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A robust method of bonding fixed lingual retainer

S.S. Rana *, O.P. Kharbanda

Division of Orthodontics and Dentofacial Deformities, Centre for Dental Education and Research, All India Institute of Medical Sciences, New Delhi 110029, India

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ABSTRACT

Flexible spiral wire (FSW) is commonly used as a bonded retainer. Accurate and passive placement of a FSW requires a lot of skill and dexterity. Stabilizing the retainer wire with a plier or finger pressure is very demanding and various auxiliaries like elastics, dental floss and silicone transfer tray aid in securing the retainer in place, however their precision is questionable. We used a simple bonding technique, using a laboratory-prepared Memosil 2, is an accurate, effective, and predictable method for bonding fixed multistranded wire retainer.

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1. Introduction

Flexible spiral wire (FSW) is commonly used as a bonded retainer. Accurate and passive placement of a FSW requires a lot of skill and dexterity. Stabilizing the retainer wire with a plier or finger pressure is very demanding and various auxiliaries like Elastics,[1] dental floss[2] and silicone transfer[3] tray aid in securing the retainer in place, however their precision is questionable.

Memosil 2[1] is an elastomer of medium viscosity which is dimensionally stable once it has set in. It also has an advantage that being transparent in nature; FSW is clearly visible during bonding thereby allowing accurate placement over the tooth.

This article describes a simplified technique for fabricating and bonding of lingual retainer of 0.0175 in. coaxial wire[2] using a Memosil 2.

2. Procedure

1. A lower anterior FSW retainer with extension in mesial pit of lower premolars is fabricated using multistrand wire on plaster working model cast, and securing it with Memosil 2 at each end.
2. Tooth pick is cut equal to interpremolar width at mesial pits of lower premolars is cut and placed over the Memosil 2 before it sets (Fig. 1). After that Memosil 2 is smoothened with a finger to a uniform thickness and the whole assembly is removed gently (Fig. 2).
3. After pumicing and isolation of the lingual surfaces of the patients' teeth. Etchants 32–40% orthophosphoric acid for 20–30 s are applied as acid gel or an acid solution and try to restrict the area of etching to only the minimum required. The acid is gently rinsed off after 15–20 s with abundant water supply. After teeth are completely dry and frosty

* *Corresponding author.*
E-mail address: rana.shailu0612@gmail.com (S.S. Rana).

[1] Registered trademark of Heraeus Kulzer, Inc., 99 Business Park Drive, Armonk, NY 10504; www.heraeus-kulzer-us.com.

[2] 0.0175 in. Coaxial wire, 3M Unitek, 2724 S. Peck Road, Monrovia, CA, 91016; www.3Munitek.com.

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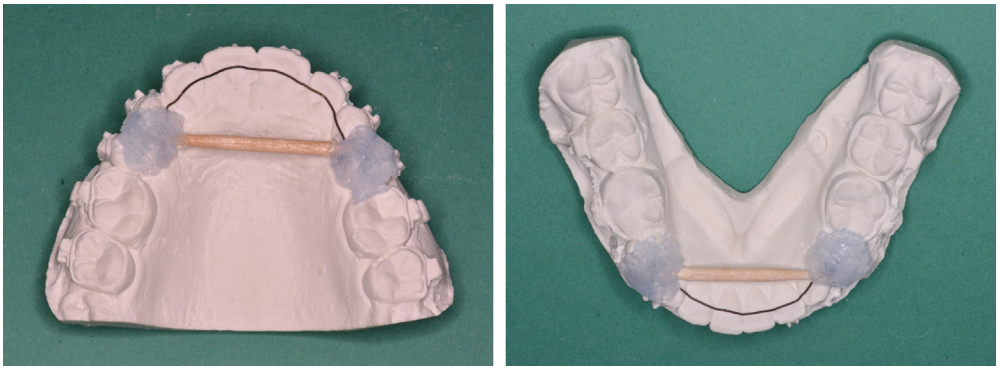


Fig. 1 – Adapted FSW with Memosil 2 and toothpick on patient upper and lower cast.

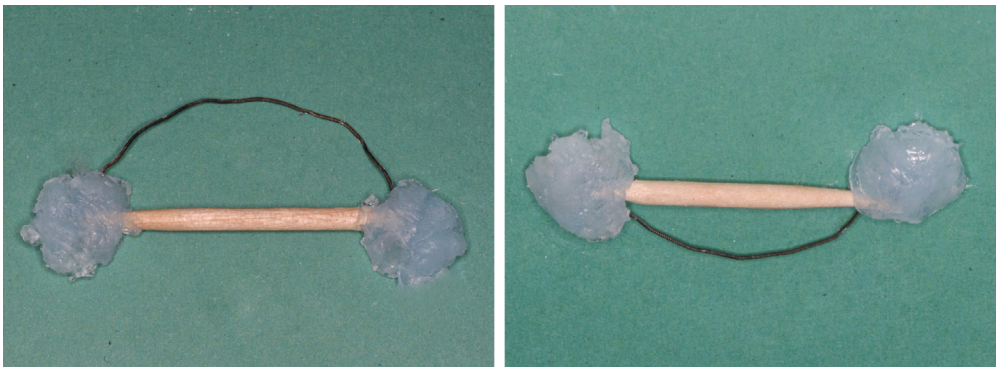


Fig. 2 – Removed assembly of FSW, Memosil 2 and toothpick from patient upper and lower cast.



Fig. 3 – Assembly of FSW, Memosil 2 and toothpick placed on patient upper and lower teeth surface.

white, a thin layer of primer is painted over the entire etched surface. Then assembly is transferred to the patient's mouth, positioned and held with gentle finger pressure and marking were made over the point of contact of FSW on the teeth (Fig. 3). Then composite adhesive[3] is placed onto lingual surface of teeth followed by curing with light emitting diode (LED) unit for the complete polymerisation 20 s per tooth.

4. Memosil 2 with tooth pick is removed and bonding of the FSW at both ends is done followed by smoothening of the lingual surface of teeth (Fig. 4).

3. Discussion

After orthodontic treatment, dental arch length decreases and lowers anterior crowding increases. The ideal alignment maintain by some form of permanent retention.[4,5]

[3] Transbond XT, 3M Unitek, 2724 S. Peck Road, Monrovia, CA, 91016; www.3Munitek.com.



Fig. 4 – Finished lingual bonded retainer on patient upper and lower arch.

After acid etching technique introduction various method suggested for fabrication and bonding of fixed retainers to the lingual surface of lower canines or to the lingual surface of all lower anterior teeth.[6] However, the accurate and passive placement of the retainer has always been a matter of concern. Holding the retainer wire with a 1 plier or finger pressure is especially risky, as any movement during curing can weaken the bond.

Zachrisson introduced flexible spiral wire retainers (FSWRs). These retainers use a multistranded wire and include all anterior teeth.[7] Bonded retainers are commonly used in order to prevent anterior lower arch crowding.[8]

In this method we used 0.0175 in. coaxial wire as a fixed retainer. Many studies show that multistranded FSWs are broadly accepted for routine use in modern orthodontics. Multi-stranded wires used for postorthodontic retention have shown 2-year success rates of approximately 50–90%.[9,10]

Multi-stranded retainers also have suitable efficacy and reliability; hence, they are considered a standard treatment option in modern orthodontics.[11]

Aldrees et al. found greater bond strength values with coaxial wire compared to a solid chain retainer.[11]

We also used MEMOSIL 2's transparency facilitates the positioning of aids. It also used for allows light curing of composites and fillings through the material. The material is best suited for use as an occlusal stamp for light-curing posterior composites, an anterior stamp for provisionals, fillings and veneers, a fixation material for X-ray measuring spheres when planning implants and a transfer matrix for bracket constructions on the plaster model.

In previous methods holding and placing the wire on teeth is very difficult, however we explained a method which has advantage of easy placement of fixed retainer on the tooth using tooth pick and can cure all teeth in one step.

This simple bonding technique, using a laboratory-prepared Memosil 2, is an accurate, effective, and predictable method for bonding fixed multistranded wire retainer.

Conflicts of interest

The authors have none to declare.

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