Clinical indications for a composite metal PFM restorative

By Barry McArdle, DMD

Although “metal-free” has become a mantra in some dental circles, even when it comes to indirect restorations, all-ceramics have their limitations.

When parafunctional habits, wear of the existing dentition, the need for subgingival margin placement, masking of discolored tooth structure or the necessity of conventional cementability contraindicate the use of these newer dental materials, the traditional porcelain-fused-to metal restoration is called for.

It has, however, fallen out of favor with many practitioners primarily because of its cosmetic shortcomings in the esthetic zone.

There is an alternative to conventional PFM, which has proven itself as a prime option under these circumstances both functionally and cosmetically. Captek (Precious Chemicals Company, Altamonte Springs, Fla.) is a composite metal, not an alloy, whose optical properties accurately mimic those of enamel’s underlying hard and soft tissues.1

In the hands of master ceramists, such as the Elite porcelain team at Arrowhead Dental Laboratory (Sandy, Utah), ultimate vitality can be obtained by using this system (Figs. 1, 2) and the shade matches attained with this material is remarkable (Fig. 3).

In addition, Captek has demonstrated micromechanical interlocking as its primary mechanism of porcelain adherence,2 which

Dental students attend AACC scientific session for free

The American Academy of Cosmetic Dentistry is offering several scholarships to dental students so they can attend the AACD’s annual scientific session in May at no charge — a $1,045 value.

The AACD will host the session May 18-21 in Boston. The event, themed “The Rise of Collaboration,” will offer lectures, workshops and networking opportunities for cosmetic dental professionals.

The AACD APEX Student Scholarship includes:

- Registration fees to the annual scientific session ($125 undergraduate)
- Round-trip coach-class airfare (up to a $500 value)
- Four nights hotel accommodations (May 17-21) for the annual scientific session ($1,000 value)
- One year of AACD membership ($20 undergraduate)
- Undergraduate dental students are eligible to apply for the scholarships and will be judged on academic achievement, and their understanding of and commitment to the future of cosmetic dentistry. The deadline for applications is March 1.

To apply, students must submit:

- Completed scholarship application (available at www.aacd.com/students).
- Official dental school transcript (must be sent by a student’s school)
- Two letters of recommendation
- Essay (500-1,000 words) on the social or scientific value of cosmetic dentistry

Applications will be accepted and reviewed by an AACD assigned review committee for consideration.

For more information, visit www.aacd.com/students.

About the AACD

The AACD is the world’s largest non-profit member organization dedicated to advancing excellence in comprehensive oral care that combines art and science to optimally improve dental health, esthetics and function.

Composed of more than 6,500 cosmetic dental professionals in 70 countries worldwide, the AACD fulfills its mission by offering superior educational opportunities, promoting and supporting a respected accreditation credential, serving as a user-friendly and inviting forum for the creative exchange of knowledge and ideas, and providing accurate and useful information to the public and the profession.

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

Fig. 2: Transformed into a naturally balanced smile using Captek crowns.
A new cosmetic research study is open for dentist participation in the United States and internationally. The purpose of the cosmetic dental study, conducted by Dental Ideal Lab, Smiley Vision Dental Laboratory and Big Case Marketing, is to determine the behavioral impact of pre-treatment cosmetic simulations on patient case acceptance rates, measure time efficiency of the “template technique,” which improves esthetic outcomes, and the whole staff [of Cosmetic Dental Associates] was friendly, nice and smiling.”

Moore said: “Over all the years I lived in the community and what the community has done for me, I feel it is fun to give back and help others. Whether I help people, children, my staff or animals I find it fun. Thank God I can not only help myself and my family, but I am in a position to help those that are not as fortunate as I. It is a blessing to be able to do that!”

Moore has been a San Antonio dentist for more than 25 years, and has been honored for his work by Moore, of Cosmetic Dental Associates of San Antonio. Moore has been a volunteer dentist for the San Antonio Donated Dental Services program since 2001 and has contributed more than $20,000 to the cause. Fredricks’ wife, translator, Mrs. Fredericks saw Moore, he had just a few teeth left. The financially strapped couple didn’t have the resources to correct the dental damage left by leukemia. Then a neighbor who had been the recipient of donated dental services herself suggested that they apply for the Smiles Foundation’s program. The Texas Donated Dental Services program is open to patients who are at least 55 years or older, or have a permanent disability, and have no other way to get dental care. Patients submit their cases to the website, and register online or in person to become a candidate for these services.

Once the patients meet their requirements, their cases are then submitted to the clinicians. The clinicians review each case they are given, and choose the patient that is financially and medically unable to receive the treatment otherwise.

In Fredrick’s case, the treatment started in July and continued several months into the autumn. Mrs. Fredericks said it was a godsend.

“We were blessed,” she said. “Dr. Moore did an awesome job with my husband’s teeth. We had a great time, and the whole staff [of Cosmetic Dental Associates] was friendly, nice and smiling.”

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Moore has been a San Antonio dentist for more than 25 years, and has credits include serving as an assistant professor of dentistry at the University of Texas Health Science Center in San Antonio. He is a prolific lecturer and published writer, and has won numerous awards, including being voted into America’s Top Dentists in Cosmetic Dentistry and honored as San Antonio’s Top Dentist in Cosmetic Dentistry. He is also a top San Antonio orthodontist, and has been honored for his groundbreaking treatments in correcting major alignment problems with a “no braces” method without jaw surgery.

(Source: PRWEB)

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in my experience has resulted in the superior strength and fracture resistance that is often required in specific clinical situations.

Even though the Captek coping is not cast, its extensively documented marginal integrity\(^1\) and antibacterial qualities\(^4\) make it an ideal restorative where subgingival margins are necessary, and I have found in many cases that these properties may afford the clinician more leeway in relation to the biologic width.

**Uses**

It is often the case that the location of previous restorations or new carious lesions will mandate the placement of subgingival margins. 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 fit that bill.

However, zirconia is among the least esthetic of the ceramics where Captek is clearly superior, both intrinsically and for its influence on gingival appearance.

Captek has been found to outperform any other material in terms of its performance with regard to gingival color.\(^5\) Its aforementioned bacteriostatic properties contribute greatly to gingival health where other materials, even including semi-precious metal copings, can be problematic (Figs. 4, 5). Thus, Captek has become my material of choice for indirect 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 these instances, the effect on gingival color can be decidedly negative.

The translucency of most metal-free restoratives will not allow for the full masking of this tooth discolored or metal reflection, and cosmetic outcomes will be adversely affected when those materials are used under these circumstances.\(^6\)

As a PFM restoration, Captek offers ultimate masking qualities, and its excellent esthetic results make it the prime choice in situations where masking abutment discoloration is of prime importance.

The longevity of large restorative cases is of major consequence to the treating dentist. Remakes due to functional failure are costly to the clinician 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.\(^7\)

In cases where occlusal or parafunctional matters are of a principal concern, ceramic-metal crowns will be the longest lasting. Considering Captek’s advanced cosmetic capabilities, there is no disadvantage to going with PFM restorations in a smile design case that has wear issues that could lead to potential failures if all-ceramics are used.

It is on this last point that I am met with the most skepticism during my lectures around the country. There are many practitioners who simply will not believe that a PFM restorative can match the vitality of an all-ceramic product.

I have found it true 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 really life-like restoration from a metal-free material, but in the hands of a master ceramist, Captek restorations can achieve an organic realism that is virtually indistinguishable from nature.

In fact, complex restorative cases blending Captek, and all-ceramic units have been documented to realize a harmonious result.\(^7\)

**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 schools,\(^8\) they are not the be all or end all when it comes to these situations.

The placement of all-ceramic restorations is much more technique sensitive than its ceramic-metal counterpart, and their long-term function, especially when all occlusal considerations have not been carefully accounted for, is questionable at best in comparison.\(^9\)

There is a porcelain-fused-to-metal alternative that is stronger than the all-ceramic choices available, kinder to gingival tissues, more esthetic when seen through those tissues, and every bit as natural looking when fabricated by a talented ceramist. These attributes come from the design of Captek’s unique composite metal coping,\(^10\) whose properties set it apart from all other PFMs.

If there are cases for which you hesitate to use a metal-free restorative due to occlusal questions or where periodontal and gingival factors are paramount, consider Captek.

It will perform flawlessly under all these conditions while delivering cosmetic results that are unsurpassed by any other material when in the hands of a gifted laboratory technician. What more could you ask for?\(^11\)

**Fig. 3:** Shade matching with Captek and accurate clinical records is virtually perfect. The crown in this picture is on tooth #13.

**Fig. 4:** The gingivae at these premolars restored with porcelain-fused-to-semi-precious-metal copings are severely inflamed and have receded substantially after only 14 months.

**Fig. 5:** The same teeth, 10 months after having been restored with Captek crowns, show no sign of gingival irritation whatsoever.

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**About the author**

Dr. Barry F. McArdle graduated from Tufts in 1985 and maintains a private practice in Portsmouth, N.H. An expert reviewer for JADA, he has authored numerous articles in the peer-reviewed literature. McArdle is also an alumnus of The Pankey Institute. He co-founded the Seacoast Esthetic Dentistry Association in 2000 and his lecture series, Seacoast Dental Seminars, in 2005.

*About the author*

The author would like to thank the Elite porcelain team at Arrowhead Dental Laboratory for its expertise in fabricating the Captek restorations shown in this article.

A complete list of references is available from the publisher.