



## Eyes, Ears, and Noses Too

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Oral prosthodontic restorations supported by bone-anchored osseointegrated implants have generally received universal acceptance as bona fide treatment modalities for the replacement of missing teeth. Other anatomic structures in and about the craniofacial complex that have been lost as a consequence of disease or trauma, or are missing or deformed because of congenital etiology, likewise may require prosthetic replacement.

Historically, maxillofacial defects have been restored by surgery, prosthesis, or a combination thereof. When external prostheses have been the treatment of choice, a primary shortcoming has been the lack of adequate retention with attendant patient frustration and the continual need to use adhesives and/or mechanical devices.

As the osseointegration concept was conceived and has subsequently developed, bone-anchored implant support for external prostheses or combination intraextraoral restorations has become a most viable treatment option. Concurrent with the documented research and hardware component, development of the Swedish intraoral system has been a parallel investigation of craniofacial and orthopedic applications utilizing the tissue-integrated prosthesis concept. In addition, bone-anchored support has been successfully utilized for the retention of bone-conduction hearing aids in multicenter investigations. Used internationally in organized study protocols, this form of bone anchorage provides for a more secure external prosthesis attachment; makes possible thinner, more esthetic restoration margins; and eliminates the need for skin-irritating adhesives.

Reports presented at two 1990 national meetings, an International Symposium on the Craniofacial Applications of Osseointegrated Implants (Missilac, France) and the 2nd International Congress on Tissue Integration Prosthesis (Rochester, Minnesota), suggest that evidence is accumulating to confirm the efficacy and predictability of implant support for craniofacial restorations. Since the hardware components for treating patients with craniofacial defects are still in the experimental stage, they are not available for routine use. An international multicenter prospective study involving approximately 15 institutions and agencies was initiated in 1988. Intended to evaluate the long-term retention success rate for titanium implants anchoring craniofacial prostheses (including auricular, orbital, and nasal) and to evaluate the long-term stability of the prostheses, this investigation will involve more than 100 patients and is designed to meet the US Food and Drug Administration premarketing criteria for approval.

Preliminary results from a survey of 13 US centers participating in the craniofacial clinical investigation were recently compiled and presented at the

international symposium in Missillac, France, August 20-21, by Dr Stephen M. Parel, University of Texas Health Science Center, San Antonio. In 84 nonirradiated patients with orbital, mastoid, or nasal implants supporting prostheses for periods of up to 1 year, 268 implants placed had an overall success rate of 94%. Mastoid implants (99%) fared better than the others and nasal were the least successful (76%). However, the numbers are relatively small and period of observation short, so no long-term conclusions should be drawn. In 11 irradiated patients, some 50 implants have been placed with an overall success rate of 64%. The greatest risk of failure in this group seems to be in the orbital region. These early results are relatively consistent with those of earlier Swedish reports involving a longer and wider range of clinical and animal experience.

A craniofacial panel participating in the 2nd International Congress on Tissue Integration, September 23-27, 1990, reached consensus on a variety of matters. While the placement of implants in the craniofacial region is not considered to be major surgery, success is dependent upon the coordinated efforts of a multidisciplinary team with expertise in surgical oncology, oral and maxillofacial reconstructive surgery, prosthetic rehabilitation, and allied specialties. Inadequate long-term experience and implant survival data preclude the determination of universal success criteria.

Treatment to date suggests that fewer implants may be needed to support craniofacial prostheses than thought initially. Prosthesis weight and exposure to torquing forces affect the treatment decision. An exception is the irradiated orbit, in which additional implants may be required to offset the possible loss because of nonintegration.

Age and systemic health conditions are generally not routine contraindications to craniofacial implantation. However, as with oral applications, patients who are under treatment with cytotoxic drugs, are subject to recurrent or residual tumor, have vascular disease or AIDS, have psychiatric disorders, or present evidence of management noncompliance may be at risk. Probably the most significant concern in treating craniofacial defects is the unpredictability of osseointegration when irradiation is involved either before or after implant placement.

It would seem that at this juncture, patient selection cannot be based on specific predetermined criteria but rather on a distillation of situational factors involving each individual patient. Among these could be the cost-benefit ratio, patient survival prognosis, concomitant chemo or radiotherapy, and patient input—particularly with regard to desire for improved quality of life. The art and science of treating craniofacial defects has definitely been advanced in this osseointegration era. However, future treatment must be approached with care and caution in light of our lack of long-term experience and implant survival data. The craniofacial region is highly visible and psyche-sensitive, thus deserving our best professional effort in reconstruction and rehabilitation.