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Management of Extrusion Injury Using An Erich Archbar: A Case Report

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Abstract - Fracture that led to luxation of the teeth is not uncommon in the frame of reference of day to day activities, assaults and road traffic mishaps. This luxation injury is a common type of finding, along with tooth mobility. A 15 year aged male reported with bleeding from the mouth after being hit during a fight. There is no history of loss of consciousness, vomiting, and bleeding from nose and ear. The extra oral inspection revealed an asymmetrical face, hematoma on upper lip and chin region. Edema present in respect to the above areas. The diagnosis made was extruded teeth in respect to 12, 22 accompanied by grade I mobility. First treatment was the control of bleeding followed by repositioning of the extruded teeth and splinting with Erich arch bar followed by prescribing of antibiotics and analgesics. Post treatment advices included maintenance of oral hygiene, soft diet, and return of occlusion by splinting. Treatment results show good soft and hard tissue healing.

Keywords - Assaults, Luxation, Extrusion, Mobile Teeth, Erich arch bars, Extrusion.

INTRODUCTION-Luxation injuries of the permanent teeth can be categorised into the followings: subluxation, lateral luxation, intrusion and extrusion. Sign of extrusion injury is a lengthened mobile tooth and a commonplace radiographic presentation is an apically widened periodontal space. The most preferred line of management for extruded luxation is positioning back of the extruded teeth back into the socket as early as possible and secure with a splint for up to minimum of 3weeks. This trauma constitutes the elementsof dentition, periodontal structures, and alveolus that may occur separately or at the same time. Trauma related to the dental structures, such as the lacerations and avulsions may often lead to fractures of the alveolar bone which in return leads to loss of the dental tissues. It may happen in any age group of the population. Facial traumas can lead to loosening of the tooth or loss of the same. Extrusion is a trouble, especially in patients in younger age group, because it may result in preliminary loss of tooth which may hamper the quality of the life of the patient as it affects the normal functioning and the aesthetics of the patient. This kind of traumatic fracture results from often caused by falling, sports activities, traffic accidents, etc. As of trauma may depends on the type, location, and direction of pressure.

CASE REPORT- A 15 year old man reported to the department of oral and maxillofacial surgery, Institute of Dental Science with a complain of bleeding from mouth and loose front teeth. He had a history of hit during an assault on which lead to the above mentioned complaints. He had no history of unconsciousness and vomiting post trauma and no history of ENT bleed. Patients was initially taken to the nearby government

hospital for the initial management and was later brought to the department of OMFS, Institute of Dental Sciences for further management.

On examination, extraorally, loss of symmetry of the face in respect to the lower and middle 1/3rd of the face. Lacerations present over the chin region approximately (2*2)cm , and over the upper lip region approximately(1*3)cm. Abrasions seen over the nasal bridge. Edema present over the upper lip and chin region. Hematoma present with respect to the same. Intraorally, lacerations present over the upper vestibular sulcus region in respect to 11,12,13,14 region. Extruded teeth present in respect to 11, 12, which was reverified by an OPG.

Initial line of management done was maintaining the haemostasis and all the lacerations were sutured. The extruded teeth were then repositioned back into their sockets and fixed using Erich arch bar and 26 gauge wire. The Erich archbar was placed in such a manner that the hooks were upside down inorder to prevent from irritation to the lip and the buccal mucosa. Patient was prescribed for antibiotics with the composition amoxicillin and potassium clavulanate, thrice daily for a period of 5 days ; analgesics with the composition diclofenac , twice daily for a period of 5 days after meal. In addition to these PPI was prescribed with the composition pantoprazole. The patient was reviewed weekly. The patient was adviced for soft diet and to maintain proper oral hygiene. The archbar was removed after a month, and a post-operative OPG was taken to mark the hard tissue healing. There was a satisfactory both soft and hard tissues of the patient. And the patient was satisfied with the results.

Fig1. Depicting the extruded teeth in respect to 11,12

Fig 2. Depicting the placement of Erich arch bar after proper stabilisation of the extruded teeth.

Fig 3. Pre-operative OPG revealing extruded teeth in respect to 11, 12.

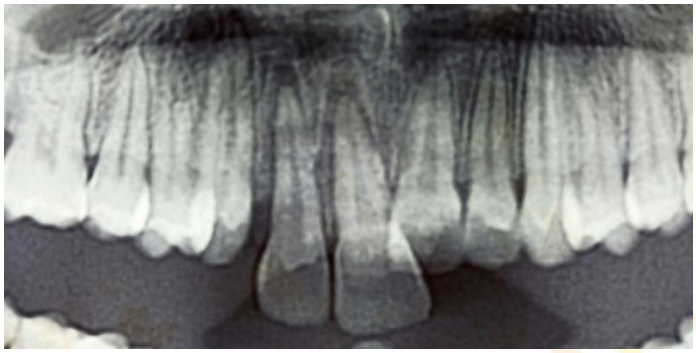

Fig 4.OPG revealing widen periodontal spaces in respect to11, 12.

Fig 5. OPG revealing stabilisation and fixation using Erich arch bar.

DISCUSSION - The most preferable line of management for extrusive luxation is repositioning and stabilisation of the extruded tooth. As in almost all traumatic situations, time is a critical factor for the successful treatment of extrusive luxations.It need to be as soon as possible.. The Erich archbar is considered as the standard method of intermaxillary fixation because helps to obtain better occlusal stability.The treatment ofdentoalveolar and slighty displaced fractures of the maxilla or mandible and luxation or avulsion of teeth are the common procedures carried out by a maxillofacial surgeon. Arch bar fixation and stabilisation has long been used as the technique of choice for these above mentioned injuries. This technique can be effective if the fixation has been placed for about 3–4 weeks.The fixation achieved with the Erich arch bars ligated to teeth is used as a conservative treatment of facial bone fractures and to maintain immobilization in patients.The fixation is still necessary in cases like osteosynthesis performed with semi-rigid miniplates or with lag screws Techniques for splinting tooth luxations have gone through changes in the past two decades as rigid arch bar splints have given way to more flexible fixation methods, most of which are based on acid-etching. Arch bars are fixed on teeth either with or without acrylic. The arch bar introduced by Schuchardt et al has an acrylic coverage - and is bent on the labial side and fixed on the teeth with ligament wires. Diagnosis of dentoalveolar fractures must consider anamnesis and clinical examination carefully. The initial phases of a comprehensive history of the trauma are the patient's data, when, where, how can occur, what initial treatment has been made, whether there is a tooth fracture at the site, the general

condition of the patient, a history of systemic disease, and mastication. The absolute aim of treatingsubluxation trauma is to regain the normal functioning of tooth and the oral cavity. The line of management of trauma is categorised into 2 stages, immediate care after trauma i.e emergency treatment and the management for dental or alveolar bone with trauma. Emergency care is very crucial and to be done with no waste of time because it affects prognosis which include cleaning, suturing, relieving from pain, and preventing infection. Later the definitive treatment is the repositioning of alveolar or traumatized tooth bone and then stabilisation and fixation. The technique of repositioning of the teeth and the alveolar part undergoing trauma / luxation can be done by fingers or tools. The length of immobilization is based on the degree of tooth luxation, bone support, tooth root condition. Usually the duration of treatment is about 6-7 weeks.The result of treatment is there healing process wounds both soft tissue and hard tissue. Treatment of such kind of fracture should reduce and restore the fracture in the correct position and then fixation until the bone begins to improve. Excellent immobilization tools and techniques can enhance the healing process and increase the success rate.The purpose of dental splinting is to stabilize the tooth as long as necessary to ensure no trauma and to protect new periodontal tissue attachment. Bone sockets continuous remodeling by stimulus-response and cementum growth slowly. After reimplantation, the new epithelial junction is reestablished within seven days, and supracrestal and bone marrow connective tissue are the main sources for proliferation of connective tissue.The perfect formation of a periodontal ligament takes about four months. The correct diagnosis should associate with rapid treatment and long control periods for the treatment to work successfully.

CONCLUSION - Dentoalveolar fracture is the breakdown or breakage of hard tissue continuity in the tooth structure and alveolus. In adults it is often caused by falling, sports activities, traffic accidents, etc. Stainless Steel wire and the composite splint is one of the most common and easy fixation methods to treat dentoalveolar fractures. The purpose of dental splinting is to stabilize the tooth for as long as necessary to ensure no trauma and to protect the new periodontal tissue attachment. Use of simple tools and techniques make rigid wires and composite splint a good treatment modality for simple dentoalveolar fractures.

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