

THE SINGLE-TOOTH DENTAL Implant Restoration

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Tremendous advances have been made in the area of dental endosseous implantology in the decades following the introduction of the concept of “osseointegration” by Professor Per-Ingvar Brånemark based upon his research with vital microscopic studies in situ of bone marrow beginning in 1952. Improvements in dental implant design and surface technologies, and advancements in clinical techniques and materials reflect an ever-increasing understanding of the biologic parameters that influence the peri-implant environment and determine the success and predictability of this “direct structural and functional connection between ordered, living bone and the surface of a load-carrying implant.”¹ Our increasing knowledge base and experience with dental implants has been accompanied by a broadening in the scope of their application.

Whereas early applications beginning in 1965 were limited to the completely edentulous arch, restoration of partially edentulous span, including replacement of single missing teeth with dental implants has become common and well accepted, with predictably high success rates with regard to functional criteria.

Like many of our patients, some practitioners may expect the replacement of a missing single tooth in the esthetic zone with a dental implant restoration to be a particularly simple matter. Twenty years ago, when the majority of dentists in the United States had not yet had experience with dental implants, participants in my dental implantology courses would routinely assume that the easiest cases with which to begin their dental implant experience was the restoration of a missing single tooth. After all, shouldn't it be a relatively simple matter to replace a single anterior tooth, compared to the complexity of restoring multiple missing posterior teeth or an edentulous arch? Today, those practitioners with more extensive experience probably know this

assumption to be “somewhat” inaccurate.

As in other areas of dentistry, a paradigm shift accompanying advances in dental implant technology has occurred. Patient expectations and demands for natural-appearing restorations have driven a shift from merely restoring function, to restoring or establishing pleasing cosmetics, with increasingly stringent esthetic criteria. Given the pervasive marketing of appearance-related dental products and procedures direct to the consumer, it is no wonder that our patient's expectations with regard to a single-tooth dental implant replacement can be so demanding, particularly in the esthetic zone. Fair or not, it is understandable that our patients frequently define “failure” as “whenever my personal treatment expectations are not fulfilled.”

For these reasons, a detailed understanding of the multidisciplinary parameters determining the restoration of normal tooth and peri-implant hard and soft tissue form and contour, esthetics, speech, function, and health is necessary to have the best chance of successfully fulfilling our patient's expectations, and those of our own, in a predictable fashion with regard to not only esthetics, but also function, longev-

ity, length of treatment time, number, and nature of procedures and cost.

In this issue, a multidisciplinary approach to planning and treatment for the single-tooth dental implant restoration will be presented. Success is facilitated when all members of the team – implant surgeon, restorative dentist, orthodontist, dental laboratory technician, and patient – are familiar with each others roles, the basic principles underlying what each specialty can contribute to treatment, and how to best coordinate everyone's efforts.

Dr. Kumar Shah presents a step-by-step guide to the pretreatment restorative evaluation appointment and outlines clinical, historical, and radiographic diagnostic data critical for determining the appropriate sequencing and selection of implant surgical and adjunctive procedures. In addition, he discusses the

various factors that make dental implant treatment restoratively driven but surgically and orthodontically facilitated.

Dr. Michael Lum provides insight into the organizational process involved in treatment planning, facilitating communication among team members, and coordination of procedures and appointments.

Dr. Doina Panaite, Dr. Perry Klokkevold, and Dr. Allan Charles describe the peri-implant biologic parameters that influence the presence and contour of the peri-implant papilla and review implant selection characteristics, soft tissue management techniques and emergence profile factors affecting papilla preservation and reformation. Importantly, they provide us with information needed to reasonably predict expected final soft tissue contours prior to initiation of treatment.

Finally, Dr. Moustafa El-Ghareeb,

Dr. Tara Aghaloo, and Dr. Peter Moy address various postextraction hard tissue management and augmentation options available to preserve or create a more ideal implant site and elucidate parameters determining the indications and predictability of each.

The authors hope that you enjoy this issue and find it to be a useful guide to help navigate your way through the myriad of considerations, treatment options, communication and coordination necessary to consistently predict treatment outcomes and successfully meet patient expectations when restoring a missing tooth with the single-tooth dental implant restoration. ■■■■

REFERENCES

1. Brånemark PI, Zarb GA, Abrektsson T, *Tissue-integrated Prosthesis: Osseointegration in Clinical Dentistry*, Quintessence Publishing Co., Chicago, Ill., 1985.