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Trevor Burke

More FAQs

In the last Comment, I explained that I would answer some Frequently Asked Questions (FAQs) in writing, as I didn't have time at the conclusion of a webinar. Here are more!

The most frequent FAQ was: *Seal&Protect has been discontinued by the manufacturers: what is the best alternative?*

This was news to me as I was not aware that this material was no longer available: I hadn't used it for years, which is probably why I hadn't missed it! However, quite a number of dentists obviously did.

For information, Seal&Protect (Dentsply Sirona) was a nanofilled light-curing dental varnish designed to protect exposed dentine areas, both mechanically and by way of an antimicrobial agent. It contained resins, including PENTA (dipentaerythritol penta acrylate monophosphate), which has appeared in Dentsply bonding agents over the years, a photo-initiator, stabilizers, cetylamine hydrofluoride, triclosan and acetone. It appears that it was the triclosan (an antibacterial and antifungal agent that readers will have learned about as a constituent of some toothpastes), which was the villain of the piece, as a change in Medical Devices Regulations[1] meant that it was no longer to be used in medical devices. Indeed, in light of mounting evidence on the human health and ecotoxic effects of triclosan, some companies reformulated to remove it in advance of regulation: Colgate-Palmolive removed it from Palmolive Dish Soap and Softsoap in 2011 (but it remained in Colgate Total toothpaste until early 2019); Johnson & Johnson removed it from baby products in 2012 and all products in 2015; and Procter & Gamble from all products in 2014.[1]

Seal&Protect was indicated for protecting abraded and/or eroded exposed cervical dentine, and/or treatment of hypersensitive cervical areas. In other words, it was designed to be a protective coating for exposed roots. The material was applied to clean (but not dessicated) class V surfaces using a specially designed applicator. The sealant was light cured, and it was not necessary to etch the dentine surface. Two or more layers could be applied. The concept was to seal exposed dentinal tubules and improve resistance of the surface to erosion and abrasion. So, what alternatives are available? I contacted the manufacturers who advised that their suggested alternative was Prime&Bond Active (Dentsply Sirona), a universal adhesive that lists, in its indications, 'desensitizing exposed dentine'. I then looked at the indications for use for a number of other universal adhesives, finding that, for example, Scotchbond Universal Plus (3M, MN, USA) was indicated for 'root surface sensitisation', Futurabond U (VOCO, Cuxhaven, Germany) for 'hypersensitive tooth necks', One Coat 7 (Coltene, Altstatten, Switzerland) for 'dentine sealing', Clearfil Universal Bond (Kuraray, Tokyo, Japan) for 'treatment of exposed root surfaces', and, Adhese Universal (Ivoclar-Vivadent, Leichtenstein) for 'desensitising hypersensitive cervical areas'. Advice to readers, therefore, is that it is likely that most universal adhesives will be capable of treating sensitive roots, but not all websites make this clear, so best to check! In common with Seal&Protect, however, is the fact that if the sensitivity is due to over-vigorous toothbrushing, then the layer of dentine adhesive will wear away and will need re-application. If the emergence profile of the root will not be challenged by application of an actual composite restoration as opposed to merely the bonding agent, then why not apply a thin layer of composite to further protect the root surface? On the other hand, application of a layer of resin-modified glass ionomer will also help cover and desensitize a root surface.

Another question which was asked by several, in different ways! *Do you recommend no etching and using the bond that has etch prime and bond features or is use of etching gel important?*

This question, to me, related to the concept of selective enamel etching. This will be addressed in a new publication in the September issue, so, briefly, selective enamel etching was introduced with the so-called self-etch dentine adhesives because their pH was not sufficiently low to adequately etch uncut enamel, leading, in time, to increased staining or deficiencies at the enamel interface. The concept of selective enamel etching was, therefore, developed by researchers in Leuven[2] in order to overcome these enamel margin problems, even if it seems strange (Irish, some say!) to etch margins when using a material that is designated self-etch. More recently, the universal adhesives can be used in total etch, self-etch or selective enamel etch modes, with the clinician deciding which mode to employ. When used in self-etch mode, margins will be optimized by the use of selective enamel etching. In addition, for posterior teeth in particular, not etching the dentine, with its associated risk of over etching, should reduce the risk of post-operative sensitivity, although other factors also come into play in this. So, the advantages to selective enamel etching are better margins, reduced risk of post-op sensitivity, even if it is a fiddly technique. Another reason for using selective enamel etching was identified by Szesz and colleagues[3] who carried out a systematic review and meta-analysis on the subject, identifying 2689 articles, but retaining only 10. Their aim was to identify whether selective etching of enamel margins improves the retention rates of cervical composite restorations in NCCL. While their findings related to self-etch adhesives, it may be considered that their results are pertinent to universal adhesives used in self-etch mode. They concluded that selective enamel etching prior to application of self-etch adhesive systems in NCCLs can produce composite restorations with better aesthetics (lower marginal discolouration rates) and higher retention rates, the latter surely being another reason to employ selective enamel etching for class V resin composite restorations.

Tip from Trevor, for selective enamel etching, try to find an etch gel that is relatively viscous and therefore, easy to place and control. I could find no research on etch gel viscosity – this is indeed an area that needs more research. Anyone fancy spending three years of their life doing a PhD on this topic? It might not be great fun, but it would be useful!

The last question was: *anyone old enough to remember Concise and Adaptic?* For the benefit of younger readers, these historic materials were macrofilled composites with large (up to 100 micron) filler particles. This meant that they were impossible to polish satisfactorily, and the filler particles were not well bonded to the resin matrix, meaning that they were lost when opposing cusps moved over them (ie their wear resistance was poor). One respondent advised that she had a 44-year-old restoration in one of these materials still functioning in her mouth! I reflected on how far resin composite has progressed from those early materials, given that we can now place very aesthetic and wear-resistant restorations using current easily polished materials, some capable of being placed at depths of 5 mm. What progress will be made in the next decade, let alone the next 44 years? A self-adhesive composite perhaps? Then we would not need that PhD on etch gels!

Finally, I know from corresponding with readers that Lakshman Samaranayake's monthly COVID Commentary has been essential reading in these difficult times. However, discussions between the lead author of each Commentary and I have led us to decide that, as the pandemic wanes (hopefully!), he will write a COVID Commentary for every alternate issue and the next one will appear in the July/August issue.

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