A Simplified Guide for Arranging 30° Pilkington Turner Posterior Denture Teeth in a Balanced Occlusion

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A simple technique is presented for achieving balanced occlusion when setting 30° Pilkington-Turner teeth. This technique involves the rotation of the mandibular posterior teeth around three axes: the vertical axis, to align the grooves and embrasures with the lateral path of the movement of the cusps; the mesio-distal axis, to achieve the Curve of Wilson; and the bucco-lingual axis, resulting in the Curve of Spee.

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FOR MOST dentists, arranging denture teeth represents a rite of passage in dental school. For technicians, it is a task often performed with little rationalization or guidance. In the dental school environment, arranging denture teeth assists the student in visualizing and understanding the required concepts, and may be especially important for those who are visual learners. This is also an exercise that, while familiarizing students with prosthetic materials, can also improve perceptual motor skills. Arranging teeth can be of great use to the practicing dentist as well. The dentist is the person best qualified to select teeth that will not abuse the tissues and will allow the patient to function well, speak normally, and present an esthetically pleasing appearance.[1] Often, in a clinical situation, the treating dentist must modify the arrangement received from the laboratory. When this is necessary, it is important that the dentist knows how to achieve a balanced occlusion. Most importantly, however, it must be stressed that the tooth arrangement on the articulator must accurately model the tooth position in the mouth. If it does not, the casts must be remounted. Arranging prosthetic teeth in the mouth is a recipe for disaster, because movement of the dentures on soft tissue is unpredictable; therefore, a clinical remount of the wax trial denture is recommended to ensure accuracy.[2]

A number of advantages have been attributed to cusped posterior denture teeth set in a balanced arrangement. Although this includes (among other factors) slightly better chewing efficiency, there appears to be little data supporting one tooth form over another, other than to support different concepts of occlusion.[3] A balanced occlusion can help maintain the stability of the denture and ensure even pressure on the residual ridges. Since stability of the dentures is of utmost importance, a balanced occlusal scheme may often be recommended for the completely edentulous patient.[4]

One of the more difficult problems confronted by students and practitioners is how to position teeth to achieve a balanced occlusion. One technique involves arranging the maxillary posterior teeth first against the mandibular occlusion rim formed to the proper occlusal plane. This is accomplished by determining the reference marks representing the crest of the ridge and the pear-shaped pad using a pencil and a transparent ruler on the mandibular cast. The record base is then placed on the cast, and a line scribed on the posterior occlusal surface representing the crest of the

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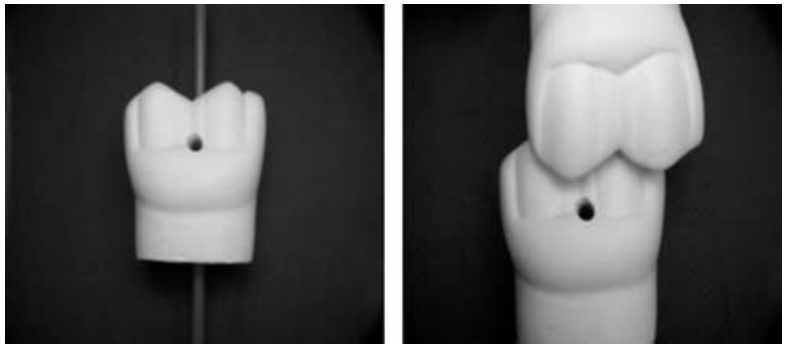

Figure 1. Rotation of the tooth on the vertical axis.

mandibular ridge. The maxillary premolars and molars are then set to establish the proper bucco-lingual position and to develop the Curves of Spee and Wilson as recommended by Dentsply for setting Pilkington-Turner teeth.[5] After the maxillary posterior teeth are set, the mandibular first molar is arranged to balance in all excursions. In this last procedure, many experience difficulty in conceptualization and execution of optimal placement and intercuspation. The following teaching technique may help facilitate mastery of the concepts and procedure for correctly arranging a balanced occlusion using 30° (Pilkington-Turner) prosthetic teeth.

Technique

1. To accomplish optimum interdigitation, rotate the tooth around a vertical axis as depicted in Figure 1. This serves to align the grooves and embrasures with the lateral path of movement of the cusps. Usually, the mesial of a tooth must be rotated towards the buccal.
2. To accomplish the optimum balance, rotate the tooth around the mesio-distal axis as depicted in Figure 2. This serves to align the cusp incline to the effective cusp angle necessary for balance, resulting in the compensating curve.
3. To achieve optimum balance, rotate the tooth around the bucco-lingual axis as depicted in Figure 3. This serves to align the cusp incline to the effective cusp angle necessary for a compensating curve during protrusive movement.

Discussion

Visualization of necessary movements facilitates faster correction of occlusal discrepancies and better communication between the dentist and the laboratory technician. The same concepts apply to the arrangement of denture teeth of varied cusp angles where a balanced occlusion is chosen.

Acknowledgment

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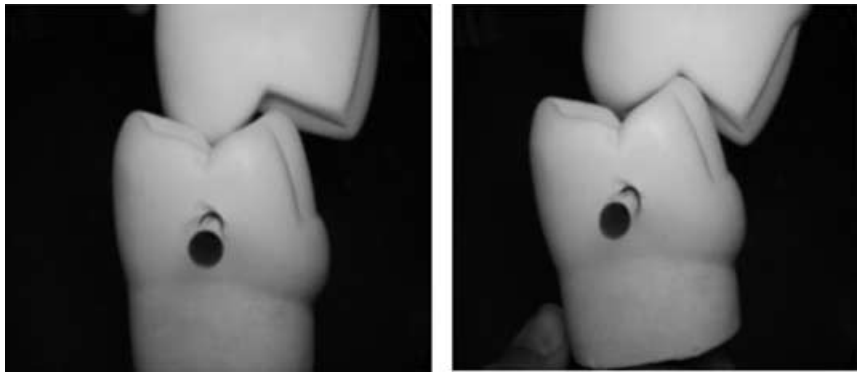

Figure 2. Rotation of the tooth on the mesio-distal axis.

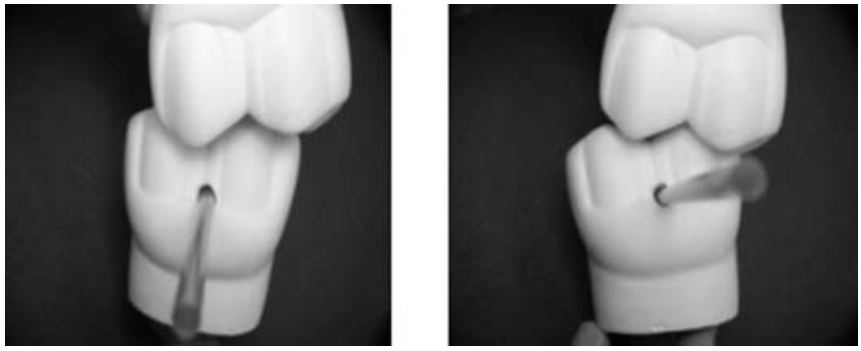

Figure 3. Rotation of the tooth on the bucco-lingual axis.

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