Stabilizing Teeth with non Surgical Treatment: A Case Report of Splinting

Susant Mohanty[1], Sonu Acharya[2], Jnana Ranjan Swain[3], Bismay Singh[3]

[1]Professor and Head, [2]Professor, [3]Senior Lecturer, Department of Paediatric and Preventive Dentistry, Institute of Dental Sciences, Siksha O Anusandhan (Deemed to be Univerisity) Bhubaneswar, Odisha, India

Abstract

The management of tooth mobility is one of the prime objectives of traumatic injury. The treatment of trauma-associated tooth mobility may include occlusal therapy, extraction, splinting and various treatments too. This article discusses a case report on the management of tooth mobility in trauma associated patients.

Keywords: *Traumatic Injury; Tooth Mobility; Non-Surgical Treatment, Tooth Stabilization.*

Introduction

In children traumatic exposure to anterior/posterior teeth is common including facial fracture due to unprotected/uncontrolled playing activities. So there is a major prevalence of traumatic injuries during 0-6 years of life i.e 10-30%. And according to Kenwood and Seow the prevalence is more than 30% among < 7-year children. These type of injuries mostly seen in male rather than female and anterior teeth are most frequently affected. Most of the trauma during childhood are sports-related and less control over extremities.[1]

So the prevention of sports injuries in children is most important. And to prevent these injuries parents and pediatric dentists are plays a significant role. For the protection of lips and oral soft tissues from bruises and laceration, the mouthguards are designed. There are different types of mouthguards used for different purpose including stock mouth guards, mouth-formed mouthguard, costume fabricated, etc. other preventive measures are helmets, face masks, jaw joint positioner.[1]

Corresponding Author:
Prof. (Dr.) Susant Mohanty
Professor and Head, Department of Paediatric and Preventive Dentistry, Institute of Dental Sciences, Siksha O Anusandhan (Deemed to be Univerisity) Bhubaneswar, Odisha, India
e-mail: dr.susantmohanty@gmail.com

Stabilization of teeth with nonsurgical therapy may offer a good modality for trauma associated tooth mobility.[2] The treatment protocol may vary for displaced/ partial displacement of the tooth including no treatment or extraction or repositioning of the tooth. Stabilization of teeth can be achieved by splinting which can be provisional or permanent.[3] A splint has been defined as 'an apparatus used to support, protect or immobilize teeth that have been loosened, replanted, fractured or subjected to certain endodontic surgical procedures.[4] Minimum tooth mobility and increased occlusal function is the major advantage of stabilization done by splinting.[5] A splint should restore the arch stability and integrity, redirect the forces to reduce stress and tension[6] there are two types of splints i.e removable and fixed splint. And new splints are available in the market like Ribbond, Fiberglass, Synthetic fibers, etc. The ideal properties of the splint are that it should be simple, economic, stable, efficient, hygienic, non-irritating, not interfering with treatment, aesthetically acceptable, not provoke iatrogenic disease.[7] However the splints are contra indicated in moderate to severe increased tooth mobility.[8] Here we present a case report of a patient with trauma who was timely managed with the provisional splint and non-surgical therapy.

Case Report: A 3-year old female patient presented with the chief complaint of mobility of upper anterior teeth (Figure 1). And the patient fell on the table while playing with her brother. Proper case history was taken including:

- History of trauma- she had no such medical history of any diseases like bleeding disorders, allergies, epilepsy and also no history of vomiting and loss of consciousness or amnesia. And past dental history was also normal and never visited any dentist.
- Initial neurologic assessment was done by checking any unusual communication and normal respiration without any obstructions of the airway.
- Also other examination had performed like vocal function, TMJ movement, neck movement, function of the eye, and ability to protrude the tongue

Clinical Examination:

Extraoral examination- The face was symmetrical with a swollen upper lip.

Intraoral examination- The patient had Grade IIImobility of 51,61. And minimal laceration of gingiva in 51, 61 region. 51 was more displaced buccally than 61 with no evidence of crown fracture.

Investigation was done by taking an intraoral periapical radiograph. And there was no evidence of alveolar bone fracture and root fracture. And also the tooth had not distressed the permanent tooth buds.

Diagnosis and treatment done- A diagnosis of the trauma was made when she fell during playing. Initially Phase I therapy such as scaling was done followed by occlusal adjustment. The management of tooth mobility was planned with the idea of placing ligature wire and splinting about 52,51,61,62 (Figure 2). Ligature wire was braided to the desired length and adapted on the tooth. The labial surfaces were etched with 37% phosphoric acid for 20 seconds. Then the area is cleaned, dried thoroughly, a bonding agent is applied, and curing light was given for20 seconds. Wire was stabilized on the labial surface using composite. Composite resin was then placed on the wire and light-cured. Excess material was removed and finishing and polishing was done. The tooth was checked for mobility. The patient was given instructions on oral hygiene, advised to use an interproximal brush, and was recalled after 15 days for review. During the review, the patient was satisfied with a sense of well being and a great sense of mastication after splinting as the tooth mobility was minimized. The splinting was then removed and the post-operative photograph was taken (Figure 4).

Figure 1: Preoperative photograph

Figure 2: Tooth Repositioning and Ligature wire Splinting done

Figure 3: 15 days follow up

Figure 4: Post- Operative photograph

Discussion

Tooth mobility is defined as a visually perceptible movement of the tooth away from its normal position when a light force is applied.[9] (Gher 1996)Composite and wire splints are perhaps the most commonly used in clinical practice and are flexible splints when the wire has a diameter of no greater than 0.3–0.4 mm.[10] Tooth mobility has been described as an important clinical parameter in predicting prognosis.[11] For this reason and patient comfort, splinting has been the recommended therapy to stabilize teeth. In the past, direct stabilization and splinting of teeth using an adhesive technique required the use of wires, pins, or mesh grids.[12] Splinting done using ligature wire is cost-effective and economical for the patient when compared to fiber splints.[10]

Conclusion

This article has described the ligature wire technique for splinting mobile anterior teeth. The mobility of teeth is a common complaint of patients with trauma. A dental splint is an appliance designed to immobilize and stabilize mobile loose teeth. Various methods of splinting should be applied depending upon the prognosis of mobile teeth and periodontal conditions of surrounding teeth.

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