CASE STUDY

Dr. Clarence Tam,
HBSc, DDS, AACD, FIADFE

Simultaneous Back-to-Back with Quad Matrix System

Dr. Clarence Tam Auckland, New Zealand

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.

Clarence has multi-faceted dentistry experience that extends across multiple tiers of leadership. She is the immediate past Chairperson and Director of the New Zealand Academy of Cosmetic Dentistry. She is one of merely two dentists in Australasia who are Board-Certified Accredited Members of the American Academy of Cosmetic Dentistry (AACD). Moreover, Clarence maintains Fellowship status with the International Academy for DentoFacial Esthetics. She sits on the Advisory Board for Dental Asia, and is part of the Restorative Advisory Panel for Henry Schein Dental New Zealand. Aside from the professional organizations she belongs to, Clarence is a Key Opinion leader for an array of global dental companies, including Triodent, Coltene,Kuraray Noritake, Hu-Friedy, J Morita Corp, Henry Schein, Ivoclar Vivadent,Kerr, GC Australasia, SDI, and DentsplySirona. Moreover, she is the sole Voco Fellow in New Zealand and Australia.

Clarence participates in a number of charitable endeavors and takes great pride in achieving beautiful smiles for patients in and around her community. She sits on the board of Smiles For the Pacific, an educational trust and charity that aims to expand professional dentistry services across the entire South Pacific region. She is involved with Delta Gamma Sorority and aims to spearhead projects harmonious with Service for Sight in the South Pacific.

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Background

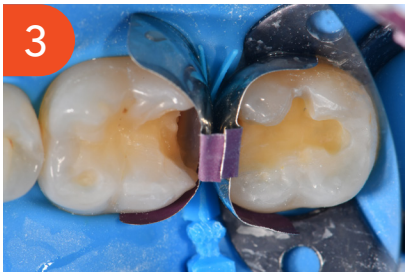
A healthy 44 year old female presented to the practice exhibiting marginal failure on old composite restorations #30DO and 31MO along with a small erosive pit noted on the mesiobuccal cusp tip of tooth #30.

Procedure

The patient was anesthetized using 2 carpules of 2% Lignocaine with 1:100,000 epinephrine via an inferior alveolar nerve block and supplemental long buccal nerve block. A rubber dam was placed (figure 1, Nictone Medium, MDC Dental) prior to preparation of teeth #30DO and 31MO, Recurrent caries was noted apical to the restorations in the proximogingival locations. Caries was excavated using

Pre-operative view of failing restorations on #30DO and 31MO

Intraoperative view with restorations removed, caries excavated.



Post micro particle abrasion, Garrison Dead Soft Bands were set-up in a back-to-back fashion, secured interdentally by the bifid wedge of the Quad Matrix system.

a stainless steel rosebud bur (figure 2, Komet) to the level of hard, affected dentin with the assistance of caries detector dye (Kuraray Noritake). Coronal margins were beveled prior to adhesive substrate optimization using a micro particle abrasion system and 29 micron aluminum oxide (Aquacare). The Quad matrix system (figures 3-4, Garrison) was assembled in a back-to-back matrix band fashion and

The Quad system-specific tension ring in place, showing the arrow on the lingual aspect driving between the tines of the bifid wedge.

Selective enamel etching using Ultra-etch (Ultradent Products).

Micro layering completed and marginal ridge reconstruction complete. This is the point where the contact is checked proximally for form and tested with floss.

secured using the single bifurcated wedge prior to placement of the unique tension ring featuring a driving head which is properly placed between the tines of the wedge, further increasing adaptation in a circumferential manner in the cavosurface margin area. The enamel was selectively etched for 20 seconds with a 33% orthophosphoric acid solution (figure 5, Ultra-Etch, Ultradent Products) prior to rinsing copiously with water. The adhesive used was scrubbed into both enamel and dentin for 20 seconds prior to aggressive air thinning as per manufacturer instructions (Clearfil Universal Bond Quick 2, Kuraray Noritake) and cured with a polywave LED light unit (Valo X, Ultradent

Products). The dentin base was lined with 0.25-0.5mm microincrements of Clearfil Majesty Flow A2 prior to marginal ridge reconstruction using Simplishade Bulk (figure 7, Kerr Dental). The matrix assembly was removed and the contact strength and proximoaxial contours

Occlusal microlayering completed using Simplishade Bulk Flow

Final occlusal layering result using the oblique, successive cusp buildup technique as per Deliperi and Bardwell (1)

confirmed as ideal prior to proceeding with occlusal layering, which was completed in an oblique, successive cusp buildup technique using Simplishade Bulk (1) to facilitate a stress-reduced restoration

Considerations

According to the author, the preparation is always subjected to micro particle abrasion without the matrix bands in place, as roughening this surface paired with the chemical bonding potential of the acidic adhesive monomer, 10-MDP may lead to bonding of the fresh composite and matrix band, particularly if the Teflon/PTFE non-stick coating has been compromised, leading to difficult band removal and occasional composite fracture. Given adequate interdental space, the use of the Garrison Quad Matrix allows for idealized cervicoproximal adaptation, minimizing overhangs, whilst generating accurate proximoaxial and proximofacial contours and contacts efficiently. The use of appropriately-sized silica and zirconia nanoparticles in Simplishade Bulk mimic the microstructure of enamel, allowing for similar optical refraction properties, resulting in an outstanding chameleon effect with just a single shade.

Reference

1) Deliperi S, Bardwell DN. An alternative method to reduce polymerization shrinkage in direct posterior composite restorations. J Am Dent Assoc. 2002 Oct;133(10):1387-98.