

Comparison of Porcelain Veneers and Crowns for Resolving Esthetic Problems: Two Case Reports

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“Clinical Showcase” is a series of pictorial essays that focus on the technical art of clinical dentistry. The section features step-by-step case demonstrations of clinical problems encountered in dental practice. If you would like to contribute to this section, contact editor-in-chief Dr. John O’Keefe at jokeefe@cda-adc.ca.

When dentists are considering restoration of maxillary anterior teeth to improve esthetics, they must often choose between porcelain veneers and full-coverage crowns. Porcelain veneers are considered much more conservative in terms of the requirements for preparation, and they provide satisfactory, long-lasting esthetic results. Typically only the facial surface is involved in veneer preparation, with the minimal preparation depth ranging from 0.3 to 0.5 mm to maintain the all-enamel surface that is necessary for optimum bonding to the veneers.¹ However, if the teeth are already compromised by the presence of extensive carious lesions, wear, old restorations or endodontic treatment, placement of a crown is the more prudent choice. This article presents 2 selected cases, one illustrating an ideal situation for veneer restorations and the other illustrating an ideal situation for crowns.

Case 1

A 60-year-old woman presented with the chief complaint of anterior teeth that

were discoloured, spaced and malaligned (Figs. 1a and 1b). Although these problems had been present for several years, there had been recent deterioration, and the patient had decided to seek treatment to avoid further deterioration. The maxillary anterior teeth were darkened, with a diastema between the central incisors; in addition, the right central incisor appeared rotated and out of alignment. Vertical crack lines were visible at the centre of the facial surface of the 2 central incisors (Figs. 1a and 1b), but these marks were only superficial. At the time of the initial photographs, bleaching of the lower anterior teeth was in progress. Lingual examination showed some evidence of extrinsic staining, but the teeth were otherwise free of caries and restorations (Fig. 1c). Incisal wear was minimal and did not pose a serious concern.

The patient was offered several treatment options. The first would involve attempting to whiten the maxillary teeth by a combination of in-office and at-home bleaching regimens. Although this option was likely to improve the colour of the



Figure 1a: Frontal view of the maxillary anterior teeth in case 1. The teeth are dark, there is a diastema between the 2 central incisors, and the right central incisor appears rotated and out of alignment.



Figure 1b: Left lateral view. Rotation and protrusion of the maxillary right central incisor are clearly visible.



Figure 1c: Lingual aspect of the maxillary teeth. Although there is evidence of some extrinsic staining, the teeth are otherwise free of caries and restorations.



Figure 1d: Appearance of the maxillary anterior teeth after preparation for restoration with porcelain veneers. More reduction was required on the distal aspect of the facial surface of the maxillary right central incisor to create room for proper alignment of the veneer restorations.



Figure 1e: Six porcelain veneers were fabricated in a laboratory to restore the maxillary anterior teeth.



Figure 1f: Postoperative appearance of the maxillary anterior teeth. The diastema between the 2 central incisors has been closed, the maxillary right central incisor is now in proper alignment, and the shade of the teeth is much lighter than the original.



Figure 1g: Lingual view of the maxillary anterior teeth after cementation of the veneer restorations. This view shows how the porcelain had to be extended interproximally between the 2 central incisors to close the diastema.

teeth, it would not change the diastema or the position of the right maxillary central incisor. The patient was not interested in orthodontic treatment because of the estimated length of the course of treatment and the fact that she would need fixed appliances. Because all of the maxillary anterior teeth were caries- and restoration-free, the relatively aggressive option of full-coverage crowns was not considered. The only remaining option was to prescribe porcelain veneers for all 6 maxillary anterior teeth. It was acknowledged that this would involve more complex preparation for the maxillary right central incisor, including sufficient reduction to allow the veneer restoration to bring this tooth into alignment. A waxed-up model demonstrating the corrected positions and anatomic features of the teeth was used to discuss

the expected treatment outcome with the patient. The patient agreed to this treatment plan.

Figure 1d shows the appearance of the teeth after preparation. After the impression was taken, 6 feldspathic porcelain veneers were made at a local dental laboratory (**Fig. 1e**). At the next visit, the prepared teeth were cleaned with a slurry of flour of pumice applied by means of a rubber cup. The prepared teeth surfaces were then etched with a phosphoric acid etchant, and a resin cement was used for cementation of the porcelain veneers. The diastema between the 2 central incisors was closed, the maxillary right central incisor had proper alignment, and the shade of the teeth was much lighter than the original (**Figs. 1f** and **1g**). The lingual view shows that the porcelain had to be extended interproximally between the 2 central incisors to close the diastema (**Fig. 1g**).



Figure 2a: Facial view of the maxillary anterior teeth in case 2. The middle third of both maxillary central incisors shows evidence of loss of enamel. The maxillary right lateral incisor has a cervical abrasion lesion, and the right canine has excessive incisal wear, along with cervical abrasion and mesial restoration.



Figure 2b: Lingual appearance of the 6 maxillary anterior teeth. The maxillary left lateral has a porcelain-fused-to-metal crown, and the remaining 5 teeth show evidence of severe enamel wear and the presence of extensive restorations.



Figure 2c: The waxed-up model was used to fabricate a silicon reduction guide.



Figure 2d: A soft clear matrix was used to fabricate the provisional crowns.



Figure 2e: Appearance of the anterior teeth after cementation of the temporary crowns. There has been a dramatic improvement in esthetic appearance.



Figure 2f: The interior surfaces of the 6 ceramic crowns, which consisted of a zirconium oxide core veneered with porcelain.

Case 2

A 52-year-old woman expressed a desire to improve the appearance of her anterior teeth (**Fig. 2a**). The 2 maxillary central incisors were discoloured and had areas of eroded enamel in the middle third. The maxillary right lateral incisor had a cervical abrasion lesion, and the right canine had excessive incisal wear, along with cervical abrasion and an old restoration at the mesial level. The maxillary left lateral incisor had been restored previously with a porcelain-fused-to-metal crown, which appeared too opaque. Examination of the lingual aspects of the maxillary anterior teeth revealed that the maxillary left lateral crown had a metal backing. The remaining 5 teeth showed evidence of severe wear and erosion of the enamel and extensive resin composite restorations (**Fig. 2b**). Following further analysis of study

models, a duplicate stone model was waxed up according to the “most agreeable smile” guidelines.² More specifically, the maxillary central incisors and canines were waxed up to appear longer than the maxillary laterals.² The waxed-up model was used to discuss expected treatment outcomes with the patient. It was also used for fabrication of a silicon reduction guide (**Fig. 2c**). In addition, the waxed-up model was used for making a duplicate stone model that was subsequently used for fabrication of a soft clear matrix in a vacuum-forming machine. This was used in fabrication of the provisional crowns.

After careful assessment of the case, it was decided that the most appropriate treatment for this patient would be to provide full-coverage crowns for all of the maxillary anterior teeth. All of the teeth had sustained extensive damage from



Figure 2g: Facial view of the 6 crowns 2 weeks postoperatively. The gingival tissues have rebounded to their original position and appear healthy, representing a positive response to the ceramic crowns.



Figure 2h: Lingual view of the maxillary anterior teeth 2 weeks postoperatively. This view also shows rebounding of the gingival tissues to their original position.

previous carious lesions, wear and erosion, and full-coverage crowns would provide the support (bracing) necessary to maintain the structural integrity of the teeth under the forces of mastication. To optimize esthetics, nonmetallic crowns were selected. The maxillary left lateral incisor had previously undergone endodontic treatment, including restoration with a metallic post, and the nonmetallic crown had to be capable of concealing the metallic shade of the post. Therefore, crowns made of zirconium oxide cores and porcelain veneer were chosen. The literature contains good evidence of the reliability and survival of non-metallic crowns when used on anterior teeth.³⁻⁵ The 6 anterior teeth were prepared accordingly, with guidance from the silicon reduction guide. Provisional crowns were fabricated using the soft clear matrix (Fig. 2d) and were then cemented in place with temporary cement (Fig. 2e).

Impressions were taken in a silicon material, and 6 ceramic crowns with zirconium oxide cores were fabricated (Fig. 2f). These were cemented with self-adhesive resin cement. By 2 weeks after cementation, the gingival tissues had recovered completely, and there was a dramatic improvement in esthetics (Figs. 2g and 2h).

Conclusions

When considering treatment of the maxillary anterior teeth for esthetic purposes, the dentist must consider each case on its own merits. The choice between porcelain veneers and crowns will depend on the condition of the teeth. If the use of crowns would be beneficial in terms of providing support (bracing) to the lingual tooth structure, to prevent future failure, then crowns are preferable

to veneers. Veneer restorations do not typically provide coverage or protection for the lingual tooth structure, but they definitely improve labial esthetics. The first case presented in this article represents a classic situation in which veneers are the most appropriate treatment option. The second case illustrates the situation in which crowns would be the most appropriate treatment option. ❖

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