

FROM *the* FRONTLINE

Behind the Scenes: A Guide To Implant Success

By Richard Winter D.D.S.

Many of today's patients with severe periodontal disease are looking for strategies to improve their esthetics and function. In a series of articles by the author entitled "Upgradeable Dentistry Parts 1-4". (*Dentistry Today*), the author discusses the strategies for helping patients remain engaged in their dental rehabilitation over the course of their lives. Upgradeable Dentistry is the sequential improvement in a patient's oral rehabilitation according to their personal, financial and psychological needs at a pace they can afford.

When patients understand the limitations of denture therapy and the fact that dentures need to be relined or remade every 3-5 years and the accompanying costs and sequelae of bone loss, they become more receptive to incremental rehabilitation to convert them from a denture patient to a dental patient once again.

Foundations of Success:

Discussions about osseous atrophy should precede edentulation and denture therapy so that osseous augmentation can be addressed during and post extraction. The ability to avoid bilateral sinus lifts, and extensive block grafting can help patients more willingly say "yes" to implant restoration without some of the fears and costs associated with these more invasive procedures.

In this case study, a patient was given all of the options for a sequential rehabilitation and he chose a full mouth reconstruction with endosseous implants. The ability to converse with our patients about all of their rehabilitative options with knowledge of the costs both surgically and prosthetically can lead to increased patient acceptance for patients undergoing advanced implant therapy.

Having excellent communication with the surgical dentist, if they are not per-

forming the surgery themselves, can help the dentist understand the surgical costs associated with the case.

The same communication with your laboratory is important in order to receive pre-estimates of anticipated lab costs and estimated number of appointments. Then the cost per hour for inter-operative appointments and number of appointments can help dentists intelligently offer patients options and costs for different aspects of implant rehabilitation.

In this way dentists can discuss options, costs, advantages, disadvantages, risks and benefits to various upgrade paths from deluxe dentures to overdentures with and without bars to hybrids and fixed bridges without the confusion that accompanies these treatment options.

Case Study:

A 52-year-old male presented in my office with advanced AAPIV periodontitis, pain, splayed maxillary teeth and multiple diastemata. (Fig. 1) His desire to have fixed teeth motivated him to seek dental treatment and he wished a solution that didn't involve taking his teeth out at night. His big motivation was to never have his young daughter see him without teeth! The call to action for each patient is different and quite powerful.

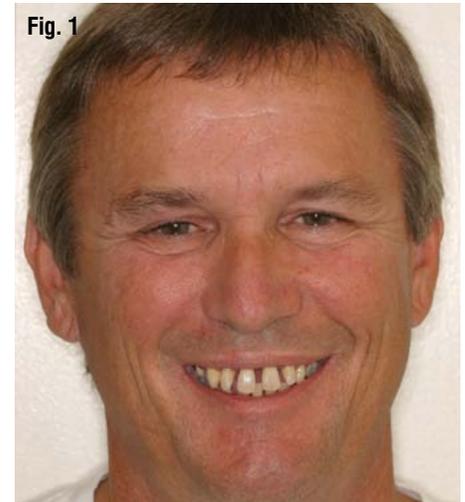


Figure 1: Full face pre-operative view demonstrating diastema.

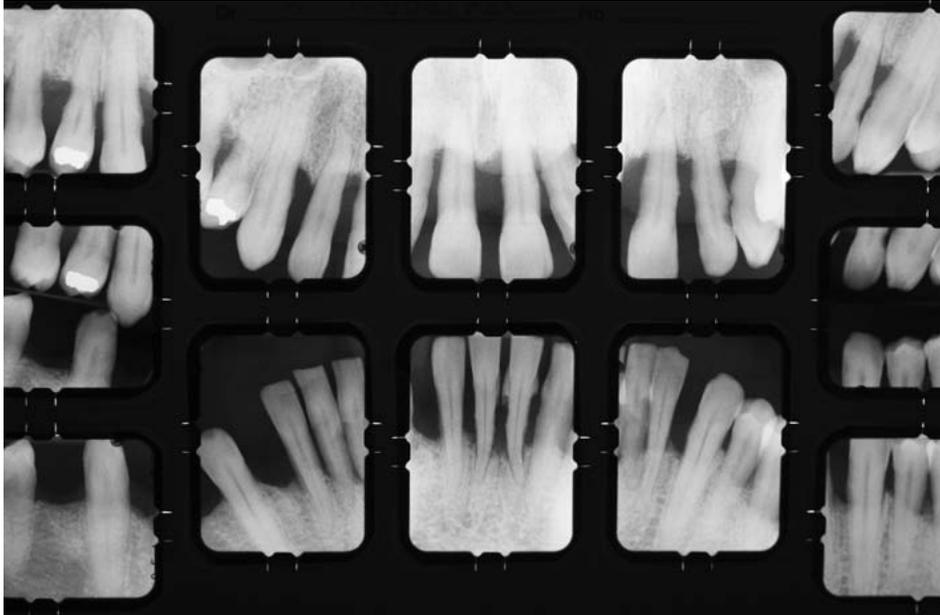


Figure 2: Retracted view demonstrating advanced periodontal deterioration.

The proper pre-treatment interview can provide information that can quickly help the dentist focus their treatment planning time toward solving patients immediate concerns.

The periodontal status is visible in the retracted photograph and revealed erythema, edema and cyanosis on the majority of his remaining teeth (Fig. 2).

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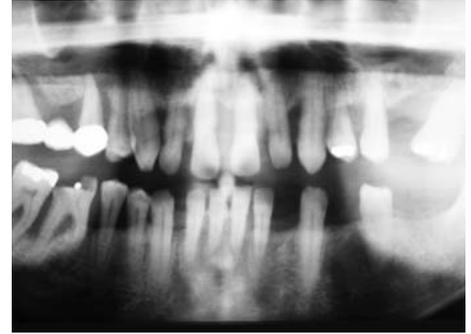
Fig. 3**Figure 3:** Periapical films preoperatively.

Radiographic evaluation demonstrated furcation bone loss in the molar areas and generalized severe AAPIV bone loss (Figs. 3 & 4).

A comprehensive examination involved 3-dimensional imaging, Panoramic and full mouth radiographs as well as photos, face-bow transfer of study models to a semi-adjustable articulator (Hanau) and cosmetic imaging (Smile Pix.) A diagnostic wax-up and laboratory-fabricated provisionals, (Biotemps, Glidewell Dental Lab) were fabricated prior to the first surgical appointment. A few strategic teeth were retained to hold these provisionals to protect grafting materials and insure implants could integrate undisturbed. (Figs. 5 & 6)

Understanding costs alleviates frustration:

The communication between the dental laboratory and the dentist during these planning stages can help insure maintenance of vertical dimension of occlusion and help create a prototypic restoration that will help insure an ideal prosthetic outcome. The laboratory was instructed to photograph the wax-up and send them to me for approval prior to completing the Biotemps. Changes were made by prescription to decrease the Class 2 malocclusion and achieve an ideal class 1 dental relationship. Even the buccal

Fig. 4**Figure 4:** Panorex pre-operatively showing AAPIV deterioration.**Fig. 5****Figure 5:** Diagnostic Wax-up

corridor display was addressed to meet or exceed patient's esthetic expectations.

The maintenance of bicuspids and canines to hold the first provisional insured "fixed-teeth" which satisfied the patient's concerns regarding denture use during implant treatment. They also provided a cosmetic provisional that greatly encouraged the patient emotionally during the therapy. (Fig. 7)

Once the posterior implants had integrated, Peek abutments (BioHorizons) were used to retain a second set of provisionals so that the remaining teeth could be removed and additional implants placed. (Fig. 8)

Full arch impressions followed at 6 months with the 3inOne™ abutment and ball top screw (Biohorizons). Then custom abutments were fabricated and a Primatec stent (seating jig) was delivered with the abutments. (Figs. 9, 10) A new provisional was fabricated to further develop the soft tissue contours prior to addition of the porcelain to the metal framework. These provisionals were relined with Snap™ provisional material, which is made from ethyl-methacrylate due to its low polymerization shrinkage and low heat generation. (Parkell) The definitive abutments were delivered to the maxillary and mandibular arches and torqued to 35 Ncm after radiographic

Fig. 6**Figure 6:** Biotemps provisionals delivered after first surgery.

verification of seating. Wax patterns were tried in to verify marginal fit prior to creating the bridge metal substructures. (Figs. 13, 14)

The ability to maintain vertical dimension was insured by sectioning the provisionals and taking a bite registration with **Blu-Mousse®** (Parkell) of the sectioned provisionals. (Fig. 16)

That way small sections of provisional could be in occlusion on the left side of the arch while the rest of the arches could be recorded. Then the remaining provisional could be placed so the small section could be related in a bite registration. To further verify accuracy the entire

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Fig. 7

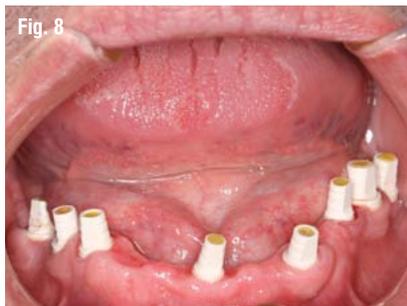


Fig. 8

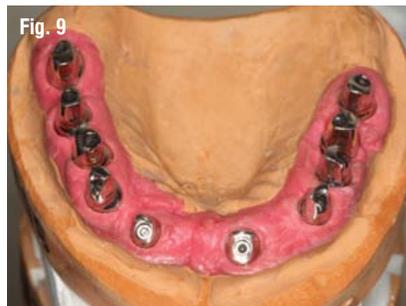


Fig. 9

Figure 7: Smile view after first surgery. **Figure 8:** Temporary abutments after phase 2 surgery. **Figure 9:** Custom abutments and soft tissue model.

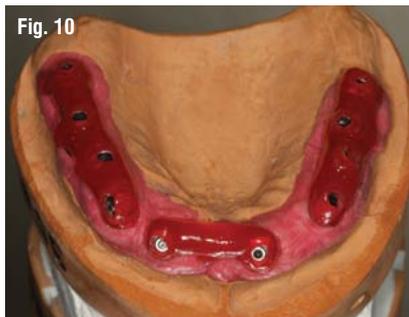


Fig. 10



Fig. 11



Fig. 12

Figure 10: Seating jigs with maxillary abutments. **Figure 11:** Abutments delivered with Temposil 2 in orifices. **Figure 12:** Mandibular abutments seated after phase 2 surgery.



Fig. 13



Fig. 14



Fig. 15

Figure 13: Wax copings with indices. **Figure 14:** Maxillary metal substructure. **Figure 15:** Blue Mousse used to transfer sectioned frame to lab.

arch was recorded in a solid bite at the proper vertical dimension so that all mountings could be verified in 3 different ways.

Accufilm® (Parkell) was used to check and verify occlusion as it stretches and allows for an accurate equilibration to insure that mesio-lingualized occlusion could be delivered in the provisional restorations. Once the occlusion was verified, alginates of each temporary were made so that they could be cross mounted with the opposing metal framework and a custom anterior guide table could be fabricated for developing the lingual and occlusal constructs of the definitive fixed bridges. (Fig. 16)

The mandibular bridge was delivered with a long term provisional

cement, Retrieve™ (Parkell) which has resilient properties to allow for slight flexing of the cement that can facilitate removal of the bridge at a later date should there be porcelain fracture or any issue requiring retrievability. (Fig. 17) There are many concerns regarding long-term cementation of ceramo-metal prostheses and some dentists use provisional cements while others use permanent cements for final luting of these bridges. In this case the patient was given the options of which cement to use and he chose a cement that may have more retrievability to avoid the possible need to destroy the bridge should there be any damage down the road to the bridges. (Fig. 18) In all cases of complex restoration a bruxism appliance is fabricated to decrease

deleterious effects of parafunction such as nocturnal bruxism. The author uses Interra mouthguards (Dentsply Caulk) on the day of bridge cementation as these can be fabricated quickly chairside and provide stable void free splints. If there is concern about occlusion or parafunction, Talon appliances (Space Maintainers) are selected as these mouthguards have a soft thermoplastic intaglio when placed in hot water that makes them insert softly and act as a “shock absorber” during occlusal contact.

The patient was able to achieve the smile that closely approximated their cosmetic simulation and they were ecstatic that they could realize

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Figure 16: Bite Registration of maxillary provisional to mandibular frame.



Figure 17: Mandibular bridge post cementation with Retrieve cement.



Figure 18: Maxillary definitive bridge prior to cementation.



Figure 19: Post-operative smile non-retracted.



Figure 20: Retracted R view showing maximum intercuspation and gingival porcelain mask.

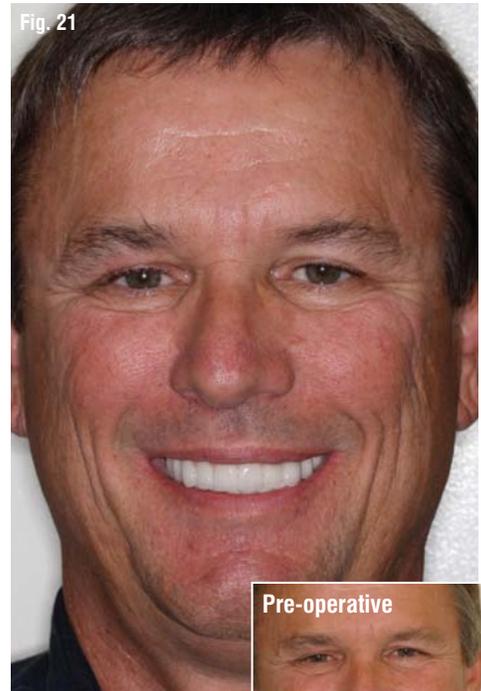


Figure 21: Post-operative full face view. (inset of preoperative)

the cosmetics that had been carefully maintained during three separate provisionals. (Fig. 19)

Bilateral balanced occlusion was stable and had been proven in his sequential provisionals. (Fig. 20) This case study achieved a truly prosthetically driven implant rehabilitation, which satisfied the esthetics, phonetics and function for this patient. (Fig. 21).

The lessons discussed are relevant for the single tooth implant as well as the many paths that lead away from edentulism. Staying engaged in a patient's dental health over the course of their lives with a dynamic treatment plan will help stimulate dentists to love their profession while providing our patients with the ultimate dental solutions to their problems.

Conclusion:

A comprehensive review of this case entitled, "General Dentistry As A Specialty" was published in *Dentistry Today* in February 2012 and may be read at www.dentistrytoday.com. The article further elucidates the complexities of this case and facilitates the discussions needed to help general practitioners treatment plan and work on cases of this magnitude with the proper education, training and support. Not all dentists may want to participate in complex restoration and full mouth rehabilitation but the ability to converse about it intelligently will help our patients achieve the level of care that they are seeking which meets their needs.

ABOUT *the* AUTHOR:



Richard Winter D.D.S. is a Master in the Academy of General Dentistry, a Diplomate in the International Congress of Oral Implantologists and has Fellowships in the International College of Dentists and the Academy of Dentistry International. He has written many articles on reconstructive and implant dentistry and lectures on Upgradeable Dentistry, General Dentistry As A Specialty, and Alternatives to Edentulism.

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