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Rapid Communication

Esthetic and Functional Restoration of A Compromised Central Incisor: A Case Report

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Abstract

Treatment of severe compromised tooth in the maxillary anterior area still poses great challenge to the clinicians. The present paper aims to report a case of esthetic and functional restoration of a left-maxillary central incisor fractured following a traumatic event on a young patient. Root canal treatment, functional and esthetic issues are discussed in order to achieve a succeful result.

Keywords

Central Incisor, Compromised Tooth, Ceramic Crown, Vitroceramic

Declaration of Conflicting Interest

There are no conflicts of interest

Introduction:

The restoration of a single central incisor is a demanding procedure especially for teeth with extended tissue loss and devitalized before complete root canal edification. Often the management is multidisciplinary.

Case presentation:

A 22 -year-old male patient with a compromised maxillary central incisor was referred by the department of endodontics. His left central incisor is horizontally fractured at the mid-third of the discolored crown. The patient reported he was victim of a traumatic incident many years previously (figure 1) and the tooth has been endodontically treated since then.

The preriapical radiograph done the first time he visited the department of conservative dentistry shows incomplete root edification (figure2). The formation of an apical barrier was necessary in order to fill the root canal system without risk of overfilling .Therefore the large canal was filled to the mid-third with biodentine and the rest of the canal was filled with gutta percha (figure3).

Now the tooth responds normally to percussion, palpation and has normal periodontal probings and mobility.

The patient has a 5mm overbite and asks for an aesthetic free metal solution so an e-max crown is indicated.

The tooth preparation is done with juxta gingival finish line (figure 4). Composite is used to extend the clinical tooth length (figure 5). Then a temporary crown was made and sealed with eugenol free temporary cement (figure 6).

Figure 1 : Intraoral frontal view shoing discolorated fractured central incisor

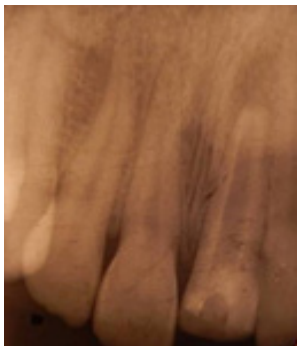

Figure 2 : Initial priapical radiograph

Figure 3: Periapical radiograph after treatment in department of restorative dentistry

Figure 4 : Intraoral view after tooth preparation

Figure 5: Intaoral view after length crown augmentation with composite

Figure 6: Patient smile with provisional crown

Figures 7-8-9 : Virtual conception of the crown

Figure 10 : Final result

Discussion:

Root canal treatment :

Biodentine, is a biologically active cement which has dentin-like mechanical properties and can be used as a dentin replacement in the tooth crown and root region. The cement consists mainly of a tri- and dicalcium silicate powder, which is mixed with an aqueous calcium chloride solution. Appreciable properties of biodentine includes good physical properties and its ability to stimulate tissue regeneration as well as good pulp response. It has great potential to revolutionise the different treatment modalities in paediatric dentistry and endodontics especially after traumatic injuries.

Functional restoration:

Due to the fracture the abutment presents an insufficient height. Glass fiber post and core is not possible because of the large width of the canal as well as the presence of biodentine which occupies more than half of the canal height. We tried adding composite at the incisal edge of the tooth but we were limited by the ecentric movement of the mandibule.

Both of The significant overbite (overbite = 5mm) and the insufficient height of the abutment led us to indicate an emax crown. Finishing line is then carried out supragingival to allow bonding which will improve the retention of the restoration.

Esthetic outcome:

When designing the e max crown,a symmetry with the right central incisor is achieved. As for optical outcome, a try in paste is used to check the final result before bonding .In fact, optical outcome vitro-ceramic crowns is not limited to restoration color , but it also depends on the thikness of the ceramic core, the surface state , the assembly method and materials and the color of underlying substrate. Once the patient is pleased with the result, the crown is bonded.

Conclusion:

In everyday practice, dentist are confronted to a combination of endodontic, periodontal, and reconstructive problems. Saving compromised teeth may carry risks for failure in the mid and long term, therefore a multidisciplinary team approach to a treatment decision is required.

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