

Simplifying cementation with reliability

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GIVEN THE CURRENT STATE of health care, it has never been more important for dentists to increase efficiency and reduce overhead. One simple way to achieve this is by streamlining inventory to the most reliable, versatile, and cost-effective products. In the cementation world, that would mean taking a hard look at a cost-effective, resin-modified glass ionomer (RMGI) cement with unsurpassed bond strength to dentin and decreased water sorption.

When traditional glass ionomer cements were introduced, a considerable leap forward was achieved with some adhesion to dentin, fluoride release, and possible risk reduction for secondary caries.¹ With ongoing use, it was observed that glass ionomer cements still fell short with regard to setting time, adhesive strength compared to resin cements, and degradation in lower pH environments.²

The introduction of resin monomers to traditional glass ionomer cements immediately solved the concerns about setting time; however, the materials became more technique-sensitive² as water sorption increased dramatically.³ To add to these concerns, changes to the delivery systems for convenience altered the physical properties of the cements, and this varied from brand

to brand.⁴ These challenges with RMGI cements created a void for a product that could be used reliably for most applications, including posts, metals, zirconia, and high-strength ceramics.

The novel formulation of Meron Plus QM (Voco) offers clinicians the aforementioned luting capabilities, while simplifying the cementation process. The formulation incorporates a long-chain polyacrylic acid, formulated glass, and limited photoinitiators to obtain the desired characteristics. The end result is a convenient paste-to-paste automix-delivery RMGI without compromise to physical properties when compared to trituration or hand-mixing.⁵ Furthermore, based on the research of the Voco R & D team and this clinician's anecdotal results, dentists can expect to observe excellent bond

strengths to dentin, an improved bond to zirconia, decreased water solubility, and improved hydrophilicity when compared to other available RMGI cements.⁵ Rounding out the favorable clinical characteristics of this material is an extended gel phase after tack-cure, which creates an opportunity for thorough removal of excess cement and eases the cleanup process. Finally, with a low cost-per-gram of material, comparatively speaking, Meron Plus QM can increase profitability for dental practices, complementing their inherent reliability and efficiency.

In the following clinical case, cementation of a full monolithic zirconia crown is documented in an extremely apprehensive patient.

CASE REPORT

A 53-year-old male patient presented for restorative dentistry with severe apprehension. General anesthesia was required to prepare his carious and structurally compromised tooth no. 29 for a full zirconia crown (figure 1). Full monolithic zirconia was chosen for its strength and resistance to fracture, given that the patient did not want to have the edentulous space from tooth no. 30 restored (figure 2).

The patient stated he cared little about esthetics and that longevity was his primary concern. With that in mind, the full zirconia crown was to be luted with a material that could provide fluoride release with adhesion to dentin and zirconia alike. The patient did not want to submit to general anesthesia for cementation and had an aversion to cotton and gauze.

In this compromised situation, a simple delivery and a forgiving material that could

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Figure 1: Prepared tooth no. 29

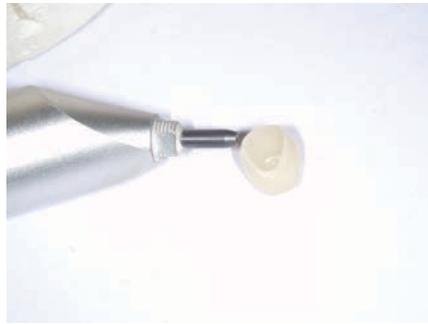


Figure 2: Intaglio surface of crown abraded with 50 micron aluminum oxide



Figure 3: Meron Plus QM automix, chosen for optimal properties



Figure 4: Try-in of crown for marginal fit, contact, occlusion, and shade



Figure 5: 50 micron aluminum oxide (Deldent) abrasion of tooth to clean and enhance bond



Figure 6: Cleansing and application of MDP zirconia primer to crown (Z-Prime, Bisco)



Figure 7: Simple application of RMGI cement through automix applicator tip



Figure 8: Crown firmly seated and held to place for light tacking



Figure 9: Three-to-five second light tack to accelerate gel phase for easy flash removal



Figure 10: Cement easily removed with explorer in gel phase



Figure 11: Final restoration following cleanup

SIMPLIFYING CEMENTATION

reliably accomplish the task at hand had to be considered. Meron Plus QM was chosen for the case (figure 3). The restoration was seated initially to assure marginal fit, proximal contact, and gross occlusion (figure 4). Following try-in, the intaglio surface of the crown and the prepared tooth were cleansed and microabraded with a Micro-Etcher II (Zest Dental) and 50 micron aluminum oxide (Deldent Ltd.; figure 5). After thorough rinsing and gentle air-drying of both the crown and the preparation, the zirconia was treated with Z-Prime (Bisco Dental; figure 6) a methacryloyloxydecyl dihydrogen phosphate (MDP)-containing metal primer. Immediately following this step, the primer was gently air-dried, and the crown was prepared for luting.

Because the patient would not tolerate isolation adjuncts, the assistant was required to maintain isolation of the tooth manually. With the isolation maintained, Meron Plus QM was expressed through the auto-mix syringe into the crown (figure 7). Excess cement was removed with the back end of a generic cotton tip applicator.

Having two minutes of working time, the tooth was again rinsed and gently dried to reduce saliva contamination. The zirconia crown with luting agent inside was then firmly seated over the preparation with firm finger pressure (figure 8). To establish a tack-cure for easy cleanup of the cement, the seated crown was light-cured from the lingual, distal, and buccal for five seconds each (figure 9), after which the excess material in a gel state peels away readily with an explorer or scaler (figure 10).

After four-and-a-half minutes, the material was fully set and final cleanup, contact, and occlusal confirmation were performed. Polishing was finalized with A.S.A.P Polishers (Clinician's Choice). The final result (figure 11) shows a moderate cosmetic result but realized expectations for both the clinician and patient: a durable restoration with long-term retention due to the favorable characteristics of this novel RMGI cement. **DE**

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