

Simple and Effective Haemostasis in Crown & Bridgework

Michael N. Mandikos

BDS, MS, Cert Pros, FRACDS, FICD

Preparing crown margins that are defined, continuous and of the proper depth and position is a significant daily challenge in fixed Prosthodontics. However, once these margins have been formed, capturing the margins with high fidelity in an elastomeric impression can be just as challenging.

A survey conducted by Gordon Christensen which was published in the Journal of the American Dental Association ¹ reported that the most frequently reported problem encountered by Laboratory Technicians doing fixed Prosthodontics, was the poor quality of the impressions. Subsequent studies have reported that the prevalence of poor quality impressions for fixed Prosthodontic procedures is widespread and of significant concern. ^{2,3} There are many factors that contribute to inaccurate impressions; however the most observable problem would appear to relate to accuracy of capture of the margin finish line. ⁴

The margins of a crown preparation can be difficult to capture in an impression due to inadequate soft tissue retraction, or due to moisture or poor control of bleeding. Retraction cords have traditionally been the preferred means of achieving both tissue retraction and haemostasis. A survey of over 1200 members of the American College of Prosthodontists (all specialist Prosthodontists) revealed that 98% used retraction cord. Of those using cord, 81% soaked it first in a haemostatic solution, and of those who soaked their cord, 55% used Aluminium Chloride. ⁵

Placing a retraction cord is a deliberate procedure with the aim being to place it at the level of the preparation, and within the confines of the gingival sulcus. Finer, braided cords are easier to place, and similarly fine placement instruments are required. The cord should horizontally retract the tissue, not displace it vertically. Practice is needed to allow the clinician to rotate and roll the cord as it goes into the sulcus and the cord must remain in the sulcus for in excess of 10 minutes to achieve effective retraction and haemostatic control.

This complicated and time consuming process has allowed the introduction and adoption of alternative, cord-less retraction techniques. Expanding polyvinyl siloxane and Kaolin based paste materials have been introduced to the market with claim of faster, easier and more effective retraction. A recent study has even hinted that these materials may be more efficient to use, as they were much less likely to stimulate bleeding in the gingival sulcus either during placement, or immediately after removal, when compared to retraction cord⁶.

The following case report describes the use of a new material “Traxodent®” from Premier®. Traxodent is a clay-based paste which contains 15% Aluminium Chloride. The paste is delivered to the sulcus directly from its syringe as an alternative to use of a separate haemostatic solution and retraction cord. It can be used alone for haemostasis, or in combination with Premier’s “Retraction Caps” if greater retraction

is desired. It is recommended to leave the paste in place for 2 minutes prior to rinsing it away.



Traxodent's ergonomic disposable syringe and bendable syringe tip provides excellent reach.

The patient presented with symptoms associated with gross caries in the distal of the lower right second premolar (#45). The patient was referred to an Endodontic colleague and the #45 was subsequently root canal treated. (Figures 1 to 3).

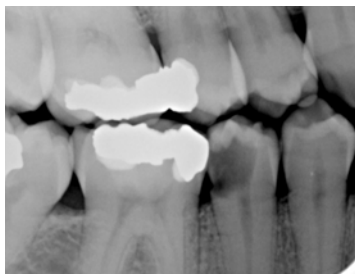


Figure 1

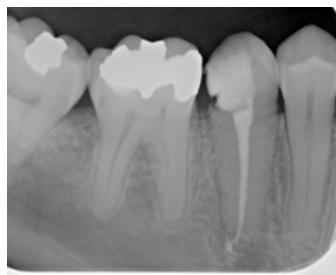


Figure 2



Figure 3

After root canal treatment, the tooth was restored with a direct post and core, and then prepared for a Lava zirconia crown. The extent of the caries meant that the distal margin was located very deep and in a subgingival position. This resulted in significant bleeding as "gingival curettage" was performed by the preparation bur. (Figures 4 and 5).



Figure 4



Figure 5

Significant haemostasis was needed and so Traxodent was syringed directly into the gingival sulcus and left in place for 2 minutes. (Figures 6 to 8).



Figure 6



Figure 7



Figure 8

The Traxodent was then rinsed away, and the bleeding was observed to have stopped. (Figures 9 and 10). Retraction cord was then placed and the impression made.



Figure 9



Figure 10

Approximately 4 weeks later, the patient returned for insertion of the definitive crown. At this appointment, the soft tissues were observed to have healed very nicely, with no residual inflammation and no recession. The crown was adjusted and seated, and the procedure was performed in a healthy gingival environment. (Figures 11 and 12.).



Figure 11

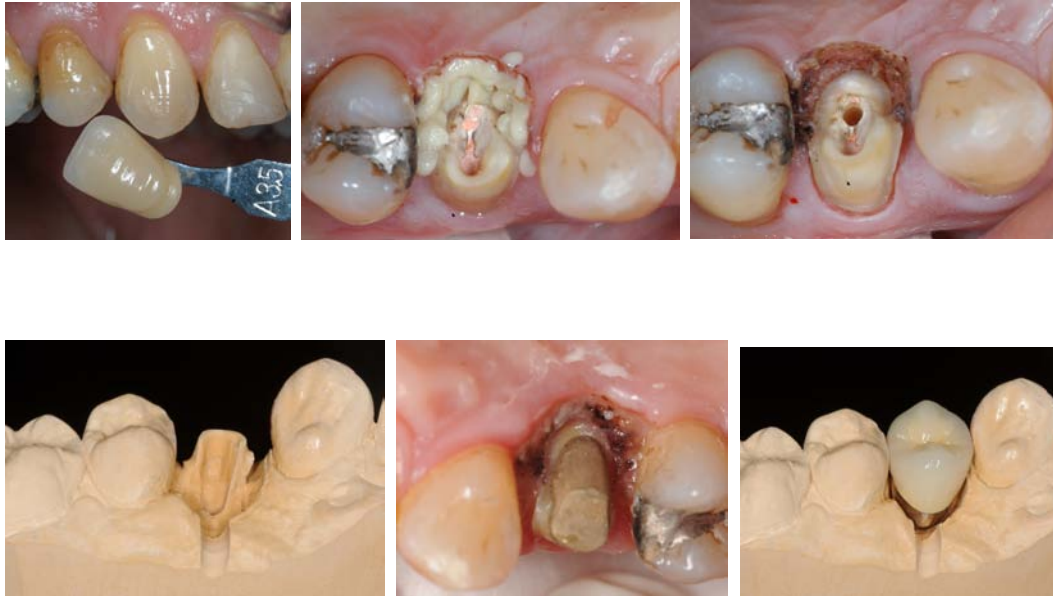


Figure 12

The author has found this material to be invaluable in situations where there is excessive gingival bleeding. In particular, when necessity has meant margins are placed very subgingivally or electrosurgery has been performed, I have observed Traxodent to work very quickly and effectively in controlling the bleeding in these instances.

The six images below demonstrate an upper right first premolar (#14) that lost its palatal cusp through fracture, nearly 3mm subgingivally. A combination of electrosurgery and tooth preparation created a significant amount of bleeding, which was then arrested by the application of Traxodent for 2 minutes. After rinsing the Traxodent away, the clean, dry tissue surface then facilitated an accurate

impression, for the fabrication of a gold post and core. The final crown was subsequently made and cemented to place.



Acknowledgement:

I would like to thank the Teams at Prestige Milling Services and Slater Dental Studio, for their excellent technical skills to allow successful restoration of these two challenging cases.

References:

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About the Author

Dr. Mandikos is a registered specialist in Prosthodontics. He received his Bachelor of Dental Science Degree with honours, from the University of Queensland and completed a three-year residency program at the State University of New York at Buffalo, (USA) graduating with a Certificate in Prosthodontics and Masters Degree in Biomaterials. His research was in composite resin materials and he published several papers in Australian and international journals on clinical and dental materials topics.

Dr Mandikos is a Fellow of The Royal Australasian College of Dental Surgeons and a Visiting Prosthodontist to the University of Queensland Dental School and the Royal Australian Air Force. He is a Reviewer for the Australian Dental Journal, Quintessence International and Clinica as well as a product evaluator for several dental companies.