



Robert Kreyer, CDT

# Increase denture efficiency

Three-in-one denture teeth segmental design speeds set-up.

**We have all at one time** or another thought, "I wish there were a way to set complete denture teeth faster and more efficiently." My father and grandfather, who both worked in high-production dental laboratories that produced an average of 50 dentures per day, were always searching for innovative techniques to set posterior denture teeth faster with consistent results.

In a dental laboratory with a business model geared toward high levels of production, a dental technician's training, time efficiency, and consistency are critical to profitability.

It is in the memory of my father's and grandfather's aspirations for a more efficient and productive posterior tooth form that I write this article on denture occlusion.

### PREVIOUS POSTERIOR FORMS

Attempts by manufacturers in the past to link posterior denture teeth together to speed up the setting process resulted in linking the posteriors with wire as well as offering mass blocks of acrylic resin in non- and semi-anatomic tooth forms. The "block tooth" approach often meant the original appearance of individual teeth was lost. Linking teeth together also made it extremely difficult, if not impossible, to harmonize the esthetic transition from the anterior to the posterior. Function became altered because the block teeth did not provide the ability to establish a curve of Spee, and the occlusal schemes were limited primarily to flat plane occlusion. Until now, the attempt to link posterior denture teeth in a solid form has not

proved successful primarily due to compromised esthetics and function.

### TRIO'S INNOVATIVE FORM

Recently, I beta-tested a new posterior tooth form from Ivoclar Vivadent called BlueLine Trio, which was introduced at the Cal-Lab meeting in Chicago in February (see First Look on page 10). The Trio denture tooth system provides a three-and-one delivery form in both lingual and semi-anatomic occlusal schemes.

At first, I was skeptical of this concept due to the failed previous attempts to link posterior denture teeth, but after looking at Trio posterior teeth from the perspective of a student learning posterior denture occlusion for a complete maxillary and mandibular set-up, I could definitely see the

## ○○○ CREATING FULL DENTURES WITH TRIO



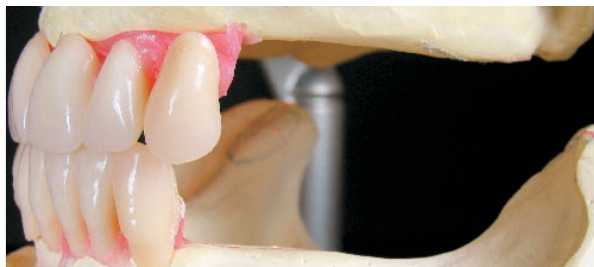
**Fig. A** The lower set of posterior teeth is conventional OrthoLingual, and upper set is TrioLingual. Note the pre-designed compensating curves and segments in Trio Lingual. Imagine picking up and setting eight teeth with conventional arrangement or four with segmental set-up.



**Fig. B** The lower set of posterior teeth is conventional OrthoTyp, and upper is TrioTyp. Note the pre-designed compensating curves and segments in TrioTyp.



**Fig. C** The inter-residual space between this edentulous maxillary and mandibular illustrates the difficulty in visualizing the occlusal plane and establishing compensating curves in negative space.



**Fig. D** I set the anterior teeth without a baseplate to illustrate the negative space as we set the TrioTyp posteriors and establish the plane of occlusion and compensating curves.



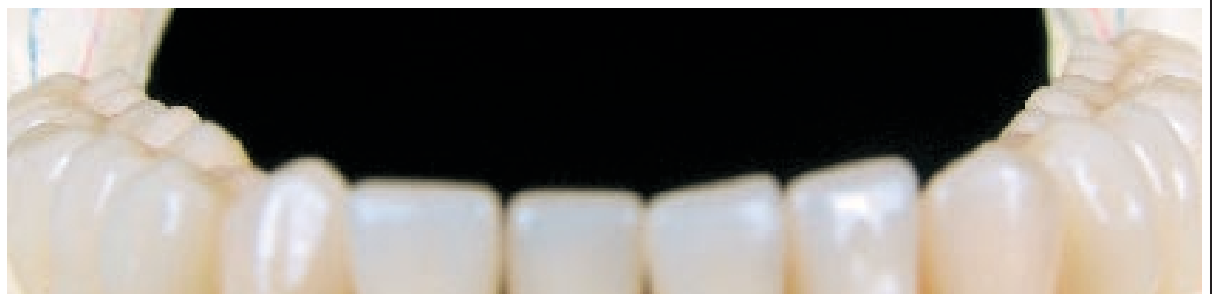
**Fig. E** The first bicuspid is set and placed in its proper position and becomes the transition tooth from anterior esthetics to posterior function.



**Fig. F** The TrioTyp segment is set and placed in its proper position creating the plane of occlusion and compensating curves. With two hand movements the mandibular left side is set and ready to wax to baseplate.



**Fig. G** The maxillary four OrthoTyp teeth are set and placed in their proper occlusal position filling in the negative inter-residual space as shown in Fig. C.



**Fig. H** The marginal ridge height from the transitional first bicuspid to mesial of second molar is easy to align with Trio. Raising or lowering each individual tooth to achieve this even plane will no longer be necessary thus improving technical efficiency and consistency.

advantages of using such a tooth form.

First of all, having the mandibular first premolar "unattached" enables a smooth esthetic transition from anterior to posterior teeth as opposed to having all four posterior teeth in one "block". Having three teeth segmented together with the compensating curves of Spee and Wilson "pre-designed" into the segment was also very important (Figs. A and B). I firmly believe the Trio segment will greatly reduce denture occlusion education time and increase a denture technician's level of competence.

**TRIO SEGMENTAL SET-UP**

Denture setup using conventional methods is very time-consuming and requires specific knowledge and additional training in functional denture occlusion. The compensating curves pre-designed into the Trio segments allow more setup accuracy and consistency than could possibly be attained by individual tooth placement. Also, the proper positioning of the Trio is one effortless movement instead of three individual placements.

Occlusion for mandibular tooth segments is easy and predictable using anatomical landmarks as guides. The plane of occlusion is an imaginary line that runs from the distal incisal edge of the canine to two-thirds up the retromolar pad.

Determining the proper plane of occlusion within the inter-residual space is critical to establishing the compensating curves of Spee and Wilson (Fig. C). Because compensating curves are pre-designed into the Trio segment, there is a significant savings in set-up time (Figs. D, E, F and G).

The Plane of Occlusion also plays an integral role in esthetic smile design (Fig. H). Whether you set the mandibular posteriors first or maxillary posteriors first, this segmental setup with Trio teeth will enhance your productivity.

**OTHER TRIO ADVANTAGES**

Because the Trio tooth segments come as three posterior teeth, it is no longer necessary to spend excessive time adjusting individual tooth movement after waxing to create an even, smooth transition of marginal ridges and central fossa.

During flasking procedures after boil-out, the problem of individual mandibular posteriors popping out of the negative index is eliminated as the Trio is more retentive in the indexed mold. After processing, the Trio posterior teeth will have a more retentive bond to the denture base and individual teeth will not pop out due to occlusal forces.

This segmental set-up can be used with any articulator system including semi-adjustable, average value, and straight line hinge.

**TRIO INDICATIONS**

This Trio segmental set-up technique is primarily designed for complete maxillary and mandibular dentures. Trio could be used for partial dentures when denture teeth oppose each other as in bi-lateral distal extensions. However, Trio is not

indicated for partial or complete dentures opposing natural dentition due to the wide variations of natural tooth positions.

The growing demand for removable complete denture prosthetics coupled with a decreased supply of qualified removable prosthetic technicians requires that labs look for ways to increase efficiency and productivity

while decreasing the learning curve for complete denture set-ups. Trio will be beneficial to production for removable prosthetics, enhancing complete denture prosthetic productivity while achieving predictable results.

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