

Technique Tips – Composite Edge Bonding – the Reverse Triangle Technique

Composite has seen a strong renaissance in recent times with a large variety of materials appearing on the market packed with claimed improvements in handling strength and appearance. We do not need scientific data to appreciate that the latter claim is true. Appearance and the ability to blend composite to tooth structure certainly is better than materials of earlier generations. Much of this is down to the material properties, meaning that layering techniques can be simpler. Simplicity brings many benefits not just to the dentist but very much also to the patient. This is because many dentists in the past have not had the confidence to lengthen teeth with composite and instead have used porcelain.

Now the consequences of this are far reaching, because of the biological sacrifice required, the actual cost and, very importantly, the fact that many patients cannot afford it and, as a result, suffer further tooth substance loss (TSL) because

there seems to be no simple solution and, as a result, many patients are simply left with their teeth wearing.

This technique tip will look at a simple practical method to bond composite with virtually no preparation and just two layers of material. Being able to do this means that patients can have aesthetic and functional improvements quickly and effectively. It can be used to execute the Dahl principle,¹ provide a mid-term solution in aesthetic cases where patients are concerned about irreversible changes, and vary the patient's functional guidance in patients needing restorative treatment.²

The reverse triangle technique (Figures 1–3)

This particular technique utilizes the properties³ of nano-hybrid composites, such as Venus Pearl and Diamond (Heraeus Kulzer, Newbury, UK), to

create simple aesthetic and strong outlines that can enhance aesthetics and functional guidance. It involves using primarily a simple layer of dentine (OM, OL, OB) as the back shell and base – then placing a reverse triangular layer of enamel on the facial surface – so effectively the dentine is thicker at the join and thinnest at the tip, while the enamel is thickest at the tip and thinner at the join. This helps to block out light and masks the typical grey join line that can appear with thin edge tips.

Case 1

This 28-year-old patient complains of some old chipped worn composite on her upper front teeth. The sequence of treatment was as follows:

1. Previous material is removed which was seemingly placed with a bevel. With this technique bevels are not required (Figure 4).

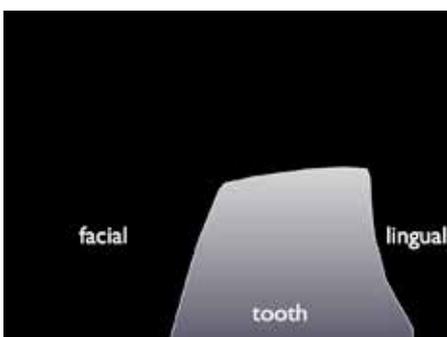


Figure 1. Cross-section of tooth.

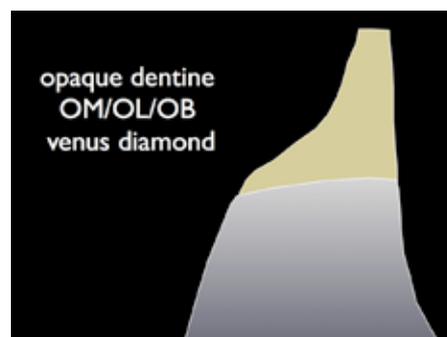


Figure 2. Dentine layer.

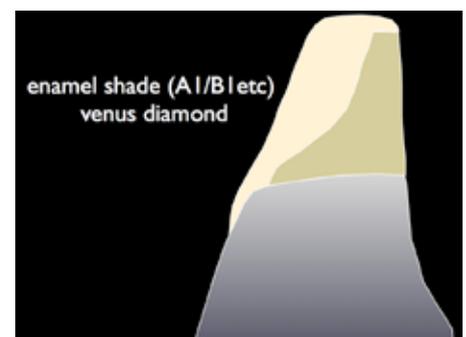


Figure 3. Enamel layer.



4



5



6



2. *Total Etch* on prepared enamel 20 sec; on unprepared enamel 60 sec (Figure 5).
3. Wash thoroughly (Figure 6).
4. Bonding agent applied (*Optibond FL*) and cured (Figure 7).
5. OL dentine Venus Diamond applied (thickest at the join, and thinnest at the tip (Figure 8) (for a tip less than 2 mm the whole dentine layer is built in one go to get a single-bonded surface and minimize air traps).
6. B1 Venus Diamond applied (thickest at the tip, thinnest at the join to blend in; again the whole window is built in one

- go to minimize air traps) then gently brushed to feather in (Figure 9).
 7. Simple primary anatomy created following line angles and anatomy (Figure 10).
 8. Polishing vertically with silicone discs (Venus Polishing Kit) (Figure 11).
 9. Buffing with *Enamelize* and *Flexibuff* discs (Cosmedent, Chicago, IL) (Figure 12).
 10. Final (Figure 13).
 11. Recheck and re-polish between 1 week – 1 month (Figure 14).
- Some further cases have been

included to show potential case types and longer-term follow-up with edges requiring minimal maintenance.

Case 2

- Figure 15 – Before.
- Figure 16 – After edge bonding and whitening.
- Figure 17 – 3 years review showing upper/lower edges.

Case 3

- Figure 18 – Before.



Figure 19 – After 8 years lower composite edges to Dahl case open (one upper lateral and minimal upper alignment).

Figure 20 – After 8 years.

Case 4

Figure 21 – Before treatment.

Figure 22 – Immediately after treatment: temporary composite build-ups to intercept wear and temporary bridge placed.

Figures 23, 24 – Patient returned after 13 years without seeing a dentist in that time.

Discussion

Composite edges, even with older less aesthetic materials, can provide long term success for many patients, not only improving appearance but as an interceptive tool to help prevent functional breakdown in cases that might otherwise have been treated with multiple ceramic units. Every dentist has the ability to place composite directly and the materials emerging now are making that process easier and more accessible for patients.

References

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2. Thornton LJ. Anterior guidance: group function/canine guidance. A literature review. *J Prosthet Dent* 1990; **64**(4): 479–482.
3. Weston JF. Predictable nanohybrid composite systems and techniques for anterior and posterior direct restorations. *Compend Contin Educ Dent* 2013; **34**(Spec No 5): 8–12.

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