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Short Communication

An innovative -LBRPIN

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Abstract

A fixed lingual retainer is a common method for maintaining incisor alignment following orthodontic treatment. Over the years, various techniques have been developed to effectively bond retainer wires, with the proper stabilization of these wires being a crucial step for orthodontists to prevent relapse. This study introduces a custom-made device designed to simplify fabrication, securely stabilize the retainer wire along the contours of the palatal surface, and reduce the risk of iatrogenic damage to adjacent soft tissues during the bonding process.

Keywords: Lingual bonded retainer, Lingual bonded retainer device, LBR pin, Lingual bonded retainer stabilizer.

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1. Introduction

"Relapse has been a significant concern in orthodontics since its inception, drawing considerable attention from practitioners.[1] Fixed retainers are typically bonded to the lingual surfaces of the teeth following the removal of labial appliances. Nevertheless, retainer breakage can occur, necessitating repairs and making the rebonding of a lingual retainer particularly challenging. Over the years, various direct and indirect techniques have been developed for bonding fixed retainers, employing wires of different diameters and alloys.[9] The indirect method, in particular, involves intricate laboratory processes to accurately position the retainer wire on the tooth surface. Although several techniques, such as using fingers, dental floss, or orthodontic elastic ligatures, have been proposed to stabilize the wire during bonding, these approaches often come with significant limitations."[2,3]

"A fixed lingual retainer is a widely used method for maintaining incisor alignment after orthodontic treatment. A major challenge orthodontists face is achieving proper stabilization of the retainer wire to prevent relapse. This study presents a custom-made device designed to address this issue. The device is easy to fabricate, ensures secure stabilization of the retainer wire along the palatal surface contours, and reduces the risk of iatrogenic damage to surrounding soft tissues during the bonding process. Over the years, Three techniques have been proposed for bonding the lingual retainer wire.(**Figure 1**, **Figure 2**, **Figure 3**)

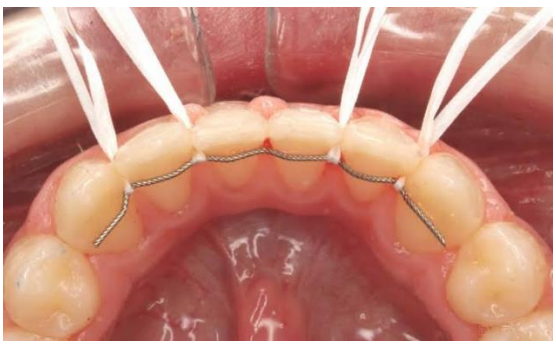

Figure 1: Using dental floss-23 minutes[9]

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Figure 2: Using separator - 22 minutes

Figure 3: Using fingers -28 minutes widely use technique

To overcome these problems, a new device which we named "LBRPIN" have been developed, the procedure is as follows:

2. Materials

1. 0.8 mm round stainless steel (SS) wire – Used as the pin.
2. Universal plier – For bending and shaping the wire.
3. Orthodontic cutter – To cut the wire to the desired length.
4. Flowable composite – Used for bonding the retainer wire to the teeth.
5. Twisted 0.010" ligature wire or multistrand wire – For stabilization or securing the retainer wire.(**Figure 4**)
6. Curing light gun – To cure and harden the flowable composite during bonding.

2.1. Purpose of innovation

1. Reduce Orthodontic relapse.
2. Reduce contamination of saliva and chair-side time.
3. Easy to stabilize & fabricate.
4. Prevents any damage to the adjacent soft tissues during the bonding process.
5. Cost effective.
6. Easy to design.

2.3. Method of fabrication

Prepare a maxillary and mandibular working model. With 0.7 mm round SS wire, prepare Traiangle shaped wire bending on labial and lingual surface teeth.

*2.4. Clinical Procedure (**Figure 6**a,b)*

1. Take Impression and Prepare Model**:** After debonding, take an impression of the arches and prepare a working model.
2. Adapt Ligature Wire**:** Adapt the twisted 0.010" ligature wire or multistrand wire along the lingual surface of the anterior teeth on the working model.
3. Pumice Polishing**:** Perform pumice polishing of the lingual surfaces of the teeth where the retainer will be bonded.
4. Check Wire Position**:** Adjust and check the position of the retainer wire (twisted 0.010" ligature wire or multistrand wire) in the patient's mouth, making adjustments if necessary.
5. Place LBRPIN**:** Position the LBRPIN to hold the retainer wire securely in place.(**Figure 5**)
6. Isolation and Bonding**:** Follow proper isolation and bonding protocols to ensure long-term stability of the retainer wire.
7. Adhere Retainer Wire**:** Bond the retainer wire using composite, preferably flowable composite.
8. Light Curing**:** Cure the composite for 20 seconds from both the mesial and distal sides.
9. Cut Ligature Wires and Remove LBRPIN**:** Cut the ligature wires and disengage the LBRPIN.
10. Post-Insertion Instructions**:** Provide the patient with post-insertion care instructions.(**Figure 7**a,b)

Figure 4: Lingual view

Figure 5: Labial view

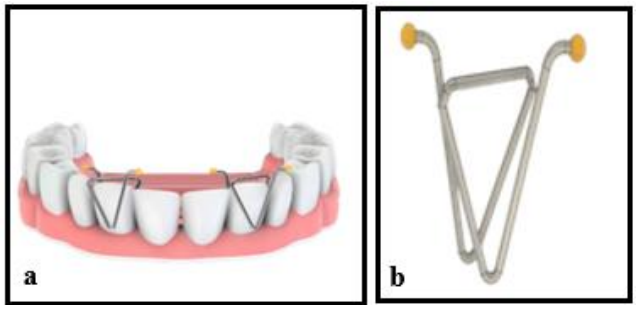

Figure 6: a: Placement of LBRPIN; b: 3D design

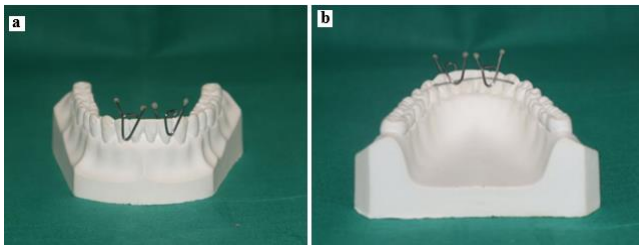

Figure 7: a: Labial view on cast; **b:** Lingual view on cast

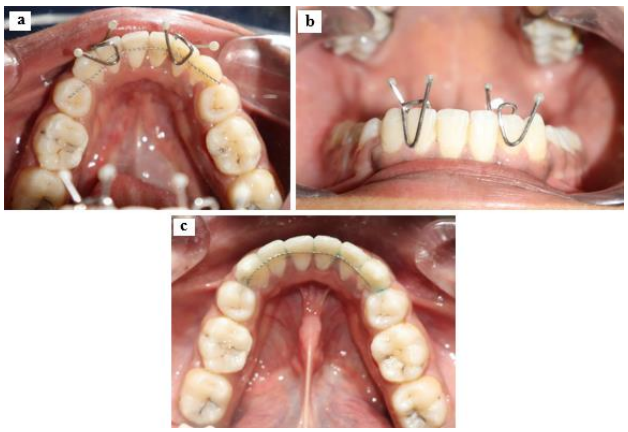

Figure 8: a: Lingual view on patient; **b:** Labial view on cast; **c:** After bonding

2.5. Advantages

1. Versatile Application**:** Ideal for cases requiring bonded retainers or repairing broken retainers.
2. Secure Adaptation**:** Ensures the retainer wire is well-adapted at each contact point, providing superior stability compared to other methods (**Figure 5**).
3. Efficient**:** Reduces material usage and saves time during the bonding process.
4. Universal and Customizable**:** Can be universally applied or custom-fabricated to suit specific cases.
5. Easy Fabrication**:** The appliance is simple to fabricate, making it user-friendly for orthodontists.
6. Unobstructed Visibility**:** Does not hinder the operator's visibility during the bonding process.
7. Simultaneous Bonding**:** Allows all teeth to be etched and bonded with adhesive at the same time, improving efficiency

2.6. Indication

1. Periodontal Splinting
2. LBR
3. To stabilize avulsed tooth

3. Discussion

This custom-made device represents a straightforward clinical innovation aimed at securely stabilizing the retainer wire.[4,5,6,7,8,9] It allows orthodontists to achieve more efficient bonding with reduced chair-side time and improved patient comfort. Its key advantage lies in its simplicity, as it eliminates the need for complex laboratory procedures and minimizes the risk of iatrogenic damage to surrounding soft tissues. Cost of my appliance is 1.75rs. This is the world smallest appliance to reduce orthodontic relapse.(**Figure 8**a,b,c)

4. Conclusion

This device secures the retainer wire to the contours of the palatal surface of the teeth, stabilizing it in the desired position during bonding. This simple, innovative approach is easy to fabricate, highly effective, and helps reduce chair-side time.

5. Source of Funding

No funding.

6. Conflict of Interest

None.

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