Myths about Gingival Response to Crowns

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"Believe nothing, no matter where you read it or who has said it, not even if I have said it, unless it agrees with your own reason and your own common sense." — Buddha

In response to the informative article written by Dr. Omar El-Mowafy in the December 2007/January 2008 issue of the *JCDA*,[1] I would like to offer some comments from a different perspective and with different conclusions.

The article suggested that the tissue of a 25-year-old, otherwise healthy gentleman was inflamed around porcelain-fused-to-metal (PFM) crowns on both maxillary central incisors due to poor fit and overextension of the crown margins into the interproximal gingival spaces. Once the crowns were replaced with new, more perfectly shaped and fitted crowns, the tissue returned to health.

Although these factors likely played a role, I believe the main culprit was overlooked; I suggest that the tissue response was primarily due to the fact that the original restorations contained metal and the replacement crowns did not.

Over the past 10 years, I have generally considered biologic width preservation of secondary importance, in favour of optimizing esthetics by using metal-free prosthetics and without resorting to highly invasive surgical crown-lengthening procedures. In my experience, when the final restoration is metal-free, the tissue response has always been favourable regardless of the remaining distance from the crest of the tissue to the bone.

Tissue response to metal-containing prosthetics is frequently poor, even when the margins are supragingival. I believe that this response is not due to galvanism, as it appears frequently in mouths that contain no other metal restorations, but rather to a tissue reaction to the metal itself, usually only observed in the anterior part of the mouth.

Figure 1 illustrates such a condition in a mouth restored with a PFM bridge, even

Figure 1: Tissue response to a porcelain-fused-to-metal bridge.

though the margins are not subgingival. No other metal restorations are present.

Figure 2a shows a patient with an anterior PFM crown with a supragingival margin. After replacing the crown with a metal-free restoration and moving the margin subgingivally, the tissue improved markedly, as shown in **Fig. 2b**. This treatment was provided over 15 years ago.

In further defence of my position, I present the case of a 20-year-old woman, who asked to have her "gummy" smile improved (**Fig. 3a**). She was aware of the existence of veneers, but was unsure whether she was a good candidate. She was not interested in orthodontic alternatives.

Under anesthesia, her gingival sulcus was probed to find the level of the crestal bone. The sulcular depth was found to be 2 mm, and the bone was at the 3.5-mm level. To create a more ideal smile, it was necessary to remove approximately 3 mm of tissue, leaving a depth from the crest of the tissue to the underlying bone of merely 0.5 mm. This gingivectomy was accomplished on the 4 incisors with a diode laser at the time of veneer preparation on the anterior 10 maxillary teeth (**Fig 3b**).

At 7-year recall (**Fig. 3c**), the patient agreed to be probed, under anesthesia, to determine the crestal bone level. The sulcular depth was 0.5 mm and the crestal bone depth was at 1 mm (**Fig. 3d**). Tissue health is optimum, and the patient has not had any complaints.

Figure 2a: Reaction to an anterior porcelain-fused-to-metal crown with a supragingival margin.

Figure 2b: Tissue improvement after replacing the crown with a metal-free restoration and moving the margin subgingivally.

Figure 3a: Patient requesting improvement of a "gummy" smile.

Figure 3b: Two weeks after gingivectomy and application of veneer to the anterior 10 maxillary teeth.

Figure 3c: Gingival condition of the same patient at 7-year recall.

Figure 3d: Sulcular depth 0.5 mm and crestal bone depth 1 mm.

If this situation were unusual, it would not be noteworthy. However, tissue response to this type of invasion of the theoretical biologic width is consistent and, in my experience with hundreds of examples, has never resulted in gingival complications, as long as metal-free prosthetics were provided.

It should be noted that before treatment was provided in this case, consultation with a local periodontist resulted in the suggestion that an osseous recontouring crown-lengthening procedure could be performed after completion of the veneer treatment if chronic inflammation resulted. The patient was made well aware of the experimental nature of this approach, and was willing to follow through with post-treatment surgical periodontal therapy if it had proven necessary.

Belief in the cause–effect relation between prosthetic biologic width invasion and tissue inflammation is widely accepted. As a result of my clinical experience, I question the validity of this belief and suggest it is important to restore anterior teeth without the use of metal.

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Reference

1. El-Mowafy O. Gingival response to crowns: a 3-year report [Clinical Showcase]. *J Can Dent Assoc* 2007/2008; 73(10):907–9.

Read Dr. El-Mowafy's response to this article on page 803.