

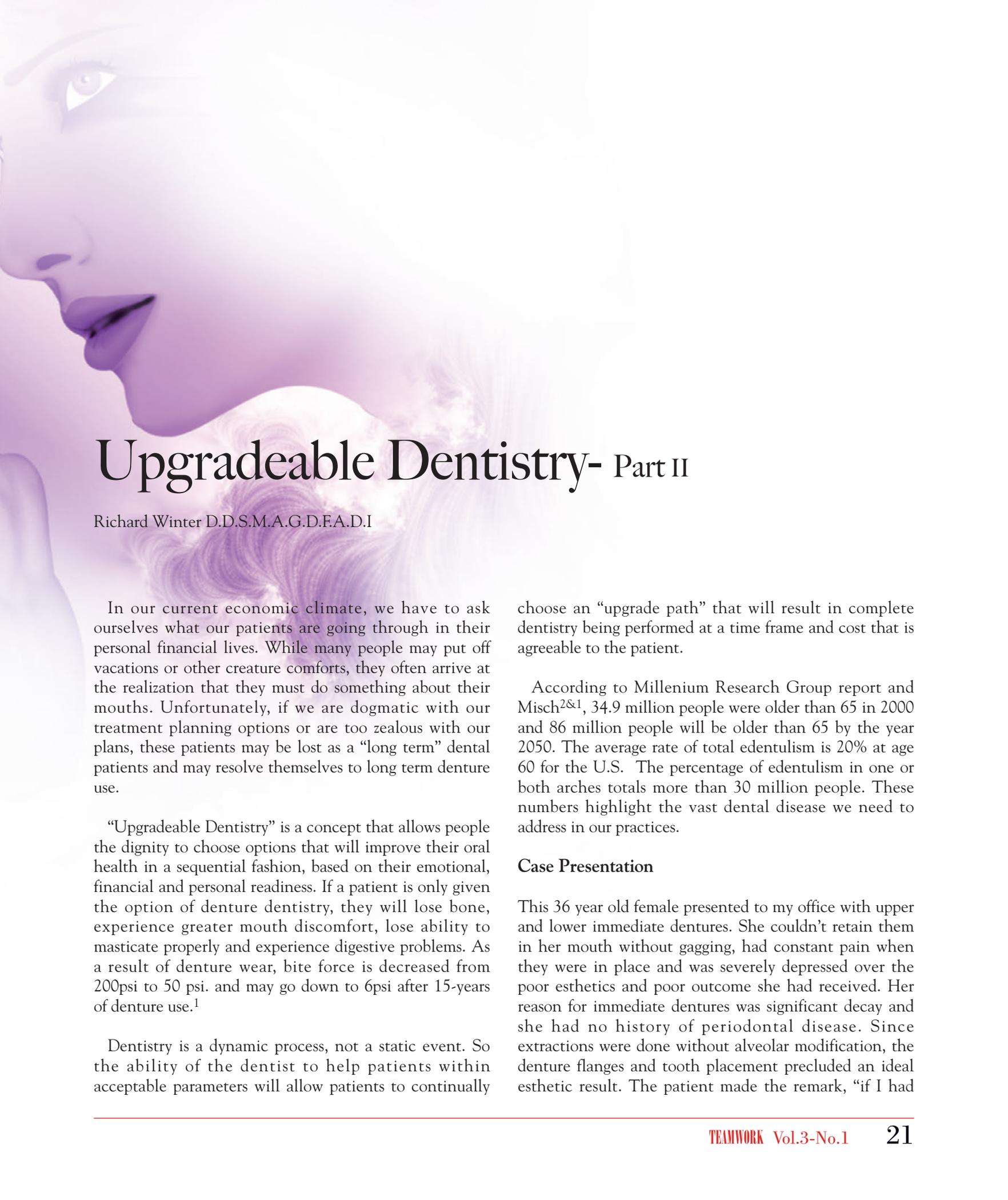


**About the Author**



**Richard B. Winter, D.D.S.M.A.G.D.F.A.D.I.F.I.C.O.I.**, received his dental degree from the University of Minnesota School of Dentistry in 1988.

He received his Mastership in the Academy of General Dentistry (AGD) in 2007 and is currently on the Board of Directors for the Wisconsin AGD. Fellow in the Academy of Dentistry International.



# Upgradeable Dentistry- Part II

Richard Winter D.D.S.M.A.G.D.F.A.D.I

In our current economic climate, we have to ask ourselves what our patients are going through in their personal financial lives. While many people may put off vacations or other creature comforts, they often arrive at the realization that they must do something about their mouths. Unfortunately, if we are dogmatic with our treatment planning options or are too zealous with our plans, these patients may be lost as a “long term” dental patients and may resolve themselves to long term denture use.

“Upgradeable Dentistry” is a concept that allows people the dignity to choose options that will improve their oral health in a sequential fashion, based on their emotional, financial and personal readiness. If a patient is only given the option of denture dentistry, they will lose bone, experience greater mouth discomfort, lose ability to masticate properly and experience digestive problems. As a result of denture wear, bite force is decreased from 200psi to 50 psi. and may go down to 6psi after 15-years of denture use.<sup>1</sup>

Dentistry is a dynamic process, not a static event. So the ability of the dentist to help patients within acceptable parameters will allow patients to continually

choose an “upgrade path” that will result in complete dentistry being performed at a time frame and cost that is agreeable to the patient.

According to Millenium Research Group report and Misch<sup>2&1</sup>, 34.9 million people were older than 65 in 2000 and 86 million people will be older than 65 by the year 2050. The average rate of total edentulism is 20% at age 60 for the U.S. The percentage of edentulism in one or both arches totals more than 30 million people. These numbers highlight the vast dental disease we need to address in our practices.

## Case Presentation

This 36 year old female presented to my office with upper and lower immediate dentures. She couldn't retain them in her mouth without gagging, had constant pain when they were in place and was severely depressed over the poor esthetics and poor outcome she had received. Her reason for immediate dentures was significant decay and she had no history of periodontal disease. Since extractions were done without alveolar modification, the denture flanges and tooth placement precluded an ideal esthetic result. The patient made the remark, “if I had

known how miserable this was going to be, I would have never let him pull my teeth.” This underscores the importance of educating our patients as to all aspects of edentulism before we pick up the forceps.

This patient was in good health without any medical problems. She was financially challenged as she had to pay for the extractions and dentures so was very concerned about her financial situation. In order to allow our patient to afford treatment, we phased her treatment, utilized Care Credit, a non-recourse payment plan, to allow her the ability to spread out payments “interest free” and satisfied her needs financially before we began her treatment.

In Figure 1 the “gummy” smile of her dentures is apparent. What you can not see was the lack of retention of the denture and the overextension palatally of the prosthesis.

Upon discussion of the advantages, disadvantages, benefits, risks and alternatives, we decided to begin her treatment with mini-implant supported overdentures. Typically, a discussion of “Upgradeable Dentistry” will involve traditional implants first with overdentures, hybrid prostheses or fixed bridgework. The use of mini-implants is another “tool in the shed,” for rehabilitation as they have been approved for long term and continuing use by the FDA and are very useful for establishing retentive elements in denture prostheses. In figure 2 we can see the Lang Duplicate denture I fabricated to aid me in evaluating the bone and creating a Barium Sulfate stent for radiographic evaluation. Furthermore, these duplicate dentures were used as a tool for creating

functionally generated impressions, a technique for achieving a superior fitting prosthesis. An integral foundation for ideal full mouth rehabilitation is to understand complete denture dentistry. Dr. Jack Turbyfill, one of my mentors, always used to say, “a great dentist should never go through life with a cold spatula.”

The establishment of proper occlusal vertical dimension, esthetics, phonetics and function are essential to establishing long term success. I drilled holes approximating the position for the desired implant placement with #6 round burs by Komet. I then mixed triad clear gel, Dentsply, with BaSo4 2- powder in a ratio of 3 to 1, filled a used flowable composite syringe and injected it in to the intaglio of the denture to the desired pilot depth. This was light cured and used to establish an optimal A-P spread. Figure 3 shows a lead foil from a film which was wrapped around the lower duplicated denture for a cephalometrics film to check the angle of the mandibular bone, undercuts and shape of the ridge. (An occlusal film on a tongue depressor blade held across the lower mandible is a suitable replacement.)

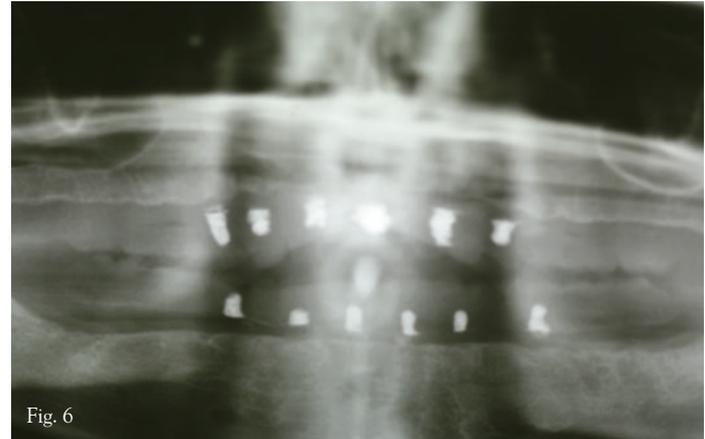
Figure 4 and 5 show the functionally generated impressions made with Hydrocast tissue conditioning material, Kay See Dental. The Barium Sulfate markers are the white dots you can see through the tissue conditioner. Now the patient can have a Panorex x-ray or a CAT scan performed to evaluate the barium sulfate markers in relation to anatomic landmarks figure 6. Notes can be made as to the need to move an implant forward or back in relation to these markers and can be an invaluable aid in determining implant placement positions. Palpation of the mental nerve with a ball burnisher prior to anesthesia



Fig.1



Fig. 2



helps confirm this important landmark figure 7. Indelible marker or marking sticks can be used to transfer all of this information intra-orally at the time of surgery.

Patients are anxious to receive dentistry that will solve some of their problems. This patient was extremely nervous and distrustful at the onset of treatment. Denture fabrication began with bite blocks, rims, and tooth set up and was approved before any surgical intervention, to insure that her esthetic desires could be met. Furthermore, by using Lang Duplicate dentures, I was able to trim extensions, add tissue conditioner and make sure she would tolerate denture wear at all.

As I was confident she would have implants and bridges later in her life, I was extremely reticent to remove bone. Alveoplasty may have made denture set up easier but that bone would be difficult to regenerate at a later date, so we went ahead and it wasn't until we had full approval of denture esthetics that surgery was accomplished.

Figure 8 shows the finger driver used to deliver the mini-implant after perforation of the cortical plate with



the 1.2mm pilot burr. The thumb driver in figure 9 shows the advancement of the implant with figure 10 showing the ratchet delivery to the implants final position. Figure 11 shows ideal mandibular mini-implant placement and figure 12 shows the maxillary arch after placement of 6 mini implants. Figure 13 and 14 show the Panorex radiographs after implant placement. Parallelism was achieved as was a great anterior-posterior spread for the implants. Since mini-implants are used as retentive



Fig. 8



Fig. 9



Fig. 10



Fig. 11

elements and not meant to support the load of the masticatory forces, the large spread allows the dentures to sit evenly with fewer propensities toward rocking.

While the protocol for mini-implants allows for immediate loading of the implants at the time of surgery, I prefer to use tissue conditioning material for 4-6 weeks to decrease immediate load forces, evaluate the health of the implants and insure patient comfort prior to final prosthesis completion. (Figures 15 and 16.) It is very easy to finalize the denture by modifying the tissue conditioner until it is even, verify borders are of adequate size and width, and make sure the “neutral zone” of tooth and gum placement is acceptable prior to final prosthesis completion.

My protocol for denture fabrication includes use of metal bases for these dentures to create thinner more comfortable prostheses, improve tactile sensation as well as temperature differentiation and improve on the strength of the dentures. Figures 17 and 18 show the metal being used judiciously so that relines can be accomplished in the future as peripheries remain in acrylic. As well, I leave acrylic around all keeper caps so they can be removed in the event an implant is lost in the



Fig. 12

future. It is of note that either the retentive elements can be picked up directly in the mouth or fabricated indirectly at the lab. The patients’ final smile, figure 19, and full face photos, figure 20, show the improved cosmetic outcome. These photos are 2 years post operative and the patient has no desire to continue with further implant dentistry at this point. While many people might not feel comfortable with utilization of mini-implants, it is clear the patient is happy and her needs have been met. In a personal communication with Dr. Charles English before he passed away, I asked him if he ever felt the need to offer traditional implants to patients after they have worn

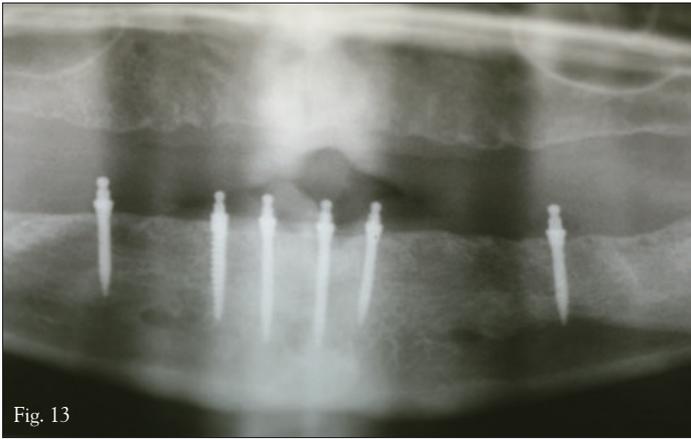


Fig. 13

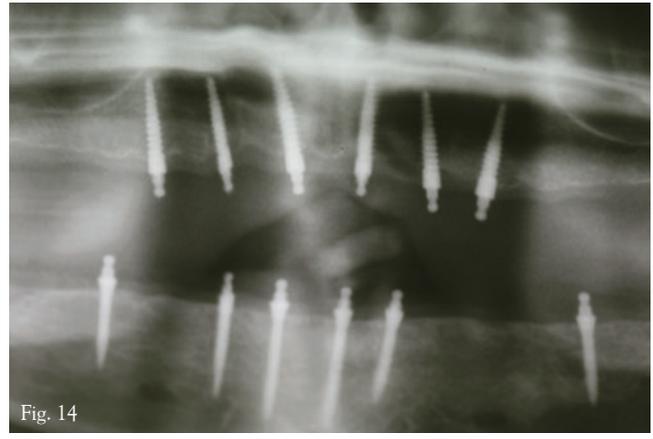


Fig. 14



Fig. 15



Fig. 16



Fig. 17



Fig. 18



Fig. 19



Fig. 20

mini-implants. He said that he never had to take mini implants out to offer a different option as his patients were primarily denture patients that loved their outcomes. With baby-boomers and younger patients, however, the need to “upgrade” should never be overlooked. This is a case where we have “done no harm” and have improved a persons’ life. I removed the palatal vault of the denture and used a metallic “U” shaped partial denture design to satisfy the patients’ desires and eliminate her fear of gagging from the dentures. In an article by Tarnow, small diameter implants that are unsplinted can be successful in retaining a maxillary overdenture with partial palatal coverage.<sup>5</sup>

The key to success in these difficult economic times are to help patients move forward. The tools we have to do this involve mini-implants, small diameter 3.0mm traditional implants, Locator attachments, Era’s, or other implant retentive devices with or without the use of bars. We can use hybrid prostheses which are screw retained or cementable or fabricate implant supported bridges which will bring us full circle from edentulism. Our denture

patients can become dental patients and eat with chewing forces approaching what they had when they were fully dentate. Future articles and lectures expand on these concepts and highlight the need in this economic climate to help patients achieve the dentistry they can afford and desire in sequential fashion. **TW**

**Bibliography**

1. Contemporary Implant Dentistry Third Edition, Mosby Dr. Carl Misch 2008, p. 5-18
2. National Institutes of Health census development conference statement on dental implants, J Dent Educ 52:686-691, 1988.
3. Turbyfill, WF. "Impression techniques for removable partial dentures." Gen Dent 49(2001): 358-64.
4. Turbyfill, WF. "Excellence in complete dentures." Dent Econ 84(1994): 80-1.
5. Cavallaro, Js Jr, Tarnow, DP. "Unsplinted implants retaining maxillary overdentures with partial palatal coverage: report of 5 consecutive cases." Int J Oral Maxillofac Implants 5(2007): 808-14.

**GPS**

Direction for Smile Design

Creation Satisfaction

Prescription

GPS technology allows you to go from a fast simulation to a virtual diagnostic wax-up. The digitally-generated prescription can be sent to the laboratory with unprecedented precision.

- Increase case acceptance
- Save time with chairside adjustments
- Achieve incomparable results

Begin showing your patients what their new smile will look like in just a few minutes.

**www.dentalgps.com • Call now for information 1 877 GPS-8977**