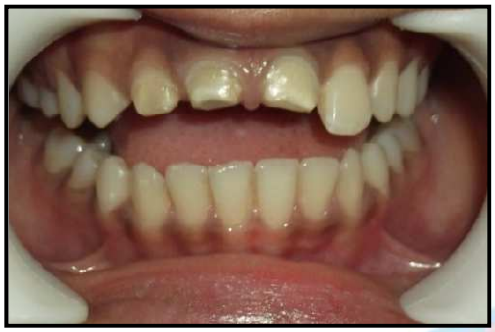

Figure 1: Fractured teeth 12, 11, 21

The upper front teeth were fractured when she fell down while playing in the school playground. The patient gave history of undergoing dental treatment before 1.5 years. A diagnostic intraoral periapical radiograph (IOPA) was taken and it revealed root canal treatment was done in 12, 21 and temporary restoration in 11. (Figure 2) Hence, a treatment plan was made so as to improve the esthetics and phonetics of the adolescent.

Figure 2: Diagnostic IOPA showing root canal treated 12 and 21

In the first stage, root canal treatment was started in 11 tooth by taking a working length IOPA. Working length was found to be 15mm and biomechanical preparation was done till 80 K file (Mani, Prime Dental, Mumbai) followed by irrigation with copious amounts of 1.25% sodium hypochlorite and finally with normal saline. Master cone of size 80 was selected which was confirmed after taking an IOPA. The root canal was obturated with gutta-percha by lateral condensation method. (Figure 3, 4 and 5) In the second stage, crowns of the three teeth were built by composite and crown cutting was done.

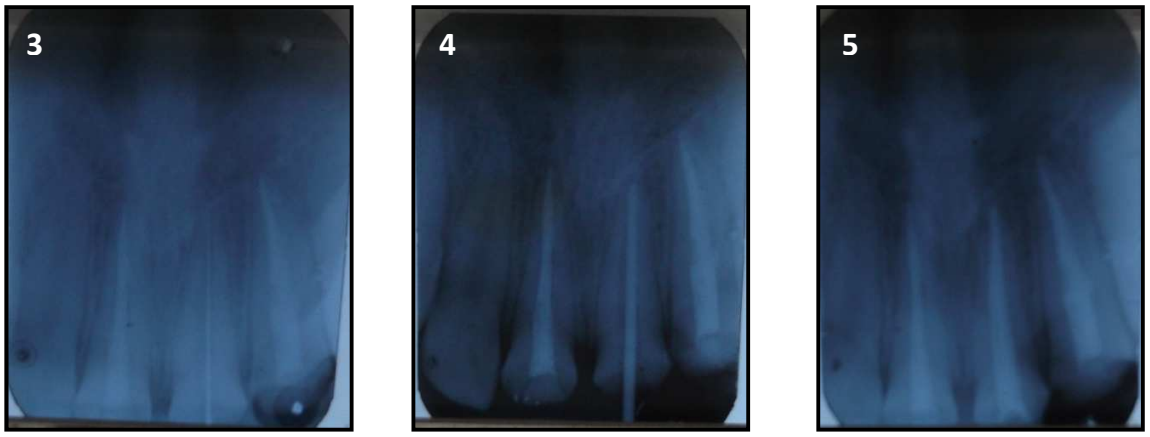

Figure 3, 4 and 5: Intraoral Periapical radiographs showing completed root canal treatment in 11

Alginate impression of maxillary and mandibular arch was taken and cast was poured. The crowns of the three teeth were built up on the cast by inlay wax and a putty impression by polyvinyl siloxane material was taken.

In the third stage, a chair side procedure was performed for the esthetic rehabilitation of fractured teeth by bis-acrylic crown (Protemp 4, 3M ESPE, Minnesota, USA). The material was flowed into the putty impression which was inserted into the mouth. As the setting reaction was completed the crown was removed. Careful trimming of the acrylic crown was made with finishing (Soflex) discs and occlusion was checked. The acrylic crown was cemented with glass ionomer cement and excess was removed.

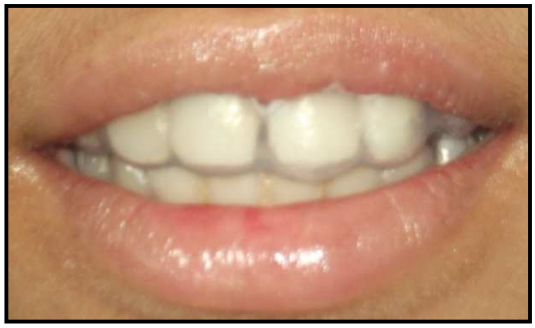

Figure 8: Delivery of mouth guard for the habit of bruxism.

Interdental removal of excess cement was done by using interdental floss. Final check of the occlusion was made followed by polishing. (Figure 6, 7) The patient also had the habit of bruxism so a night guard was delivered and patient was instructed to wear it at night. (Figure 8)

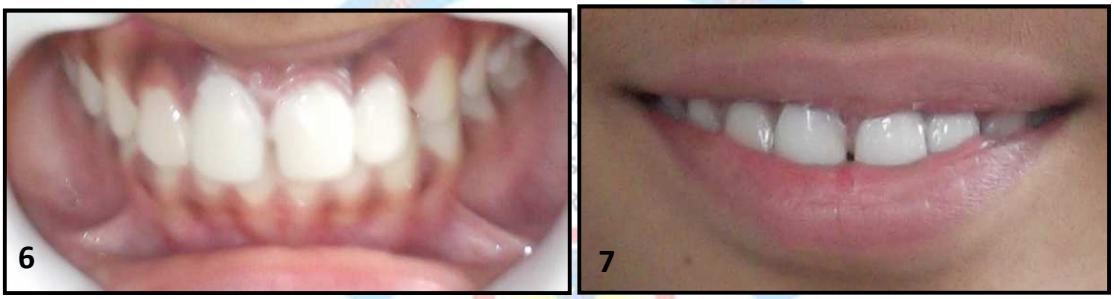

Figure 6 and 7: Intraoral picture showing cementation of acrylic crown.

Discussion

One of the common occurring dental problems in children and adolescents after dental caries is fracture of teeth following dental trauma. Reports indicate that between 9% and 39% of all dental injuries are sports related, with males sustaining injuries at two or three times the rate of females and with children aged 8–15 years among the majority of patients.[6,7] In the present case, the patient is a 12 year old girl and she fell down while playing in the school playground, fracturing both her permanent central incisors and right lateral incisor. The prevalence of incisor injury has been reported to range from 1.8% to 49%.[8,9] Of these fractures, 70% is maxillary incisor coronal fractures without compromising the root. Esthetic dentistry demands keen observation, patience, and meticulous application of the existing technique protocols. Subtleties in color variation – generally not perceived from a conversation distance – are perhaps one of the greatest desires of the patients and their parents and have become a challenging objective when restoring the anterior teeth with fidelity.[10] Natural-looking restorations can be achieved routinely and predictably by using a methodical approach.[11] So as to achieve strength to the teeth, crown build up was

done with composite restoration in 12, 11, 21 and crown cutting was done for acrylic crown placement. This procedure for making acrylic crowns was done by preparing a silicone matrix based on a diagnostic wax-up. In the present case, to achieve best esthetic results and restore form and function bis-acrylic temporary crowns were cemented on the fractured permanent anterior teeth. As the patient is only 12 years old, permanent crowns cannot be delivered because of the continuous changing gingival margin's position on account of the growing maxilla. As the gingival margin's position becomes stable after 18 years of age, temporary crowns will be replaced by permanent crowns. As the child has the habit of bruxism, to prevent dislodgement or fracture of the temporary crowns night guard was delivered.

Conclusion

In an adolescent the most preferable method to achieve esthetic rehabilitation along with restoration of form and function for fractured permanent teeth is bis-acrylic crown. When the patient reaches adulthood it can be replaced with permanent crowns.

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