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Case Report

"Multi-Faceted Approach for Soft and Hard Tissue Management of Peri-Implantitis: A Case Report"

Aishwarya Sabharwal, Nidhi Saripalli, Pramod Waghmare and Nishita Bhosale

Department of Periodontology, Bharati Vidyapeeth (Deemed to be University), Dental College and Hospital, Pune

***Corresponding Author:** Aishwarya Sabharwal, Department of Periodontology, Bharati Vidyapeeth (Deemed to be University), Dental College and Hospital, Pune.

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Abstract

Introduction: Peri-implant diseases are inflammatory reactions to bacterial infections affecting osseointegrated dental implants. The treatment of peri-implantitis is commonly associated to soft tissue changes as part of disease resolution. These changes may alter harmony in the aesthetic area, and thus may negatively affect patient satisfaction.

Case Report: A 30-year-old male patient reported to the Department of Periodontology, with a complaint of bleeding associated with implant and prosthesis which was placed in the region of 21, about 4 months back. On clinical and radiographic examination, mild to moderate bone loss associated with increased probing depth was seen with respect to 21. In the initial phase of treatment, mechanical debridement was carried out with plastic instruments and implant surface was treated using EDTA and Bifilac, a combination of prebiotic and probiotic. Due to anticipated soft tissue shrinkage, surgical intervention was necessary. Hence, a connective tissue grafting procedure was planned, the results of which are expected in 3 weeks.

Results and Discussion: Volumetric studies have demonstrated that the peri-implant mucosa undergoes considerable changes no matter what type of strategy is used to manage peri-implantitis. A major drawback in the management of peri-implant bone lesions is referred to the aesthetic sequelae which includes mucosal recession.

Conclusion: Given the shortcomings of nonsurgical therapy, surgical access is often advocated to efficiently remove the biofilm adhered to the contaminated implant surface.

Keywords: Peri Implantitis; Bifilac; Probiotic; Connective Tissue Graft; EDTA; Soft Tissue Augmentation

Introduction

Dental implants have now emerged as a popular form of treatment for patients with partial or total edentulism. The healthy soft tissue that surrounds the implant is just as important to the long-term success of the implant as is osseointegration. Peri-implant diseases are inflammatory reactions to bacterial infections affecting osseointegrated dental implants [1]. Non-surgical approaches for the treatment of peri-implant diseases have proven to be reliable in reducing clinical signs of peri-implant inflammation. The microorganisms most commonly associated with implant failure are spirochetes and mobile forms of Gram-negative anaerobes. Diagnosis is based on changes of colour in the gingiva, bleeding and probing depth of peri-implant pockets, suppuration, radiograph, and gradual loss of bone height around the implant. The management of implant infection should be focused on the control of infection, the detoxification of the implant surface, and regeneration of the alveolar bone. This case report highlights the significance of both non-surgical and surgical treatment approaches for the management of peri-implantitis.

Case Report

A 30-year-old male patient reported to the Department of Periodontology, of Bharati Vidyapeeth Dental College and Hospital, Pune, with a chief complaint of bleeding associated with implant and prosthesis which was placed in the region of 21, approximately 4 months back (Figure 1). After recording complete case history and on clinical and radiographic examination, mild to moderate bone loss associated with increased probing depth was seen with respect to 21 (Figure 2). A combined non-surgical and surgical treatment was planned for the patient. The non-surgical phase included mechanical debridement which was carried out with plastic instruments. In the surgical phase, after administration of infraor-

bital nerve block local anaesthesia (Figure 3), a horizontal incision (Figure 4), apical to the margin of the gingiva, was given using a #15 blade. The incision extended from the distal line angle of 11 to the distal line angle of 22. A full thickness flap was reflected and the area was properly debrided (Figure 5). The implant threads were then clinically visible after flap reflection and debridement (Figure 6). The implant surface was treated using ethylene diamine tetra-acetic acid (EDTA) for 2 minutes (Figure 7). Then, a combination of prebiotic and probiotic, Bifilac capsule, was mixed with a few drops of distilled water in order to make a paste-like consistency. This paste was applied on the exposed implant threads for 3-4 minutes and irrigated with saline (Figure 8). The defect site was then measured to be approximately 10 X 8 mm (Figure 9).

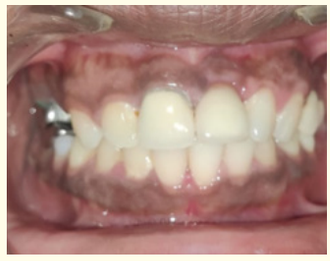

Figure 1: Pre operative Clinical photo.

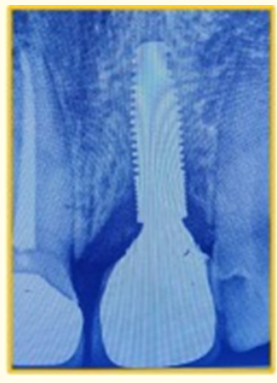

Figure 2: Radiographic photo.

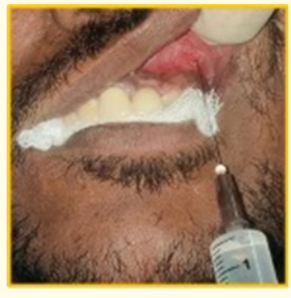

Figure 3: LA Administration.

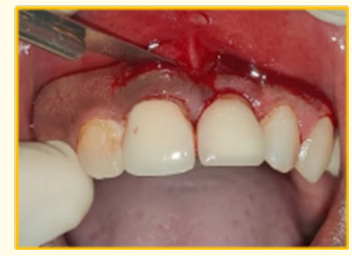

Figure 4: Incision.

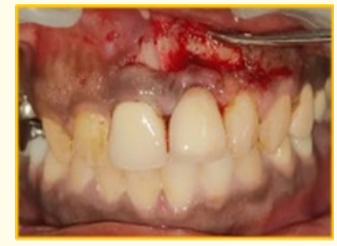

Figure 5: Flap reflection and debridement.

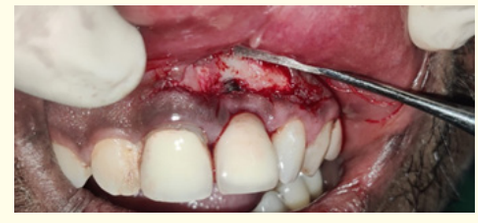

Figure 6: Clinically visible implant threads.

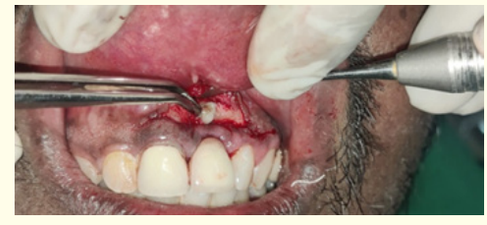

Figure 7: EDTA Application.

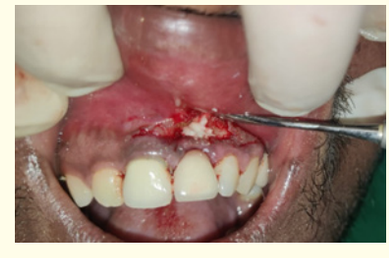

Figure 8: Bifilac Application.

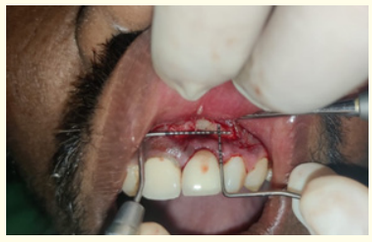

Figure 9: Defect site measurement.

A greater palatine nerve block was administered in order to harvest a soft tissue graft from the palatal aspect of the second quadrant. Two horizontal incisions and two vertical incisions were given using a #15 blade, extending from the distal of 26 to the mesial of the 23, as per the size of the defect. A free gingival graft was procured from the donor site. The donor site was then covered using an absorbable gelatin sponge (Abgel) for hemostasis. The graft was then sliced by placing between wooden sticks, so as to separate the epithelial and connective tissue portions. Thus, a connective tissue graft of the desired dimensions was obtained (Figure 10). The graft was placed in saline and the recipient site was irrigated. The graft was then positioned in the recipient site and stabilised using simple interrupted 5-0 non-resorbable monocryl sutures (Figure 11). The patient was given post-operative instructions and prescribed antibiotics and analgesics for 8 days. Patient was recalled for follow-up on day 2, day 8 and day 15. The sutures were removed on day 15. Wound healing and graft stability were excellent on all follow-up visits (Figure 12).

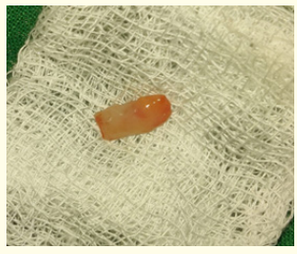

Figure 10: Connective tissue graft.

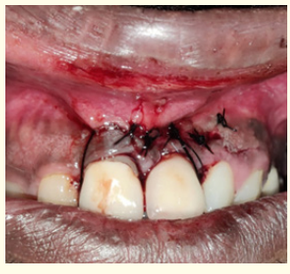

Figure 11: Graft stabilisation with suturing

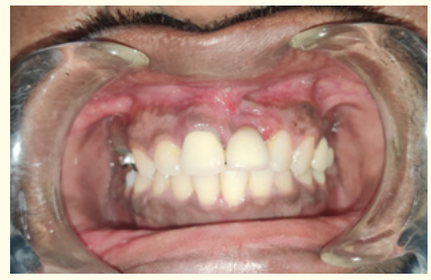

Figure 12: Follow up on 15th day.

Discussion

Peri-implant disorders are referred to as a "collective name for inflammatory reactions in the tissues surrounding the implants," whereas peri-implantitis was first described as an inflammatory condition on hard and soft tissue that results in pocket development and loss of supporting bone [2].

Until now, no methodology has been established as a gold standard approach for the treatment of peri-implantitis. So the therapy of peri-implantitis comprises (a) the nonsurgical phase, which includes debridement by mechanical means, either alone or combined with antiseptic agents and (b) the surgical phase, utilizing either resective or regenerative techniques. However, the screw-shaped design of the implants, combined with various surface modifications of titanium, may facilitate plaque accumulation, resulting in bacterial biofilm formation [3]. Mechanical debridement on such surfaces may have a limited effect and results in incomplete removal of the microorganisms. Mechanical instruments for plaque removal include plastic curettes, ultrasonic scalers with a metal tip, metal curettes, air abrasive, and metallic (titanium) brushes [4]. However, Karring., *et al*. demonstrated that sub-mucosal debridement alone, accomplished by utilising either an ultrasonic device or carbon fiber curettes, is not sufficient for the decontamination of the surfaces of implants with peri-implant pockets ≥ 5 mm and exposed implant threads [5]. So it seems reasonable to suggest that mechanical debridement alone may not be an adequate modality for the resolution of peri-implantitis.

In peri-implantitis cases, both the use of local antiseptics and the use of antibiotics can improve clinical parameters but the overuse and misuse of antibiotics along with increased bacterial resistance cannot be neglected, compelling us to look for other equally effective treatment alternatives. The dysbiosis concepts support a new perspective about peri-implant infections where the goal is no longer to eliminate periodontal microbiota, but instead, driving the biofilm to a health-compatible status [6]. The use of probiotics seems tailored to this purpose and they act as inhibitors of peri-

odontal pathogens by producing antimicrobial defense agents and have the potential to neutralize the pH of the oral cavity, preventing the formation of organized bacterial plaque and thus prevent oral diseases [7]. Hence the use of Bifilac in our study seems advantageous when used as an adjunct to mechanical debridement. Not only this, to remove the smear layer for periodontal regeneration and peri-implantitis, EDTA is usually used as a chelating agent in dentistry [8]. Wohlfahrt., *et al.* cleansed peri-implantitis defects with 24% EDTA for 2 minutes, who discovered that EDTA reduced the PD by 2.6 mm [9].

Therefore, given the shortcomings of nonsurgical therapy, surgical access is often advocated to efficiently remove the biofilm adhered to the contaminated implant surface.

A major drawback in the management of peri-implant bone lesions is the esthetic sequelae-mucosal recession. Romandini., *et al*. noted that implants with peri-implantitis had significantly greater mean mucosal recession than healthy/mucositis implants (20.3%) [10]. Hence to prevent recession, we planned Connective tissue graft procedure. These grafts are effective in increasing soft tissue thickness, preventing recession, thus improving aesthetics.

Conclusion

The prognosis of the compromised implant will depend on the early diagnosis and management of peri-implantitis. A general image of some clinical improvement with the use of anti-infective therapy emerges in terms of resolution of inflammation and bone healing, even though research examining various peri-implantitis treatment modalities are not comparable. This finding, together with our understanding of the undeniable contribution of periodontal micro-organisms to the pathogenesis of peri-implantitis, suggests that any other approach to solving this issue must include some type of anti-infective therapy.

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