ISSN 2347-5579

Unique Journal of Medical and Dental Sciences

Available online: www.ujconline.net

Case Report

INDIRECT METHOD OF FIXING LINGUAL RETAINER USING ADDITION POLYSILICONE TRAY

Ajithesh KV[1*], Praveen Shetty[2], Akhter Huasain[3]

[1]Orthodontist, Private Practitioner, India
[2]Reader, Departments of Orthodontics & Dentofacial Orthopaedics, Yenepoya Dental College, Mangalore, India
[3]Professor and HOD, Departments of Orthodontics & Dentofacial Orthopaedics, Yenepoya Dental College, Mangalore, India

Received: 01-10-2014; Revised: 30-10-2014; Accepted: 29-11-2014

*Corresponding Author: **Ajithesh KV**
Orthodontist, Private Practitioner, India

ABSTRACT

When placing a fixed retainer with a direct bonding technique, various materials and methods are used to fix the wire, including dental floss, elastics, ligature wire, wires tack-welded to the retainer and finger pressure. To avoid this, an indirect bonding method was introduced in which the attachment is first fit on to a stone cast and then transferred to the oral cavity with a tray. Addition polysilicones (Memosil®2, heraeus Kulzar, Germany) where used as transfer trays, which are the most stable of all existing materials.

Keywords: Lingual Retainer, Transfer Tray, Addition Polysilicone Tray, Ligature Wire, Fixed Retainer, Light Cure Composite.

INTRODUCTION

Even when excellent tooth alignment and occlusion are obtained through orthodontic therapy, unorganized periodontal fibers, immature bones, and functions not yet adapted to the new form can make these changes hard to maintain. Orthodontists must also consider the dentofacial and dentitional changes during and after normal growth and development. Hence one has to choose an appropriate retention protocol.

When placing a fixed retainer with a direct bonding technique, various materials and methods are used to fixate the wire, including dental floss, elastics, ligature wire, wires tack-welded to the retainer and finger pressure. But contamination of the etched surface or changes in wire position can disturb the contacts, and incorrect placement of the retainer not only puts the stability of the treatment result at risk, but also often leads to failure. To avoid this, an indirect bonding method was introduced in which the attachment is first fit to a stone cast and then transferred to the mouth with a tray. Indirect bonding has several advantages over direct bonding, including correct placement of the attachments, less chair time, and prevention of etched surface contamination. But the method also has some disadvantages: a sensitive technique is required, more laboratory time is needed to fabricate the appliance, and there is some risk of adhesive leakage to gingival embrasures and subsequent oral hygiene problems. We have used Addition polysilicones (Memosil®2,heraeus Kulzar, Germany) as transfer trays, which are the most stable of all the existing materials.

ADDITION POLYSILICONES

Alternate names

- Polyvinyl siloxane.
- Vinylpoly siloxane. Dispensing Method
- Supplied as two paste systems and available in all four viscosities.
- Also available in a single consistency called single phase or monophase material. It can be used both as a tray and syringe material due to pseudoplastic property.

On mixing the two pastes, a platinum catalyzed addition reaction occurs causing cross-linking between the two types of siloxane prepolymers to form silicone rubber. The reaction does not have byproducts which results in a minimum dimensional change during polymerization reaction.

- Mixing time: 35-45 seconds
- Working time: 2-3minutes
- Setting time: 6-8minutes
- No inhibition layer on composite-filling materials
- Excellent elastic recovery of 99.93%
- Low permanent deformation: 0.07%
- High tear strength: 150024300 gm/cm
- Low flexibility: 3%

Addition Polysilicones are the most stable of all the existing materials, as no volatile byproduct is released and hence no shrinkage occurs in the impression.

PROCEDURE AND FABRICATION

A few weeks before debonding, take an impression and pour an accurate cast in hard stone. Placing the fixed lingual retainer before debonding provides several advantages, including avoiding the relapse that might occur immediately after debonding, giving a patient time to adapt to the lingual retainer before debonding, and reducing complications at the debonding appointment.

Gently bend a length of multi-stranded wire to accurately fit the cast. Check the adaptation of the wire to ensure passive location against all tooth surfaces to be retained. Our preferred material is 0.0175 inch multi-stranded wire (Unitek Coaxial, 3M/Unitek, Monrovia, Calif). This 6-stranded wire has a relatively smooth surface conformation and offers increased mechanical retention and enough flexibility to allow physiologic movement of the teeth.

Apply Cold mould seal separating medium to the cast and fix the shaped wire to the cast. Using orthodontic composite (Transbond XT), the retainer wire is adapted on the lingual surface of the cast keeping a distance of at least 1.5mm from the gingival margin and light cure the composite. Then with the help of Addition Polysilicone (Memosil®2,heraeus Kulzar, Germany) we fabricate a tray covering from 4-4.

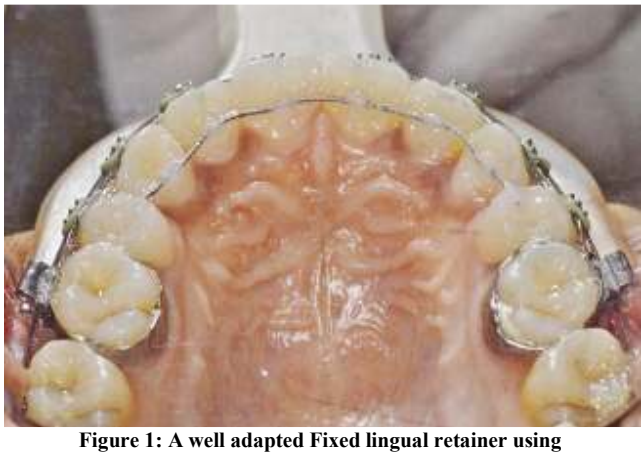

Figure 1: A well adapted Fixed lingual retainer using Addition Polysilicone transfer tray technique.

Figure 2: Before debonding

Method of Fabrication

1) Before debonding the appliance, impressions are made and plaster casts are prepared. The cast should be devoid of air bubbles or chipped incisal edges.

Figure 3: Dental cast impression for the preparation of fixed lingual retainer.

2) The retainer wire is adapted on the lingual surface of the cast keeping a distance of at least 1.5mm from the gingival margin.

Figure 4: Adapt Retainer wire according to the tooth morphology in place.

3) After applying a thin layer of separating medium, the wire is held in place with finger pressure and light cure orthodontic composite (Transbond XT) is applied over the adapted wire to cover a small area in the middle of the tooth maintaining a smooth surface and is light cured.

Figure 5: Fixed Retainer after light cure.

4) After curing the restorative composite, a Addition Polysilicone(Memosil®2 heraeus kulzer) tray of 2mm thickness is fabricated. The entire setup is removed from the cast without any distortion using a sharp instrument.

Figure 6: Addition Polysilicone transfer tray along with Fixed lingual retainer after removal from the dental cast.

5) Any thin layer of the orthodontic composite from the facial surface are carefully trimmed and the retainer is ready for bonding

Clinical Procedure

1) The lingual surface of the teeth to be bonded are pumiced and isolated.

2) After etching for 30 seconds, rinsing and drying, primer is applied on the teeth.

3) A thin layer of composite, the same used in the laboratory (Transbond XT), is spread on all the bonding surfaces of the retainer and is placed on the teeth with light figure pressure using Addition Polysilicone tray(Memosil®2,heraeus Kulzar) as a guide.

4) As very thin layer of composite is used, flash is not seen and the composite is cured.

DISCUSSION

The method described here is easy to follow and allows accurate placement of the retainer. The Addition Polysilicone tray is rigid and do not break during the entire bonding procedure. Here the clinician has good control over the adaption of the bonding composite and less chances of irregular surface, which reduces the chance of plaque accumulation. The method also allows a fast clinical placement of the retainers as a majority of the work is done in the lab and therefore saves valuable chairside time for the clinician.

CONCLUSION

The technique presented here, stabilizes 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 arise during wire positioning before bonding. This technique also allows the clinician the opportunity to check the occlusion and adjust the retainer wire to avoid occlusal interference prior to bonding maxillary retainers. This same clinical strategy can be used to stabilize wires for splinting periodontally affected teeth and traumatized teeth. Addition polysilicones (Memosil®2,heraeus Kulzar, Germany) where used as transfer trays, which are the most stable of all the existing materials.

REFERENCES

1. White LW, A new and improved indirect bonding technique, J. Clin. Orthod. 1999; 33: 17-23.
2. Rakesh Mohode, Minimizing Adhesive Flash During Indirect Bonding of a Lingual Retainer, J. Clin. Orthod. 2012; 46: 233-234.
3. AliIhya Karaman, A practical method of fabricating a lingual retainer, Am J Orthod, 2003; 124: 327-330.

Source of support: Nil, Conflict of interest: None Declared