The next generation in cement technology

By Dr Michael N. Mandikos, BDSc (Hons), MS (New York), Cert Pros, FRACDS

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In an era when clinicians already have conventional cements (Zinc Phosphate and Glass Ionomer), Resin Cements and Hybrid Cements (Resin Modified Glass Ionomers and Compomer Cements), one might ask why should a “new” category of luting cement be introduced into Dentistry? The answer of course is an attempt to blend the favourable properties of conventional cements (ease of use and fluoride release) with those of the resin cements (aesthetics and physical properties) in order to produce a truly universal luting cement which is simple and easy to use, moisture tolerant and insensitive to technique.

RelyX™ Unicem Self-Adhesive Universal Resin Cement by 3M ESPE represents the first available product of a new generation of self-adhesive resin luting cements. RelyX Unicem contains a modified methacrylate monomer with phosphoric acid side chains, which provides a very low pH and makes it a self-etching monomer much like the new 6th and 7th Generation self-etching Dentine Bonding Agents. When RelyX Unicem comes into contact with tooth structure, it conditions the enamel and dentine. As it penetrates the dentine, it is also buffered in the process leaving a neutral pH. The final cement film has excellent physical properties, is translucent in colour and has a hydrophobic matrix making it essentially insoluble and impervious to oral fluids. RelyX Unicem is a composite luting cement which is indicated for metal-ceramic, all-ceramic and composite restorations and does not require a separate dentine bonding procedure. Crowns and other restorations luted with RelyX Unicem can thus be placed quickly and efficiently with a minimum of chairside time, in areas where isolation and moisture control are difficult and with little risk of post-operative sensitivity.

The following case illustrates the clinical steps required to place metal-ceramic restorations with RelyX Unicem.

The patient is missing several teeth in the maxilla. It was decided to replace the teeth in the upper left
quadrant with implant-supported crowns, whilst the remaining maxillary teeth were to be restored with conventional ceramic and metal-ceramic crowns. The maxillary right premolars were to be replaced with porcelain fused to metal crowns, whilst the missing right lateral incisor was to be replaced with a pontic cantilevered from the right canine, via a two-unit porcelain fused to metal bridge. It was decided to place two ceramic veneers on the central incisors to complete the aesthetic result.

Slide 2
The relevant teeth were prepared and impressioned with polyvinyl siloxane impression material (3M ESPE Express), and the metal-ceramic and all-ceramic restorations were made. The provisional restorations were removed and the prepared teeth were cleaned with pumice and water slurry. No further isolation or preparation of the teeth was necessary.

Slide 3
RelyX Unicem Self-adhesive Universal Resin Cement capsules were mixed in a Rotomix unit (other amalgamators can be used) and the luting cement was dispensed directly into each crown. The cement was wiped over the internal aspect of each crown ensuring that the margins were covered.
Slide 4
Each cement-loaded crown was then placed into position on its prepared tooth and pressure was exerted to correctly seat the crown.

Slide 5
The excess cement film exuded from the crown margins was then "tack-cured" for 1-2 seconds to cause initial polymerisation only. This partially polymerised cement was then removed with an explorer or scaling instrument to ensure no excess cement remained around the margins or in the interproximal embrasures.

Slide 6
After a few minutes passed and auto-polymerisation of the cement occurred, the remaining crowns were also loaded with RelyX Unicem and seated in place. The final case after cementation of the
metal-ceramic crowns and cantilever bridge is shown.

(The ceramic veneers were placed with a veneer luting cement (RelyX Veneer Cement) in line with the manufacturer’s recommendations for indications for use of RelyX Unicem Self-adhesive Universal Resin Cement.)

Slide 7
The requirement to bond a post-core restoration into a root canal system when little coronal tooth structure remains is a frequent scenario for clinicians. Etching, drying, priming and bonding the dentine in such circumstances can be very time consuming and is a very technique sensitive process.

Slide 8
The ability to bond a post-core restoration in one simple step by using RelyX Unicem Self-adhesive Universal Resin Cement is a timesaving, efficient and predictable process.

Dr Michael N. Mandikos received his BDSc with honours, from the University of Queensland and his Certificate in Prosthodontics and Masters Degree in Biomaterials from the State University of New York at Buffalo, USA. He has researched direct and indirect composite resins and published several papers in local and international journals on clinical and dental materials topics. Dr Mandikos has presented continuing education programs at Dental meetings throughout Australia and South East Asia and he is a Fellow of the Royal Australasian College of Dental Surgeons and a recipient of the College Medal. He is a Visiting Specialist Prosthodontist at the University of Queensland Dental School and was a Visiting Prosthodontist to the Australian Army. He maintains a private practice limited to Prosthodontics in Brisbane City.