



# Novel Protocol to Manage Peri-implantitis

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## ABSTRACT

Peri-implantitis is characterized by an inflammatory reaction that affects the hard and soft tissue, which results in loss of supporting bone and pocket formation surrounding the functioning osseointegrated implant. This short communication proposes new protocols for management of Peri-implantitis. The non-surgical approach involves the mechanical surface debridement using carbon or titanium curettes, laser light, and antibiotics whereas, the surgical approach involves implantoplasty, elevation of mucoperiosteal flap and removal of Peri-inflammatory granulation tissue followed by surface decontamination and bone grafting.

**Keywords:** Peri-implantitis Treatment, Protocols, Surgical and Non-surgical Therapy.

## 1. INTRODUCTION

Peri-implantitis is characterized as an inflammatory reaction that affects the hard and soft tissue, which results in loss of supporting bone and pocket formation surrounding the functioning Osseo integrated implant. [1]

Bio-film and bacteria on the surface of implant always play an important role in the appearance of Peri-implantitis (Canullo et al. 2015). [2] The management of Peri-implantitis is focused on infection and bacterial controls. The treatments proposed for the Peri-implant disease are based on the evidence gained from the treatment of periodontitis. Both surgical and non-surgical techniques have been developed for the treatment of Peri-implantitis.

The treatment of Peri-implantitis in the case of incipient bone loss involves the elimination of local irritants with or without surface decontamination, systemic antibiotics, some additional adjunctive therapies agents or devices and usually follows the CIST protocol till date. [3]

### **Non-surgical Techniques**

Karring and his co-workers [4] compared the treatment results obtained with the Vector® ultrasound system versus carbon fiber curettes. They found no significant differences between the two techniques after 6 months of follow-up. In a study by Person and his co-workers [5] where titanium curettes versus ultrasonic device were used there was a similar result. After 6 months of follow up, no differences were found to reduce microbiota and neither proved sufficient to treat Peri-implantitis.

In the study conducted by Sahm and his co-workers, [6] he compared mechanical debridement using carbon curettes and antiseptic therapy with amino acid glycine powder. After 6 months of follow up treatment, both study groups resulted in limited clinical attachment level and the bleeding was reduced in amino acid glycine powder group as compared to mechanical debridement group. Schwarz and his co-workers [7], Renvert and his co-workers [8] and Pearson and his co-workers [9] compared the Er: YAG laser with an air abrasive device. Limited improvement in clinical parameters was found in both the groups but the bacterial count was not reduced after 6 months of follow up.

Renvert and his co-workers [10] compared local minocycline microspheres and chlorhexidine gel debridement. After 1 year of treatment, both study groups showed improvement in plaque index, pocket depth and bleeding without improvement in terms of microbiota.

Schar et al. [11] examined the benefit of photodynamic therapy (PDT) over minocycline microspheres. In both group, significant reductions in mucosal inflammation were observed up to 6 months.

Hallstrom and his co-workers [12] in 2012 used systemic antibiotic azithromycin for 4 days. After 6 months of follow up, there was an improvement only in oral hygiene but this study could not provide adequate evidence.

Machtei et al. [13] evaluated and compared the matrix chips (MatrixC) with that of chlorhexidine chips (PerioC) in 60 patients with probing depth 6–10 mm and bone loss >2 mm. The results yield after 6 months of repeated treatment shows probing depth reduction was greater in the PerioC compared with MatrixC group. Reduced bleeding on probing and Clinical attachment level gains for both groups were found to be significant.

### **Surgical Techniques**

Surgical techniques for Peri-implant disease management can be divided into resective and regenerative surgery

Aghazadeh and his co-workers [14] concluded that resective surgical procedures coupled with bovine derived xenograft and placement of collagen membrane have more radiographic evidence of bony defect filled as compared to autogenous bone graft use.

Schwarz and his co-workers [15] in their study concluded that the application of nano-crystalline hydroxyapatite and guided tissue regeneration showed significant improvement in clinical parameters.

Wohlfahrt et al. [16] evaluated the 12 months outcome by adding porous titanium granules (PTG) together with an open flap procedure and in conjunction with mechanical debridement of the implant surface for decontamination with 24 % ethylenediaminetetracetic acid gel followed by antibiotics (amoxicillin and metronidazole) 3 days prior to surgery and for 7 days after surgery. Both the treatment demonstrated significant improvements in probing pocket depth but the reconstruction with PTG resulted in better radiographic Peri-implant defect fill

Romeo et al. (2007) [17] have compared the efficacy of respective surgery with that of Implantoplasty. The results obtained after 3 years of therapy demonstrated that the marginal bone loss was significantly lower after Implantoplasty.

The study by de Waal et al. (2013) [18] demonstrated that the adjunctive benefits derived from the addition of respective surgical treatment consisting of apically re-positioned flap, bone re-contouring and surface debridement and with 0.12 % CHX + 0.05 % CPC to a placebo-solution (without CHX/CPC) tend to be greater immediate suppression of anaerobic bacteria on the implant surface than a placebo-solution, but does not lead to superior clinical results.

## **2. DISCUSSION**

Based on the results of above studies we have proposed a new protocol for management of non-surgical and surgical treatment of Peri-implantitis, which is as follows,

### **2.1 Non - Surgical Treatment**

1. Perform the desired occlusal adjustment to relieve the occlusal overload if any.
2. Perform scaling and non-surgical mechanical debridement with ultrasonic special soft tips/ titanium hand scalers/ plastic scalers/titanium curettes.
3. Polish exposed implant surface with implant paste.
4. Flossing with implant floss (in office demonstration followed by regular use by patient)
5. Advise patient to rinse with an alcohol free none staining- mouthwash once daily.
6. Let patient apply chlorhexidine and metronidazole gel combination twice daily for one week
7. Apply Local drug delivery agents like tetracycline fibres and Chlorhexidine gel in the affected area
8. Systemic antibiotic coverage include amoxicillin and metronidazole combination for 5-7 days
9. Irrigate affected site with Chlorhexidine / Betadine to provide local antiseptic action.
10. Perform at least one round of water flossing therapy with chemotherapeutic agent like Betadine/ Chlorhexidine mixed in the water tank of Waterpik irrigation system
11. Advisable to use soft tissue Lasers like diode laser for disinfection of pocket and laser curettage.
12. Lasers and Photodynamic therapy recommended for effective local anti-microbial action.
13. Ozone therapy may be used by irrigating Peri-implant sulcus with ozonated water/oxygenated gas for lethal antimicrobial action

### **2.2 Surgical Management**

1. Flap surgery may be performed and specially modified ultrasonic soft tip along with debridement using implant curettes can be carried out.
2. Detoxify the implant surface using cotton pellets soaked in citric acid for 30 seconds followed by flushing with sterile water/ sterile saline
3. Bone grafting and PRF/collagen membrane may be done to cover the exposed implant thread followed by flap closure
4. After opening the flap irrigation with antiseptic may be done for local anti-microbial action
5. Systemic antibiotics as antimicrobial therapy to be prescribed (Amoxicillin+metronidazole) - If Guided bone regeneration procedure then Doxycyline + Ornidazole may be given
6. Implantoplasty with high speed diamond burs and polishers can be done on exposed implant threads
7. As a final option - Explantation or Implant Extraction may be done followed by redevelopment of implant site with necessary grafting

\*Patient is than put on maintenance and periodic follow-ups to be carried out

\*Patient should be informed about his/her prognosis. The patient should not have any unrealistic expectations.

\*Keep implant out of occlusion and covered for 10 to 12 weeks followed by replacement of the prosthesis.

### **3. CONCLUSION**

With the increase in the acceptance of dental implants as a treatment modality for patients with missing teeth, Peri-implant diseases are likely to become more prevalent. Hence, routine monitoring of dental implants as a part of a comprehensive periodontal evaluation and maintenance is essential. Early diagnosis is vital for effective management of the Peri-implant disease and is useful for a favourable prognosis. Prevention of Peri-implant disease is the key to successful implant therapy. The author believes that the new proposed management protocol will enable the clinician to achieve more success when treating a case of Peri-implantitis.

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