

Clinical Showcase

Clinical Showcase is a series of pictorial essays that focus on the technical art of clinical dentistry. This section features step-by-step case demonstrations of clinical problems encountered in dental practice. If you would like to propose a case or recommend a clinician who could contribute to Clinical Showcase, contact editor-in-chief Dr. John O'Keefe at jokeefe@cda-adc.ca.

A Transdisciplinary Approach to Rejuvenative Dentistry

Glenn S. McKay, DDS

Comprehensive treatment planning requires an integrated approach to total case management. Regardless of the expanding dental service mix, the clinician must continue to integrate the fundamentals of endodontics, periodontics, orthodontics and restorative dentistry in a meaningful step-by-step treatment plan.

The following case illustrates how integrating reconstructive dentistry, endodontics, periodontics and restorative techniques can engender quality care and optimize esthetic results. By adhering to the basic tenet of reconstruction — that “form follows function” — the practitioner can provide balance and harmony to the occlusion and the smile.

Case Presentation

An attractive 40-year-old woman presented to our office seeking a second opinion regarding the replacement of her existing prosthetics. She is a public figure who is routinely photographed for print publications. She expressed dissatisfaction with the colour of her teeth as they appeared in photographs and the exposure of the margins of the anterior crowns (**Figs. 1a** and **1b**).

Clinical examination with a full-mouth series of radiographs (**Figs. 2a**, **2b** and **2c**) and mounted study casts revealed a canted maxillary occlusal plane; a heavily restored dentition characterized by mismatched,

misshaped and inappropriately shaded porcelain-fused-to-metal crowns; cervical recession associated with carious margins; mucogingival deficiencies about the bridge in the maxillary right quadrant; and occlusal discrepancies throughout, but most noticeably associated with the bridge.

A periodontal consultation was performed and a laboratory wax-up done to provide the patient with a visual sense of what could be realistically achieved within the time constraints of her schedule. A crown-lengthening procedure would correct the asymmetry of the cervical margins in the maxillary anterior region. Osseointegrated implants were indicated to eliminate the need for a long-span bridge in the maxillary right quadrant. An endodontic consultation was also required because many of the teeth exhibited poor-quality root canal therapy. There was concern that pulpal degeneration would result subsequent to re-preparation of the teeth, particularly those with cervical caries in evidence. The possible impact of these procedures on pulpal health was explained to the patient. She agreed to both interceptive endodontic therapy and retreatment where they were considered necessary.

Integrated Treatment Approach

A staged approach to the overall treatment was initiated with diagnostic wax-ups. The wax-ups were used to



Figure 1a: Diagnostic photograph taken at the clinical examination.



Figure 1b: The patient was aware of her deteriorating dental health, as evidenced by the exposure of crown margins and the associated tooth discoloration.



Figure 2a: Radiograph of the anterior teeth reveals ill-fitting margins.



Figure 2b: Radiograph showing interproximal bone loss associated with embrasure space impingement.



Figure 2c: Radiograph showing root canals with deficient apical seals and lack of intimacy of post and core fit.



Figure 3: A heat- and pressure-treated acrylic transitional bridge was fabricated in the laboratory.



Figure 4: After the crown-lengthening procedure is completed, there is a more natural scalloped and esthetic cervical symmetry.



Figure 5: The transitional bridge was relined using cold-cure acrylic. Marginal fit and embrasure spacing were now more in keeping with a natural, harmonious appearance.



Figure 6: Root canal therapy using a crown-down, thermosoftened gutta-percha technique was completed. The post and core assembly is characterized by the intimacy of fit to the post channels created.



Figure 7a: The augmentation procedure created a substantive increase in ridge volume, facilitating an ideal emergence profile.



Figure 7b: The healing abutments were used to restore a natural appearance to the gingival architecture in anticipation of the placement of the final implant prosthetics.

construct a surgical stent for the crown-lengthening procedure and to determine parameters for a transitional acrylic bridge (**Fig. 3**). The periodontist architecturally recontoured the canted cervical areas using a full-thickness flap, combined with osteoplasty and ostectomy, to increase clinical crown length without impinging on the biologic width (**Fig. 4**).

Approximately 6 weeks after the surgery, the existing prosthetics were removed and an acrylic maxillary transitional bridge was adapted to the new preparations (**Fig. 5**). Root canal therapy and post and cores (FRC Postec, Ivoclar

Vivadent Inc., St. Catherines, Ont.) were completed shortly thereafter (**Fig. 6**).

The implant site in the maxillary right quadrant was prepared using autogenous bone grafts (Bio-Oss, Osteohealth Co., Shirley, NY) and resorbable collagen membrane (Bio-Gide, Geistlich Pharma AG, Wolhusen, Switzerland). After a 6-month healing period, 2 ITI Straumann root-form dental implants (Straumann Canada Ltd, Burlington, Ont.) were placed in the sites of missing teeth 15 and 16. Impressions of the entire maxillary arch (Virtual VPS, Ivoclar Vivadent Inc.) were taken when the



Figure 7c: Radiograph showing proper adaptation of the impression copings to the fixtures.



Figure 7d: The bridge framework is seated accurately on top of the abutments.



Figure 7e: Successful osseointegration of the fixtures and intimacy of fit of the prosthetics.



Figure 8a: Photo taken at the time of final insertion of the crowns.



Figure 8b: The only area of dissatisfaction for the operator was the inability to correct the loss of the interdental papilla between teeth 11 and 21. However, this was not a concern to the patient.

implants were integrated and the soft tissue had matured (Figs. 7a to 7e).

Anterior crowns were constructed using all-ceramic material (Creation Translucent, Jensen Dental Products, North Haven, Conn.). A multi-layering technique was used to create anatomical features and optimize translucency. Crowns were bonded into place using Variolink II resin cement (Ivoclar Vivadent Inc.). Although optimal bilateral symmetry was not achieved, the patient was nonetheless extremely pleased with the final result.

Successful esthetic and functional results can always be achieved through a transdisciplinary approach, effective treatment planning and patient education regarding treatment process and outcomes (Figs. 8a and 8b). The fundamental rationale for a comprehensive treatment approach

is long-term, maintainable dental health commensurate with an enhanced level of wellness for our patients. It behooves all practitioners to use a systematic approach based on the traditional fundamentals that provide a healthy foundation to facilitate treatment planning. ♦

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Dr. McKay maintains a private practice in Mississauga, Ontario.

Correspondence to: Dr. Glenn McKay, 4141 Dixie Rd., Mississauga, ON L4W 1V5. E-mail: rockwoodental@on.aibn.com.

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