Clinical Realities

Achieving Anterior Aesthetics in the Geriatric Patient Using Full-Coverage Metal-Ceramic Crowns

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In the Western hemisphere, human life expectancies continue to rise. The dental patients of today generally live longer than did previous generations, and often with a higher quality of life and better health. In the year 2000, approximately 20% of the population was over the age of 65. Due to the continuous advances made in medical and dental care, geriatric patients are retaining more of their teeth until later in life. Recent reports indicate that approximately 50% of people over age 55 have retained at least 23 of their 32 natural teeth. From this segment of the population, dental professionals have witnessed an increasing demand for better function, health, and even aesthetics.

Senior dental patients are requesting natural aesthetics from fixed restorations rather than removable partial dentures. Many understand that fixed restorations provide convenience, longevity, and comfort. The following presentation demonstrates the application of one such treatment option for a geriatric patient who presented with an uncomfortable removable partial denture.

Case Presentation

An 89-year-old female patient presented with a horizontal fracture to tooth #7(12) below the biologic width. The tooth was determined nonrestorable and subsequently extracted. A removable partial denture (ie, Stayplate) was fabricated and only tolerable for a minimal period of time. Upon clinical evaluation, it was determined that the existing restorations were over 20 years old and demonstrated wear. Evidence of soft tissue recession and composite patches on her gingival tissues were also present. While the patient's former clinician had treated her conservatively out of deference to her age, the patient was dissatisfied with the fit and aesthetics of her smile. The patient also expressed concerns about the inconvenience and discomfort associated with the removable denture. The restorative team sought to address these complaints and, following discussion of the available techniques, elected to use full-coverage metal-ceramic crowns to improve the patient's smile.

Figure 1A. Preoperative facial view of the existing removable partial denture. Note the soft tissue recession and severely compromised fit and aesthetics.

Figure 1B. Postoperative appearance of the definitive metal-ceramic crown restorations demonstrates significant aesthetic enhancement.

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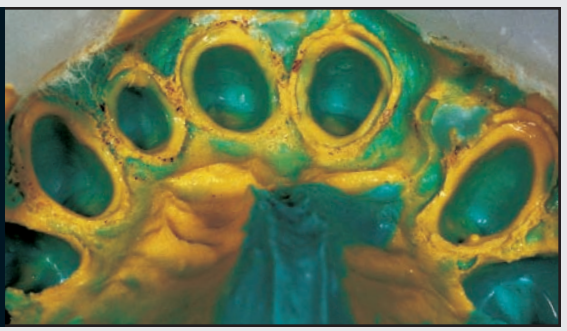
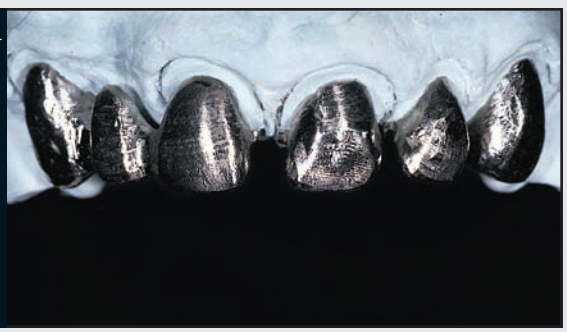
2A

2B



3A



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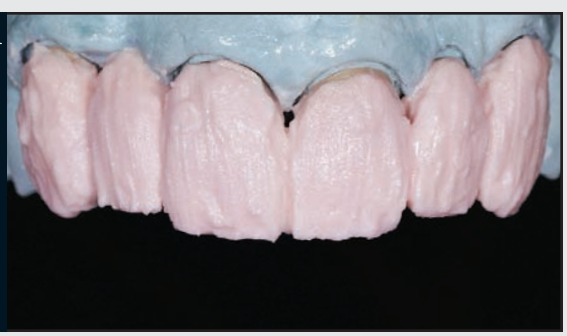
4A



4B

5A

5B

6A

6B

Figures 2A,B,C. Once the existing partial denture was removed, the patient's teeth were conservatively re-prepared to receive the full-coverage crowns. These restorations required a 1 mm to 1.2 mm chamfer reduction on the porcelain margin, 1.5 mm of facial reduction, and 1.5 mm to 2 mm of incisal reduction. Using a light-body, medium-viscosity polyvinylsiloxane impression material (ie, Twinz VPS, Bisco, Schaumburg, IL), the position of the dental and soft tissues were recorded for the laboratory technician. Provisional restorations were delivered to stabilize the intraoral environment and facilitate the evaluation of fit, aesthetics, phonetics, and occlusion.

Figures 3A,B,C. The impression and related diagnostic information (eg, photographs, shade requirements) were forwarded to the dental laboratory. The models were poured, the metal substructures were created, then buildup was initiated. Two consecutive coats of gold were applied to the metal substructure. A thin layer of whitish opaque dentin was then applied to increase the value. This would compensate for the loss of value that would occur from multiple firings or the use of translucent powders. Vertical indentations were then placed in the dentin layer to reflect and scatter the light naturally.

Figures 4A,B,C. Following the creation of the vertical indentations, the dentin layer was built up to full contour and the final shape of the restorations. Cutback was performed, and also provided sufficient space for the placement of enamel and translucent effects. Once these optical properties were rendered, the first firing of the dentin was performed at 900°C and held for 1 minute.

Figures 5A,B,C. After the internal characterizations were completed, buildup of the enamel and translucent layers was performed. The completed buildup was then fired at 900°C and held for 1 minute. The metal-ceramic restorations were inspected and placed on the model for final finishing and polishing before they were re-sent to the clinician for try-in and final delivery.

Figures 6A,B,C. Instead of using a bisque bake try-in, the completed restorations were tried in. The gingival tissue was determined unbalanced due to the loss of bone in the extraction site. In order to achieve a balanced gingival line, the tissue on the facial of tooth #10(22) was recontoured using an electrosurg. The preparation was also modified to provide an emerging profile from the gumline. A pickup impression was made with polyvinylsiloxane impression material. The definitive full-coverage crowns were seated with resin cement (ie, Fujicem, Tokyo, Japan) and provided the patient with an aesthetic, fixed treatment she requested during consultation.

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