

# A complex composite reconstruction

*Dr Clarence Tam (New Zealand)*

A 72 year old healthy woman presented to the practice with a chief concern of food trapping between teeth 47 and 48. Tooth 46 was missing, and there was evident mesial tipping and drift of the tooth 47 relative to tooth 48. The patient wished to have the diastema closed. Clinical assessment of the tooth revealed the presence of a large DOL composite restoration with the offending gap as well as a small hairline fracture verticoaxially on the tooth structure lingual cavosurface immediately adjacent to the restoration. The tooth had no symptoms.

Various treatment options were discussed, including a bonded minimal prep full coverage restoration as the surface area of the restoration approximated 65 % of the total. This was ruled out as a prudent option as the patient did not have any prosthesis to prevent further mesial drift of tooth 47, and hence a pragmatic solution was to replace the restoration with an attempt to restore firm centric contacts with no lateral excursive interferences. This would give the highest likelihood of preventing further mesial drift as well as load the composite in compression where it is stronger, relative to flexion or tension where it is weaker.

## Procedure

Full rubber dam isolation was completed following profound local anaesthesia via inferior alveolar nerve block using 2.2 ml of a 2 % Lignocaine with 1:100,000 epinephrine solution. The restoration was excavated and the vertical hairline fractured segment easily released with just a touch of the bur. Caries detector dye (Kuraray) was utilized. The cavosurface margins were bevelled (as one cannot bond to the lateral aspects of enamel rods, only to the ends) and the preparation micro air abraded using a 27 micron aluminum oxide powder at 30-40 psi or 2-3 bar of pressure.

The resulting restoration was extremely large and featured extension on the lingual to virtually the mesiodistal midpoint of the tooth. A Garrison Slickbland (FX175) was placed and the small blue wedge (FXBL) placed snugly in the cervical embrasure space prior to the placement of the Wide Prep ring (FX600). A total etch technique was utilized and Optibond Solo Plus (Kerr, Orange County, CA) scrubbed into the preparation and marginal areas for 30 seconds before air thinning, evaporation of the solvent and light curing.

3 ultra-thin horizontal increments of 0.25 mm each (GrandioSO Flow, A2, VOCO GmbH) were placed on the proximal box floor to hybridize the bond layer and ensure maximum bond strengths to the dentin and enamel. Other reasons for the placement of ultra-thin layers is not only to ensure complete polymerization, but also increased micro-tensile shear bond strength in the area which is responsible for the majority of clinical failures in Class II cases. The average depth from marginal ridge to proximal box floor in mandibular molars averages 6 mm.

With the matrix assembly in place, it is hard to get as close as possible and to achieve the best angle for curing down to the base of the proximal box floor. The ideal angle in this case is not from the patient's left side, but by the operator. Following placement of these initial three microlayers, the composite was layered in horizontal increments measuring 1 mm high each until completion of the ridge (GrandioSO, A2, VOCO). The matrix assembly was removed at this point before completion of esthetic, incremental occlusal layering using GrandioSO (A2 shade, VOCO).

## Images



Fig. 1: Placement of a complete rubber dam

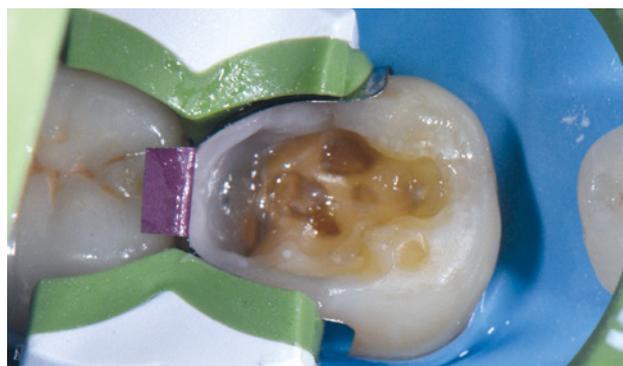


Fig. 2: The existing restoration on tooth 47 was excavated



Fig. 3: Application of thin composite layers (GrandioSO Flow, VOCO) to the floor of the proximal box



Fig. 4: Horizontal layering up to marginal ridge with GrandioSO (VOCO)



Fig. 5: After removal of the matrix system, the occlusal restoration was laid in increments (GrandioSO, shade A2)



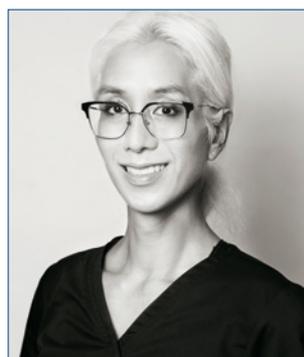
Fig. 6: Completed restoration



Abb. 7: Final look after finishing and polishing the restoration

## About the author

Dr Clarence Tam heads a practice in Auckland, New Zealand, which specialises in cosmetic and restorative dentistry. She is originally from Canada, where she completed her Doctor of Dental Surgery and General Practice Residency at the University of Western Ontario and the University of Toronto, respectively. Clarence is the Chairperson and Director of the New Zealand Academy of Cosmetic Dentistry. She holds Board-Certified Accredited Member Status with the American Academy of Cosmetic Dentistry (AACD).



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