

Prosthetic Loading of the Osseointegrated Implant

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For more than 25 years, P.I. Brånemark has been documenting the phenomenon that he called osseointegration. The success of his original two-stage surgery with delayed loading of the healed implants yielded a predictable high rate of success for implant dentistry. He continues today with the Novum concept that allows a patient to receive a definitive metal-reinforced prosthesis in one day. The prosthesis is supported by three special implants. The surgical stages and time requirements (three to six months) for osseointegration have not changed. The current emphasis on earlier loading places an additional burden on the clinician. Instead of the restoration maintaining stable, provisionally restored implants, the prosthesis must now avoid any micromovement during the healing process that will prevent the integration process from continuing to full maturation. Today, studies continue on the ability of a patient to receive an incision-free, immediately placed and loaded definitive prosthesis in less than an hour. Whether the prosthesis is placed in a few months, a few days, one day, a few hours, or even one hour, certain prosthodontic principles remain paramount for every restoration.

In this issue, we examine the role of complete denture principles in implant dentistry. It is imperative that fundamentals of esthetics and removable prosthodontics be used as core values for the restoration of implant-supported restorations. We will look at principles for patient treatment with immedi-

ately loaded prosthesis. We will look at advanced concepts in the development phase with preplanned surgical guides and prefabricated prostheses.

New paradigms for earlier loading have been developed to create an option to the original two-stage, three- to six-month protocol. Brånemark's machined titanium surfaced implant fixture remains the gold standard to which all other techniques must be measured. One-stage surgery has proven equally successful to the two-stage protocol. Most implant companies offer a variety of options for tapered implant shapes; and textured, passivated, oxidized, and non-oxidized surfaces appear with specific sizes for the surface texture. The conditions of the site selection can be studied in advance in Houncefield units with computer tomography scans, and primary implant stability can be measured in Ostell units using radiofrequency analysis machines. The common factor seems to be the elimination of micromovement with primary stability and functional overload during the early phases of osseointegration. If optimum conditions are not present, the proven conservative approach must be relied on for long-term success.

There are few controlled studies with standardized protocols on immediate loading. The concepts of immediate loading are relatively recent in application; and, in the rapidly advancing field of implant dentistry, we find that we need to define the procedures we are talking about to compare similar techniques and experiences. All too often terms are introduced to define a particular patient treatment or technique with-

out reference to standard recognized nomenclature. Such references to obsolete terms only indicate a lack of review of current published articles and nomenclature that has international understanding and meaning. Every effort should be made to improve and standardize the generic nomenclature that will advance the progress of implant dentistry.

Among the related terms that are misinterpreted are immediate, early, delayed, or progressive functional loading. Relative to the prosthesis, one could be an interim, provisional, temporary, or definitive. Surgical placement could be immediate, delayed immediate, or delayed after healing from extraction. The prosthesis could be an implant single tooth, implant fixed partial denture, complete arch prosthesis, fixed complete denture, or implant overdenture.

The broad spectrum of science, research, and techniques that has evolved from the early applications of osseointegration is truly remarkable and represents areas of ongoing studies in genetics, cellular physiology, and functional biomechanics. The term "osseointegration" has expanded the horizons for research and improved clinical success for all areas of clinical dentistry as well as parts of the human skeleton where there is bone and the potential for an implant-supported prosthesis. **CDA**



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