

Same-Day Implant Placement and Delivery of a Bar Overdenture: A Case Report

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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.

The provision of a stable, complete prosthesis for edentulous patients has become routine, predictable and efficacious since the introduction of osseointegrated implants a few decades ago,^{1,2} and the effect on patients’ quality of life has been dramatic.³ Many techniques are available for the rehabilitation of a mandibular edentulous arch with implant-supported restorations, which may be fixed or removable.⁴ One such option is anterior placement of mandibular implants splinted with a bar, which has the advantage of allowing immediate loading.⁵⁻⁸ This report describes a patient requiring complete maxillary and mandibular dentures and removal of the remaining mandibular teeth. Anterior mandibular implants were placed and new teeth were delivered in the course of one working day.

Case Report

The patient in this case had failing maxillary anterior teeth and a worn

maxillary prosthesis (Figs. 1-3). She presented for treatment in the office early in the morning. New complete dentures had been prepared previously, re-establishing form, function and esthetics (Fig. 4). A clear hard acrylic surgical mandibular template had also been fabricated from the new prosthesis (with appropriate presurgical implant analysis done after acceptable try-in of the wax prosthesis). After administration of local anesthetic, the remaining teeth were extracted. Four 4.3 × 13 mm Replace Groovy implants (NobelBiocare, Yorba Linda, Calif.) were placed in the anterior mandible according to the surgical template that had been created, and two extra 4.3 × 10 mm Replace Groovy implants were placed distally at the time of surgery. PME 2-mm abutments (NobelBiocare) were attached to the four anterior 4.3 × 13 mm implants, and cover screws were attached to the distal 4.3 × 10 mm implants. Bone grafting augmentation was done as required (autogenous and allograft [Dynagraft II bone



Figure 1: Worn maxillary complete denture and failing mandibular dentition.



Figure 2: Failing mandibular dentition.



Figure 3: Patient’s appearance before treatment.



Figure 4: New maxillary and mandibular complete dentures had been prepared previously.



Figure 5: Master cast impression showing 4 PME impression pins. Red GC Pattern resin was used for splinting. Planning of this case was for 4 implants; on the day of surgery, 2 additional implants were placed distally and recorded in the master cast impression.



Figure 6: Soldered Dolder bar on the master cast.



Figure 7: Dolder bar try-in.



Figure 8: Mandibular complete denture adjusted to fit over the Dolder bar.

matrix, Neomem membrane and Atrisorb barrier, Citagenix Inc., Laval, Que.) and soft-tissue closure was accomplished with 5-0 Vicryl sutures (Johnson & Johnson, Somerville, N.J.). An open-tray impression was obtained using Impregum (3M ESPE, St. Paul, Minn.) with the PME abutments in place; the PME impression pins were indexed with waxed floss (Dentotape, Johnson & Johnson) and GC Pattern resin (GC America, Alsip, Ill.) (Fig. 5).⁹ Cover caps were placed on the PME abutments and the mandibular denture was relieved as indicated. The patient was dismissed for a few hours while the impression was being poured in the laboratory and a Dolder bar (Swiss NF Metals, Toronto, Ont.), which had been previously designed from the wax denture set-up and cast but not soldered, completed (Fig. 6). The patient returned, the PME cover caps were removed, and the Dolder bar was tried in and checked for

passive fit (Fig. 7). The new mandibular complete denture was related to the Dolder bar intraorally by making judicious adjustments, and the anterior relieved area of the complete denture was relined with a soft liner (Viscogel, Dentsply, York, Penn.) (Figs. 8 and 9). After setting, the soft relined denture (now an index), the Dolder bar and the mandibular cast were returned to the laboratory for processing of a permanent anterior soft liner (Molloplast B, Buffalo Dental, New York, N.Y.) (Fig. 10). After a few hours, the completed anterior soft-relined denture with one Ackerman MD clip (Swiss NF Metals, Toronto, Ont.) was returned and delivered to the patient (Figs. 11 and 12).

Depending on the proximity of the laboratory, this technique of removing teeth, placing the implants, and delivering a bar overdenture (and new complete maxillary denture) can be done in 4 to 7 hours on the same day. Practically speaking,



Figure 9: Soft relining of the mandibular complete denture.



Figure 10: Soft-relined mandibular complete denture and Dolder bar ready for return to the laboratory.



Figure 11: Soft-relined mandibular complete denture with one Ackerman MD clip after processing in the laboratory.



Figure 12: Intraoral view of soft-relined mandibular complete denture after processing.



Figure 13: Definitive mandibular complete denture with metal frame, which fits the milled bar intimately.

most of this time is devoted to laboratory procedures and transit.

At this point, the treatment can be considered complete, or (as the author prefers) the rehabilitation can be thought of as provisional mandibular and definitive maxillary prostheses. The definitive mandibular prosthesis for such patients is a milled bar and a new mandibular complete denture at the existing vertical dimension with an intimately fitting metal substructure (**Fig. 13**). Goodacre and others¹⁰ have reported a high frequency of complications with this style of bar overdenture prosthesis. It has been the author's experience that this holds true with a simple prosthesis incorporating a metal bar and acrylic overdenture (similar to what was delivered in this case as the provisional prosthesis, with or without the soft relining), but this is not the case for a prosthesis with metal bar and metal overdenture substructure.

A scalloped milled bar with a lingual wall (the longer the better) positioned perpendicular to the occlusal plane and with no more than 5° labial convergence (with or without auxiliary attachments), in combination with an intimately fitting complete denture metal substructure, provides superb resistance form and long-term retention. Distal bar attachments such as the Strategy-DE attachment (Attachments International, San Mateo, Calif.) augment retention in this situation, whereas they represent the main source of retention in a simple metal bar with acrylic overdenture prosthesis. Compare the design of the 2 types of bar (**Figs. 14** and **15**) and the mating surface of the mandibular dentures for each type of bar (**Figs. 11** and **13**). Although this second stage of prosthetic treatment might appear unnecessary and costly, it offers stability and maintenance-free service over time. For practitioners who provide all stages of



Figure 14: (a) Appearance of the Dolder bar and mandibular tissue after 4 months of healing. (b) Appearance of the milled bar with vertical walls.



Figure 15: (a) Occlusal view of the Dolder bar. (b) Occlusal view of the milled bar, which has a scalloped, parallel profile and distal attachments.



Figure 16: Appearance of mandibular tissue, with 6 PME abutments in place, after 1 year.

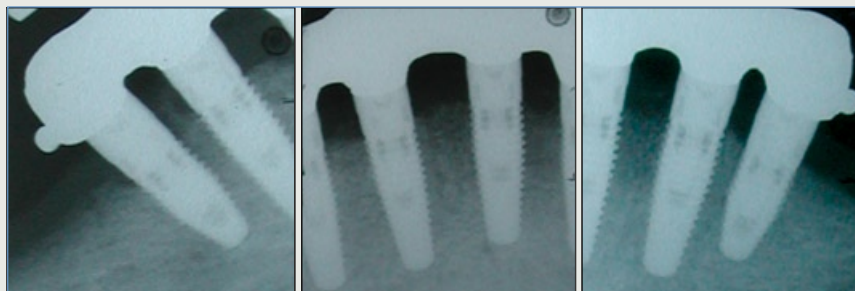


Figure 17: Periapical radiographs obtained after 1 year. Bone adaptation is excellent



Figure 18: Final rehabilitative outcome.

care, compensation for this type of procedure is based on hourly remuneration rather than a unit fee. The treatment is therefore efficient, effective, economical and efficacious. The final results are shown in **Figs. 16 to 18**.

Conclusion

This article describes a case in which implants were placed and new teeth were delivered in the course of one working day. Although there are many ways of providing this level of care, such as digital imaging and computer-aided surgical stent fabrication (NobelGuide, NobelBiocare), this basic technique, which has been employed and taught for about 20 years in teaching facilities, is practical for routine cases with adequate bone. Costs are minimized, and patients readily accept the treatment. ✦

THE AUTHOR

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