DENTISTRY TODAY

VOLUME 10 No.3 THE NATION'S LEADING NEWS MAGAZINE FOR DENTISTS April 1991

#136

Implants

A Clinical Case Illustrating A New Implant Abutment

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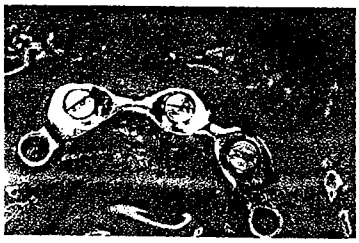

Figure 1

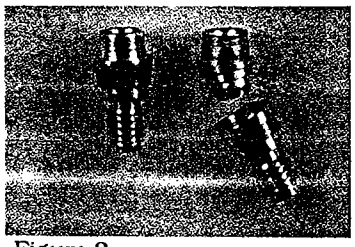

Figure 2

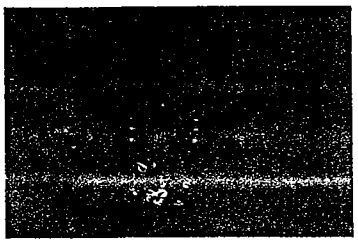

Figure 3

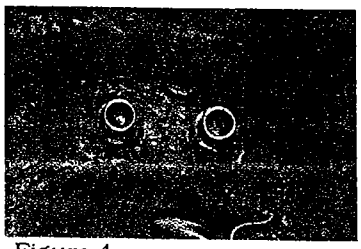

Figure 4

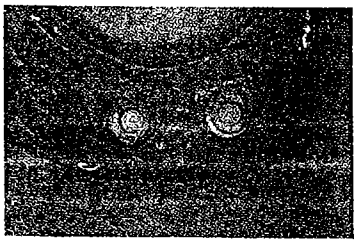

Figure 5

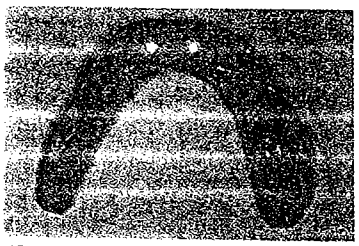

Figure 6

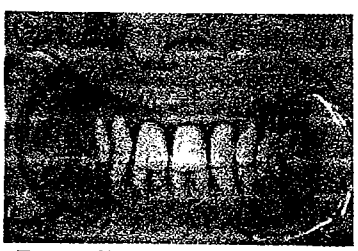

Figure 7

Figure 1: A connector bar for the IMZ osseointegrated dental implants with ERA attachment females.
Figure 2: The zero degree and angled Stern ERA Implant Abutments for the IMZ system.
Figure 3: Labial view of Stern ERA Implant Abutment System in position.
Figure4: Occlusal view of implant abutments. Note the near parallelism of abutments.
Figure 5: White ERA males processed to position.
Figure 6: ERA males processed into fully-extended mandibular complete denture.
Figure 7: Final stabilized mandibular complete denture.

Dental implants have become a viable alternative for replacing lost teeth and offer extraordinary solutions to patients who cannot function adequately with complete or removable partial dentures. Dental implants can provide increased comfort and stability, elimination or reduction of food impaction between the gingiva and the underside of a denture base, and better physical and psychological adjustment for those who have difficulty with bulky removable dentures. Increased chewing efficiency allows for better digestion and improved physiological responses.

When patients are reconstructed with dental implants, the improved positive changes are immediate. Normally the patient is delighted with the increased stability and function that is provided. Complications may arise when the surgical or restorative phase of the reconstruction develops problems. Tolerance of any appliance can be developed over time. However, once a restoration is fabricated that positively improves a situation, it is difficult to move backward in treatment.

The new Stern ERA Implant Abutment System is described here in the restabilization of an existing implant retained mandibular overdenture.

The following case presentation describes a situation in which a 65-year-old female with a health history unremarkable except for chronic smoking of cigarettes, presented for an implant retained mandibular overdenture.

The IMZ implant system (Interpore Intl. of Irvine, Calif.) was used to anchor a stabilizing bar to which a mandibular prosthesis could be securely attached to minimize displacement. Two distal extension Stern ERA attachments (APM-Sterngold of Attleboro, Mass.) were used as the overdenture stabilizer. The simplicity and dependable performance and excellent patient acceptance of the Stern ERA attachments have benefited many patients in our practice over the past five years.

Three IMZ osseointegrated dental implants were surgically placed in the symphysis in the area of teeth #23, #25 and #26. This system consists of a two-phase implantation procedure which allows for a stress-free healing phase during which the implants are totally immobilized. The period of immobilization is a prerequisite for predictable physical union of the bone and implants. During this first phase of healing the patient continued to smoke heavily, which may have influenced the healing process and subsequent treatment. Phase one includes insertion of the implant and healing screw and the stress-free healing period of three to four months. Phase two includes exposure of the submerged implants and fabrication of the prosthesis after impressions are made. During the second phase of implantation the implant cylinder height is increased by means of the transmucosal implant extension (TIE) to ensure that the stress absorbing element will be in a supragingival position and available for cleaning and replacement.

The three IMZ implants were connected with a screw retained bar. The female portions of the ERA attachments were waxed and cast distal to the implants (Fig. 1). The ERA attachments allow for distal extension retention of the prosthesis. This helps to eliminate rotation and stabilizes the denture.

After about 10 months use of the implant in tooth area #23, changes developed within the surrounding bone. It was determined that this implant would need to be surgically removed. The other two remaining implants clinically and radiographically appeared to be functional. The patient's main concern in this surgical procedure was the loss of the use of the stabilizing bar and a return to a nonfunctional, conventional, mandibular complete denture.

The new Stern ERA Implant Abutment System applies the clinically proven ERA attachment concept specifically to overdentures and partial dentures supported by implants. Figure 2 illustrates the Stern zero degree and angled abutments for the IMZ system.

Previously, the ERA partial denture eyelet attachment has been used extensively, with outstanding success, to retain overdentures stabilized by bar splinted implants.

Now, our treatment options are expanded with the availability of ERA Implant Abutments designed to be threaded directly into osseointegrated implants, such as the IMZ system.

The ERA Implant Abutment components are made of titanium to assure electromotive compatibility with titanium implants. The female eyelets are coated with titanium nitride to provide a smooth, hardened surface for greater wear resistance.

The system is made to suit a variety of implant brands and clinical situations. The high quality, precision made ERA abutment has threads and a body diameter appropriate to accurately match the size of the implant at one end, and the titanium nitride hardened ERA female at the other. All components are available with 2mm and 4mm tissue cuff heights. With this design there is no need for the intramobile element or the polished titanium transmucosal implant extension which is unique to the IMZ implant system. Figure 3 illustrates the position of the two ERA implant abutments within the IMZ dental implants. The tissue cuff allows for better cleaning ability around the implant.

When the implants are within 5°, as they are in this situation, no correction of the alignment is needed for proper function of the attachments. One piece, 4mm diameter, 2mm cuff height, zero degree ERA abutments were used (Fig. 4). A simple snap-in handle is provided for easy intraoral visual evaluation of the alignment.

Whenever excessive divergency is encountered, unique, two-piece, five, eleven, or seventeen degree Angle Correction Abutments will be used to bring the alignment of the ERA attachment females within their functional limit.

Briefly, the procedure for use of the Angle Correction Abutment is to screw its separate base all the way into the implant and temporarily snap an angle female into the base. The female is free to rotate and is turned to the desirable orientation. The special handles are used to evaluate the corrected alignment. If more correction is needed, a higher degree angled female is replaced in the base. When the alignment is approved, the mutual orientation of the angled female and the threaded base is marked with an indelible pen or other suitable marker. This will record the orientation of the female in the base. Both components are then removed from the mouth and cemented together with ERA Lock composite resin, observing the orientation marks. The Angle Correction Abutment is now a custom one-piece unit. When the abutment is screwed back into the implant, the female returns to the identical alignment position you originally elected.

Prior to the final placement of an ERA Implant Abutment, ERA Seal medical grade silicone adhesive is placed on its threaded stem. The silicone cures to provide light adhesion, which stabilizes the abutment against inadvertent unthreading during function. Yet, the component can be removed by the dentist without excessive force or risk of damage to the implant.

The silicone seal also forms a barrier to the seepage of oral fluids between implant components, reducing bacterial infiltration of the threaded connection.

All attachments in the ERA system use a metal female fixed in the mouth and a nylon male processed into the

denture base acrylic. The nylon males give the ERA attachment advantages over all metal attachments of similar design. The movement of nylon against metal creates smooth, cushioned resiliency for maximum protection of the abutments. It also virtually eliminates wear of the fixed female component. The nylon male is easily replaced and long lasting, with a documented average life expectancy of more than three years.

A black fabricating male, with a built in spacer for vertical resiliency, is used to mold a socket in the denture base acrylic. This socket has undercut walls which will mechanically retain all future ERA males. The black male is either processed into the denture base by the dental technician or the dentist can pick it up intraorally from the ERA female by using self-curing acrylic in the finished denture. The fabricating male is then replaced by a retentive male of the dentist's choice. Figure 5 shows the white ERA males cold cured with acrylic into the denture base. Figure 6 illustrates the full denture borders and the male ERA components in place. This prosthesis is both implant and tissue supported.

Every ERA attachment comes with a selection of color-coded males which have varying degrees of retention, from the light retention of the white male, through the orange and the blue males, to the quite heavy retention of the grey male. To replace an ERA male, its center post is cored out with a specially designed bur, and the remaining nylon housing is then flicked out of the denture base with a sharp hand instrument. This leaves a clean socket in the denture base to receive the new male, which is snapped in utilizing the ERA Seating Tool. The same technique and the same tools are used with all ERA attachments.

Notice that replacing ERA males does not require the use of self-curing acrylic. This means they can be changed during a recall appointment without disrupting the dentist's schedule, and no reappointment for attachment maintenance is needed. Figure 7 illustrates the final maxillary and mandibular prostheses in place.

In summary, the new Stern ERA Implant Abutment System provides an acceptable means of rehabilitating failing prosthetic cases in a simple, exact and timely fashion. Without this retentive system the patient would have been left with an inadequately retained mandibular complete denture until a new prosthesis and bar could be fabricated. The research and development of the ERA Abutment System may provide another alternative to restoring compromised prosthetic situations.■

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