View from the bench

Famously, on reading his own obituary, Mark Twain quipped, 'Reports of my death have greatly exaggerated'. The metal/ceramic crown and bridge restoration industry could say the same, writes Peter Wagon

Virtually all recent magazine articles about cosmetic dentistry, including those written by me, have pushed the virtues of metal-free restorations over those of the more traditional porcelain bonded crown or bridge, but advances in materials mean that their entry into the history books is still a while off yet.

If we look back, far into the past, when I first entered a dental laboratory things were simpler. There were two options for crown and bridge work: porcelain-bonded (VMK) work or the platinum jacket crowns (PJC). In those days everyone was searching for a non-precious alloy that would perform as well as the gold or silver palladium alloys. This would lower the cost of the restoration and allow the labs to charge a fixed fee without being hostage to the vagaries of the world commodities markets.

The early attempts weren't unqualified successes! When I was a trainee in the late 1970s, every few months my boss would give us a few ingots of some new metal to try. Some seemed to be virtually impossible to cast cleanly, others we found to be a dream to cast but when we put porcelain on them we found the bond failed. One cast and bonded well but all the crowns, whatever shade of porcelain we used, came out a dark yellow B4.

The alloy companies kept banging away though, and by the mid 1980s there was a range of reliable non-precious nickel-based alloys that in many ways performed better than the more expensive alloys. These alloys were far stronger, so large spans could be bridged with less metal in the connecting areas between units, allowing the ceramist more space to create aesthetic teeth shapes.

Now all of our prices are based on VMK units using non-precious alloy, with those clients who prefer precious metal alloys paying an additional charge by metal weight and spot price.

Precious alloys have moved forward apace too. For cosmetic cases where it isn't possible to cut the shoulder preparation required for all-ceramic crowns or a porcelain butt margin, we now use a 98% yellow gold alloy called Bio 2000. A skilled technician can cast this soft, malleable metal far thinner than any other and then swage down the alloy to create an unrivalled fit without the black line. As the metal has such a high gold content it does not build up an oxide layer when the crown is fired in the furnace, so when the light travels through the crown it reflects back a warm colour that patients seem to love. And of course, being gold, there are virtually no allergy problems.

One way around the dreaded black line at the fit of a crown is the porcelain butt finish, which is made by finishing the metal short of the margin and making up the fit with a marginal ceramic… let me tell you, these can be tricky and frustrating for the ceramist!

A full 360º ceramic margin can now be achieved using a pressed-to-metal technique. A traditional metal substructure is made, then the full contour restoration is waxed up and pressed into a porcelain ingot of the correct shade without any of the colourful language and tears that often accompanies porcelain butt fits.

These advances by the metal companies have been matched by the porcelain manufacturers. In my early days, working mostly for Harley Street private clients, we had just one porcelain system – Vita VMK. While state-of-the-art at the time, now when I see patients with old crowns I'm struck by how dead and lifeless they look. This has been superseded by far superior products, which give the technician the chance to create far more vital restorations and provide the dentist with a far greater range of shades and effects they can prescribe from both the traditional Vita Lumin and the newer Vita 3D shade guides.

So, the porcelain bonded restoration is evolving to keep up with the advances in all-ceramic work and I believe will still be alive and kicking long after I've hung up my brushes and overalls.

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