Proximal Contact Control using the Garrison Compositight 3D Fusion Sectional Matrix System



Procedure/Study by Clarence Tam, HBSc, DDS, AACD, FIADFE

Predictability of establishing firm and anatomic contacts has been a complication of direct restorative dentistry since the introduction of composite resins and the inability to pack and laterally displace material similar to the properties of amalgam. Tofflemiretype matrix systems are circumferential, however feature axial emergence profiles that are unnaturally straight and difficult to modify to generate curved, anatomic profiles even with determined burnishing. The Garrison Slick band architecture features a moderate, average curve, a great compromise between one with a more pronounced proximal convexity, such as the Triodent/Palodent Sectional matrix systems and one without any convexity at all. This allows fitment in narrow proximal areas where root proximity is more of an issue and allows placement without the need to plasty the enamel of the adjacent tooth.

Rationale for Treatment Approach

Placement of MOD or dual proximal wall Class II restorations whether on the same tooth or on adjacent teeth have been wrought with the problems of open, loose or inadequate contacts irrespective of axial curvature, posing a risk for recurrent decay and the onset of periodontal problems with the tooth, not to mention the risk of mesial drift and the generation of occlusal disharmony. Often, the use of a circumferential matrix or the placement of back-to-back sectional matrix systems to establish proximal contacts have the disadvantage of having one acceptable contact and the other suboptimal. The approach described reconstructs a single wall at a time, aiming to convert the MOD Class II lesion into a Class I situation, in a step-by-step format whilst allowing for timely assessment (i.e. contact flossing) of the freshly built wall immediately before moving on the next step. The concept is similar to a pre-flight checklist. Every step is checked off before allowing one to complete the time-intensive occlusal

anatomy sculpting. If a freshly built wall is unacceptable, one simply needs to prep it off without much investment of time or wasted effort.

Treatment

Marginal failure was diagnosed on tooth #19 relative to an existing MOD composite restoration (Fig. 1). The patient had been complaining about biting sensitivity with the tooth of 1 month duration. Primary concerns were both micromovement of debonded aspects of the old restoration, but also the possible presence of hairline fractures or cracks, which could only be elucidated via an exploratory restoration.

The patient was anesthetized with 1 carpule of 2% Lignocaine with 1:100,000 epinephrine and a rubber dam placed (NicTone). Preparation ensued and the restoration was removed along with virtually all the liner underneath for assessment of the pulpal floor. No cracks or hairline fractures were identified, and the caries detector dye (Caries Detector, Kuraray) was utilized to ensure cariesremoval endpoints (Fig. 2). The margins were bevelled (0.5-1.0mm) as the closer the cavosurface margin is to a cusp tip, the more one will be attempting to bond to the lateral aspects of enamel rods, whereas it is more effective to bond to the ends of enamel rods. Bevelling allows transverse exposure of the enamel rods and improved etching and bonding efficiency.

Micro air abrasion was carried out isolating the adjacent tooth with a serrated metal strip using 27 micron aluminum oxide (Prep Start, Danville Engineering) under 2-3 bar of pressure. This was completed prior to placement of any sectional matrix system as typically roughening the actual matrix paired with the use of a 10-MDP containing selfetching adhesive (10-MDP bonds to nonprecious metals) will see a more difficult matrix removal after buildup of the wall, indeed often with remnants of the Teflon color coating from the band left adhered to the restoration.



Figure 1



Figure 3



Figure 2



Figure 4

Composi-Tight 3D Fusion

Buy a FX-KFF-10 kit, get a TN009 instrument

Sectional Matrix System

ental Solutions



TN009 valued at \$157.30



gds@garrisondental.com • www.garrisondental.com

ADAU0321

60-day money-back.



Figure 5

The Garrison premolar sized Slickband (FX100) was selected for this case, due to slight microdontia generally in this case. Slickband sizes should be selected so that at full apical seating the occlusal limit of the band is coincident with or slightly beyond the desired marginal ridge level. A wedge was placed (FXYL) to secure the Slickband and cervical marginal seal checked at this stage. If any gaps were to eventuate with placement of the tension ring (FX400), this would require removal of the ring and packing of PTFE tape in the area of the void before replacing the tension ring.

The mesial wall was selected for reconstruction as a first step (Fig. 3). Microlayers of an A2 flowable (Majesty Esthetic, Kuraray Noritake) were placed after the total etch adhesive approach with MPa Bond (Clinicians Choice). This was allowed to decouple with time to allow for maturation and ultimate hybridization of the link to dentin for maximal microtensile bond strengths. The proximal wall was reconstructed in horizontal 1mm increments layering occlusally as prescribed by the technique advocated by Nikolaenko et al, allowing for maximal microtensile bond strength values.

Following curing for 20 seconds, the sectional matrix assembly was removed, the contact point anatomy and strength assessed with flossing before assembly of



Figure 6

the matrix to reconstruct the distal wall in a similar manner. (Fig. 4) Following construction of the distal wall and relevant checks, a Class I situation has been created, devoid of tension rings and other paraphernalia that can impede access for occlusal layering (Fig. 5). The author's preference to reconstruct and build one wall at a time with separately placed mesial and distal matrix assemblies through the process is in contrast to proximal contact strength (PCS) findings by Saber et al, which promote simultaneous mesial and distal assembly placement. The author finds the first method to be more predictable especially on smaller teeth such as premolars, where there may be physical difficulty with simultaneous placement of mesial and distal matrix assemblies due to the need to overlap SlickBands and the along with the risk of matrix accordian-bunching.

The occlusal aspect was microlayered horizontally also with a white opaque flowable composite (Herculite Ultra flowable XL2 shade, KavoKerr) to block out the dark dentin (Fig. 5) before completion of layering was using an A2 shade of Voco Grandio SO. Occlusal tints were applied using Brown (Final Touch, Voco) (Fig. 6)

Overall, a very satisfying restorative session by adhering to a step-by-step protocol that decreases stress, increases predictability and allows for optimal performance of materials and esthetic



Figure 7

reconstruction of missing tooth structure in an enjoyable procedure for both patient and clinician. \blacklozenge

References

Keogh TP, Bertolotti RL. Creating tight, anatomically correct interproximal contacts. Dent Clin North Am. 2001 Jan;45(1):83-102. PMID: 11210702.

Nikolaenko SA, Lohbauer U, Roggendorf M, Petschelt A, Dasch W, Frankenberger R. Influence of c-factor and layering technique on microtensile bond strength to dentin. Dent Mater. 2004 Jul;20(6):579-85. doi: 10.1016/j. dental.2003.08.001. PMID: 15134946.

Saber MH, El-Badrawy W, Loomans BAC, Ahmed DR, Dorfer CE, El-Zohairy A. Creating Tight Proximal Contacts for MOD Resin Composite Restorations. Oper Dent. 2011;36(3):304-310.

About the author

MEET CLARENCE TAM, HBSC, DDS, AAACD, FIADFE

Dr. Clarence Tam is originally from Toronto, Canada, where she completed her Doctor of Dental Surgery and General Practice Residency in Pediatric Dentistry at the University of Western Ontario and the University of Toronto, respectively. Clarence's practice has a focus on restorative and cosmetic dentistry, and she strives to provide consistently exceptional care with each patient. She is well-published in both the local and international dental press, writing articles, reviewing submissions, and developing prototype products and techniques in clinical dentistry. She frequently and continually lectures internationally.





All FitStrips share these remarkable features:

FitStrips are your complete line of interproximal trimmers and finishers!

Whether you're looking for safe and accurate IPR for your aligner cases, interproximal cement clean-up or smoothing out cervical margins, FitStrip[™] is a fast and convenient solution.

Ready for a marathon! FitStrips are very durable and long lasting. They stay sharp and ready to go even after multiple autoclave cycles.

FitStrip

One handy handle! FitStrip's simple, attachable handle makes a world of difference for both clinician ease-of-use and patient comfort.

Do the Twist! Twist the color-coded barrel to adjust FitStrips' curvature and it's automatically locked in place.



- Primary Function: Contouring Composites and IPR up to .30mm.
- Durable diamond abrasive on just one side to protect adjacent teeth
- The FitStrip[™] serrated saw is the PERFECT instrument to separate accidentally bonded teeth and reduce over-tight contacts

276.10*

FitStrip[™] Starter Kit FPSK01 kit

FPSK01 contains:

2 handles

2 serrated

4 single sided (1 of each .08 mm, .10 mm, .13 mm, .18 mm) 4 double sided (1 of each .11 mm, .15 mm, .21 mm, .30 mm)



Your Complete Solution for Interproximal Reduction (IPR)!

- Primary Function: IPR when .40mm and .50mm are needed, yet can still be used to contour composites
- IPR gauges for exact reduction
- Attachable handle for greater ease of use and patient comfort

Universal Kit

4 single sided (1 of each

1 IPR gauge

FPSK04 contains: 2 handles

.08 mm, .10 mm, .13 mm, .18 mm)

6 double sided (1 of each .11 mm, .15 mm,



Subgingival FitStrips are the ideal solution for the cervical



- Primary Function: Use with Composites, both Contouring accessing cervical areas to remove overhangs or excess cements.
- Only 2.5 in height keeps abrasive below the contact point
- Safety zone protects contacts during insertion
- Extra thin at .05mm

FitStrip[™] Subgingival Finishing and Single Sided Kit

FPSK08 contains: 2 handles



2 handles 10 Strips: 2 subgingival super fine, 2 subgingival fine, 1 subgingival medium, 1 serrated saw, 1 each single sided .08 mm, .10 mm, .13 mm, .18 mm

Ask about our Subgingival FitStrip[™] Trial Pack.

