CASE REPORT

Delayed multidisciplinary management of an intrusively luxated maxillary lateral incisor- A case report

Chirag Pandya,[1] Mihir Pandya,[2] Soham Patel,[3] Milan Ughareja[4]

ABOUT THE AUTHORS

1.Dr. Chairag Pandya MDS
Senior lecturer
Department of orthodontics
Karnavati school of Dentistry
Gandhinagar, Gujarat.

2.Dr. Mihir Pandya BDS
Postgraduate student
Department Of Conservative Dentistry & Endodontics
Pacific Dental College
Udaipur, India

3.Dr. Soham Patel BDS
Postgraduate student
Department Of Conservative Dentistry & Endodontics
Pacific Dental College
Udaipur, India

4.Dr. Milan Ughareja BDS
Postgraduate Student
Department Of Conservative Dentistry & Endodontics
Pacific Dental College
Udaipur, India

Corresponding Author:

Dr. Mihir Pandya

Post Graduate Student
Department Of Conservative Dentistry & Endodontics
Pacific Dental College
Udaipur, India

Email:
dr.mihirpandya@yahoo.com

Abstract

Crown fractures account for the highest percentage of all traumatic injuries to the permanent dentition. This paper reports a case of delayed (1 month after the injury) multidisciplinary management of an intrusively luxated permanent lateral incisor. The intruded tooth was diagnosed as necrotic without coronal discoloration. Upon completion of root canal treatment, the tooth was repositioned orthodontically and finally restored post endodontic therapy for esthetic purposes.

KEYWORDS: Crown fractures, multidisciplinary management, traumatic injuries

Introduction

Crown fractures account for the highest percentage of all traumatic injuries to the permanent dentition.[1] Intrusive luxation is the partial displacement of a tooth from its bony socket. Clinically, intruded teeth were seen shortened with deviation in association with bleeding from the periodontal ligament. There is pain during occlusion, either no or mild spontaneous pain. Radiographically, an extruded tooth exhibits an decreased periodontal ligament space after the accident. [1, 2] This paper reports a case of delayed (1 month after the injury) multidisciplinary management of an intrusively luxated permanent lateral incisor. The intruded tooth was diagnosed as necrotic without coronal discoloration. Upon completion of root canal treatment, the tooth was repositioned orthodontically and finally restored post endodontic therapy for esthetic purposes.[2]

Case report

A 18-year-old girl presented to the Department of Endodontics, Pacific Dental College, Udaipur, Rajasthan (India) with discomfort and mild pain in her maxillary right lateral incisor upon biting. She reported falling on her face while climbing down the stairs 4 month earlier. She got the endodontic treatment done for the central incisors in a private dental clinic. Clinically, the right lateral incisor was intrusively luxated while the central incisor had a horizontal crown fracture. This lateral incisor was indicated for extraction in the private clinic so the patient turned up to our department for a second opinion.

The tooth was diagnosed as non-vital after electrical pulp and cold tests. There was no color change in the crown and the crown of the tooth was intact. Radiographically, the right lateral incisor was displaced with an apical radiolucency associated with the loss of lamina dura and widening of the periodontal ligament. There was no sign of external or internal root resorptions. The mobility of the luxated tooth was recorded as grade 1.

Fig 1. Pre-operative (Labial View)

Fig 2. Pre-operative (Lateral View)

Fig. 3 Pre-operative (Lateral View)

Fig 4. MBT straight wire appliance used for orthodontic extrusion

Fig 5. Crown preparation after post space preparation

Fig 6. Cast post cemented

Root canal therapy was performed using laterally condensed gutta-percha and sealer (AH26; Dentsply, Konstanz, Germany) in the lateral incisor. Both the central incisors were asymptomatic. Orthodontic therapy was planned to reposition the luxated right lateral incisor after the endodontic treatment. Orthodontic therapy was performed using a removable appliance for 4 months and the tooth was repositioned. Both central incisors were restored again to improve esthetics using the composite resin.
After the successful result of orthodontic treatment of the intruded tooth, prosthodontic rehabilitation was carried out to the same tooth. Following the post space preparation, a cast post was fabricated and cemented with resin based cement for better strength and stability. Finally, a porcelain fused to metal crown was fabricated and placed on to the core and cemented.

Discussion:

One complication of intrusive luxations may be tooth malposition because of treatment delay following the injury. In the present case, the right lateral incisor was diagnosed intrusively luxated, malpositioned palatally thus out of occlusion[3] .
The most severe form of luxation injury, intrusion, not surprisingly, yields the poorest prognosis and requires more complex treatment. There is no consensus on the optimal treatment of intruded permanent teeth.

The recommended treatment options for intruded teeth include:

1 Allowing spontaneous re-eruption of the tooth
2 Immediate surgical repositioning and fixation
3 Orthodontic repositioning (extrusion)
4 periodontal crown lenghtening[5,6]

Orthodontic extrusion is an another option for the management of intruded permanent teeth. It has been suggested as a possible alternative which might allow for remodeling of bone and the periodontal apparatus . Successful treatments of cases using this technique have been reported in the literature.[4] Andreasen and Andreasen have considered this option as the treatment of choice for most of the cases involving mature permanent teeth[4]. The disadvantages of orthodontic extrusion have been reported as long treatment time and retention period, strict patient compliance and higher treatment costs[7,8,9].

Conclusion:
The need for a multidisciplinary approach in the treatment of routine dental problems has been recognized for some time , especially for dental traumas that require comprehensive treatment and an accurate diagnosis and treatment plan, respecting the biological, functional and esthetic aspects, as well as the patient's will. The general dentist would be the ideal professional to treat dental traumas, because of the multidisciplinary involvement of those cases. The key factors in a successful functional and esthetic rehabilitation of complicated crown fracture and crown-root fracture are multidisciplinary approaches, which involves surgeries, endodontics, orthodontics, periodontics, and prosthodontics.

References

1. Andreasen JO, Andreasen FM, editors. Luxation injuries. In: Textbook and Color Atlas of Traumatic Injuries to the Teeth. Copenhagen: Munksgaard; 1993. p. 315–81.
2. Dumsha T, Hovland E. Pulpal prognosis following extrusive luxation injuries in permanent teeth with closed apex. J Endod 1982;36:410–2.
3. Saroglu I, Sonmez H. The prevalence of traumatic injuries treated in the pedodontic clinic of Ankara University,Turkey, during 18 months. Dent Traumatol 2002;18:299–303.
4. Andreasen JO, Andreasen FM, Skeie A, Hjorting-Hansen E, Schwartz O. Effect of treatment delay upon pulp and periodontal healing of traumatic dental injuries – a review article. Dent Traumatol 2002;18:116–28.
5. Robertson A, Andreasen FM, Bergenholtz G, Andreasen JO, Noren JG. Incidence of pulp necrosis subsequent to pulp canal obliteration from trauma of permanent incisors. J Endod 1996;22:557–60.
6. Mandel U, Viidik A. Effect of splinting on the mechanical and histological properties of the healing periodontal ligament in the velvet monkey (Cercopithecus aethiops). Arch Oral Biol 1989;34:209–17.
7. Andreasen FM, Vestergaard PD. Prognosis of luxated permanent teeth: the development of pulp necrosis. Endod Dent Traumatol 1985;1:207–20.
8. Oikarinen K, Andreasen JO. The influence of conventional forces extraction and extraction with an extrusion instrument on cementoblast damage and root resorption of replanted monkey incisors. J Periodontal Res 1996;31:337– 44.
9. Alacam A, Ucu¨ncu¨ N. Combined apexification and orthodontic intrusion of a traumatically extruded immature permanent incisor. Dent Traumatol 2002;18:37–9.
10. Lee R, Baret EJ, Kenny DJ. Clinical outcomes for permanent incisor luxations in a pediatric population. II. Extrusions. Dent Traumatol 2003;19:274–9.
11. Al-Nazhan S, Andreasen JO, Al-Bawardi S, Al-Rouq S. Evaluation of the effect of delayed management of traumatized permanent teeth. J Endod 1995;21:391–3.