John Ley, DDS, Editor

Basic Science and Research

"Forced Eruption and Implant Treatment in Posterior Maxilla: A Clinical Report," by S. Erkut, A. Arman, A. Gulsahi A., et al. J Prosthet Dent, 97:70–74, 2007.

This paper is a case report that describes the use of orthodontic forces to effect new bone formation to allow implant placement in the posterior maxilla. A patient presented with a complaint of pain and mobility in the right posterior maxilla. The teeth in this segment displayed severe bone loss and a pneumatized maxillary sinus that, if extracted, would result in an alveolar ridge that would require bone augmentation prior to implant placement. Instead of bone grafting, the patient had fixed braces placed in both arches. The upper right teeth were treated endodontically and reduced occlusally to allow for forced eruption. Gradual eruption of the teeth was applied along with necessary occlusal adjustment over 7 months. Due to the forced eruption, the surrounding bone followed the roots and resulted in enhanced bone, allowing for implant placement after the remaining roots were extracted. Two 4.1 × 12-mm implants were placed and a 3-unit bridge was restored on the implants after 4 months of healing.

Endosseous Implants

"Three-Year Treatment Outcomes with Three Brands of Implants Placed in the Posterior Maxilla and Mandible of Partially Edentulous Patients," Y. Ozkan, M. Ozcan, B. Akoglu, et al. J Prosthet Dent, 97:78–84, 2007.

This paper compared the success rates of three different brands of implants used in the posterior maxilla and mandible in partially edentulous patients. A total of 203 implants were placed in 63 patients. There were 105 Straumann one-stage implants (ITI) (Institute Straumann, Waldenberg, Switzerland), 53 Camlog two-stage implants (CAM) (Camlog Biotechnologies, Basel, Switzerland), and 45 Frialit two-stage implants (FRI) (Friatec, Mannheim, Germany). There were 112 placed in the maxilla and 91 placed in the mandible. All implants were at least 10 mm long and 3.5 mm in diameter and were placed by the same surgeon. Fifty implants supported single crowns while the rest supported fixed partial dentures (FPDs). The FPDs included tooth-implant supported units (11 of 81 FPDs). Peri-implant bone levels were monitored using standardized radiographs. In addition, the following parameters were recorded: plaque index, sulcus bleeding index (SBI), and probing depth (PD), as well as complications relating to the prostheses/implants and teeth. The patients were followed for 3 years. The results indicated that one implant was lost, for a success rate of 99.3%. There was a mean bone loss of 0.27 mm over the observation period. There was no difference in bone loss between the systems. The PD increased over time and there was a significant difference between the groups, but this difference was less than 1 mm. In the FRI group, there was one instance of abutment loosening that was noted at the 2-year recall. No other prosthetic complications were noted and all patients were satisfied with their prostheses. These results indicated that similar surgical and prosthetic success rates can be achieved with each of these 3 systems. Both one-stage and two-stage implants had similar success rates.

"The Influence of Recombinant Human BMP-2 on Bone-Implant Osseointegration: Biomechanical Testing and Histomorphometric Analysis," J. Lan, Z. Wang, B. Shi, H. Xia, X. Cheng X. Int J Oral Maxillofac Surg, 36:345–349, 2007.

This paper evaluated the effect of coating implants with recombinant human bone morphogenetic protein-2 (rhBMP-2) on the osseointegration in bone. Thirty-two implants were placed into the femurs of 8 rabbits. Sixteen implants were preoperatively soaked in a combination of saline and rhBMP-2 and 16 were soaked in saline only. Two different bone-labeling fluorescent dyes were injected at 4 and 8 weeks post-implant placement. The rabbits were killed at 12 weeks post-implantation. The implant-femurs were subjected to histologic and biomechanical testing. The results indicated that the test group implants had significantly greater pullout strength than the controls. Histologic examination demonstrated significantly greater bone at both 4 and 8 weeks post-placement in the test group. These results suggested that coating implants with rhBMP-2 increases osseointegration.

"Bone Healing at Implants With a Fluoride-Modified Surface: An Experimental Study in Dogs," T. Berglundh, I. Abrahamsson, J. Albouy, J. Lindhe. Clin Oral Impl Res, 18:147–152, 2007.

This paper evaluated the effects of a fluoride modified surface on the osseointegration of implants. Six dogs had their mandibular first molars and premolars

extracted. After 3 months of healing, 6 implants were placed on one side of the mandible. One half had a TiOblast surface (control) (Astra-Tech Implants, Astra-Tech, Molndal, Sweden) and the other half had a fluoride-modified TiOblast surface (test). After 4 weeks of healing, the other side of the mandible had 6 implants placed as previously described. Two weeks later the animals were killed, their mandibles removed and subjected to histologic and histomorphometric analysis. The results demonstrated greater bone-implant contact in the test implants and greater bone formation adjacent to the test implants. These results suggest that fluoride modification of the implant surface may increase osseointegration.

"A Comparison of Implant-Supported, Bar or Ball Retained Mandibular Overdentures: A Retrospective Clinical, Microbiologic and Immunologic Study of 10 Edentulous Patients Attending a Recall Visit," S. Lachmann, E. Kimmerle-Muller, K. Gehring, et al. Int J Prosthodont, 20:37–42, 2007.

This paper evaluated the health of implants supporting overdentures via a bar or ball attachment using bacterial and immunologic analysis. Ten patients participated in the study. All had a complete upper denture and two mandibular implants that supported an overdenture via ball attachments (5 patients) or a Dolder bar (5 patients) Patients were matched for age and gender. All patients were nonsmokers, had no immune deficiency, and had not received antibiotics for at least 3 months prior to analysis. The Dolder bar patients had their implants for an average of 10 years and those with ball attachments had their implants an average of 3 years. The patients were evaluated clinically for oral hygiene, probing depths, plaque, and bleeding on probing, and the sulcular fluids were evaluated for the presence of inflammation markers (interleukin 1β and prostaglandin E2) and 5 species of pathologic bacteria. The results did not find any difference between the groups. Both groups demonstrated healthy tissues in the clinical, microbiologic, and immunologic analyses.

Telescoping Crowns

"Maxillary Removable Prostheses Retained by Telescopic Crowns on Two Implants or Two Canines," D. Weng, E-J Richter. Int J Periodontics Restorative Dent, 27:35–41, 2007.

This paper evaluated the efficacy of using telescoping crowns to retain maxillary dentures. The patients had either natural canines (8 patients) or two implants (14 patients) placed in the canine sites to support the telescoping crowns. The implants were placed via a two-stage surgery with a 6-month healing period allowed. The implants and canine teeth had telescopic crowns attached to a palate-free overdenture via electroplated gold outer telescopes placed into the dentures. A similar occlusal scheme was employed in both groups with a first molar–only occlusion. All patients were followed at regular intervals for up to 5 years after prosthesis insertion (25.6 months mean). The results indicated that all implants were integrated at uncovery. After loading, 5 implants were lost resulting in the failure of 4 telescopic dentures. The implants failed at a mean of 22 months in function. No canine teeth were lost and all dentures were in function. Radiographic and clinical analysis did not reveal a difference between the groups. These results suggest that two implants cannot predictably support a maxillary overdenture via telescopic crowns. The rigid attachment mechanism may have contributed to the poor results.