



Care and Maintenance of Implants

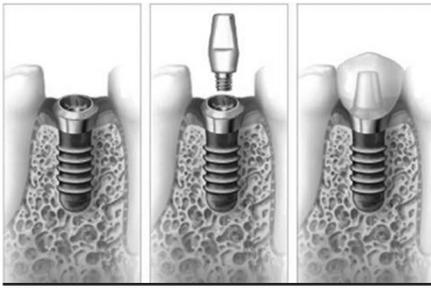
A Review of Non-surgical Treatment Modalities and Associated Clinical Findings

Several years ago the National Institute of Dental and Craniofacial Research stated, “Oral disease affects the most basic human needs, the ability to eat, drink, swallow, maintain proper nutrition, smile, and communicate.”¹ The disease of edentulism in patients can be caused by a variety of factors including periodontal disease, trauma, failed endodontic treatment, caries, or neglect, among other factors. The standard of care for treatment of an edentulous area is a dental implant. Dental implants repair the damage done by oral disease and restore the patients’ basic needs.

Dental professionals are charged with assisting patients in the maintenance of restored implants from both a patient and professional level. There are numerous homecare products available from toothbrushes to interproximal cleaning aids to rinses that can be recommended for patients. What can the clinician do from the professional standpoint to maintain the implant and restoration during the recare appointment? This article will review basic information to assist the dental professional in making the appropriate clinical decisions.

Dental implants are composed of three basic components: the fixture, the abutment, and the prosthesis. Every implant manufacturer has a variety of fixture sizes and shapes. The implant fixture can be coated with a variety of materials to increase the surface area to increase osseointegration. Implant fixtures can also be placed either at the tissue level or at the bone level depending on a number of factors which are beyond this article to discuss; however, the location is important for the dental professional to understand in order to provide safe and effective maintenance care. The abutment is the connection between the fixture and the prosthesis and can be screwed into the fixture or be part of the fixture. The prosthesis can be either screw-retained or cement-retained.

Cement-retained prostheses can cause problems with the implant if cement is remaining in the tissues following placement. Retained cement has been found to be a major contributor to peri-mucositis or peri-implantitis, which can lead to eventual loss of the implant. Care must be taken during the prosthetic cementation process to remove all excess cement.

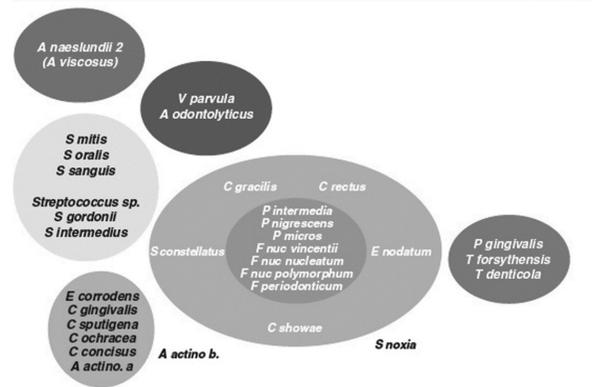


Implants attach to bone by osseointegration, the process of the inert titanium material of the implant attaching to the living tissue material of bone. Bone likes roughened surfaces to attach to, while soft tissue likes smoother surfaces. This is important for the clinician to understand when it comes to the type of fixture that is placed, whether tissue level or bone level and with the type and length of abutment used.

A tissue level implant will have a smooth collar above the roughened titanium and will be placed at the level of the tissue to allow for proper tissue emergence profile. A bone level implant will have the fixture submerged to the crest of the bone. If the surgeon has to place the implant in a position that is not favorable for occlusion, the restoring dentist may need to use a longer angled abutment in order to achieve the proper occlusal forces. This angled abutment may also be longer than a short, straight abutment and can be made of a variety of smooth materials. These variations in type of implant and abutment will allow for more tissue over the smoother surfaces and thus determine the area of maintenance for the dental professional.

Every implant manufacturer has a variety of types of implants with the abutments used varying widely from stock to custom and in materials selected, so this article can only provide a brief introduction to the hard and soft tissue components of implants. The reader is referred to implant manufacturers for more specific details.

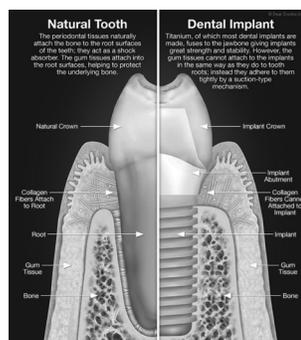
With a basic understanding of the components of implants, the dental professional is entrusted to provide the best maintenance care possible without damaging the implant and prosthesis. Research has shown that there are various species of oral bacteria, but only a few, the “red complex” bacteria, can cause disease.² These same bacteria that cause oral disease in the natural dentition can also affect the implant restored dentition.



Maintaining the implant/restoration is a collaborative process between the patient and the clinician. Patients can be provided with a variety of homecare products but what can the dental professional use in the dental practice? The clinician’s role is to provide safe, effective, and systematic recare with evaluation of both the soft and hard tissues surrounding the implant based on the available research and clinical judgment at each maintenance visit.

It is advisable to avoid: stainless steel instruments, ultrasonic or piezo scalers that are not specifically designed for implants or do not have special covers, coarse or abrasive polishing agents, acidulated phosphate fluoride, air polishers using sodium bicarbonate, metal tipped subgingival irrigators, and excessive pressure during probing.

Patient assessment is a key to long-term implant success and maintenance. Scaling instruments chosen for implant maintenance are based on the instrument tip design, prosthesis design, rigidity of the scaler, location and tenacity of calculus/biofilm, and the sterilization and/or sharpening protocols. There are many research studies available regarding implant instrumentation safety and efficiency. Implant scalers can be made of plastic, graphite, or titanium; however many dental hygienists complain that the plastic and graphite instruments currently available are bulky and inefficient. All scalers currently on the



market can cause some type of surface alteration, but it is recommended to use a scaler that causes the least amount of surface alteration.

Research has shown that filled resin scalers can cause greater alteration of the titanium than non-filled resin.³ Titanium instruments, such as Brasseler USA's ImplantPro, have been found to glide smoothly over the implant or abutment surface. Titanium instruments are thought to be a good fit for hygiene maintenance since they are a similar metal to the implant itself and are biocompatible.

To avoid alteration or scratching of the implant's surface, the practitioner should use very light pressure, approximately 30 grams, during maintenance scaling procedures. Any implant instruments should come in a variety of sizes and shapes. For example, Brasseler USA's ImplantPro Scalers and Curettes include a 204S scaler as well as four universal curette patterns, which are all manufactured from non-heat-treated titanium, which keeps the Rockwell C hardness at a low 25-31 HRC. The Rockwell Hardness Scale is the indentation hardness of a material with letters A-G representing the type of indentation load. It has been estimated that titanium scalers used for hygiene maintenance be 31 or lower HRC and be made of medical grade titanium.

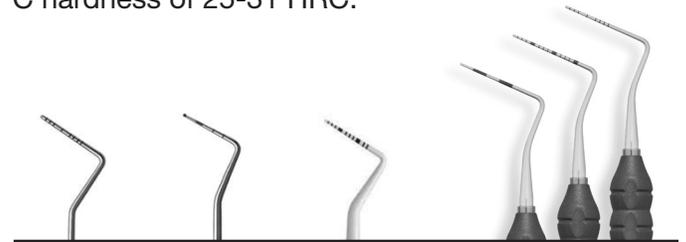


Additionally, the use of power scalers on implants is acceptable as long as the implant threads are not exposed and a specifically designed tip or cover is used. Air polishers with sodium bicarbonate are contraindicated; however glycine air polishers can be used as appropriate.

The dental professional needs to understand the implant/abutment/prosthesis restoration in determining the appropriate instrumentation to use. Each implant patient is going to present with a different maintenance situation, thus the clinician needs to be prepared with a variety of armamentarium to treat the implant patient in a safe manner.

Calculus and biofilm around implants varies in consistency and amount from the natural dentition, and maintenance can be simple or complex depending on the assessment the clinician performs at each visit. Assessment should include review of all soft tissues including color, size, shape, and consistency including appropriate probing with metal or plastic probes. A 1990 article published in the *Journal of Periodontology* showed that plastic instruments did not affect the implant surface; however, did leave residual plastic debris that could alter the biocompatibility of the titanium implant surface.⁴

Brasseler USA recently introduced a reliable alternative to plastic probes, ImplantPro® Titanium Probes. Like the ImplantPro Scalers and Curettes, the ImplantPro Probes are manufactured from non-heat-treated 6Al-4V titanium with a Rockwell C hardness of 25-31 HRC.



Radiographs, mobility assessments, and occlusal evaluations should also be performed during all maintenance appointments based on the appropriate recommended criteria.

Implants present the edentulous patient with the return of oral health ravaged by oral disease. The time and money invested in the restorative process needs to be complemented with safe, effective homecare and professional care. Dental professionals need to continually evaluate the products and research involved in implant therapy and make appropriate recommendations and treatments based on clinical judgment.

References:

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