

# Peri-implant therapy

Susan Wingrove provides an update on the tools, technology and guidelines for peri-implant therapy



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Updated clinical guidelines, tools and technology are now available for dental professionals to handle the challenges of peri-implant therapy for a variety of implants and restorations.

Previous peri-implant therapy challenges focused on not scratching the smooth implant surfaces. However, studies now reveal that the major challenge to address is biofilm, calculus, cement or instrument residue on the implant or implant-borne restoration, which can lead to peri-implantitis (Quirynen et al, 2006; Salcetti et al, 1997).

Implant surfaces are now primarily rough and porous with surface coatings. These surfaces promote osseointegration and restorations to be loaded earlier, but allow more biofilm, calculus, and cement residue to accumulate, which can alter the biocompatibility of the titanium surface (Subramani et al, 2009).

Implant roughened surfaces can also become contaminated with trace elements of the plastic, graphite, carbon, or stainless steel used to manufacture scalers and tips for ultrasonic instrumentation (Avila-Ortiz, 2013). The residue left behind on the implant surface triggers a pro-inflammatory

response that induces a systemic effect that can negatively affect the implant and the overall health of the patient (Salcetti et al, 1997; Subramani et al, 2009).

Several studies confirm the negative effects of any residue that becomes lodged on the implant surface on tissue healing and bone regeneration that can lead to peri-implant disease (Wilson, 2009; Ramaglia et al, 2006; American Academy of Periodontology, 2013).

New guidelines, technology, and products have emerged for professional implant and at-home maintenance to meet the peri-implant challenges for our implant-borne restoration patients. The American College of Prosthodontists (ACP) recently published new clinical practice guidelines (CPG) that focus on healthy patients for recall and maintenance of tooth- and implant-borne restorations (Bidra et al, 2016).

These guidelines for recall and maintenance of patients with implant-borne dental restorations include a recommendation to use of powered instruments, such as a glycine powder air polishing system.

The subgingival air polisher is used at the beginning of the appointment, not for polishing, but to remove any biofilm

prior to assessment or treatment (Daubert, 2013). The European Association for Osseointegration 2012 consensus paper concluded that subgingival air polishing (GPAP) technology can be a helpful addition to the clinicians' efforts to prevent peri-implant disease and can non-surgically treat peri-implant mucositis (Klinge, Meyle, 2012).

Another key professional maintenance implant-borne restoration recommendation from the ACP guidelines state: 'To use instruments compatible with the type and material of the implants, abutments and restorations. Therefore, titanium implant scalers and/or titanium ultrasonic tips are recommended to debride titanium implants, as like metals do not leave residue behind.'

Other guidelines highlighted by the ACP recommend that when the clinical signs indicate a need for an occlusal device, the patient should be educated and a suitable device fabricated to protect implant-borne fixed restorations.

For at-home maintenance, patients should be educated to brush twice daily and use oral hygiene aids: dental floss, water flosser, air flossers, interdental cleaners, and electric toothbrushes. Recall of peri-implant



Figure 1: Optigate, Ivoclar Vivadent



Figure 2: Air-N-Go Easy, Acteon



Figure 3a: Soprocure camera, Acteon



Figure 3b: Moderate inflammation, perio mode Soprocure image

therapy should be provided by a dental professional at least every six months (Bidra et al, 2016).

### Professional implant maintenance protocol

The updated professional implant maintenance, peri-implant therapy for implant-borne restorations begins by placing an Optragate by Ivoclar Vivadent for visibility before the assessment, maintenance, or treatment (Figure 1).

Next, use a subgingival air polisher with perio glycine powder (25 microns) with subgingival specific tip (eg, Acteon Air-N-Go Easy with Perio Easy nozzle) to remove the biofilm and prevent cross-contamination. Insert the tip gently, subgingivally until resistance is felt, then move back slightly and activate the tip for five seconds per site (six sites per tooth), to effectively remove any biofilm present (Figure 2).

Now begin the peer-reviewed Wingrove five-step protocol to assess and monitor the implant; visual tissue assessment, probe or palpate implant for signs of infection, and assess for calculus or residue to see if debridement is necessary. Next, check for mobility, occlusion, or pain, and – the most critical step – to assess the bone level for the health of the implant (Wingrove, 2013). New tools and technology have emerged to assist with this assessment and are outlined in this updated protocol for professional implant maintenance.

### Assessment

The first step is to assess the tissue that surrounds the implant referred to as the perimucosal seal to

identify if inflammation is present. To make this step more effective, use an intraoral camera to record and monitor the implant. The Soprocure camera by Acteon is an example of an intraoral camera with a specific perio mode to more easily identify mild, moderate or severe tissue inflammation surrounding the implant (Figures 3a and 3b).

Step two is to probe or palpate the implant for signs of inflammation or infection. The new update for probing the implant is to take a baseline measurement at one-year after the implant has been restored to monitor the implant.

Palpating the implant has shown to be very effective to access if inflammation or bleeding is present. Palpate the implants that are possible at every peri-implant therapy appointment by placing a finger on buccal and lingual sides of the ridge, just below the implant. Keeping pressure on the tissue, move toward the restoration in a milking action, and pus or blood will ooze to the surface if inflammation or infection is present.

Step three is to assess if calculus or residue are present and if the implant needs instrumentation debridement. This step is accomplished by flossing the implant, which also removes the biofilm. Insert the floss below the contacts on both sides of the implant, wrap the floss in circle, crisscross in front, and move in a shoeshine motion in the peri-implant crevice. Check the floss to see if it has frayed or roughened.

If no signs of inflammation or residue are present, the subgingival air polisher or woven floss are the tools of choice to remove the biofilm, no

instrumentation necessary. If frayed or roughened calculus and/or residue are present, the implant will need debridement with implant specific titanium scaler.

Step four is to test for mobility, occlusion, and/or pain. The mobility and occlusion is an important step since the implant is osseointegrated into the bone with no ligaments to allow for flexibility of movement. The implant should not be mobile, assess the occlusion of the implant-borne restoration with indicating tape or paste and adjusted if necessary.

To assess for mobility, place two mirror handles on either side of the implant or the implant restoration, and gently check if mobility is present. If there is mobility, a radiograph will be necessary to ascertain the source. The dentist will need to evaluate the implant for occlusal trauma, loose crown, a loose or broken screw, lack of osseointegration and/or pain.

The fifth, and most critical, step is to assess the bone level using the appropriate radiograph(s). It is no longer acceptable to wait two to three years if implant is healthy to take radiographs, make a radiograph at each stage of implant treatment, at sign of infection or mobility, and continue to monitor at least once a year thereafter.

Radiographic protocols for one to four implants, make vertical bitewings or periapical (PA) of each implant. Five or more implants; make a panoramic film, CBCT, or individual PAs of each implant (Wingrove, 2013; White, Pharoah, 2009).

Another resource is the latest classification of peri-implantitis by Drs SJ Froum and PS Rosen that shows the importance of the bone level in comparison to the length of the implant. Early diagnosis and treatment of peri-implantitis is key.

If the patient is in the moderate category, this is the ideal time to refer for treatment of peri-implantitis, see Table 1 (Froum, Rosen, 2012).

### Professional maintenance

The new update for debridement of implants

**Table 1: Classification of peri-implantitis**

• Early >4mm PPD, BOP and/or exudate*, bone loss <25% of implant length
• Moderate >6mm PPD at one site; BOP and/or exudate*, bone loss 25% to 50% of implant length
• Advanced >8mm at one site; BOP and/or exudate*, bone loss >50% of the implant length.
*BOP and/or exudate on two or more aspects of implant. Measured bone loss on radiographs from time of loading to current radiograph. If not available, earliest radiograph following loading.



Figure 4: Wingrove titanium implant scalers by PDT, Inc and piezo implant protect tips by Acteon

begins with selection of proper instruments or tools based on implant design, access, and prosthesis (see Figure 4, Table 2) (Wingrove, 2016).

The goal of safe, effective instrumentation on implants is a debris-free sulcus and removal of any microbial deposits without leaving any residue behind. If stain is present on the natural teeth, restorations or prosthesis, use a soft rubber cup with non-abrasive polishing paste (ie, silica-based, not pumice).

An additional, optional step is to apply an antimicrobial varnish without fluoride (eg, Cervitec Plus varnish by Ivoclar Vivadent) to the cervical area around the implant as deep as the applicator will go to protect the at-risk areas (Besimo et al, 1999).

Remove the Optragate and follow with good at-home maintenance recommendations to brush twice daily and use the recommended oral hygiene aids: dental floss, water flosser, air flossers, interdental cleaners, and electric toothbrushes (Bidra et al, 2016). Educate the patient on the importance of the elimination of 85% of biofilm daily for the overall success of the implant and schedule the patient's next peri-implant therapy appointment at least every six months (Subramani et al, 2009; Bidra et al, 2016).

**Conclusion**

Dental professionals play a key role in the

success of dental implants for their patients. Research shows that patients with peri-mucositis that do not have regular professional implant maintenance are 43% more likely to develop peri-implantitis and only 18% with regular implant maintenance by a dental professional develop into peri-implantitis (Jepsen et al, 2015). Follow the research-based clinical guidelines and use the tools and technology now available for safe, effective peri-implant therapy. ■

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**Table 2: Protocol for implant debridement**

**Narrow base implants**

Scale with longer, multi-bent implant scaler/Implant Protect Tip, Wingrove L3-4/IP3L 3R Tip, using short horizontal strokes to dislodge if calculus present on these implants, crowns/bridge or frameworks.

**Wide base implants**

Scale with universal posterior implant scaler/Implant Protect Tip, Wingrove B5-6/ IP1, using short horizontal strokes to dislodge if calculus present on implants, crowns or bridge.

**Specialty areas**

Exposed implant threads, select a shorter radius blade tip of an implant scaler/ Implant Protect Tip, Wingrove Ti L5 mini/IP1, and use horizontal side-to-side motion strokes one thread at a time. Under Hadar bar, use short sweeping strokes with an implant scaler, Wingrove Ti N128. Cement or residue, select Wingrove Ti N128 and use short horizontal strokes to remove residue.

**Implant-retained full arch fixed prosthesis**

Select a longer, multi-bent titanium scaler/Implant Protect Tip, Wingrove Ti L3-4 / IP3L 3R, use short horizontal strokes to remove any calculus if present.



**CPD**

**Aims and objectives**

This article aims to provide an update on the tools, technology and guidelines for peri-implant therapy.

**Anticipated outcomes**

By the end of this article, the reader will understand the latest guidance for peri-implant therapy.