

Maintenance and home-care for the edentulous Straumann® Pro Arch Patient



SUSAN WINGROVE, RDH, BS



INTRODUCTION

Patients today have high expectations for natural looking dental restorations that increase quality of life, improve esthetics, and can be delivered with fewer appointments. Functional esthetics with a high level of comfort, for immediate fixed hybrid prosthesis, is delivered by the Straumann Pro Arch solution.

Straumann Pro Arch delivers a seamless approach for immediate fixed full arch edentulous treatment cases. This fixed screw-retained prosthesis is non-removable by the patient but can be removed by a dental professional for periodic maintenance.

MAINTENANCE

Implant maintenance visits consist of assessment, safe maintenance, and daily home-care recommendations. Assessment at each implant maintenance visit is critical to reveal early signs of any complications and provide an opportunity for early intervention for treatment to support long-term success.¹

The recommended five-step protocol for implant assessment consists of a visual examination of the soft tissues surrounding the implant, probing the implant(s) to assess for inflammation (e.g. Bleeding on Probing- BOP) or signs of peri-implant disease. Probing access may be complicated due to the presence of the prosthesis; in many cases probing will not be possible.

Final steps include identifying if calculus is present, evaluation for mobility or pain, and assessment of the bone level using the appropriate radiograph(s).

One key element in the protocol for complete implant supported fixed arch restorations is to evaluate the tissue surrounding the implant. Is the tissue keratinized or non-keratinized? Is there any inflammation present? Ideally the tissue should look pink, firm, and keratinized with no signs of infection. Record your findings at each visit. Note: non-keratinized tissue can be a factor leading to peri-implant disease.²

Bleeding on probing (BOP) score is a necessary part of the diagnostic process. It should be completed after the implant is osseointegrated for six months along with a radiographic protocol to evaluate bone level.³⁻⁴ Assess for mobility and provide articulating medium for the doctor to monitor occlusion at every implant maintenance visit.

The radiographic protocol recommends establishing baseline radiographs or panoramic film at time of delivery of final restoration. Make a radiograph with a paralleling technique every one to two years thereafter or at any signs of infection.⁵

Vertical bitewings with a radiograph positioning and holding device are ideal for the angle, but may not show the bone level in enough detail to properly evaluate. A panoramic film is sometimes the only option due to ridge resorption and anatomical limitations. If inflammation or a systemic health risk exists continue to monitor the bone level by taking radiographs or panoramic film as warranted. If changes in bone levels are evident, consider possible removal of prosthesis for further evaluation and treatment considerations.

Most often the hygienist will complete implant maintenance with the prosthesis in place. Removal of fixed screw-retained implant prosthesis

for evaluation is not recommended unless inflammation, peri-implantitis, or other diagnostic evidence (e.g. radiographs or panoramic film) warrant removal. However, if the patient's oral hygiene is poor, it may be removed on a yearly or more frequent basis allowing the hygienist access to the implants for prophylaxis.

To complete the implant maintenance properly you will need: an ultrasonic insert (magnetostrictive or Piezoelectric), a titanium implant scaler, and if possible an OptraGate® retractor, see Table 1.⁴

TABLE 1: IMPLANT MAINTENANCE – RECOMMENDATIONS FOR THE STRAUMANN® PRO ARCH PATIENT⁴

Implant Maintenance Protocol

1. Place OptraGate® (Ivoclar Vivadent) for visibility
2. Lavage to remove biofilm with magnetostrictive or piezoelectric implant insert at the lowest possible setting or lavage setting. Use short, controlled light flow to flush any plaque or biofilm present being careful not touching the implant or prosthesis. Also could use subgingival air polisher with glycine powder.
3. Assess the area for calculus. If calculus is present, select a longer, multi-bent titanium scaler (e.g. Wingrove Ti L3-4). Use short horizontal strokes to remove the calculus from implants and prosthesis.
4. Repeat lavage to the peri-implant area with the ultrasonic or piezoelectric to remove any excess oral debris: plaque, biofilm or dislodged calculus.
5. Polish the restoration with non-abrasive prophylaxis paste (e.g. Silica) to remove stain or smooth prosthesis after debridement.

Schedule in-office peri-implant maintenance at least every 6 months.

Maintenance begins with placement of OptraGate® retractor by Ivoclar Vivadent. The OptraGate is a flexible latex-free mouth retractor that comes in different sizes to hold the lips out of the way and allow the clinician access to the fixed prosthesis. Fold and insert between the lips and vestibule, one side at a time, to gain visibility without assistance.

Next step is to lavage, using an ultrasonic insert (Magnetostrictive or Piezoelectric), compatible with titanium implants is preferred for a lavage indication only. **CAUTION** must be taken to never touch the tip of the insert to the implant surface as this can cause damage to the outer surface of the implant, prosthesis, or leave residue behind.⁶⁻⁷

Use short, controlled light flow to allow the acoustical streaming, acoustical turbulence, and cavitation effects produced by ultrasonic

or piezoelectric lavage to flush the peri-implant area before and after debridement.

The alternative is to use Subgingival Air Polishing (GPAP) with glycine powder, 25 microns specific power, using the perio implant tip to flush the oral debris and disrupt the biofilm prior to implant maintenance.

Next step is to assess for calculus with thick woven floss, preferably with a built in threader. Insert threader on mesial of implant, thread through from the lingual on the distal and wrap floss to crisscross in front, and move in shoeshine motion. Remove the floss and check floss to see if frayed or roughened. If smooth, biofilm has been removed and the implant is clean - no need for instrumentation.

For debridement of implants, it is important to remove calculus safely with titanium implant scaler to effectively remove the deposit and prevent any instrument residue from being left behind. Implants today have a roughened surface to attract the patient's own bone to more effectively osseointegrate to the implant. Therefore, instrumentation should be performed with a titanium implant scaler that is biocompatible to the titanium implant, 'titanium on titanium', which does not leave residue behind.⁸ If titanium on titanium is not used, like metals, instrument residue can become lodged on the surface, harboring bacteria and increasing the risk for peri-implantitis.

Use multi-angled universal titanium scaler (e.g. Wingrove L3-4, PDT) with short horizontal strokes to remove the calculus on the implants and the prosthesis.

Repeat the lavage with magnetostrictive or piezoelectric to remove any excess oral debris. Polishing implants is not necessary. Polish the restoration only with non-abrasive prophylaxis paste (e.g. Silica as main ingredient preferred) to remove stain or smooth prosthesis after debridement.

Finally schedule the 2-6 month in-office implant maintenance appointment based on patient's risk factors, previous periodontal disease, general health, and dexterity. The desired outcome of the Straumann Pro Arch fixed restoration is a stable, functional, and esthetic solution – a reason to smile!

HOME CARE

Home-care needs to be a high priority for patients with fixed, screw-retained hybrid prosthesis and should begin immediately following implant placement. Daily biofilm removal, stimulated keratinized tissue and the use of a non-alcohol antimicrobial mouth rinse to prevent peri-implantitis.

Studies show once the implant is exposed to the environment and loaded with occlusal forces, a salivary pellicle is formed followed by bacteria that become biofilm.^{4,9} The elimination of 85% of biofilm by the patient on a daily basis is critical for long-term health of the implants.¹⁰

Dental professionals can prepare their patients by providing them with home-care recommendations based on their individual treatment case. To determine the best recommendation for the patient's home-care, identify the patient's overall health, motivation, oral hygiene, and manual dexterity.

Home care recommendations start with post-surgical home-care guidelines, verified with surgeon, to ensure the patient feels comfortable and confident until they return for implant maintenance, see Table 2.⁴

TABLE 2: POST-SURGICAL RECOMMENDATIONS FOR THE STRAUMANN® PRO ARCH PATIENT⁴

Post-surgical Home Care Recommendations

- Use ice or cool packs externally as soon as possible to prevent swelling.
- Drink only clear liquids; a soft diet is recommended for the first few days.
- Take all prescribed antibiotics to prevent infection
- Take pain medicine as prescribed
- Use an extra-soft toothbrush twice daily, avoiding the surgical incision area, and no power toothbrush use.
- After first few hours, use saltwater rinses, or non-alcohol antimicrobial mouth rinse if recommended, twice daily.

Dental professionals need to be aware of the safety and efficacy of the products they recommend for implant home-care. Implants and substructures are primarily made of, titanium / titanium alloy.

Pay attention to product ingredients that must be avoided and those that are known to be safe for implants, prosthesis, and restorations, see Table 3.⁴

TABLE 3: HOME CARE — RECOMMENDATIONS FOR THE STRAUMANN® PRO ARCH PATIENT4

Home Care Protocol Recommendations

- Brush twice daily with low-abrasive dentifrice, soft brush, or power toothbrush that adapts to the prosthesis.
- Floss twice daily with threaded specialty implant floss or use water irrigator. Water irrigation with water or an antimicrobial rinse
- Use non-alcohol antimicrobial mouth rinse twice daily

Brush twice daily to remove bacterial plaque with a low-abrasive dentifrice.

- Use a soft toothbrush, manual or power toothbrush that adapts to the prosthesis based on patient's dexterity.
- Use dentifrice with no FL or Sodium FL (NaF) less than or equal to 2.0% NaF, as close to neutral (6.2-7.0 on pH scale).
- A fluoride with a high NaF Fluoride over 3.0% and a low pH can cause etching or roughness on implants and their esthetic restorations.*¹¹

Floss once daily with threaded specialty implant floss or use a water irrigator twice daily. The peri-implant crevice is highly susceptible to inflammation; biofilm can accumulate that can lead to peri-implant disease.^{2,4} To floss the prosthesis, instruct the patient to thread the floss on mesial, thread from the lingual through on the distal of the implant, crisscross in front and shoeshine to remove biofilm around the implant.

Flossing can be accomplished, but in most cases dexterity is an issue. One thing is clear with implants; access or lack of access, makes using floss difficult. It is highly recommended for fixed hybrid patients to use an oral irrigator.

A study of oral irrigation and floss revealed that the Waterpik® Water Flosser used at medium pressure around implants was 2.46 fold more effective in bleeding reduction compared to using floss (81% reduction using irrigation; 33 % reduction using floss).¹² For fixed hybrid patients the Pik Pocket tip is recommended.

To use the oral irrigator, instruct the patient to use a non-metal tip twice daily with water or a diluted antimicrobial rinse (e.g. Chlorine Dioxide) in 1:10 water dilution.⁴

Use a non-alcohol antimicrobial mouth rinse twice daily. The rinse is important for implant home care to prevent bacteria from attacking the epithelial barrier or invading the connective tissue surrounding the implants. Rinse with antimicrobial rinse or use diluted in oral irrigator twice daily to inactivate bacteria substantive and prevent inflammation.¹³⁻¹⁴

Chlorine Dioxide is a non-alcohol, antibacterial, antiviral, and anti-fungal mouth rinse that eliminate bacteria and Volatile Sulfur Compounds (VSC's) in oral cavity with eight hours of protection. Research has shown that, when used post surgically, the rinse does not interfere with osteoblasts and fibroblastic activity that initiate healing. Therefore it is safe and effective to use throughout the healing process and long-term home care without the side effects associated with other mouthrinses.¹⁵⁻¹⁶

SUMMARY

Dental professionals hold the key to long-term success with assessment, monitoring, effective implant maintenance, and safe home-care recommendations. Have a 'Go to Set' of proper titanium implant scalers for effective implant maintenance at least every 6 months and offer your patients more than oral function, a long-term esthetic solution for edentulism.

TABLE 1



1
OptraGate® retractor fold and insert between the lips and vestibule courtesy of Ivoclar Vivadent.



2
Lavage-Before debridement.
Courtesy of Dr. Alfonso Pineyro



3a
Assess the area for calculus.
Courtesy of Dr. A Pineyro



3b
Debridement Wingrove L3-4 PDT, Inc.
Courtesy of Dr. Alfonso Pineyro



4
Lavage-After debridement.
Courtesy of Dr. Alfonso Pineyro



5
Polish the restoration with non-abrasive paste (e.g. Silica) Image Courtesy of Directa

TABLE 3



Brush twice daily to remove bacterial plaque with a low-abrasive dentifrice.
Courtesy of Dr. J Massad



Floss twice daily or use Water irrigatore twice daily, (Pikpocket™ Tip). Courtesy of Waterpik



Non-alcohol antimicrobial mouth rinse twice daily.
Courtesy of CloSYS

REFERENCES

- 1 Albrektsson T., Zarb G, Worthington P. The long-term efficacy of currently used dental implants; a review and prognosis criteria for success. *Int J Oral Maxillofac Implants*. 1986;1:11-25.
- 2 Greenstein G, Cavallaro J. The clinical significance of keratinized gingiva around dental implants. *Compend Contin Edu Dent*. 2011; 32:24-31.
- 3 Salvi, GE, Lang NP. Diagnostic parameters for monitoring peri-implant conditions. *Inter Journal of Oral Maxillo Implants*. 2004; 19 Suppl.; 116-127.
- 4 Wingrove S. *Peri-Implant Therapy for the Dental Hygienist: A Clinical Guide to Implant Maintenance and Disease Complications*. 2013 wiley.com
- 5 Fernandez-Formoso N, Rilo B, Mora MJ, Marinez-Silva I, Santana U. A paralleling technique modification to determine the bone crest level around dental implants. *Dentomaxillofacial Radiology* 2011; 40: 385-389
- 6 Hempton T, Lancaster D, Pechter J. Implant Maintenance; Technique and tools for effective debridement of artificial anatomy. *Dimensions of Dental Hygiene*. January 2011; 9(1): 58-61
- 7 Mann M, Parmar D, Walmsley AD, Lea SC. Effect of plastic-covered ultrasonic scalers on titanium implant surfaces. *Clin Oral Implants Res*. 2012; 23:76-82
- 8 Ramaglia L, Di Lauro AE, Morgese F, Squilace A., Profilometric and standard error of the mean analysis of rough implant surfaces treated with different instrumentations. *Implant Dent*. 2006; 15:77-82
- 9 Saini, R. Oral biofilm and dental implants: A brief *Natl J Maxillofac Surg*. 2011 Jul-Dec; 2(2): 228–229.
- 10 Kracher CM, Smith WS Oral health maintenance dental implants. 2010; Mar-Apr, 79(2): 27-35
- 11 Matono Y, Nakagawa M, Matsuya S, Isikawa K, Terada Y. Corrosion behavior of pure titanium and titanium alloys in various concentrations of acidulated phosphate fluoride (APF) solutions. *Dent Mater J*. 2006; 25 (1): 104-112
- 12 Magnuson B, Harsono M, Silberstein J, Stark PC, Perry R. Water flosser vs. floss: comparing reduction in bleeding around implants [abstract]. Presented at the International Association for Dental Research Meeting; March 23, 2013; Seattle, WA. Abstract 3761
- 13 Felo A, Shibly O, Ciancio SC, et al. Effects of subgingival chlorhexidine irrigation on peri-implant maintenance. *Am J Dent*. 1997; 10(2): 107-110.
- 14 Lyle, D. Implant maintenance: Is there an ideal approach? *Compendium*. May 2013, Vol. 34, Issue 5
- 15 Wirthlin, R, Ahn BJ, Enriquez B, Hussain MZ Effects of stabilized chlorine dioxide and Chlorhexidine mouth rinses in in-vitro cells involved in periodontal healing. *J. Western Soc Periodontol abstracts* 2006; 54(3) 67-71
- 16 Drake, D, Villhauer A, An in vitro comparative study determining bactericidal activity of stabilized chlorine dioxide and other oral rinses. *J. Clin Dent* 2011; 22(1) 1-5.

International Headquarters

Institut Straumann AG
Peter Merian-Weg 12
CH-4002 Basel, Switzerland
Phone +41 (0)61 965 11 11
Fax +41 (0)61 965 11 01

Straumann North American Headquarters

Straumann USA, LLC
60 Minuteman Road
Andover, MA 01810
Phone 800/448 8168 (US) • 800/363 4024 (CA)
Fax 978/747 2490
www.straumann.us • www.straumann.ca
