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IMPLANTOLOGY

Preliminary Stabilization Of Full Denture Implant Patients

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In the past, the only way implant sites could be selected for the proper positioning of implant prostheses was to use mock surgical templates to guide restorative dentists, surgeons and laboratory technicians. Even when the surgical templates were used with diagnostic X-rays, many drill sites were not placed in the proper positions. Surgical templates guide the surgeon, but often the accuracy of the template does not allow him to place the correct number of implants required to properly support the desired restoration in the desired site because the alignment and placement of the teeth were not correctly placed from the beginning.

It is important, when planning for an implant prosthesis, to accurately preview the finished positioning of the final prosthesis before the implant sites are selected and the implant fixtures placed. With the development of a total team approach to provisional stabilization of the edentulous implant patient,[1] the surgeon and the restorative dentist, with the cooperation of the implant laboratory technician join together in choosing sites to assure as optimal a functional and cosmetic result as possible. When undertaking the implant restoration of a fully edentulous arch, therefore, it is simpler if it is treated as if a new denture were being constructed. Proper dimension, as well as tooth shape and size, must be achieved to the patient's acceptance and satisfaction. A record of tooth mold must be kept. The patient is ready for planning and design stages of the implant prosthesis.

To use the transitional denture guide as a reference, steel 5mm balls (miniballs) can be placed in the center of the denture teeth. Alternatively, a surgical template can be designed replicating the transitional denture guide using barium to outline the teeth. After diagnostic X-rays are completed, a conference among the restorative team, (including surgeon, restorative dentist, and laboratory advisor) is held. During this meeting, the surgeon can inform the group of the best available placement sites for the implants. It is important at this time for the laboratory advisor to inform the group of the recommended design of the superstructure and attachments required (both design and appropriate number) to support the final implant prosthesis. If adequate bone is not available in the sites required to support the proper structural design, the surgeon has to plan for bone augmentation and grafting. A blueprint of future proceedings between the team should be laid out. This allows a smooth path for completion of a final prosthesis.

Another consideration in planning the treatment of an edentulous arch case for implant prosthetic restoration is control of the transmucosal load placed by the transitional denture over the tissue covered implant sites. Since the bone surrounding the implant is an active biological tissue that undergoes periodic

Fig. 1

Fig. 2

resorption and remodeling in response to the stress of loading, the load to the bone surrounding the implants should be reduced to prevent or minimize the loss of supporting bone around the implants. Mini-Transitional Implants from Dentatus, USA, are preferentially loaded to control micromovement, thereby providing protected, submerged healing for the two-staged implants. It can also permit the denture to be stabilized with minimal or no adhesive material necessary when it ordinarily would be loose due to anatomic limitations in fitting the denture properly.

Case Study

This case was referred to us after an immediate denture had been inserted. The family dentist had asked us to place implants in the edentulous arch to support an implant-retained prosthesis. Unfortunately, the denture illustrated was constructed before the consideration of a team approach analysis.

The midline (Fig. 1) off center causing placement of the other teeth to be misaligned from the beginning. The patient's

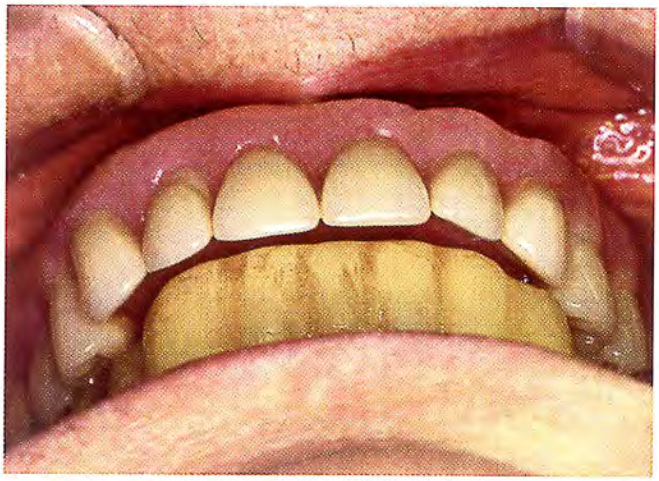

Fig. 3

Fig. 4

Fig. 5

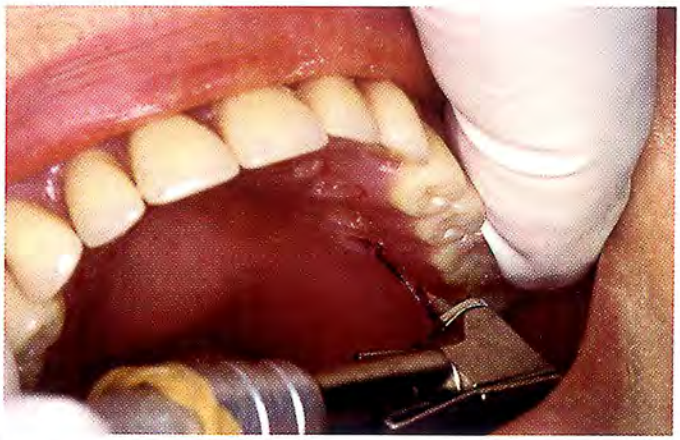

Fig. 6

high smile line is marked (Fig. 2). Also apparent is an unbalanced occlusion, which needs to be considered upon implant placement.

Markings are necessary on the palatal surface of the denture to prepare the prosthesis to be used with our technique so the patient can wear this transitional denture securely after surgery.

Because of the severe anterior overjet, posterior buccal overjet (Fig. 3) measurements must be taken for proper drill sites. Drill marking sites are set interproximal for the implant pins (Fig. 4). Adjustment measurements to compensate for the anterior and posterior overjet are transferred onto the denture, which allows for proper site placement.

Stone is poured into the denture allowing for a sturdy base. The model is placed by the implant laboratory advisor on a surveyor and surgical pilot guide holes are drilled parallel through the acrylic (Fig. 5). Do not do this drilling free-hand because the palatal incline angle of the acrylic throws off correct paralleling positions for the drill.

The transitional den-

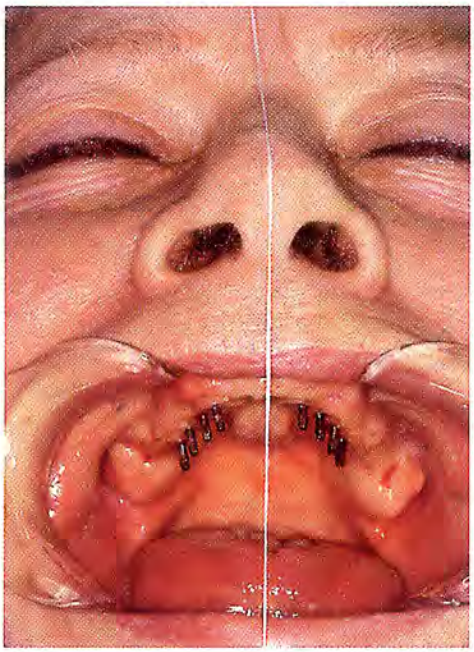

Fig. 7

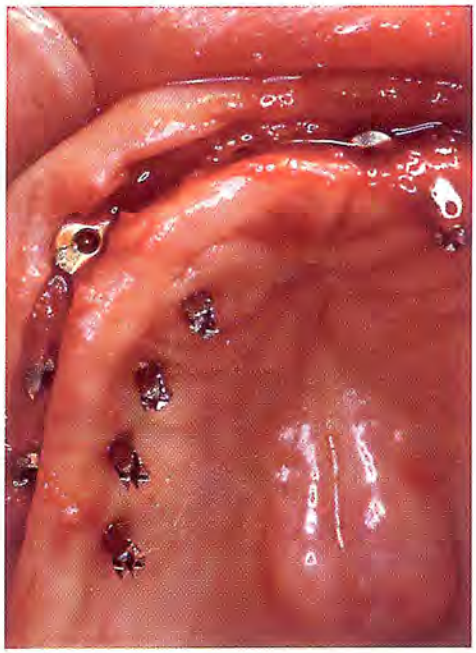

Fig. 8

ture is then placed back into the patient's mouth. Starting drill sites for the transitional implants can be placed and begun (Fig. 6). The denture is then removed, and the accurate depth for the implants is completed (Fig. 7).

With accurate placement of the implants, the surgeon has a simple three-dimensional sight verification for placement of the dental implants. A more conservative flap design is possible, which may result in less postoperative discomfort for the patient and less trauma to bone (Fig. 8). During the time of dental implant placement, the laboratory advisor has reduced the labial flange to the high smile line previously marked before surgery. Also, at this time, the denture has been hollowed out from the farthest right to the farthest left side of the dental implant sites. Relief is also made under the denture teeth. The two areas of the denture, which should not be altered or relieved, are the tuberosity regions and the palate. These provide tripodial landmarks and balanced stops for the denture (Fig. 9).

A titanium, ribbon connector bar, from the Dentatus system, is then placed into the heads of the implants. Connect the components of the system using our luting technique (Fig. 10). The luting of the connector bar to the denture can be done in a tripod manner. This is strong enough to allow the denture to be removed with the guiding support structure remaining in place (Fig. 11). The transitional denture is then given to the laboratory advisor. At this time, the luting can be completed. It is extremely important that luting material not go past the borders of the original trough, otherwise, the stop points on the pins and the landmark stops on the denture is interfered with.

The transitional denture is then delivered back to the patient and inserted (Fig. 12). The denture must be free of any contact to the surgical site allow-

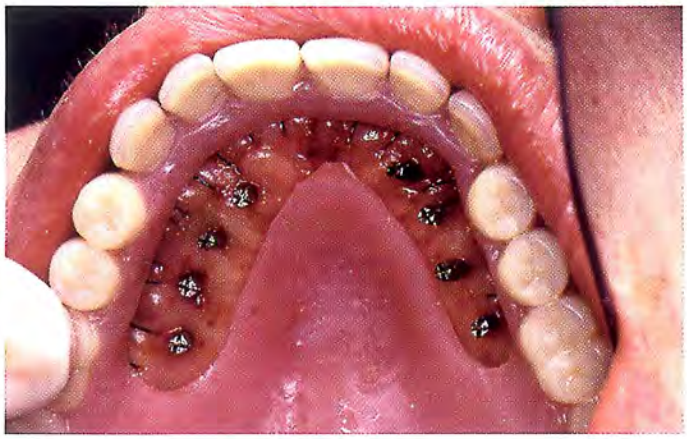

Fig. 9

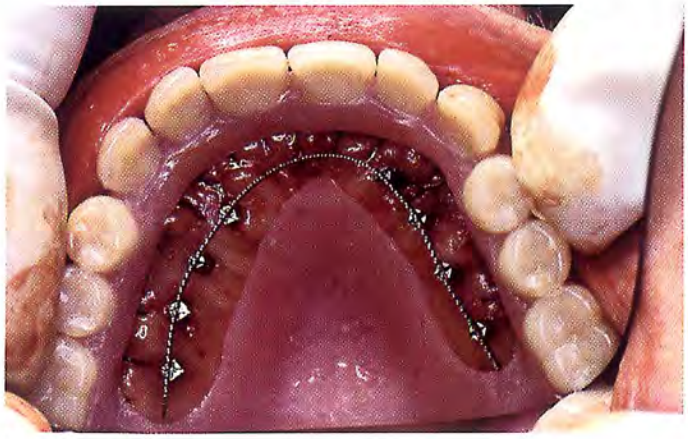

Fig. 10

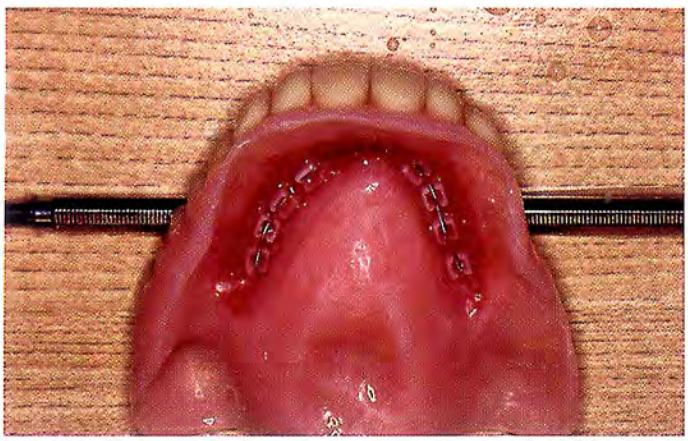

Fig. 11

Fig. 12

ing added room for post-operative swelling. This procedure allows the patient the ability to fully function immediately after surgery. No longer are there problems of transmucosal load from patients using their old denture post-surgically, after having been hollowed out or soft-lined, and placed into function over freshly placed implants. Even if the patient does not wear his prosthesis after surgery, we know that the mastication of food can cause transmucosal load to these recently placed implants. The Dentatus Mini-Transitional Implant system enables the full team approach to be successfully implemented, allowing the surgeon, restorative dentist and laboratory advisor to give the patient immediate full function and protection from the beginning to the end of treatment.✦

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1. Gottehrer, NR, Singer, G. Full Team Approach for Provisional Stabilization of Edentulous Patients, Dentistry Today, Vol. 15 No. 1, 56-59.
2. IBID

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