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Research Article

STABILIZING TEETH WITH NONSURGICAL TREATMENT- A REPORT OF TWO SPLINTING CASES

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ABSTRACT

The management of tooth mobility is one of the prime objectives of periodontal therapy. The treatment of periodontitis-associated tooth mobility may include occlusal therapy and splinting. This article discusses two case reports on the management of tooth mobility in Periodontally compromised patients.

Key Words:

Periodontitis, tooth mobility, ligature wire,
fibre splint

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INTRODUCTION

Periodontitis is defined as an inflammatory disease of supporting tissues of teeth caused by a group of specific microorganisms, resulting in progressive destruction of the periodontal ligament and alveolar bone with periodontal pocket formation, gingival recession or both. This may lead to tooth mobility. Hence, the management of tooth mobility becomes a prime objective of any periodontal therapy.

Stabilization of teeth with nonsurgical therapy may offer a good modality for periodontitis-associated tooth mobility. The management of mobility in severe chronic periodontitis patients with generalized recession and clinical attachment loss greater than 3mm can be done with stabilization of teeth using non-surgical therapy and thereby avoiding further surgical management. Stabilization of tooth can be achieved by splinting which can be provisional or permanent.

Dawson defines splinting as the joining together of two or more teeth for the purpose of stabilization. Splinting is a procedure by which a tooth resistance to an applied force is increased by joining it to a neighbouring tooth or teeth. It is a well accepted

provisional treatment using permanent or temporary splints in order to control irreversible tooth mobility.

One advantage of splinting is the stabilization of mobile teeth by forming a firm unit, minimizing tooth mobility and greatly improving the occlusal function of the teeth.

The rationale for splinting is to arrest the mobility of teeth, redistribute and redirect the forces, preservation of arch integrity, restoration of arch stability and psychological well-being of the patient.

Splinting is mainly indicated to stabilize teeth, that cannot be treated by other means, when increased tooth mobility interferes with normal masticatory function and comfort of the patient, secondary occlusal trauma, to prevent the extrusion of unopposed teeth, following acute trauma and orthodontic movement. The ideal properties of splint are that it should be simple, economic, stable, efficient, hygienic, non-irritating, not interfering with treatment, aesthetically acceptable, not provoke iatrogenic disease.

However the splints are contraindicated in moderate to severe increased tooth mobility in the presence of periodontal inflammation or primary trauma, when prior occlusal

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adjustment has not been done on teeth with occlusal interferences, when there is an insufficient number of non-mobile teeth to adequately stabilize the mobile teeth and inadequate oral hygiene.

Here we present two case reports of patients with chronic periodontitis, generalized gingival recession and clinical attachment loss who were timely managed with the provisional splint and non-surgical therapy.

Case Report 1

A 45-year old male patient presented with the chief complaint of mobility of lower anterior teeth. The patient had Grade-II mobility of 32, 41, 42. Gingival recession of 3mm was seen in 31, 41 and 2mm recession in 32,42. IOPA of 41,42 revealed horizontal bone loss extending up to middle third of the root and widening of periodontal ligament space. A diagnosis of generalized chronic periodontitis was made. Initially Phase I therapy such as scaling and root planing was done followed by occlusal adjustment. The management of tooth mobility was planned with the idea of placing ligature wire and splinting in relation to 33 to 43. Alginate impression of the lower arch was taken. Ligature wire was braided to the desired length and adapted on the cast. After phase I therapy and pumice polishing, the teeth surfaces were thoroughly rinsed and dried (Fig 1).The lingual surfaces were etched with 37% phosphoric acid for 20 seconds. Then the area is rinsed and dried thoroughly and bonding agent was applied and light-cured for 20 seconds. Wire was stabilised on the lingual surface using rubber bands (Fig 2). Composite resin was then placed on the wire and light cured.

Splinting of Lower Anterior Teeth with Ligature Wire



Figure 1 Pre-operative view



Figure 2 Ligature wire stabilized with rubber bands



Figure 3 Post- operative view

Excess material was removed and finishing and polishing was done (Fig 3). The tooth were checked for mobility. Patient was given instructions on oral hygiene, advised to use interproximal brushes and was recalled after 3 months for review. During the review, patient was satisfied with a sense of well-being and a great sense of mastication after splinting as the tooth mobility was minimized.

Case Report 2

A 39-year old male patient presented with the chief complaint of mobility of upper anterior teeth. The patient had Grade II mobility of 11, 12, 22 (Fig 4). IOPA of 11, 12 and 22 region revealed horizontal bone loss extending up to middle third of the root and widening of periodontal ligament space. Initially phase I therapy and occlusal adjustment was done. Splinting was done in relation to 13 to 23 using fibre splint (Fig 5).

Splinting of upper anterior teeth using fibre splint

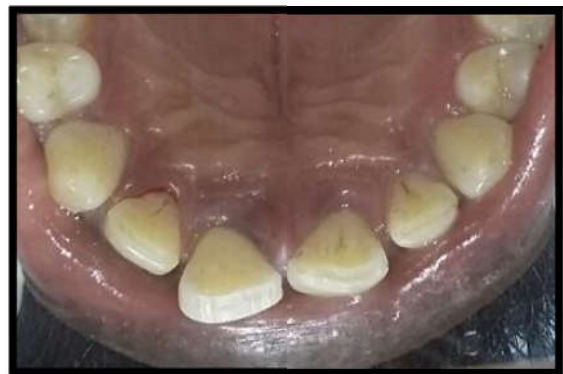


Figure 4 Pre-operative view



Figure 5 Post-operative view; Fibre splint placed

DISCUSSION

Tooth mobility is defined as a visually perceptible movement of the tooth away from its normal position when a light force is applied. (Gher 1996)

Tooth mobility has been described as an important clinical parameter in predicting prognosis^{1,2}. For this reason and for 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.

These materials could only mechanically lock around the resin restorative. Because of this there was the potential of creating shear planes and stress concentrations that would lead to fracture of the composite and premature failure. With the introduction of bondable, polyethylene woven ribbons, many of the problems with older types of reinforcement were solved³. Provisional splints are indicated for a limited time period. They will provide information as to whether teeth stabilization will have benefits before planning comprehensive treatment. Examples include ligature wires, night guards, interim fixed prosthesis and composite resin splints⁴. Splinting done using ligature wire is cost effective and economical for the patient when compared to fibre splints.

Fibre splint is aesthetically pleasing and comfortable to the patient. It has highly favourable mechanical properties. When compared to metals, they offer many other advantages including non-corrosiveness, translucency and good bonding properties⁵.

The presence of splint often makes it difficult for the patient to achieve adequate plaque control and thus may predispose to further periodontal destruction⁶.

Clinical research supports using fibre splints as long term provisional splinting material⁷.

Chandra Sekhar *et al* (2011)⁸, in a clinical study compared the efficacy of two splinting materials, ribbon with stainless steel wire. He concluded that ribbon reinforced composite resin was an excellent material for splinting with respect to patient comfort, durability, resistance to fracture, biocompatibility and esthetic acceptability.

Recently, Wakabayashi *et al* (2010), suggested that fixed splinting can decrease the periodontal load on premolars with reduced periodontal support, but may increase the load on the splinted tooth⁹.

Mosedale (2007) concluded that when used correctly, periodontal splinting can greatly improve the comfort, prognosis and outcome for a patient with serious periodontal disease¹⁰.

CONCLUSION

This article has described two techniques for splinting mobile anterior teeth. The mobility of teeth is a common complaint of patients with advanced periodontal disease. It is caused by a loss of supporting bone caused due to periodontal disease. Dental splint is an appliance designed to immobilize and stabilize mobile loose teeth. Various methods of splinting should be applied depending upon prognosis of mobile teeth and periodontal conditions of surrounding teeth.

Splinting is a well-accepted integral part of holistic periodontal treatment which results in morale boost, improved patient comfort, and oral functions.

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