

## Clinical Technique/Case Report

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# Technique to Enhance Skill in Forming Posterior Composite Anatomy

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### INTRODUCTION

It is increasingly common for dentists to place resin-based composite restorations in posterior teeth.<sup>1,2</sup> As the quality of these materials continues to improve, dentists may desire more often to restore an extensive amount of the occlusal surface with composite. Many practicing dentists have never had the opportunity to enhance their skills in creating cusps, contours and anatomy with composite material in a bench-top situation.

### PURPOSE

This article describes a simple, inexpensive technique that practicing dentists and dental students can use to develop their skills for creating contours and anatomy in composite restorations in a bench-top situation. This method involves reducing the occlusal portion of a mounted dental stone cast tooth, applying resin adhesive to the reduced stone surface, incrementally adding composite material to restore the occlusal surface (Figure 1) and adjusting the occlusion with the oppos-

ing cast. This inexpensive technique is used at the University of Texas Health Science Center at San Antonio (UTHSCSA), San Antonio, TX, USA, in which freshmen dental students are taught to develop and refine their skills in forming the occlusal anatomy using resin-based composite restorative material during their course in Dental Anatomy and Occlusion.

### DESCRIPTION OF THE TECHNIQUE

Mount dental stone casts in maximum intercuspation position (MIP) on an articulator. On one of the dental stone casts, reduce 3 mm of a tooth's occlusal portion with a bur or heatless wheel and smooth any rough edges with a knife blade. Apply resin adhesive to the stone surface where the composite will be added (etchant and primer are not necessary) and light cure. Incrementally add composite to the reduced tooth surface and light cure in layers that are no thicker than 2 mm. Any resin adhesive and composite may be used.

Composite is added with a push-pat technique, pushing the composite to the desired location and repeatedly patting to fully adapt it to the adhesive-covered stone or previously polymerized increment of composite. This is performed with only room light, because the bright overhead dental light may cause the material to prematurely set. In the course, students are instructed to build the anatomy to be a mirror image of the anatomy in the uncut tooth on the opposite side of the arch. This

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DOI: 10.2341/08-31

will generally provide the desired occlusal architecture, that is, outline form, cusp and triangular ridge location and prominence, and degree of occlusal wear.

At UTHSCSA, this procedure is taught in conjunction with occlusal concepts, so that students can use mounted casts and also reestablish ideal occlusal contacts in MIP and posterior disocclusion in eccentric excursions. The students first identify the occlusal contacts that should be established, then, for each planned contact, they place a 1-mm diameter composite cone that extends from the trimmed stone to the opposing tooth, and they light cure the cones while the casts are in MIP. It has been observed that, if uncured composite cones touch the opposing cast, the cones will momentarily adhere to the opposing cast as the casts are separated from MIP and be elongated. Therefore, when these elongated cones are cured, they will then interfere with articulation of the casts in MIP. Curing the cones while the casts are in MIP prevents elongation.

A thin, black articulating ribbon is used to mark each cone's contact, and composite is sculpted around each cone in building the tooth's anatomy, but not over the black marks. The composite is added using the push-pat technique and is light cured in layers that are no greater than 2 mm. Once the desired anatomy is formed and light cured, there is generally composite in regions that interfere with the casts occluding in MIP. These areas are marked using a thin, red articulating ribbon and reduced with a #7404 finishing bur. This is repeated until the composite's occlusal marks are limited to the established MIP contacts; excursive movements are then similarly marked and adjusted. Once the composite has the desired form, a composite polishing system is used to polish the composite.

#### List of Materials Used

- Maxillary and mandibular dental stone casts
- Articulator
- Acrylic bur or heatless wheel
- Handle and #25 knife blade
- Any resin adhesive and composite
- Instrument preferred to push/pat (shape) the composite
- Curing light
- Thin black articulating ribbon
- Thin red articulating ribbon



Figure 1. The second premolar and first molar restored with resin-based composite restorations.

- #7404 finishing bur or other preferred bur for refining occlusion
- Preferred composite polishing system

#### Potential Problems

There have been reports of contact dermatitis from handling resin-based composite restorative materials.<sup>3</sup> When placing and forming the composite material, it is recommended that direct contact with the material be avoided by wearing gloves or limiting contact to the dental instruments.

Many dentists and dental students are in the habit of using the overhead dental light. If the overhead dental light is used in the bench-top situation, it often causes premature curing of the composite. Therefore, it has been found that the greatest amount of working time is achieved if only ambient room light is used.

#### SUMMARY OF ADVANTAGES AND DISADVANTAGES

This is a simple, inexpensive technique that practicing dentists and dental students can use to enhance their skills for creating cusps, contours and anatomy with composite restorations in a bench-top situation.

(Received 4 March 2008)

#### References

1. Haj-Ali R, Walker MP & Williams K (2005) Survey of general dentists regarding posterior restorations, selection criteria, and associated clinical problems *General Dentistry* **53**(5) 369-375.
2. del Aguila MA, Anderson M, Porterfield D & Robertson PB (2002) Patterns of oral care in a Washington State dental service population *Journal of the American Dental Association* **133**(3) 343-351.
3. Tang AT, Björkman L & Ekstrand J (2000) New filling materials—an occupational health hazard *Annals of the Royal Australian College of Dental Surgeons* **15** 102-105.