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Labial Reduction Guide for Laminate Veneer Preparation

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Abstract: This article describes a method of fabricating a labial reduction guide for laminate veneer preparations by using a digital tire tread depth gauge and orthodontic wire. The labial reduction guide can help clinicians to achieve accurate reduction of the labial surface.

Introduction

Minimally invasive porcelain laminate veneers have become a popular option in esthetic dentistry.¹ Porcelain laminate veneers require only 25% to 50% of the amount of tooth reduction required for complete-coverage restorations.² Nevertheless, adequate labial reduction is important in creating optimal esthetics. However, excessive reduction can lead to compromised bond strength due to penetration of the enamel surface.³ Typically, the appropriate

reduction is determined from a diagnostic waxing; then a silicone index or thermoplastic matrix is made to guide preparation.

Verifying the amount of reduction during tooth preparation from the guide can be problematic as the range of labial reduction for laminate veneers is small (0.3 mm to 0.9 mm). Freehand labial reduction can result in insufficient tooth removal.⁴

The purpose of this article was to describe the fabrication and use of a labial reduction guide (LRG) for laminate veneers.

Technique

1. Obtain a digital tire tread depth gauge (Tresna D06; Guilin Guanglu Measuring Instrument Co, Ltd) (Fig. 1).
2. Sharpen the tip of the depth bar to minimize the surface contact area (Fig. 2).
3. Bend a rectangular (0.017× 0.025 inch) wire (Resilient Rectangular Wire; 3M Unitek) (Fig. 3A). Then adjust the thickness (0.3 mm) of the wire tip and place the wire on the protective plate (Fig. 3B).
4. Attach the wire to the protective plate with electrical solder (WLC100 Soldering Station; Weller).
5. Zero the instrument by placing the 2 tips on a flat surface and push the zero set button (Fig. 4).
6. Insert the tips of the LRG into the reduction area between a silicone matrix (Aquasil Putty; Denstply Intl) and the labial tooth surface and gently push the depth bar until the tip of the bar touches the tooth (Fig. 5A). Alternatively, a thermoplastic sheet (Temporary Splint material Clear Stiff 5"x5", .020" thickness; Patterson Dental) with vertical slots can be used to evaluate the tooth preparation with the labial reduction guide (Fig. 5B).
7. Read the measuring value and add 0.3 mm (thickness of the wire tip) from the number: This shows the actual labial reduction value of that area.

Discussion

The LRG should be used with either a silicone index or thermoplastic matrix with vertical slots in order to calculate the actual

reduction amount by using a simple formula: actual reduction amount = measuring value + 0.3 mm.

The advantage of the LRG is it can measure the reduction amount to within 0.1 mm with the digital measurement feature. More accurate and precise preparation can be achieved when the LRG is combined with a silicone index. In addition, when the LRG is combined with a thermoplastic matrix, the LRG can move from the cervical to the incisal area to measure the reduction amounts of the entire labial surface, which allows more accurate verification of reduction amount.

However, the LRG is not easily sterilized and, except the tips, should be covered with a plastic bag to prevent contamination.

Summary

This article described a method of fabricating a labial reduction guide for the laminate veneer preparation by using a digital tire tread depth gauge and an orthodontic wire. The labial reduction guide can help clinicians achieve an accurate reduction amount of labial surface preparation.

References

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Legends

Fig. 1. Digital tire tread depth gauge.



Fig. 2. Pointed tip of depth bar. A, before modification. B, after modification.

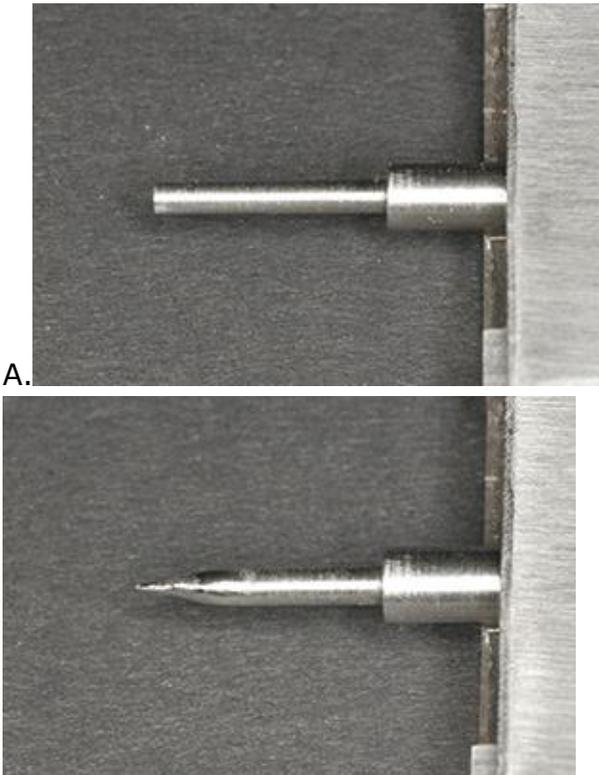


Fig. 3A. Bending rectangular orthodontic wire (0.017×0.025 inch).

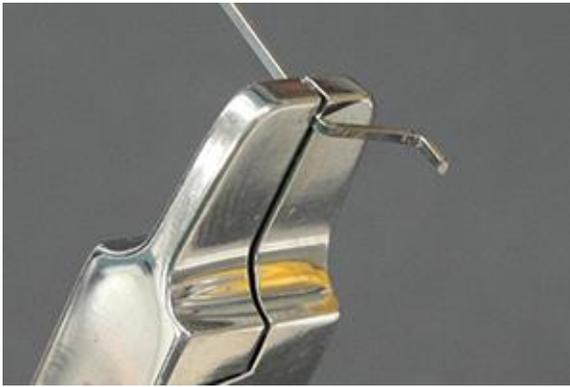


Fig. 3B. Wire adjusted to 0.3 mm thickness and placed on protective plate.



Fig. 4. Two tips placed on flat surface for zero setting.

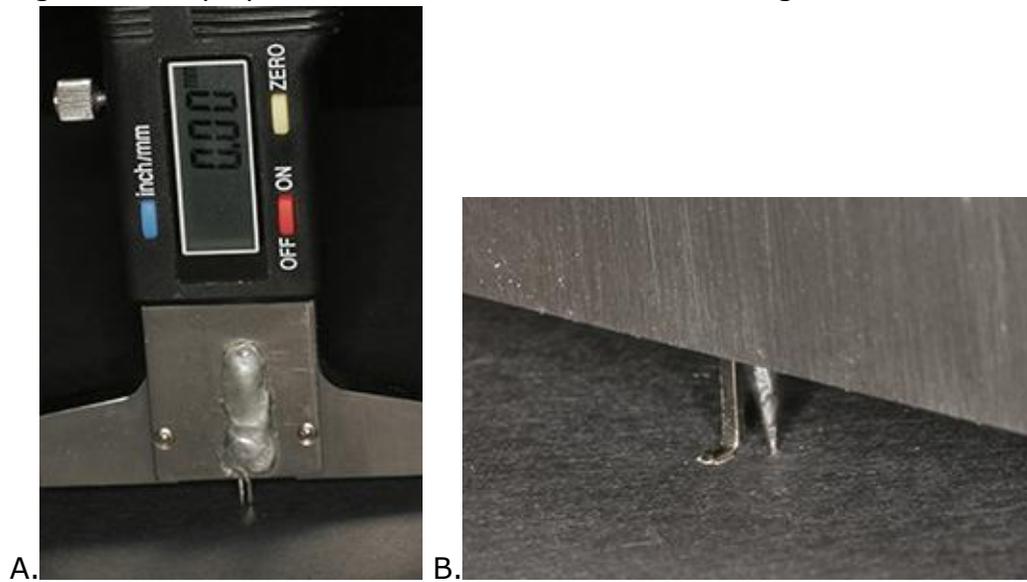


Fig. 5. A, Tips of LRG inserted between silicone matrix and labial tooth surface. B, Tips of LRG inserted through vertical slot of thermoplastic matrix.

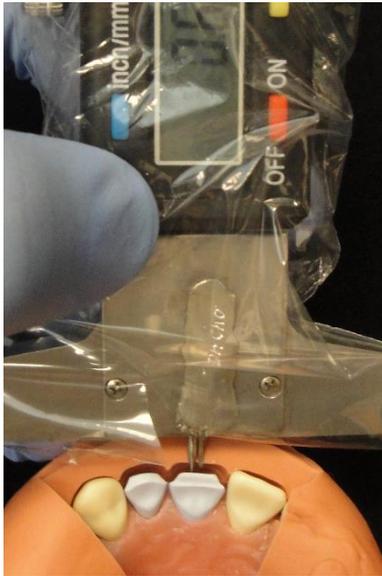


Fig. 5B.



Fig. 6. Reading mechanism of LRG: Note formula, actual reduction amount = measuring value + 0.3 mm.

