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Management of apically displaced central incisor by multidisciplinary approach – A case report

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Abstract

Trauma to the oral structures causes severe impact to an individual aesthetically, psychologically and physically as it affects he/she in terms of aesthetics, form and function. To restore these objectives with better results, we always requires management from various dental Specialities. This case report discusses regarding the management of the apically displaced tooth (intruded) and its outcome.

Introduction

Apically displaced / intruded teeth are caused due to the trauma, that are most frequently seen in children and younger individuals. Intrusive luxation is defined as apical displacement of tooth into the alveolar bone. The tooth is driven into the socket, compressing the periodontal ligament, and commonly causes a crushing fracture of the alveolar socket. . Intrusion injuries are often associated

with severe damage to the tooth, Periodontium, and pulpal tissue.[1] The rare occurrence of this injury, 0.3–1.9% in the permanent dentition, has resulted in limited studies to support suggested treatment regimens. The treatment protocol for apically displaced involves endodontic, orthodontic and prosthodontic management for restoring its aesthetics, form and function.[1,2]

Case Report

A 16 year old female patient reported to the department of oral medicine in Mahe institute of dental sciences and hospital, chalakara, Mahe, with a chief complaint of trauma to the right upper front tooth. It is diagnosed to be intrusion of the incisor due to trauma. Patient referred to the department of orthodontics for orthodontic correction of the intruded central incisors. Orthodontic extrusion of the 11 was done for 2- 3mm (Treatment period – 1 and half year) and endodontic therapy is carried out in 11 and obturation is done. Patient is then referred to department of periodontics for the functional crown lengthening of 11, 12,13, 21, 22,23 to correct the gingival zenith for better aesthetics.

Patient is then referred to department of prosthodontics for management of the extruded tooth. Based on the evaluation of the tooth structure, post and core was advised. Temporary restoration was removed and canal space prepared using piezo reamers no .1, 2, 3 and no. 2 fibre post is selected and post is cemented using dual cure resin cement and core build up is done using composite.

Crown preparation of 11 with incisal reduction of 2mm; labial reduction of 1.5mm, palatal reduction of 1.5mm done with subgingival finish line . Gingival retraction done using cord number 000 with hemostatic agent and placed in the gingival margin. Putty light body impression made in two stage technique. Shade selection done as 2R – 2.5 using vita 3D master shade guide. E max crown was fabricated (for the high aesthetic demand as well as the patient is of younger age) and cemented using resin cement.

Fig. 1: Extra oral photograph

Fig.2: Intruded 11

Fig.3: Post-Operative (orthodontic extrusion)

Fig.4: Maxillary occlusal view

Fig.5: Mandibular occlusal view

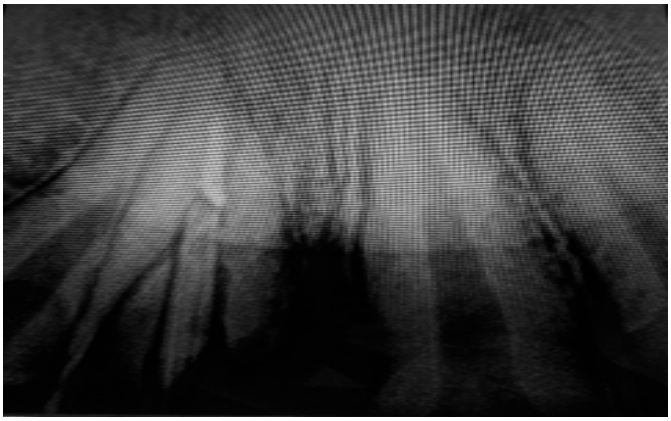

Fig.6: Post Placement in Canal Space

Fig.7: Core Build-UP

Fig. 8: Tooth preparation and gingival retraction

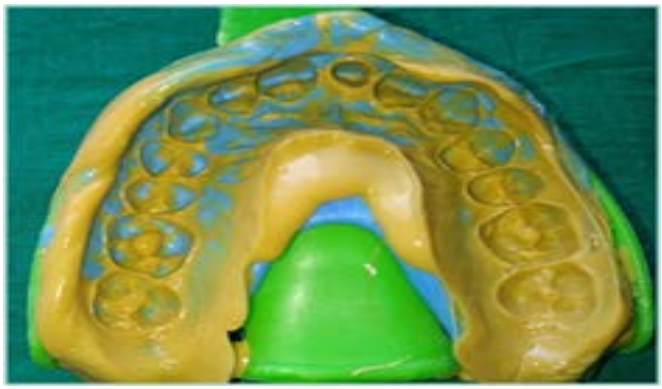

Fig. 9: Final Silicone Impression

Fig. 10: Shade selection done – 2R- 2.5

Fig. 11: E max crown in situ

Fig.12: Occlusal view of crown in 11

Fig. 13: Post-Operative

Discussion

Luxation lesions account for 15.0–61.0% of the trauma in permanent teeth. The primary etiologic factors are bicycle accidents, sports accidents, falls, and fights. From the standpoint of the therapy, anatomy, and prognosis, five different types of luxation lesions are recognized: Concussion, subluxation, extrusive luxation, lateral luxation, and intrusive luxation. The factors establishing the type of lesion seem to be the force and direction of the impact.[1]

One of the most damaging injuries to a tooth and its supporting structures is an intrusion luxation. These injuries are often accompanied by comminution or fracture of the alveolar socket. Various techniques and materials have been suggested to manage the coronal tooth fractures, for example, stainless steel crowns, basket crowns, orthodontic bands, pin retained resin, porcelain-bonded crown, and composite resin. All such historic techniques are least conservative and time-consuming. However, in today's era, immediate replacement of lost structures is demanded and practiced. [2] Fibre post has better homogeneous tension distribution when loaded, than rigid metal or zirconium oxide ceramic posts. Fibre reinforced posts also possess advantageous optical properties over metal or metal oxide post systems. Therefore, a combined use of fiber posts provides satisfying aesthetic results and improved mechanical properties.[5]

E–max crown is a type of all ceramic crown which is preferred for its long lasting, aesthetic qualities. Crown is made from a single block of lithium disilicate ceramic. This is top grade material which has been harvested for its toughness, durability and opaque qualities which makes it a highly prized crown. The crown is considered to be the best match with natural teeth. . In following case, Age is the important factor lead to the decision for choosing E-max crown due to its high aesthetical feature, as there is no much of discoloration in the stump of the prepared tooth, as the E- max crown has the translucent property.[6]

Conclusion

Primary etiologic factors of trauma in the permanent dentition are bicycle accidents, sports accidents, falls, and fights. From the standpoint of therapy, anatomy, and prognosis, five different types of luxation lesions are recognized: Concussion, subluxation, extrusive luxation, lateral luxation, and intrusive luxation. Intrusive luxation

is apical displacement of tooth into the alveolar bone. The tooth is driven into the socket, compressing the periodontal ligament, and commonly causes a crushing fracture of the alveolar socket. It is considered one of the most severe luxation injuries to affect permanent teeth. The above discussed case history explains the part of the different specialities in management of apically displaced teeth and its good aesthetic outcome. This article also describes that without extraction of a fractured apically displaced crown it can be managed by extruding the minimal coronal structure and managing it prosthetically can make us achieve aesthetically pleasing results.

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