Clinical indications for a composite-metal PFM restorative

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A lthough "metal-free" has resulted in the use of some metal alloys in dentistry, the need for subgingival margin placement, masking of discolored tooth structure or the necessity for conventional pontic retainers has not diminished. The elasticity of this micromechanical interlocking diminishes with aging and is caused by the movement of microstructural changes that occur with time. The UCP on Capp's copings provide a color background for the natural restoration of the tooth. The color of the porcelain that surrounds the metal core is an inherent orange in the coping and is the same color as the porcelain on the crown. Therefore, the coping is required for the partial preparation of the tooth to provide adequate occlusion for the coping.

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Fig. 1 The patient's worn, misaligned and discolored smile.

Fig. 2 The old smile is transformed into a naturally balanced one using Captec crowns.

Fig. 3 The first layer of metal-mixed wax is put in place on the refractory die.

Fig. 4 The second layer adaptation is completed and ready for firing.

Fig. 5 Shade matching with Captec and accurate clinical records is virtually perfect. The crown in this picture is on tooth #1.

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es of 0.28 mm for longer span bridge fabrication, 0.25 mm for routine restorations and even less than 0.2 mm for areas in the esthetic zone where maximal clearance for porcelains application may be needed.

Capek copings for bridge work utilize a specialized solid denture investment that precludes the possibility of any casting distortion for a completely predictable fit. At this time, close to 10 million Capek units have been placed in the United States alone. Uses

It is often the case that the location of previous restorations, cemental exposure or new carious lesions will mandate the placement of subgingival margin placement. It has been my experience that because cariogenic oral bacteria are particularly aerobic, and therefore do not have a significant presence in the subgingival environment, subgingival margin placement results in less recurrent decay. Due to the moisture inherent in situations such as these, a cementable restoration is essential and of the new generation in metal-free products, only zirconia will fill that bill.

However, zirconia is among the least esthetic of the ceramics whereas Capek achieves clearly superior esthetic results intrinsically and, in clinical testing, is proven to encourage the most natural soft-tissue esthetics as well.9 This quality is explained by the influence of the Capek copings’ warm metal color and its aforementioned bacteriostatic properties, which contribute greatly to gingival health with stable color. Even including semi-precious metal copings, can be problematic (Figs. 11, 12).

Bacteriostasis occurs due to significant caries-inhibiting phosphor-6 acid adherence to Capek as compared with other crown and bridge components when in natural tooth structure, and significantly reduces harmful bacteria even when the gingival units over time.3 Because Capek is composed of completely premixed metals, it will not react in the mouth’s environment to cause oxidation formations. This lack of oxides is a major advantage for all the Capek coping surrounding structures from the gingivae to porcelain. Oxides from a standard crown margin can infiltrate the adjacent gingivae, causing gingival irritation and in some instances, even an inflammatory reaction. The Capek coping margin does not cause inflammation in the proximate gingiva, connective tissue or alveolar bone through its way. Oxide formation on standard crown margins can make them susceptible to discoloration and in some cases, advance to periodontitis. Capek’s oxide-free surface prevents the occurrence of such reactions. In conventional crown systems, metals oxidize during porcelain firing, causing an overall grayish look at the margins. Over time, in this environment, these standard metals continue to oxidize, further discolored the marginal porcelain through dispersion of the oxide molecules. Capek metals will not oxidize in the oral cavity under any circumstances, thus preserving the original color of the restoration. Capek’s composite metal structure also produces a micro-circuit bipolar stimulus that seems to progressively invigorate the tissue cells around it.4 Gingivae are not only unaffected by Capek, but the production of a prosthetic-like esthetic patients.7,8,9

There is, thus, comparatively less gingivitis and recession around a Capek crown than found around other ceramic-metal restorations. Consequently, Capek has become my material of choice for direct restorations in the esthetic zone that demand subgingival margins.

As any dentist knows, endodontically treated teeth often discolor significantly after such procedures. It is also true that there are some implant cases where it is preferable to use a metal abutment, and in those instances the effect on gingival color can be distinctly negative.10 The transparency of most metal-free restorations will not allow for the full masking of this tooth discoloration or metal reflection, and cosmetic outcomes will be adversely affected when those materials are used under these circumstances.11

As a PFM restoration, Capek affords ultimate masking qualities, and its excellent esthetic results make it the prime choice in situations where masking abutment discolored coloration is of prime importance.

The longevity of large restorative restorations is of major consequence to the treating dentist. Remakes due to functional failure are easy to the dentist not only economically, but in terms of his or her reputation as well. The greater strength of PFM restorations over their metal-free counterparts, even including zirconia units, is well documented in the literature.12 In cases where occlusal or parafunctional matters are involved, much concern, ceramometal crowns will be the longest lasting. Considering Capek’s advanced cosmetic capabilities and strength characteristics, there is no disadvantage to using PFM restorations in a smile design case that has wear issues, which could lead to potential failure of all-ceramics are used. It is on this last point that I am met with the most skepticism from colleagues in lectures around the country. There are many practitioners who simply will not believe that a PFM restoration can match the vitality of an all-ceramic product.

I have found in my practical experience that all other things being equal (skill of the laboratory technician involved, quality of the clinical records provided, etc.), it is easier to fabricate a realistic life-like restoration from a metal-free material, but in the hands of a master ceramist, Capek can achieve an organic realism that is virtu- ally indistinguishable from nature Figs. 13, 14.13

In fact, complex restorative cases blending Capek and all-ceramic units have been documented to realize a harmonious result.14 Conclusion

Although all-ceramic restorations have been en vogue when it comes to transformational restorative cases in the esthetic zone for some time – even being taught as state-of-the-art in dental schools14 – they are not the be-all or end-all where it comes to solving many common clinical situations.

The placement of all-ceramic restorations is much more technique sensitive than its ceramometal counterpart, and their long-term function, especially when all occlusal considerations have not been carefully accounted for, is questionable at best in comparison.

There is a porcelain-fused-to-metal alternative that is stronger than the all-ceramic choices available, kinder to gingival tissues, more esthetic when worn, and easy to maintain through these tissue and even any bit as natural looking when fabricated by a talented ceramist. These attributes come from the design of Capek’s unique composite metal coping (Fig. 15),16 whose properties set it apart from all other PFM’s in the 10 years that I have been using it. If there are cases for which you hesitate to use a metal-free restorative due to occlusal questions or where periodontal, abutment color or gingival factors are paramount, consider Capek. It will perform flawlessly under all these conditions while delivering cosmetic results that are unassuming compared with any other material when in the hands of a gifted laboratory technician. What more could you ask for?

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