Rescue Procedure for the Brånemark Novum Protocol

Stephen M. Parel, DDS[1]/R. Gilbert Triplett, DDS, PhD[2]

The Brånemark Novum protocol for immediate functional loading of a mandibular fixed implant-supported prosthesis has been an effective alternative for selected patients. In the event of the loss of an implant, a rescue set that allows continuous use of the original fixed restoration while restoring tripod osseointegrated support at the implant level is available. INT J ORAL MAXILLOFAC IMPLANTS 2004;19:421–424

Key words: *dental implants, rescue procedure, retrievability*

The Novum (Nobel Biocare, Yorba Linda, CA) implant-supported prosthesis is based on 3 precisely placed implants in the anterior mandible. These 3 implants are immediately loaded. Prefabricated titanium bar structures are used to create the definitive fixed partial denture. The success rates for both the implants and the restorations are reported to be in the 98% range.[1–3]

In the event of a lost or failed implant with the Novum protocol, rescue components are available that allow the recovery of stabilized function without modification to the existing restoration. The rescue set contains drills and templates for immediately replacing the failed implant in either the central or distal sites, enabling subsequent immediate use of the original bar structures at the same appointment. The precision in implant placement required for this intervention is the same as in the original procedure. With rigid splinting between the lower bar and the remaining integrated implants during healing, the wider 6-mm implant allows for immediate stable bone contact.

This technique allows for a high prosthesis success rate, even in the occasional event of a compromised implant. For both the patient and clinician, this is a very beneficial aspect of the Novum immediate loading concept.

METHOD AND CASE PRESENTATION

A Novum implant can be identified as compromised through presentation of pain on manipulation, clinical mobility, or radiographic evidence of soft tissue interposition (Figs 1a and 1b). Although these symptoms or signs can be subtle, in the case presented here, replacement of the implant with an integrated substitute was critically important for long-term success.

[1]Director, Center for Maxillofacial Prosthodontics, Department of Oral and Maxillofacial Surgery and Pharmacology, Baylor College of Dentistry—Texas A&M University System Health Science Center, Dallas, Texas.
[2]Professor and Department Head, Department of Oral and Maxillofacial Surgery and Pharmacology, Baylor College of Dentistry—Texas A&M University System Health Science Center, Dallas, Texas.

Correspondence to: Dr Stephen M. Parel, Center for Maxillofacial Prosthodontics, Baylor College of Dentistry, 3302 Gaston Avenue, Dallas, TX 75246. Fax: +214 828 8382. E-mail: sparel@tambcd.edu

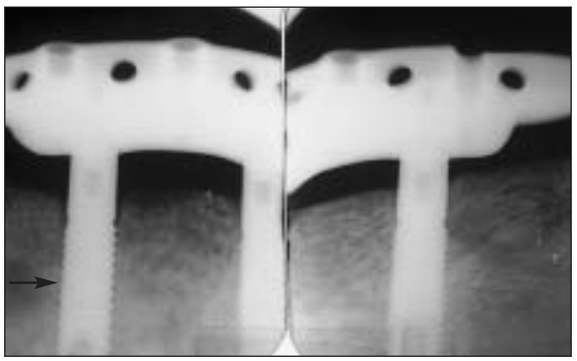

Fig 1a Radiographic analysis revealed a classically failed distal implant *(arrow),* with a thin radiolucent line around its surface.

Fig 1b This implant *(arrow)* was slightly mobile. It was symptomatic when lateral and apical pressure were applied when the implant was evaluated after the lower bar had been removed.

Fig 2a The initial surgical step exposes the intermediate bone between the implants through a minimal incision and flap. The incision continues around the failed implant, exposing it completely. The failed implant can be removed at this point (if it is very mobile) or used for partial stabilization when placing the V-shaped template.

Fig 2b The Novum Rescue Set includes a Y-shaped template (for central implant replacement) and a V-shaped template (for distal implant replacement). The drill guides correspond to the larger sizing drills used to prepare the osteotomy. The 6-mm drill guide is titanium lined for implant placement without dissimilar metal contamination.

The surgical approach for rescue in this case involved removal of the upper and lower bars and exposure of the failed implant and the surrounding bone adjacent to the central implant (Fig 2a). The rescue set includes templates for replacing either the distal or central implants and drills and drill guides for resizing the osteotomy (Fig 2b).

In this example the V-shaped template was used to replace a failed distal implant. It was secured to the central implant with a retaining screw and to the opposing integrated distal implant with an implant mount. The implant mount must be completely seated over the hex to align the template correctly (Fig 3a). Intermediate stabilizing pins were then placed. These pins provided definitive immobility for the template once anchorage to the 2 successful implants had been established (Fig 3b). The failed implant was removed and the site was

Fig 3a *(Left)* The V-shaped template was attached to the central implant with a retaining screw and centered and stabilized distally on the integrated implant with an appropriately sized mount. The mount must be completely seated over the implant hex for a successful outcome. The failed implant can also be connected to a mount at this time if it was not removed earlier. Newer sets will have a centering screw in place of the implant mount to make precision attachment easier.

Fig 3b *(Right)* Intermediate stabilizing pins were placed on both sides of the central implant in sites prepared using the 2-mm twist drill.

Fig 3c *(Left)* The failed implant was then removed with reverse torque alone.

Fig 3d *(Right)* Soft tissue was curetted out of the defect site until all bone walls felt solid.

Fig 4a The osteotomy was enlarged using the drills and drill guides sequentially until the desired width was obtained.

Fig 4b The rescue implant is 6 mm in width but has the same collar and hex configuration as the original implant.

Fig 4c The rescue implant was placed using the standard placement procedure with copious irrigation until the proper placement depth was reached.

curetted to remove residual soft tissue (Figs 3c and 3d). The osteotomy was completed using the sizing drills and drill guides, and the rescue implant was seated using the conventional procedure for placing Novum implants (Figs 4a to 4c).

Following the placement of the rescue implant, the template and associated components were removed, exposing a perfectly aligned implant and a seating surface exactly positioned to accept the lower Novum bar (Figs 5a and 5b). The lower bar was seated using 32 N/cm torque on each screw. The original upper bar and the processed dentition were then reseated using the recommended screw torque and required minimal occlusal adjustment (Figs 5c and 5d).

Fig 5a The stabilizing pins and template were removed, revealing an implant ideally placed for immediate reattachment of the lower and upper bar structures.

Fig 5b The lower bar was replaced and the titanium screws were evenly torqued to 32 N/cm.

Fig 5c The upper bar with the originally processed dentition was then attached with the same screw torque. The occlusion should be identical to that noted preoperatively. Little if any adjustment to the occlusal surfaces should be necessary.

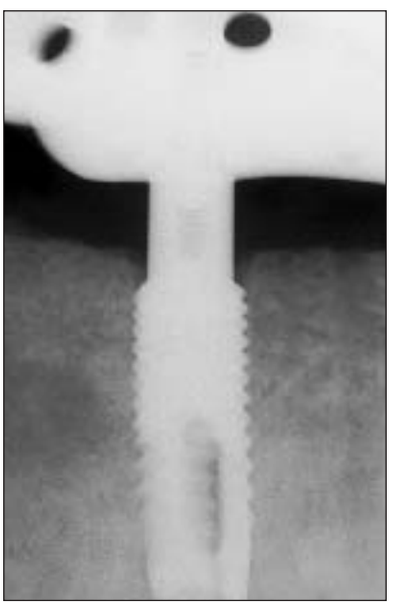

Fig 5d *(Right)* Posttreatment radiographs indicated complete integration of the rescue implant 8 months after the rescue procedure. Use of the mandibular fixed prosthesis was continuous. No modifications were necessary from the time of the original loading procedure through the end of the rescue phase.

CONCLUSION

In the unusual circumstance of a failed Novum implant, the rescue procedure allows for the functional replacement of a vital support element without interruption of prosthesis use. Limited experience with this technique to date has been positive and adds a level of confidence to the predictability of long-term success with the Novum system.

REFERENCES

1. Brånemark P-I, Engstrand P, Ohrnell LO, Grondahl K, Nilsson P, Hagberg K. Brånemark Novum: A new concept for rehabilitation of the edentulous mandible. Preliminary results from a prospective clinical follow-up study. Clin Implant Dent Relat Res 1999;1:2–16.
2. Parel SM. Immediate implant loading: A review and introduction of a new concept. Texas Dent J 2001;118(5):364–367.
3. Parel SM. A system for definitive restoration of single-stage implants in one day. Dent Today 2002;21(2):106–111.