Fig 2a Prognostically poor residual dentition in an 86-year-old female patient.

Fig 2b Teeth are extracted and replaced with immediate implant placement to support a bar.

Fig 2c Prosthetic support provided by a CAD/CAM fabricated titanium bar.

Fig 3a Prognostically poor residual dentition in a 62-year-old female patient.

Fig 3b Extraction of all teeth followed by fixed (screw-retained) CAD/CAM titanium fabricated framework for implant-supported prostheses in both arches.

Fig 3c Maxillary prostheses supported by six implants.

Fig 3d Mandibular prosthesis supported by four implants.







- 1. Zitzmann NU, Krastl G, Hecker H, Walter C, Weiger R. Endodontics or implants? A review of decisive criteria and guidelines for single tooth restorations and full arch reconstructions. Int Endod J 2009;42:757-774.
- 2. Kaufmann R, Friedli M, Hug S, Mericske-Stern R. Removable dentures with implant support in strategic positions followed for up to 8 years. Int J Prosthodont 2009;22:233-241.
- 3. Rentsch-Kollar A, Huber S, Mericske-Stern R. Mandibular implant overdentures followed for over 10 years: Patient compliance and prosthetic maintenance. Int J Prosthodont 2010;23:91-98.
- 4. Mericske-Stern R, Worni A. Optimal number of oral implants for fixed reconstructions: A review of the literature. Eur J Oral Implantol 2014;7(suppl 2):S133-S153.

Managing the Edentulous **Maxillofacial Patient**

Dr Caroline Tram Nguyen

University of British Columbia, Vancouver, British Columbia, Canada BritishColumbiaCancerAgency, Vancouver, BritishColumbia, Canada

- Head and neck cancer patients have to deal with multiple complications following their oncologic treatments, potentially including xerostomia, oral discomfort, taste disturbance, oral candidiasis, dental caries, gingivitis, uncomfortable dentures, oral mucositis, oral infection, osteonecrosis, soft tissue necrosis, trismus, dental and skeletal development problems, and/or induction of second malignancies.
- Prosthodontists have to consider a wide array of comorbidities in the treatment planning of cancer survivors. Impaired speech, difficulty swallowing, leakage of food and liquids, impaired mastication, altered mandibular movements, malocclusion, compromised control of saliva, and severe cosmetic disfigurement can all challenge proper reconstructions.
- Rehabilitation treatments offered to patients vary greatly depending on the geographic location of the hospital, care philosophy of the institution, equipment available to the rehabilitation team, and the financial means of the patients.
- In recent years, head and neck radiation therapy has moved on from conventional beam to intensity modulated radiation therapy (IMRT), which allows for more healthy tissue sparing and limits damages

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to surrounding structures and salivary glands. This could open the doors to more prosthodontic treatment options for cancer survivors.

 Improvements in implants and flap surgery procedures are leading to quicker and more accurate reconstruction plans, potentially improving prosthodontic rehabilitation prognosis and patient quality of life. The technology is unfortunately still very expensive, preventing these breakthroughs to be dispensed to all affected patients.

Bibliography

- Hancock PJ, Epstein JB, Sadler GR. Oral and dental management related to radiation therapy for head and neck cancer. J Can Dent Assoc 2003;69:585–590.
- Colella G, Cannavale R, Pentenero M, Gandolfo S. Oral implants in radiated patients: A systematic review. Int J Oral Maxillofac Implants 2007:22:616–622.
- Foley BD, Thayer WP, Honeybrook A, McKenna S, Press S. Mandibular reconstruction using computer-aided design and computer-aided manufacturing: An analysis of surgical results. J Oral Maxillofac Surg 2013;71:e111–e119.
- Schoen PJ, Raghoebar GM, Bouma J, et al. Prosthodontic rehabilitation of oral function in head-neck cancer patients with dental implants placed simultaneously during ablative tumour surgery: An assessment of treatment outcomes and quality of life. Int J Oral Maxillofac Surg 2008;37:8–16.

On Protocols for Immediate Implant Placement and Loading: A Synthesis of Relevant University of Genoa Publications and Their Current Clinical Relevance

Dr Maria Menini University of Genoa, Genoa, Italy

- Several implant therapy protocols have been proposed to reconcile immediate loading of the minimum number of implants needed to rehabilitate the already edentulous, or about to be rendered edentulous, maxilla. This presentation reviews salient features of the Columbus Bridge Protocol¹ (Figs 1 and 2) that improve the objective of achieving primary stability and control of occlusal loads, which are both essential if immediate loading is to avoid implant micromotions.
- Implant macrostructure considerations include the use of (1) tapered implants when an underpreparation of the implant site is required in order to improve primary stability and (2) tilted implants to overcome anatomical limitations (eg, the maxillary sinus) while permitting increased implant length (≥ 13 mm) to obtain primary stability and avoid bone-grafting procedures (Fig 3).²
- Tilted implants are regarded as the meeting point between surgical and prosthodontic requirements. Their use ensures wide anteroposterior spread with a favorable occlusal load distribution. Consequently, a well-spread distribution of the implant heads can

be obtained with a resultant sufficient recruitment of a reduced number of implants (four to six). The use of tilted distal implants also results in decreased stress values both in peri-implant bone and in the prosthesis framework due to the reduction/elimination of posterior cantilevers.³

- Splinting immediately loaded implants with a rigid cast metal framework is also recommended. This provides both biomechanical and esthetic advantages. In fact, to obtain the same resistance with a full acrylic resin prosthesis, a thicker prosthesis is needed. Moreover, aggressive bone remodeling may be required when a reduced prosthodontic space is available. Besides a rigid framework, an acrylic resin occlusal material is suggested in order to reduce occlusal stress due to its shock-absorption capacity.⁴
- A passively fitting prosthesis is obtained in the present protocol with an accurate impression technique (open tray technique with high-retention copings and a very rigid impression material) and with a laboratory luting technique⁵ that compensates for possible casting distortion. The immediate loading prosthesis must be screw-retained to readily permit a check of prosthesis fit, avoid undetected loosening, and facilitate an easy repair protocol.
- The proposed protocol has already yielded impressive long-term clinical outcomes.¹ Long, tilted implants placed in pristine bone exhibited predictably excellent results in immediate maxillary loading protocols.² However, minor technical complications (ie, chipping of the veneering material) are quite common (Fig 4), and prosthodontic aspects of immediate loading rehabilitations are sadly neglected in the literature.^{1,2}

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