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Review

Management of peri-implantitis – A contemporary synopsis



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ABSTRACT

Prevalence of peri-implant complication is expected to be on the rise with the increased number of implants being placed. Depending on the degree of osseous involvement, the clinician needs to decide if the treatment goal is to arrest the disease progression, regeneration or explantation and replacement. Host's medical status, defect configuration, aesthetic outcome, ability to access for plaque control post-treatment, and the patient's wishes are key factors to consider. The purpose of this review is to provide a contemporary synopsis on the management of peri-implantitis with emphasis on explantation. Guidance on the identification of factors/situations where salvaging an implant may be less favourable is discussed and the various techniques to remove a fractured, or peri-implantitis-affected non-mobile implant are described.

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Introduction

Peri-implant complications range from minor soft tissue inflammation to significant progressive bone loss. Peri-implant mucositis is a condition similar to gingivitis, described as a reversible inflammatory lesion affecting the

soft tissue in the area immediately around implants whereas peri-implantitis is an inflammatory process of the soft tissue surrounding an implant accompanied by bone loss that exceeds normal physiological remodeling [1]. As one in four patients receiving implant therapy are likely to show signs of peri-implant diseases with varying degrees of severity

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throughout the lifespan of the implants [2,3], clinicians will be confronted with peri-implant complications requiring appropriate management.

Whilst the infection is confined to the soft tissues, full resolution of infection can be expected on the removal of the contributing factors and adequate plaque control [4,5]. As the disease progresses to involve the osseous structures, surgical intervention is usually indicated [6,7]. Depending on the degree of osseous involvement, the clinician needs to decide if the treatment goal is to arrest the disease progression, regeneration or explantation and replacement [8-10]. Host's medical status, defect configuration, aesthetic outcome, ability to access for plaque control post-treatment, and the patient's wishes are key factors to consider.

Much has been reported in the literature on the treatment of peri-implantitis [11-15]. Though the most predictable treatment modality has yet to be agreed upon, the consensus remains that effective surface decontamination is a prerequisite [15]. However, the use of rough surfaced implants has cast doubts on the feasibility of a full resolution of infection [16,17]. Once exposed, the microstructures of the rough surface have a higher affinity for biofilm development that is robust, tenacious to remove and difficult to maintain plaque free [18]. Recent developments in implant removal devices have allowed for more conservative methods of explantation such as reverse-torque devices in place of the traditional approach of trephining [19]. The minimal invasiveness has made implant removal a viable treatment option for management of peri-implantitis.

The purpose of this review is to provide a contemporary synopsis on the management of peri-implantitis with emphasis on explantation. Guidance on the identification of factors/situations where salvaging an implant may be less favourable is discussed and the various techniques to remove a failed, fractured, or peri-implantitis-affected non-mobile implant are described.

Host factor

More implants are placed in older populations with increasing longevity younger patients with decades of life expectancy is likely that patients develop medical conditions that mitigate the host defenses after years of implant in service.

Patients with systemic conditions that are risk factors for periodontitis (such as uncontrolled diabetics, heavy smokers and the immunosuppressed) are more vulnerable to develop peri-implantitis [20-21]. Similarly, the treatment outcome this group of patients is less predictable; the prognosis in patients who develop these debilitations is also less certain. Until the systemic condition is under control, management of peri-implant complication should remain conservative, including mechanical debridement, antiseptics, antibacterial drugs and adequate home care. Approach should be employed in patients undergoing head and neck radiotherapy and patients with a history of, or vulnerable to medication-related osteonecrosis of the jaw (MRONJ), such as intravenous bisphosphonate [22]. MRONJ is a painful condition that is difficult to manage and can lead to devastating defects. Recent studies have shown bone sequestration can occur in already osseointegrated implants bisphosphonate administration [23] (Fig. 1).

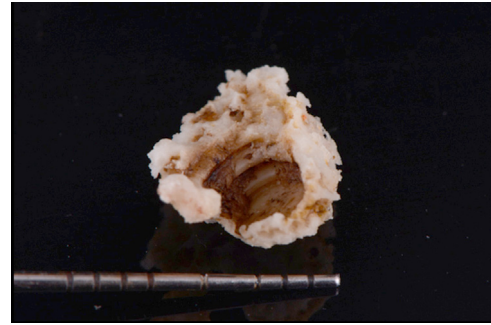


Fig. 1 – En-bloc bone sequestration removed from a failing implant of a patient with a long history use of bisphosphonate; note the implant thread marks seen on the inside of the sequestrum.

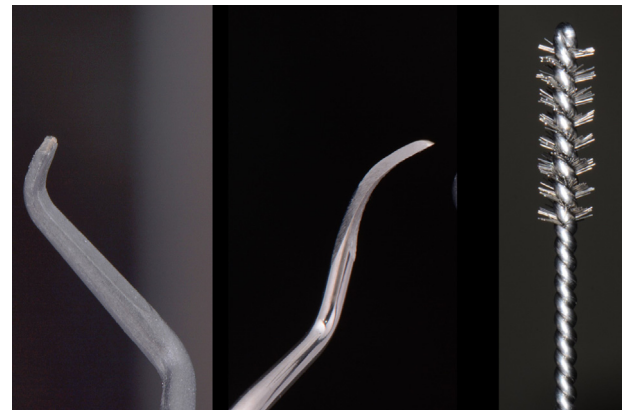


Fig. 2 – Implant-specific scalers and curettes with tip design to prevent scratches or other damage to the implant. (Left)-Carbon scaler; (Middle)-Titanium scaler; (Right)-Titanium brushes for surgical debridement.

Severity of disease and defect configuration

Early detection of biofilm progression to peri-implant mucositis is crucial as it is treatable with biofilm disruption [24]. Plaque induced peri-implant mucositis is characterized by redness, swelling and bleeding on gentle probing clinically. The inflammatory process of peri-implant mucositis is akin to gingivitis around natural teeth, but the magnitude and severity of tissue inflammation may be more severe and challenging to reverse with treatment in comparison to teeth of the natural dentition [24]. Mechanical debridement is effective in controlling peri-implant mucositis in terms of probing depth reduction. Usage of chlorhexidine in combination with mechanical debridement has been shown to improve clinical and microbiological parameters [25]. Implant-appropriate curettes, such as titanium or carbon curettes or brushes should be used to debride the implant surface thoroughly under local anesthetics (Fig. 2). Ultrasonic scaling should be avoided to prevent release of titanium particles which may aggravate inflammation [41].

Untreated mucositis can progress into peri-implantitis in which the local host response mediates bone resorption in a similar way to periodontitis, resulting in decreased bone-to-

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