



## Measuring Bonded Lingual Retainers

**M**ultistranded lingual retainers are commonly “eyeball” measured for length during bonding, which can result in a retainer that is too long or too short. The time needed to cut a new retainer wire extends the bonding appointment and may result in a loss of isolation. This Pearl provides a simple method for accurately measuring the length of a lingual retainer by using the labial surfaces of the teeth as a guide. A video of this technique can be viewed on JCO’s Facebook page.

### Technique

The lingual arc length of the anterior teeth is approximately 80% of the labial arc length. This formula can be explained by reviewing two basic geometric equations, considering the arc of the teeth as a semicircle:

$$\text{Arc length} = 2\pi r \times (\theta/360),$$

where  $\theta$  represents the central angle.

$$\text{Difference in arc length} = (r_2 - r_1)/(2\pi\theta/360).$$

The difference in radii ( $r_2 - r_1$ ) is attributable to the thickness of the teeth (A).

To determine the length of a lingual retainer wire by measuring along the labial surfaces, we use the labial arc length from the midpoint of one end tooth to the mesial embrasure of the other end tooth. For example, a lower 3-3 lingual retainer is measured along the labial surfaces from the midpoint of one canine to the embrasure between the opposite lateral incisor and canine (B). This length

will be the same as the lingual length from the midpoint of one canine to the midpoint of the other (C), thus compensating for the thickness of the teeth.

Our technique works equally well for the maxillary arch. For example, a lingual retainer extending from lateral incisor to lateral incisor is measured along the labial surfaces from the midpoint of the lateral incisor to the mesial embrasure of the opposite lateral incisor.

In our offices, this procedure is delegated to a technician, who has the retainer measured and cut before the doctor arrives at the chair.



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