

Long term Dental Implant Maintenance

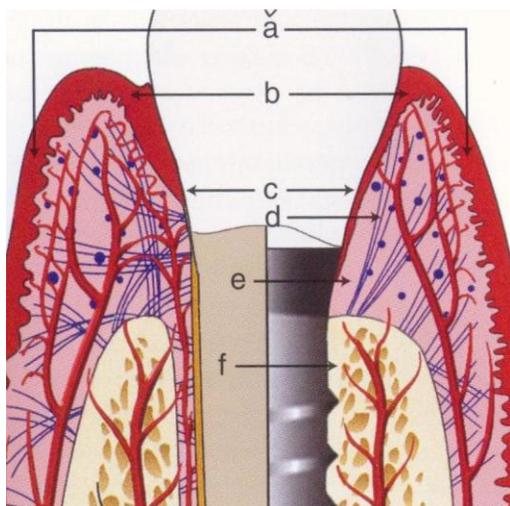
Prevention of peri-implantitis

Both dentist and patient will agree that a successful tooth restoration is one that restores and maintains long-term function and provides optimal esthetics. Dental implants enjoy a bone integration success rate in the 98-99% range and implants can typically be restored within 4-6 months of placement in the bone. But, what about the long term viability of a dental implant tooth? How long will a dental implant replacement tooth last when we know that there is a 6.1 year average lifespan for a natural tooth bridge before failure? (Fayed, 1996. Journal of Oral Rehabilitation)

Barring fracture or failure of the prosthesis, long-term success with implant retention is determined by successfully maintaining an intact zone of osseointegration. There are two general causes of loss of osseointegration: traumatic occlusion including parafunction and peri-implantitis; both can cause breakdown of the bone-implant junction over time. Maintaining occlusal harmony and prevention of peri-implantitis and bone loss ensures an implant tooth will remain functional indefinitely.

Oral hygiene and regular recall maintenance are the keys to maintaining good periodontal and peri-implant health. Calculus formation on a porous surface like cementum creates a tenacious deposit harboring bacteria that will break down a periodontal ligament over time, causing periodontitis and ultimately tooth loss. Although the lack of an interposed tissue ligament makes a dental implant less susceptible to the traditional disease mechanisms of periodontitis, the same routine of oral hygiene and recall maintenance is necessary to promote long-term peri-implant health.

Fig 1



As we have noted in a previous article, peri-implant tissues differ from natural teeth. A dental implant has a pseudo-junctional epithelium with circumferential connective tissue fibers, connective tissue attachment to the alveolar crest, less vascularity with fewer fibroblasts and no direct connective tissue attachment to the implant root itself. In contrast, a natural tooth has a robust junctional epithelium and direct connective tissue attachment to the tooth root cementum and the alveolar bone with further stabilization from the periodontal ligament. (Fig. 1 Source: Sclar, Soft Tissue and Esthetic Considerations in Implant Therapy. 2003:3)

These anatomic differences create a few key differences to remember about hygiene and maintenance around a dental implant tooth vs. a natural tooth:

- ❖ The pseudo-junctional epithelium around an implant forms a peri-coronal tissue cuff that should not routinely be probed. This cuff is a less resilient tissue barrier than the junctional epithelium around a natural tooth and can be disrupted more easily. There is no true pocket around an implant compared to a natural tooth. In health around an implant, a “pocket depth” really only measures the length of the restoration and abutment down to the bone crest. It does not represent loss of attachment compared to a natural tooth and probing that disrupted the peri-coronal cuff will weaken this barrier between oral bacteria and the bone around an implant.
- ❖ Since there is no junctional epithelium around an implant similar to a tooth, probing depths are not as indicative of disease as compared to a natural tooth. Depths of 3-5mm can be seen routinely around a healthy dental implant due to the depth of implant placement and the thickness of the overlying soft tissues. Thus, routine probing is **NOT** recommended in the absence of any other clinical soft tissue or radiographic findings. On recall, a clinical exam by palpating the tissues around an implant and looking for inflammation or exudate is more indicative of disease.
- ❖ Many times bleeding on probing at depths of 3-5mm indicates that you have disrupted the peri-implant cuff and mucosal seal and is not likely disease in the absence of other soft tissue or radiographic findings. If you must probe, do so with a **PLASTIC** tipped probe with very light pressure.
- ❖ Radiographic films with the paralleling technique are the best way to monitor on-going health around a dental implant. A **baseline image** should always be taken once an implant is restored so that there is a way to determine if there is bone loss over time. Radiographs once a year around an implant is the best way to monitor bone health.
- ❖ Generally, bone loss of > 1mm within the first year of implant placement and > 0.1mm annually, may indicate a problem with peri-implantitis and breakdown of the peri-mucosal seal leading to bone loss. If the final restoration is cement retained, you must also consider excess subgingival cement as a possible source of the bone loss.
- ❖ In health, an implant is covered by bone and protected by the peri-coronal tissue cuff and the mucosal seal. Buildup and debris is typically not on the titanium implant, but on the prosthetic porcelain surface or at the abutment-crown junction that should only be slightly sub-gingival. Deposits are typically not very adherent so only **LIGHT-HANDED** scaling is necessary to remove deposits. You want to avoid excessive hand and instrument pressure to avoid disrupting the peri-mucosal cuff seal. Deposits typically come off in large pieces, unlike that around a natural tooth. Titanium scalers (Nordent and Brassler) are recommended vs. plastic scalers because they tend to be thinner and adapt to the contours of most implant restorations, allowing for thorough removal of deposits, causing the least amount of disturbance to the peri-mucosal implant seal.

- ❖ Ultrasonic scalers, air abrasion, stainless steel instruments, abrasive polishing paste and acidulated fluorides are all **contraindicated** and can damage any exposed titanium surfaces or disrupt and will damage the peri-mucosal seal around an implant.

Our recommendations at each recall visit for the implant patient are:

- ❖ A typical tray setup for implant hygiene would include titanium scalers, floss, Q-tips, Peridex and a monojet syringe for flushing out or around implants after completing the prophylaxis.
- ❖ Perform a peri-implant tissue evaluation for color, texture, consistency, typically by palpation and visual inspection, NOT probing.
Check for loose abutments, crowns or rocking denture surfaces.
Remove deposits with a titanium scaler and perform debridement. Irrigate with Peridex/chlorhexidine.
Take radiographs yearly and compare to the post-insertion baseline image for bone loss. If there are radiographic bone changes or there is exudate visible with associated gingival inflammation only then will you reach for a plastic probe. With significant pocketing > 5mm and bleeding on probing, these clinical findings should be brought to the attention of the surgical specialist **immediately** for possible re-care and treatment. Reinforce oral hygiene with the patient each time.
- ❖ When performing maintenance around cemented restorations, begin with a light scaling followed by interproximal flossing and cleaning, finishing with a polish. Polishing can be done with Premier's 2 Pro (two in one rubber cup with a rubber tip when the cup is removed).
- ❖ When performing maintenance around fixed removable restorations, the same sequence of light scale, interproximal flossing and polish can be performed. Intermittently, the prosthesis should be unscrewed and removed. At those appointments, you can begin with a polish of the implants and abutments followed by a light scaling. Any implants without supragingival attachments do not need to be polished, but should be irrigated out with Peridex and saline.
- ❖ When performing maintenance around overdenture Locator or ball or bar attachments, polishing first will typically remove about 90% of all deposits. You can follow up with light scaling if necessary. These patients should be instructed to leave their prosthesis out at night during sleep since constant wear can lead to candidal infections.
- ❖ Check the patient's occlusion at least annually to determine if any adjustments should be made to maintain even centric contacts. Lighter occlusion should be kept on implant restorations because in maximal intercuspation, an implant restoration will tend to be in hyperocclusion compared to natural teeth that compress in occlusion due to PDL compression.

Our recommendations on oral hygiene instructions for implant patients are:

- ❖ Brush around implants like you would around teeth.
- ❖ Flossing around implants is slightly different than teeth. The goal is to remove interdental debris. If a patient flosses too far below the gingival margin next to the implant, they are likely to disrupt the peri-mucosal cuff that acts as a barrier against bacteria and peri-implantitis.
- ❖ Review interproximal brush use if interdental spaces are large.
- ❖ Discuss use of oral irrigation devices (Sonicare AirFloss, WaterPik) and electric toothbrushes (Sonicare, Braun, Rotadent).
- ❖ Remind the patient that any chronic inflammation around an implant, like a natural tooth, can damage the bone-implant connection with ultimate bone loss and loss of the implant. Dental implants need to be cared for on a daily basis just like natural teeth.

Dental implant dentistry and restorations have become the standard of care today for replacement teeth. The success rate of osseointegration has reached a level of 98-99% in patients that are treatment planned correctly. However, the process does not end with the insertion of the final prosthesis. The long-term success and health of a dental implant restoration is determined not only by successful implant placement and prosthetic design, but also by a patient's commitment to home care and regular recall visits for maintenance.

James J. Wu, DDS
Jamie Schoessling, RDH, BS
August 2012