A summary of *Peri-Implantitis and Peri-Mucositis – Aetiology, Diagnosis and Management.*

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About the author
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Introduction

Peri-implantitis(PI) has many definitions but the accepted universal is that it is an irreversible condition that effects the periodontal tissue around dental implants resulting in bone loss. Whereas in contrast Peri-mucositis (PM) affects the periodontal tissues but is reversible and no bone loss is seen.

We have been placing implants now for more than 3 decades with a reported high success rate. But the longevity and monitoring of implants is not well reported in the literature. This article is to allow practitioners to be more aware of the signs of periodontal disease and both treatment modalities and more importantly how we can prevent this occurring in the first instance.

Risk Factors

The first area to look at the patients most at risk of PM and PI. Identifying these patients prior to embarking on treatment is a crucial area to prevent the disease and explain to them that they are in a high-risk category this I believe will make the consent process more transparent as we take on higher risk patients all the time as they are usually the patients that require implants the most.

This list is by no means exhaustive but will give practitioners an idea on what to look out for.

1. Smoking (high risk of PI)
2. Previous history of periodontal disease
3. Poor Prosthetic design
4. Poor implant design and abutment-implant connection micro-leakage.

5. Poor Oral hygiene
6. Incorrect positioning of the implants
7. Iatrogenic causes – Cementitis
8. Failure to attend recalls and Hygiene appointments
9. Polymorphic genetic conditions

This is a list of the most common reasons we experience inflammation around the implants. PM is a condition similar or analogous to gingivitis and the prevalence is around 68-80% of all implants will have some degree of inflammation mostly PM and a lower incidence of PI around 6-8% reported in the systematic reviews on this subject.

Histopathology

Like periodontitis peri-implantitis is caused by a similar strain of gram negative bacterium. But in addition, we have seen reports of staph Aureus being involved in peri-implantitis whereas this is not involved in periodontitis. Staphlococcus Aureus has a large affinity to titanium and resides in the skin.

Diagnosis

To make a correct diagnosis of Peri-implant diseases of the gingival tissues and periodontium we will need baseline readings. It is widely known now that the guidelines for BPE have changed to not include this as a standard screening test for dental implants. I believe that the consensus lies in the fact that there is no effective clinical evidence to support its use around dental implants as the BPE indicates need to perform traditional periodontal therapy on teeth. This however does not mean we cannot use baseline probing depths as a better overall indicator of periodontal health around dental implants and it is crucial to record these depths when initially we fit our superstructures.

The author recommends the following at fitment of the crown be it screw or a cement retained prosthesis.

LCPA X-ray for single or multiple units at baseline
Baseline probing depths around 3 points buccally and palatally or lingually.
Clinical photograph to indicate colour and position of the gingival tissues.

Key indicators of Peri-Implant disease

1. BOP (bleeding on probing)
2. Suppuration of any kind
3. Redness or swelling of the gums
4. Bone loss

5. Pain
6. Mobility of the implant

The later points 4-6 indicate late stages of PI and early detection is the key to prevention in many cases.

Treatment

Peri-Mucositis

This is a reversible condition and we must firstly understand the key differences in treating implants to teeth. Removal of plaque and debris is an acceptable measure and titanium scalers or ultrasonics have been shown to be useful in doing this but of little overall value in solving and importantly preventing recurrence of the disease. Firstly, we must remove the biofilm abutment and or crown which lies underneath the gum tissue. As we can't employ traditional root planning on these surfaces there have been several ways to do this described in the literature.

Non-surgical treatments have been shown of limited value. But the most important factor being oral hygiene practices of the patient and how they are cleaning the prosthesis at home every day. Meticulous attention of interdental or inter-implant cleaning is a prerequisite to treatment success long term.

Summary of the protocols

1. Oral hygiene instruction both performed orally and document aids to the patient to demonstrate the use of tee pee brushes of appropriate size. Correct brushing technique. Instruction in frequency and duration of brushing and interdental cleaning.

2. Adjunctive use of mouthwash – as we should recommend peroxyl (hydrogen peroxide based mouth rinse – but emphasize this is an adjunct to mechanical cleaning not a replacement of.

3. Non-surgical intervention: use of scalers and ultrasonics for removal of visible plaque deposits

4. Airflow (Amino acid glycine powder or Perio powder®. Used to aid removal of the biofilm either non-surgically or surgically by raising a flap.

5. Laser (YAG) use to disinfect the pocket has a small degree of evidence for its use.

6. Local antimicrobials (Minocycline, Chlorohexine chips and doxycycline powder form has been employed by some clinicians but more randomised control studies are required

Peri-Implantitis Management

The management of peri-implantitis start with all the elements of managing Peri-mucositis. And the initial decision any clinician should have to make is that is the condition treatable. This is a subjective assessment that will be based on a clinician's specific experience in dealing with this issue.

We must disregard the obvious situation that if an implant is mobile, there is pain or aesthetic failure the implant may have to be removed and an appropriate plan put into place to replace it. There is no universal consensus on the approach or the classification of such a clinical decision and we are largely basing the decision on anecdotal evidence. There is great need for more research into this area. There have been attempts to classify the degree of peri-implantitis to mild, moderate and severe for clinical research purposes and this is a scale of percentage of loss of bone long the length of the implant.

Recession around implants in the aesthetic zone can be a difficult area to deal with and for less experienced colleagues referral to a periodontist or more experienced implant practitioner is recommended.

For cases of mild <30% bone loss around the implant whereby recession of the gingival zenith may not be an issue to the patient we can attempt a surgical approach to attempt to rectify the problem. Firstly, we must try to ascertain the cause of the bone loss and prevent this recurring. Bone loss around implants can also be caused by excessive non-axial forces in the bite. We must record the occlusion and ascertain if there are any interferences on excursions or excessive pressure placed on the implant(s). And then eliminate these or reorganise the bite or provide protection against potential cases of bruxism.

Summary of surgical treatments

1. Airflow Perio powder® - Biofilm removal on implant threads
2. YAG Laser use to disinfect area
3. Smooth rough implant surfaces

4. Removal of granulation tissue surgically
5. Disinfection using adjunctive local antimicrobials (see previous list)
6. Photo disinfection techniques
7. Grafting (not well documented and largely unpredictable) but has its place.

Conclusion

As we look through the literature we are embarking into an area whereby not much research has been performed to give us an insight into what treatment is considered "Gold Standard". I feel that the most important aspect is proper treatment planning, use of long established well evidenced implant systems and correct prosthesis design is crucial to prevention of such diseases. As with many aspects of surgery or medicine early detection is key to prevention and successful treatment outcomes. PM may lead to PI but if we detect PM early its largely preventable in many cases. Routine recall, patient education and meticulous oral hygiene is paramount. We must also identify that history of periodontitis is a major risk factor and we must treat the periodontal disease and its causes prior to embarking on implant therapy of any kind which cannot be stressed enough in this summary.

Dental implants have a high success rate when compared to other areas of dentistry but one must always remember that a natural tooth historically will outlast an implant and implants are primary a solution for missing teeth and not a replacement for conventional dentistry.