



Simplify Composites

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Educational objectives:

Upon completion of this course, participants should be able to achieve the following:

- Place direct class II composites with predictable tight smooth contacts without wedging.
- Routinely place well isolated class II composites on teeth with deep root caries.
- Isolate and acquire excellent access to class III preps. Assure that all margins are sealed and void free.
- Place Class IV composites with rounded emergence contours, and simultaneously build a long intimate contact with the adjacent tooth.
- Minimize black triangles on anterior teeth.
- Assure superior isolation on subgingival class V's.

Amalgam use is fading. Placing direct composite has become the mainstay of our dental practices. Composite handles differently than amalgam, which begs the question, if composite is not amalgam, why use 100 year old amalgam technology to place composite? Why handicap ourselves with matrix techniques that work very well for amalgam and delude ourselves into thinking the same matrix technique will work well for composite. Uncured composite works best when the matrix guides the composite precisely. Also, a matrix that enables superior isolation from oral contaminates is very much preferred since composite adhesiveness is very dependent on controlling moisture laden contaminates.



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Class V Composite

Subgingival class V's can be a real pain. Tooth # 18 is such an example (Fig. 1). Success is totally reliant on excellent isolation in an area of the mouth difficult to isolate. It involves root dentin, and it has an occlusal component as well.

Tooth #18 completely isolated with a Greater Curve band in a Tofflemire retainer. Further isolation provided by a Dent-a-Pop to the lingual, and a NeoDry absorbent triangle to the buccal. I like to think of a Tofflemire set up as having the enemy surrounded on the inside. The Tofflemire matrix is a circumferential barrier preventing the enemy from reaching the prep. Who is the enemy? Moisture laden contaminations trying to breach 360 degrees.



Able to place composite into the mesial, buccal, distal and the occlusal simultaneously, since all were quarantined (Fig. 3). The Dent-a-Pop and the NeoDry tip are more evident in this photo. Long term success of any restoration, amalgam, composite or resin based glass ionomers greatly predicated on the dentist assuring moisture laden contaminations are forbidden entrance during placement of the restorative material. Completed restoration (Fig. 4).

I do not advocate using a Greater Curve Tofflemire band for all class V's. Placing a band for class V's can be cumbersome. So, when is it worth the time and effort.

- 1) Any time you are dealing with a subgingival prep of 1mm or more a Tofflemire matrix makes sense.
- 2) The cavity is in an area difficult to keep properly isolated throughout the restorative procedure (Figs. 1-4).
- 3) When dealing with thin friable gingival, it is often impossible to place retraction cord, or even consider placing a 212 clamp. A Tofflemire matrix such as the Greater Curve will provide isolation and access.

For those of you not familiar with the Greater Curve Tofflemire band, it is a rainbow-shaped Tofflemire matrix band. Sometimes it is called a Banana Band. Its unique shape produces an exaggerated flare from cervical to occlusal (Fig.5).

Class II Composites



It is interesting how teeth wear against one another. This lower third molar was removed from a 33-year-old male (Fig. 6). Look at the oval flat wear facet on the mesial. Our class II technique should reproduce the same flat surface. We must take full advantage of the available contact surface of the adjacent tooth. If the adjacent tooth presents with a broad contact surface our class II composite should mirror the same. If the adjacent tooth has a contact with depth toward the gingival papilla our class II technique should mirror the same. A flat contact against a flat contact prevents food impaction. A marble shaped contact even if tight will still be vulnerable to food impaction.



Fig. 1



Fig. 4



Fig. 5

continued on page 64



Fig. 7



Fig. 9



Fig. 12

Case 1

We will begin by replacing amalgams in teeth #'s 4 and 5 (Fig. 7). Manage the difficult cases – the easy ones will fall into place.



Fig. 8

All caries removed (Fig. 8). Note the wide embrasures. Not an easy task to traverse the interproximals and simultaneously meet the demands of adequate contacts. Should these teeth have crowns? Probably so, especially #4. In my world, crowns are not always a viable option for a patient. Large composite build-ups will have to do in the short term.

A Greater Curve band is placed around tooth #4 (Fig. 9). An opening is created in the matrix intraorally at the distal by planing away the stainless matrix at the contact position. Utilize Brasseler's small football shaped 7404 finishing carbide. The technique allows ideal placement of the contact. More on creating openings later.

How you place the composite is up to you. I will describe my method. First of all, there is no need to place any kind of separating agent over the contact opening. Remember this is about simplifying composites. Yes composite will bond through the opening. First, place bonding agent of your choice. I like Parkell's Brush and Bond. Second, place flowable composite into the interproximal boxes, and extend it along the walls of the cavity prep. Keep the layer thin enough to see right through it. I use an explorer tip to lightly work the flowable into all the nooks and crannies. I want to make sure the flowable is wetting the margins as well inspecting for bubbles. Light cure. Depending on the size of the prep, I might or might not place another layer of flowable. For this case I also placed a thin layer of opaque flowable to mask the stained dentin (Fig. 10).



Fig. 10

Third, place a very thin wetting layer of flowable. Do not light cure. Follow with 2mm increment of hybrid composite. The flowable oozes out and fills in margins. I like to use Pentron's Artiste flowable because it is highly filled. Purposely condense the composite from the middle into the walls of the prep. Never work the composite away from the occlusal margins. Light cure. Repeat the process. Flowable and 2mm hybrid condensation. This method provides assurance of no captured voids and the layers of hybrid are tied into a solid block of composite. Also, note how the flare of the Greater Curve band extends composite toward the adjacent tooth (Fig. 11).



Fig. 11

Tooth #4 has been completed and a new Greater Curve band placed around #5. Mesial and distal openings have been made in the matrix utilizing the Brasseler small football shaped 7404. Note that no wedges or separating springs are needed when making openings. Why? Because the composite is a direct build against the neighboring tooth. There is no need to compensate for matrix thickness by forcing teeth apart. It's very simple. Place the matrix – make openings. This takes seconds to do. The tooth is restored in what I call a neutral position (Fig. 12). The advantage of making intra oral contact openings is that the dentist has control in mirroring the available contact surface of the adjacent tooth.

Openings are made through the matrix in the following manner. Use no water spray, and go easy on the rheostat. Just barely remove metal. Keep the RPMs low. It is a "rubbing, smoothing in" side-to-side motion. A white dot of the proximal contact will appear. Expand around the dot until you have arrived at the desired

contact size both buccal-lingual and cervical-occlusal. Don't be heavy handed. Magnification makes this easy. Side-to-side motion is the key. By employing the side-to-side motion the adjacent tooth contact surface is barely touched, if at all. It is a sweeping motion, which leaves a very smooth surface. The technique does not damage the adjacent tooth contact. If orthodontists can be trusted to slice away as much as 1/2mm of interproximal enamel, surely a day-to-day operative dentist can make smooth openings (Fig. 12).

Simply lifting the band occusally with hemostats slides the matrix through the contact. The bonded contact with the adjacent tooth is weak. It is, on average, a 1.5mm oval and the bond is to a smooth surface. The sharp metal edges of the opening cut right through the bonded contact (Fig. 13).



Teeth #s 4 & 5 are short, had wide embrasures, and had margins extending buccal and lingual. In spite of these challenges anatomical, tight, smooth contacts were easily accomplished. If you wish to participate in aggressive wedging, do not use this system (Figs. 14 and 15).

Making openings as I described above is not the traditional way to restore teeth. Wedging and pushing teeth apart is the traditional way. Wedging has been around forever. Just ask G.V. Black. So what are the benefits to restoring teeth in a **neutral** position?

- 1) Hardware cost is greatly reduced. All you need is a Tofflemire retainer and matrix band.
- 2) Faster set up. Just place the matrix and make the openings.
- 3) Superior isolation. A Greater Curve band pulls very tight around the cervical margin. Think of it as having, "the enemy surrounded on the inside."
- 4) On occasion, attempting to spread teeth apart actually moves the tooth occlusally. Should the neighboring teeth not budge, all the separating forces push the prepped tooth up. Unbeknownst to the dentist, the tooth is restored in hyper occlusion.
- 5) MODs have consistent tight contacts. When one wedges and separates the adjacent teeth in an effort to make up for matrix thickness, the teeth do not always collapse into their original position. So, what happens? One side tight, the other side not so tight. Restoring the tooth in a neutral position removes this variable.

Class II Composite – Case 2

Distal decay deep on tooth #4 (Fig. 16). In this case the matrix will not fully seat at the distal because the mesial gingival attachment stops the matrix from moving more cervical. Simply trimming the bottom of the matrix with any carbide allows the matrix to straddle the gingival interference (Fig. 17).

Greater Curve matrix in place. Mesial and distal openings made as described previously. No wedging or separating springs needed (Fig. 18).

Post-op of tooth #4 (Fig. 19). The difference in depths when comparing mesial to distal is obvious in the bitewing (Fig. 20).



Fig. 13



Fig. 14



Fig. 17

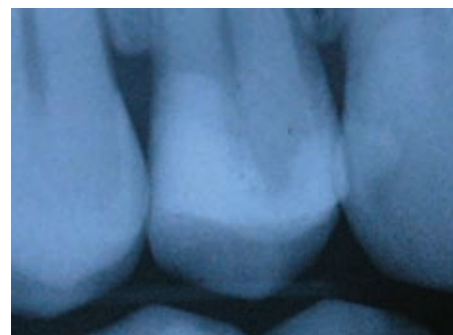


Fig. 20

continued on page 66



Fig. 21



Fig. 24



Fig. 25

Class III Composite

The key to success for any class III preparation is to slightly prep through and through buccal to lingual. Why? Because working into a dead end hole invites capturing invisible marginal voids deep within the restoration. This example is on overlapped teeth. Fortunately for us, class IIIs on overlapped teeth are not an everyday occurrence (Fig. 21).

Greater Curve band in place (Fig. 22). Although not clearly visible, the lingual side of the matrix is cut back to provide access. After placing the bonding agent, flowable is introduced from the lingual side, and could be clearly seen extruding to the buccal. By carefully moving the flowable with an explorer tip, wet only the margins with the first increment. Light cure. Add other increments of flowable to complete the fill. Do not complicate by applying a hybrid in such a small space. For most class IIIs the strength of a hybrid is not necessary since the entire restoration is surrounded by intact enamel.



Fig. 22

Final class III on tooth #7 (Figs. 23 and 24). Composite has intimate contact with the adjacent tooth #8. Restoration completed quickly with plenty of access.

I discourage the use of mylar strips. It is very difficult to isolate subgingival preps with mylar strips. Additionally, mylar strips are stiff and only bend in one direction. Consequently, mylar strips straight line emergence contours.



Fig. 23

Class IV Composite

Will restore teeth # 7, 8, 9 and 10 (Fig. 25).

Teeth #'s 7 and 8 prepped. Enamel aggressively tapered. Anytime there is much mesial and distal involvement I prefer to veneer over the entire labial surface. This is the case for tooth #7 (Fig. 26).



Fig. 26



Fig. 27

Greater Curve matrix in place (Fig. 27). An opening made at the distal. Labial portion of the matrix cut away for access. The retainer head was rotated toward the incisal. This, in turn, produces more band flare so the mesio lingual portion of the matrix will move away from the prep. The goal is to provide access and not flatten off the mesio lingual portion of the restoration. To hold the retainer in its rotated position, MegaBite from Discus Dental is syringed over the teeth and around the retainer. MegaBite is a very hard bite relation material. It sets up quickly. It is almost as rigid as plaster, which I see as a tremendous benefit when occluding models. In this restorative situation, MegaBite's rigidity secures the retainer in the rotated position.

Sequence of composite placement is as follows. First, brush and bond. Second, all margins are sealed with a very thin coat of light cured flowable. Third, several thin layers of dentin shades to hide prep margins. Fourth, bulk fill and cure the enamel shade. It is safe to bulk fill the top layers of a class IV once sufficient cured composite embraces the underlying prep. The effects of polymerization shrinkage of the bulk fill is too far removed to pull on the locked-in

marginal seal. Bulk filling the remainder of the class IV speeds up composite placement and more important eliminates capturing air bubbles near the surface of the composite. In other words, if an air bubble is captured, bulk filling will capture the bubble deeper into the restoration. The risk of exposing an air bubble when shaping the restoration is negligible. As stated earlier, I always squish composite into a thin film of uncured flowable as my preferred method to prevent capturing voids (Fig. 28).



Tooth # 7 completed (Fig. 29). All composite margins are tucked toward the interproximal. Marginal staining, should it occur, will be within the less visible interproximals. In addition, color blending of composite to tooth is easier when veneering, and veneering takes advantage of more bondable enamel.



Now for the easy one (Fig. 30). Greater Curve band is placed around #9. Labial portion of the band reduced for access. Whenever the space is tight, a flame shaped composite finishing carbide works very well. In this case a Brasseler 7901 removes and feathers the distal portion of the band

against the mesial of #7. A direct build for a long narrow contact is now possible. Herein lies the beauty of this technique. The dentist has absolute control positioning the gingival portion of the contact by smoothing away the stainless steel matrix to the proper level. Black triangles are eliminated or greatly reduced. Dentists can duplicate nature's desire for long narrow contacts distinctive to anterior teeth.

Completed class IV composite restorations on teeth #s 7, 8, 9 and 10 (Fig. 31).

In Summary

Setting up and isolating preps is critical. I trust this article has simplified this objective. I chose difficult examples. Do the difficult ones well, and the easy ones will fall into place. What bonding agent you use or what composite or what system you use for composite application is up to you. ■



Fig. 28



Fig. 31

Author's Bio

Dr. Dennis Brown graduated from The Ohio State University College of Dentistry in 1977. He has a rural practice of 30 years in Owensville, Ohio, and is the author of several published articles. Dr. Brown is the developer of the "Greater Curve technique" for composite placement. For more information, please visit www.greatercurve.com, e-mail owensdent@aol.com or call 866-493-3437.



Disclosure: Dr. Dennis Brown declares that he is the developer and distributor of the Greater Curve Tofflemire Band.

continued on page 68

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1. Composite has different handling properties than amalgam. For this reason a matrix for composite should:
 - A) Guide the composite precisely.
 - B) Provide superior isolation.
 - C) Both A & B.
2. What types of class V composite restorations work well with a Tofflemire matrix such as the Greater Curve?
 - A) Subgingival preparations of 1mm or more.
 - B) Areas of the mouth difficult to keep isolated throughout the restorative procedure, such as the lingual of molars.
 - C) Thin friable gingiva when it is impossible to place a retraction cord.
 - D) All of the above.
3. What is a disadvantage of Mylar strips secured with wedges for anterior restorations?
 - A) It is difficult to isolate subgingival preparations, particularly those close to the bone.
 - B) Mylar strips produce straight line emergence contours.
 - C) Mylar strips cannot be burnished and modified to hold a customized shape.
 - D) All of the above.
4. Placing a thin, see through layer of flowable composite against the margins of the cervical portion of a class II preparation assures:
 - A) No bubbles or voids are trapped at such a critical and not easily examined area.
 - B) A waste of time.
 - C) Seeing is believing that composite is in intimate contact with the margins.
 - D) Both A and C.
5. When preparing for class III composite restorations, why is it wise to ever so slightly prep through and through buccal to lingual?
 - A) It provides easy visualization of all the margins.
 - B) The dentist is not placing composite into a blind hole and it eliminates inadvertently capturing an invisible void right on the interproximal margin.
 - C) Both A and B.
6. Wedging and forcing teeth apart to acquire a tight contact is the traditional way. Making intraoral contact openings in the matrix is a concept foreign to traditional dentistry. What is the advantage to making contact openings?
 - A) We are able to restore the tooth in a neutral position; no wedging is needed.
 - B) It is much easier to bridge large embrasures with composite.
 - C) There is no chance of inadvertently forcing the tooth into hyper occlusion.
 - D) All of the above.
7. An additional advantage to making intraoral contact openings is that the dentist has absolute control in mirroring the available contact surface of the adjacent tooth.
 - A) True.
 - B) False.
8. When dealing with large carious interproximal lesions on anterior teeth, why is it wise to veneer the entire facial of the tooth with composite?
 - A) Marginal staining, should it occur, will be within the less visible interproximals.
 - B) Color blending of composite to tooth is easier when veneering.
 - C) Composite veneering takes advantage of a more bondable enamel.
 - D) All of the above.
9. Why would a dentist use a flowable composite exclusively on small class III preparations?
 - A) Access and visibility are often compromised by the small size of the preparation.
 - B) You do not need the strength of a hybrid since the restoration is surrounded by sound enamel.
 - C) Both A and B.
 - D) None of the above.
10. When placing 2mm increments of hybrid composite, the author recommends placing a thin film of uncured highly filled flowable composite first. This extra step provides more assurance of a void free restoration and ties the stiffer increments of hybrid composite together.
 - A) True.
 - B) False.

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