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THE USE OF ELASTICS FOR POSITIONING MULTISTRANDED STAINLESS STEEL LIGATURE WIRE IN LINGUAL RETENTION

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ABSTRACT

The purpose of this paper is to introduce a new simple technique of fixing a lingual bonded retainer in orthodontic finished cases. The aim of the technique is to simplify the clinical steps that orthodontist will go through and to reduce the chairside time. After ideal isolation of the teeth, multi-stranded ligature wire is placed using elastics to stabilize the retainer wire during the bonding procedures.

KEYWORDS: Lingual retainer, elastics, chairside bonding.

INTRODUCTION

Moyer[1] defined retention as "maintaining the newly moved teeth in position long enough to aid in stabilizing their correction". It is considered as a major step in stabilizing the results accomplished through active orthodontic treatment. Dental repositioning leads to

potential occlusal instability as teeth naturally tend to drift at least partially towards their original position. This is because the gingival and periodontal tissues are affected by the orthodontic tooth movement. Therefore, a period of few months is required in order to permit reorganization of the alveolar bone as well as the periodontium to their normal health. To achieve this, a retainer appliance is needed.

There are two types of retainers: a removable and a fixed retainer. They can further be classified into: temporary, semi-permanent and a permanent retainer. Most orthodontists believe that the only definitive way of maintaining ideal alignment after treatment is with some form of permanent retention.[2] Maintaining incisor alignment is especially important from the patient's perspective and fixed bonded retainers have been advocated in order to avoid relapse.[3] The retainer should be well tolerated by the patient with minimal negative effects on speech, mastication, oral hygiene, comfort and the general health of the oral tissue.[4]

Recent reports have suggested that long-term retention may be required to prevent post-treatment changes and the bonded orthodontic retainer constructed from composite and multi-strand orthodontic wire provides an esthetic and efficient system for maintained retention.[2] Bonded lingual retainers have been shown to be an effective means of retaining aligned anterior teeth in the post-treatment position in the long term. One of the problems that is encountered with the use of the fixed retainer is that it easily breaks and leads to accumulation of plaque and calculus. Results indicate that the bonded retainer has all the advantages of a fixed soldered retainer, in addition to being invisible. Patient acceptance is excellent and the failure rate in terms of loose retainers is low, Wire breakage does not appear to occur and the slightly elastic properties of the wire allows physiologic mobility of the teeth, which is of advantage in the periodontal patients.[5]

Two different techniques for bonding fixed retainers have evolved; direct and indirect techniques. Various diameter and alloys' wires are used for this purpose. Indirect method requires an elaborate laboratory procedure for holding the retainer wire on teeth surface for bonding. In the direct method, the retainer wire needs to be prefabricated for accurate fit on the lingual surface of the teeth. These methods have certain shortcomings inherent in them. To overcome these problems, some new techniques have been developed Recent reports have suggested that long-term retention may be required to prevent post-treatment changes and the

bonded orthodontic retainer constructed from composite and multi-strand orthodontic wire provides an esthetic and efficient system for maintained retention.

A lingual retainer or splint is noninvasive to dental tissue and is reversible. Wire breakage does not appear to occur and the slightly elastic property of the wire allows physiologic movement of the teeth, which is of advantage in the periodontal patients. Another study to present simple technique for stabilizing a lingual fixed retainer wire in place with good adaptation to the teeth surfaces and checking for occlusal interferences prior to the bonding procedure was conducted by Al-Emran.[6] The lingual fixed retainer was fabricated using three pieces of .010″ steel ligature wire which were twisted into a single strand wire. The retainer wire was bonded using the flowable composite.

The technique presented here for stabilizing the retainer wire prior to bonding provides good stabilization, adaptation and proper positioning of the retainer wire while eliminating contamination of etched surfaces which might occur during wire positioning before bonding. This technique also allows the clinician an opportunity to check the occlusion and adjust the retainer wire to avoid occlusal interference prior to bonding maxillary retainers. The technique describes step-wise placement of a lower bonded retainer. A Few minutes' procedure will be better accepted by the patient in comparison to a fixed appliance bonding. This is also preferable to spending 30 or 40minutes on an old bonding technique.

MATERIALS AND METHOD

To construct the retainer, the following material and instruments are required

1. Long stainless steel ligature wire
2. Elastics
3. Light-cure bonding kit
4. Light cure unit
5. Mathieu/mosquito forceps
6. Ligature cutter
7. Finishing bur

Chairside Steps of Retainer Construction

1. To prepare the ligature wire, hold two or three strands of 0.010 stainless steel ligature wire together at both ends with mosquito forceps. Then twist the strands into a single wire and bend the wire into a gentle curve and cut the desired length.

2. Isolate the arch using cotton rolls and slow salivary ejectors and retract the lips using a lip retractor.

3. Clean the lingual surfaces of the teeth with pumice, rinse with water and dry it.

4. Pass the elastics through the contact points between the canines and between the lateral incisors and the central incisors(fig 1).

5. Place and adapt the measured wire, into the elastics, bring the elastics below the contact points and hang it around the adjacent bracket(fig 2).

6. Acid-etch the lingual surfaces that are to be bonded. Rinse and air-dry them until they appear chalky(fig 3).

7. Apply a light-cured bonding agent to the lingual surfaces and activate it with a light source.

8. Add the light-cure flowable composite to the retainer wire and tooth surfaces. The amount of the flowable composite should be enough to cover the wire only in the middle of the crown and not all the way along the crown surface.

Fig 1

fig 2

Fig 3

fig 4

9. Light-cure each tooth for 40 seconds to achieve a final set of the composite(fig 4).

10. Remove the elastics

11. Remove the excess and smoothen the surfaces with the finishing bur(fig 5).

Fig 5

Advantages

1. Simple and effective
2. Less time consuming
3. Economical

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