CASE STUDY

Challenging Contour and Access Case with Quad Matrix System

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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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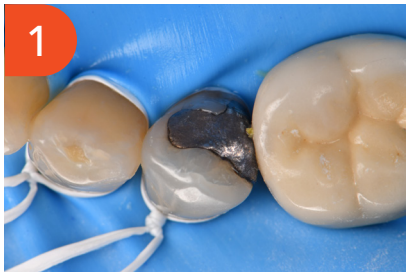
Background

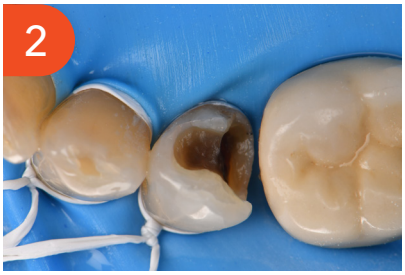
A 71 year old ASA II female with medical history significant for controlled hypertension and hypercholesteremia presented to the practice with a clinical concern of marginal failure and sensitivity with her amalgam restoration on #28DOL.

Procedure

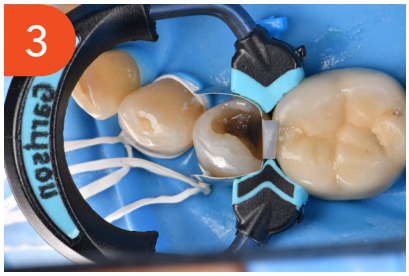
The patient was anesthetized using carpule of 2% Lignocaine with 1:100,000 epinephrine and the quadrant isolated with a non-latex rubber dam (1. Dermadam, Ultradent Products). The amalgam was removed and any caries excavated (2), leaving a stained, hard dentin base behind. The margins were beveled prior to the tooth being subjected to air particle abrasion (29 micron aluminum oxide, Aquacare). The matrix assembly begins with placement of the metal band (3. Firm Band, Garrison), subsequently secured by the bifid wedge (3. Quad wedge, Garrison Dental Solutions). The custom separating ring is then placed (3. Quad system, Garrison Dental Solutions) and the contact gently burnished. A total etch adhesive approach was



Pre-operative view of failing amalgam restoration

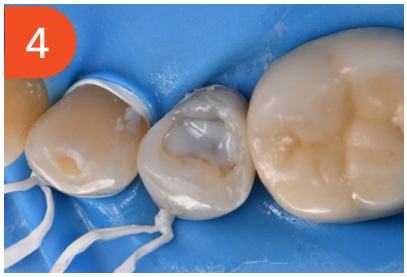


Preparation complete. Note the dark dentin staining from the amalgam restoration.

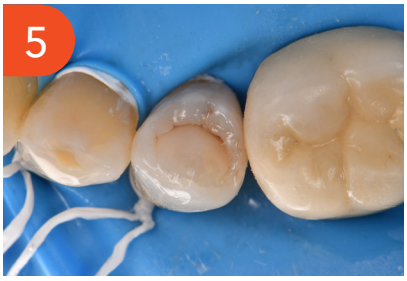


Garrison Quad matrix system in play. The intimacy of adaptation allows simple re-creation of the missing distolingual line angle.

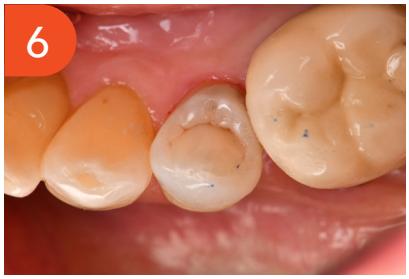
completed using enamel etching with 33% orthophosphoric acid for 10 seconds, dentin etching for 12 seconds, followed by copious water irrigation. After drying, the preparation was rewet using a 2% chlorhexidine solution (Vista) for 30 seconds with a scrubbing action. The tooth was reduced to a moist dentin state using cotton pledgets, and a 5th generation total etch adhesive placed as per manufacturer instructions (Peak Universal Bond, Ultradent Products). The marginal ridge was fashioned using a combination of A3 Clearfil Majesty Flow microlayers in a horizontal fashion (2) (Kuraray Noritake Dental) and Simplishade Dark (Kerr), converting the Class II situation into a Class I lesion (1). The occlusal layering required multiple microlayers of a white opaque flowable (4. XL2, Herculite Ultra flowable, Kerr Dental) prior to occlusal lobe-by-lobe layering using Simplishade Dark (Kerr). The fissures were characterized using a brown tint (5. Final Touch Brown, Voco).



Marginal ridge reconstruction complete, converting a Class II situation into a Class I. Microlayering of opaque flowable composite on the occlusal base to neutralize the darkness.



Completed occlusal layering with functional esthetics



Immediate post-operative view, conformative with occlusion.

The occlusion was adjusted to be conformative, and the restoration polished to high shine. The final result (6) features a restoration with well-integrated functional and esthetic characteristics

Considerations

It is crucial that when burnishing the matrix band in the assembly that the occlusal aspect is not also overburnished - doing so distorts the built-in proximoaxial contour of the band, eliminating the much-desired occlusal embrasure, which is part of the proximal anatomy, and represents a masticatory sluiceway to allow for the lateral escape of food during the compressive chewing process.

Reference

1) Francci C, Loguercio AD, Reis A, Carrilho MR. A novel filling technique for packable composite resin in Class II restorations. J Esthet Restor Dent. 2002;14(3):149-57. doi: 10.1111/j.1708-8240.2002.tb00515.x. PMID: 12132569.

2) 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..