The management of periodontal and peri implant disease

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Dental hygienist and reader panel member **Justine Nicholls** explains periodontal and peri implant disease and its management for the dental care professional (DCP).

Introduction

Periodontal disease is the most prevalent preventable disease globally and can have serious health consequences and impact on quality of life and productivity.

In recent years dental implant placement has become more frequent in order to treat aesthetic and functional problems due to natural tooth loss.

When considering restoration of the dentition, minimally invasive dentistry favours the adjacent teeth remaining intact for functionality and aesthetics.

I have endeavoured to provide an informative and interesting, thought provoking article which is limited to the non-surgical treatment of peri implant disease, its presentation and clinical and oral hygiene protocols.

Peri implant disease

Peri implant disease is a collective term for reversible peri implant mucositis and the irreversible peri implantitis.

Peri implant mucositis involves inflammatory changes within the peri implant soft tissues without bone loss.

Peri implantitis involves inflammatory changes affecting the soft tissues surrounding the implant resulting in loss of the supporting bone surrounding the implant.

As dental care professionals (DCPs) we are used to periodontitis around natural teeth where plaque biofilm induced inflammatory changes of the gingivae are followed by the loss of clinical attachment due to breakdown of the periodontal ligament and loss of the adjacent supporting bone.

Peri implantitis follows similar clinical

signs and symptoms, with peri mucositis rapidly progressing to peri implantitis if not managed firstly by careful diagnosis and secondly by the implementation of remedial professional debridement and self-performed oral hygiene measures with clear, manageable, well taught and demonstrated plaque control interventions.

Peri implantitis occurs from an incompatibility between host defences and increased bacterial load. Peri implant disease has a multi-factorial aetiology which occurs quietly and without pain.

Maintaining healthy tissues

One of the most important factors for the long term success of dental implants is the maintenance of healthy peri implant tissues. It is essential to be methodical and thorough when monitoring peri implant tissues. Firstly and crucially there must be a recording of an initial baseline assessment and taking of radiographs.

The indication for further radiographs should be made following methodical clinical assessment at regular review appointments, early careful diagnosis and spotting the clinical markers to assess the presence and severity of inflammation around the implant. It is important to note the presence of biofilm, inflammation of the peri implant tissues, increase in peri implant probing depth, bleeding on probing, suppuration from the peri implant pocket, mobility and resulting radiographic changes.

It is also important to remember that most implants show evidence of a small amount of bone loss within the first year of function.

When probing peri implant tissues the probing depths need to be recorded from a fixed landmark, the abutment implant junction, and it is essential that a light force is used (0.25 Ncm) to avoid trauma to the parallel attachment of the junctional epithelium to the implant surface.

There is therefore less resistance when probing around an implant and deeper peri implant probing depths compared to natural teeth. These probing depths are usually 2-4 mm under healthy conditions.

Good oral hygiene

It is important that good oral hygiene is

performed to maintain the peri implant health; the aim is for manageable self-performed techniques, carried out consistently and thoroughly by the patient.

The role of the hygienist and therapist or nurse oral health educator is in oral health promotion, and dental education, demonstrating and observing the correct use of the toothbrush, super floss, interdental brushes and water flossing and many other techniques relevant to the individual.

It is important that the regime is not complicated or overwhelming but achievable and simple so that it becomes embedded in the patient's daily routine. Manual dexterity varies and some patients may struggle to wrap the floss, in the case of a single implant, or gain access to a posterior bridge.

Excess cement must be removed as the presence of residual cement can lead to peri implant inflammation. It is important that all underlying dental disease is treated or stabilised before implant placement. This is of great importance when patients are susceptible to periodontal disease.

Periodontal and peri implant disease is linked to patient lifestyle. Smoking has been shown to be a risk factor as has a history of periodontitis, diabetes and other systemic diseases; genetic predisposition, alcohol consumption and other systemic factors predispose to disease.

Localised predisposing factors include the presence of plaque pathogenic biofilm and its endotoxins due to lack of maintenance adherence, prosthetic design and occlusal

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Some patients are heavy handed and patience in encouraging and teaching techniques will begin to see resulting abilities. Careful and empathic two-way discussion will tailor a manageable routine.

The cornerstone of successful therapy is optimal oral hygiene delivered by the patient in the home setting and there is a huge part to play by the professional in offering optimal support to the patient during the instruction and educational phases and beyond. The DCP will customise a dedicated personalised regime to follow in biofilm management.

Non-surgical treatment and predisposing factors

Bacterial induced inflammation is initially treated non-surgically with the use of locally administered treatments and adjuncts.

overload, retained cement, soft tissue quality and quantity and salivary reduction in patients with xerostomia.

The influence of the different risk factors can negatively affect the predictability of dental implants. It must not be underestimated that this is a multi-factorial pathology.

Smoking negatively affects bone mineral density and wound healing.

Alcohol consumption is a risk as it results in a reduction in vitamin K; alcohol can break the prothrombin repletion affecting the coagulation mechanisms.

Complications of diabetes are well documented: current evidence does point to periodontal therapy playing a role in glycaemic control; inflammatory markers in the blood due to periodontal disease lead to decreased insulin sensitivity.

Oral pathogens

Oral pathogens associated with periodontal disease are comparable to peri implant disease however dentate patients have a differing biofilm challenge to those patients where implants are placed in the edentulous mouth.

At-risk patients may require additional support from chemotherapeutic agents such as chlorhexidine digluconate, a broad spectrum antimicrobial effective against gram positive and gram negative pathogens.

Essential oils mouthwashes also offer compelling evidence of a greater reduction in plaque biofilm than with mechanical methods alone - managing the overall bacterial load and penetrating the biofilm, reducing maturation.

protocols than was once thought. There has been a paradigm shift in the management of periodontal disease in treating surfaces with reduced instrumentation pressures and in the case of the tooth surface, the preservation of the cementum. This thinking will have particular relevance when considering the treatment for the implant surface as care must be taken not to scratch the titanium surface of the implant.

There have been developments in the protocols for implant instrumentation: a 'like with like' approach recommending titanium probes, scalers and curettes, and linear action piezoelectric titanium tips for ultrasonic biofilm disruption. These are less likely to overheat than the metal stack cavitron

floss pressurised water flossing to control biofilm is extremely useful in preventing peri mucocitis and peri implantitis.

COVID-19

In recent years there has been a minimally invasive approach in using aerosol generating procedures (AGPs) in biofilm disruption, especially for implant maintenance procedures. Guidance currently available at the time of writing due to COVID-19 does not permit this approach. There is a temporary return to non-AGP treatment. Titanium hand scalers, curettes and actually using what the patient uses is a recommended approach to professional hygiene care at this time, with virtual consulting and oral hygiene advice.

In summary

When treating patients with dental implants, raise concerns regarding periodontal and peri implant disease early. If in doubt, refer to whoever placed the implants. If this is not possible then refer to an experienced implant dentist or periodontal specialist.

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There is evidence also that occlusal overload can be responsible for progressive bone loss with bruxism being particularly expressed by stress and anxiety during normal activity and sleep.

Calculus is not tenacious when formed on implants and their prosthetics. The role of calculus should not be understated. It has been questioned as it has been ascertained that it is a barrier to effective home care techniques, but it is now clear that its role in disease progression is not that of a disease initiator.

Instrumentation

The root surface can be rendered clean and endotoxin free with less aggressive treatment

magneto striction inserts.

Steel instruments are not recommended due to scratching the titanium or the highly polished supra structure and also prevent the galvanic action of the differing metals.

Teflon and plastic instruments are bulky and crucially have been found to shed bio incompatible plastic particles leading to an inflammatory response; covered ultrasonic tips are also discouraged for this reason.

Biofilm therapy air flow/perio flow with erythritol powder delivers a systematic and predictable professional prophylaxis around dental implants and their bridgework restorations and can rapidly remove biofilm painlessly both supra and subgingivally.

Similarly, for home care the use of the air

Useful resources

1. Rasperini G, Pellegrini G, Cortella A, Rocchietta I, Consonni D, Simion M. The safety and acceptability of an electric toothbrush on peri-implant mucosa in patients with oral implants in aesthetic areas: a prospective cohort study. *Eur J Oral Implantol* 2008; **1**: 221-228.
2. Heitz-Mayfield L J A. Peri-implant diseases: diagnosis and risk indicators. *J Clin Periodontol* 2008; **35**(8 Suppl): 292-304.
3. Jepsen S, Berglundh T, Genco R et al. Primary prevention of peri-implantitis: managing peri-implant mucositis. *J Clin Periodontol* 2015; **42** Suppl 16: S152-157.

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