The
Metrolina Perio

PerioDontaLetter

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Winter

From Our Office to Yours....

With the continuing increase in the number of implants placed, the prevalence of peri-implant diseases has also increased. Studies have shown that peri-implant diseases will affect 20 to 45 percent of implants placed.

Implants are now considered similar to prosthetic implants in orthopedics: they are often a temporary solution. We can't expect them to last a lifetime.

Implants are not better than teeth. They can have more complications than natural teeth with chronic periodontitis. Before deciding to place implants, clinicians should try to save those teeth.

When implants are placed, the preventive measures necessary to inhibit the development of the disease and stop it's progression must be carefully considered.

This current issue of ***The PerioDontaLetter*** *addresses the latest approaches and procedures for preventing and treating peri-implant diseases and discusses how peri-implantitis can be successfully managed.*

As always, we welcome your comments and suggestions.

Preventing and Treating Peri-Implant Disease

With the increasing popularity of replacing teeth with implant-supported prostheses, case selection must be carefully considered prior to implant treatment.

Studies show that adequately treated teeth often have a higher success rate than dental implants.

When implant treatment is planned, patient selection is important to minimize the risk of future peri-implant complications. Furthermore, clinicians should carefully consider measures to prevent and treat peri-implantitis which could complicate the implant's long term success.

Variables Leading to Peri-implantitis

Implants are more susceptible to periodontal disease than teeth. Many variables can lead to peri-implantitis.

1. Implant Placement. Implants should be placed 2mm from a natural tooth and the buccal plate, and 3mm from another implant.

2. Implant Design and Abutment Attachment. A well-designed implant/abutment interface plays an important role in the mechanical stability of the prosthesis and transfer of occlusal forces. Any deflective or premature contacts that may cause

Figure 1. Failure to remove subgingival cement caused facial bone loss and jeopardized the long term success of this implant, the restoration and facial cosmetics.

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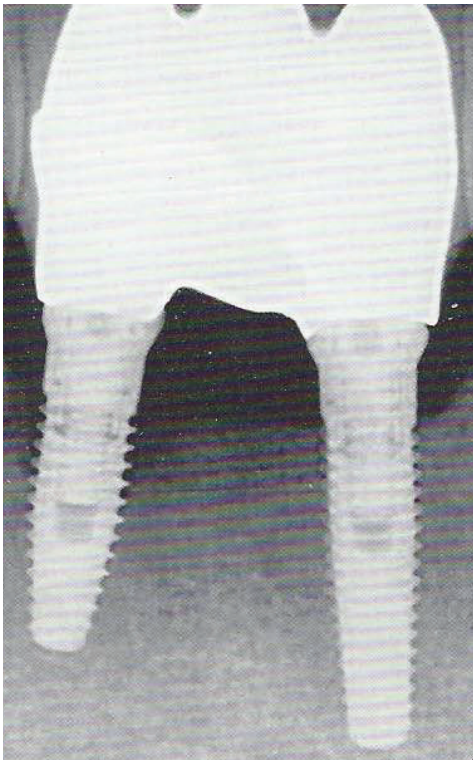

Figures 2 and 3. A radiograph of this implant in December, 2019 revealed peri-implantitis had caused significant bone loss. The patient chose to try to maintain the implant without any therapeutic intervention. A radiograph of the implant in April, 2023 showed extreme severe progression of bone loss, which then placed the adjacent canine in serious jeopardy. Treatment considerations became very complicated. Early intervention is the key to success.

loosening or fracture of abutment screws, implant, or prosthetic failure must be evaluated and corrected. Custom abutments have generally become the treatment of choice. These permit the design of the abutment/crown interface to be well-controlled just .5-1mm subgingivally allowing for efficient cleansability.

3. Platform Switched. Peri-implant diseases are prevalent around implants placed subcrestal to the osseous margin. Deep implant placement increases mucosal tunnel depth, which leads to an increased submucosal position of the implant-prosthesis interface promoting the onset of peri-implant infection.

4. Bone/Tissue Thickness. If the bone is too thin, the implant will be placed outside the alveolar housing. Studies show maxillary incisor roots are most commonly aligned against the facial bone, and the overall thickness of the alveolar facial bone at 3mm apical to the cemento-enamel junction often does not exceed 0.6mm. Often, the bone in the upper incisor region needs to be augmented and the implant placed more palatally.

5. Crown Margin and Cleansability. It is the formation of biofilm on the implant surface which causes peri-implantitis. Therefore, it is critical that the implant restoration have a cleansable contour to prevent biofilm attachment and the development of calculus. Pontic areas should be convex rather than concave.

6. Cement or Screw Retained. The risk of peri-implant disease is substantially greater with cemented restorations compared to screw-retained restorations. The poor tissue attachment in the area surrounding an implant allows cement to flow much farther apically than would be expected with a natural tooth. Screw-retained restorations virtually eliminate the problems associated with cement-retained restorations. However, screw loosening can occur about 15 per cent of the time.

7. Occlusal Load and Bruxism. Studies indicate there is a direct correlation between occlusal overload and peri-implant bone loss. The occlusal load on implants should be lighter than on natural teeth.

8. Attached Gingiva, Movable Tissue. Insufficient keratinized tissue width at implant sites is associated with the increased prevalence of peri-implantitis, plaque accumulation, soft-tissue inflammation, mucosal recession, marginal bone loss and greater patient discomfort. Adequate keratinized tissue width at the implant site is essential as it is associated with superior peri-implant soft- and hard-tissue health and stability.

9. Periodontal Infection on Other Teeth. Patients with active and even treated periodontitis have a higher risk of peri-implantitis. Active periodontitis, or any other inflammatory periodontal condition, should be treated before implants are placed.

10. Implants Splinted to a Mobile Tooth. This can put extra pressure on the implant acting like a cantilever off the implant. Generally it is not recommended to splint implants to natural teeth, although, at times this can be performed successfully on non-mobile teeth.

11. Host Factors. Smoking, diabetes and obesity are all risk factors for the development of peri-implantitis.

12. Medications, which present a risk factor for peri-implantitis. (See next section.)

13. Professional Maintenance/Plaque Control. Studies show the absence of implant maintenance increases the chances of developing peri-implantitis eleven-fold.

Figures 4 and 5. Thin alveolar labial bone and the lack of attached gingiva predisposed these implants to peri-implantitis. A gingival graft was used to create keratinized tissue which allowed the patient to maintain the implant free of inflammation.

Medications

Medications can have a profound effect on developing peri-implantitis. For example, antidepressants such as tricyclic antidepressants like Elavil and doxepin, and serotonin-norepinephrine reuptake inhibitors like Cymbalta and Effexor. A recent study found almost one-third of implants in patients on these medications failed!

Prozac and Zoloft also increase risk of failure by about six percent. The use of bisphosphonates, which increase the risk of osteonecrosis of the jaw; Xgeva, Zometa, Prolia immediately, and Fosamax after three years, create the highest risk. These require a four-month drug holiday before placing implants, and a three-month holiday after. Fosamax requires a nine-month holiday before implant placement. Aredia and Reclast also require a nine-month holiday before, and a three-month holiday after.

Immunosuppresants or corticosteroids weaken the immune system, making the body more susceptible to infections. This increases the risk of implant-related infections. Anticancer drugs, such as monoclonal antibodies, are an absolute contraindication to implant placement and may cause bone marrow toxicity. Biologic drugs which target the immune system, such as Humira and Enbrel, are also a contraindication to placing implants.

Clindamycin should not be used for any implant procedure since it actually increases the risk of implant failure and increases the risk of Clostridium difficile infection, which results in over 12,000 deaths in the United States each year.

Patients need to be informed about the risk of medications to implant failure.

Preventing Peri-Implant Diseases

Since specific biofilm infections are the main cause of implant failure, adequate motivation in self-performed plaque control and compliance with maintenance protocols appear to be the most important factors to prevent peri-implant diseases.

The patient must be able to adequately clean the restoration with an oral hygiene device such as an interproximal brush. The adequate embrasure space simplifies access for enhanced plaque control.

The onset of peri-implantitis may occur early following implant placement. Thus, the peri-implant tissues should be monitored for early indications of disease.

Probing of peri-implant tissue with metal probes and a light force has been determined to be a safe and important part of a complete examination. Suppuration is a significant indicator of disease and immediate anti-infective therapy is recommended.

A radiograph is recommended annually or every other year to monitor for crestal bone loss changes suggesting the onset of a peri-implantitis lesion. Probing depths of 6mm or more, and radiographic bone level loss of 3mm or greater, may indicate peri-implantitis.

Treating Peri-Implant Diseases

Peri-implant mucositis is a reversible condition and requires immediate intervention to eliminate the biofilm.

Thorough mechanical debridement of the area, along with improved plaque control and local anti-microbials such as Betadine or chlorhexidine irrigation, is often sufficient to resolve peri-implant

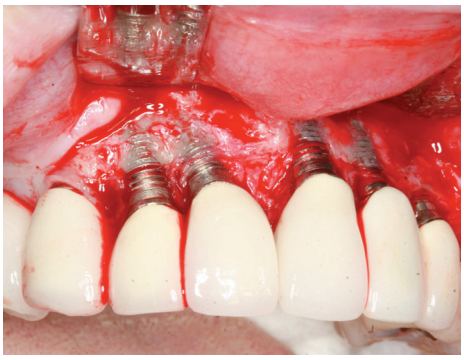

Figure 6. Thin labial plates of bone will frequently resorb after implant placement, which sets the stage for peri-implantitis. Bone augmentation at the time of surgery can help prevent this from occurring.

mucositis. Cervitec Plus, a chlorhexidine and thymol varnish, has been used successfully. Using a water irrigator with chlorhexidine has been shown to reduce peri-implant mucositis by up to 70 percent.

Peri-implantitis generally progresses in a circumferential pattern and at a more rapid rate than periodontitis. The tissues supporting an implant are more vulnerable to periodontal pathogens than the tissues supporting teeth. Implants lack a connective tissue attachment to the implant collar. Once infection starts, implants are much more vulnerable to disease progression than natural teeth, which have a periodontal ligament attachment to the cementum. The loss of attachment and bone support around an implant tends to be circular, rather than vertical, as it is with natural teeth.

Identifying patient- and implant-related risk factors contributing to the onset of peri-implant disease will help in tailoring supportive treatment protocols and procedures.

The European Federation of Periodontology in its recently published ***Clinical Practice Guidelines*** has stated that since bacterial biofilms are considered the primary etiological factor for both periodontitis and peri-implantitis, the surgical treatment of peri-implantitis is not recommended for patients who do not achieve and maintain adequate levels of self-performed oral hygiene.

Nonsurgical Treatment

Currently, the only proven way to stop the progress of peri-implantitis is mechanical debridement to remove the bacteria and their byproducts, and eliminate subgingival excess cement at the abutment/implant margin.

The use of antimicrobial oral rinses, irrigation and local drug delivery systems have been shown to have a limited beneficial adjunctive effect on peri-implantitis used in combination with mechanical debridement. If nonsurgical therapy has been attempted and the inflammation has not resolved, surgical therapy is required.

Surgical and Regenerative Treatment

A full-thickness flap around the affected dental implant must be elevated to completely visualize the implant surface. The implant can then be mechanically debrided to fully remove any retained cement, adherent biofilm, or inflamed granulomatous tissue.

Other methods to debride a plaque-contaminated abutment or implant surface include the appropriate use of sonic and ultrasonic scalers, lasers, air-powder abrasion, and various chemical solutions such as citric acid, hydrogen peroxide and saline.

Laser Treatment

Some clinicians have reported success in removing infection and even regenerating bone using laser therapy. The laser has been shown to help mitigate the bacterial infection without apparent damage to the implant itself or the surrounding tissues.

In their study, McCawley and Rams found laser treatment on mostly natural teeth and a few implants immediately suppressed putative bacterial pathogens in deep periodontal pockets to below culture detection limits. Another publication demonstrated laser treatment was able to increase crestal bone mass around the implant and reduce probing depth, thus permitting resolution of peri-implantitis.

Regenerative Treatment

The optimal outcome of peri-implantitis treatment is regeneration of the lost bone around the implant.

Following successful implant surface decontamination, various bone regenerative techniques utilizing autogenous, allograft or xenograph bone and growth factors; bone morphogenetic proteins (BMPs); recombinant human platelet-derived growth factor (rPDGF); autologous platelet-rich fibrin (PRF), and barrier membranes have been successful in rebuilding lost bone support around the “ailing” implant.

Conclusion

Prevention of peri-implant diseases should commence when dental implants are planned, surgically placed and prosthetically loaded. Once the implants are loaded and functioning, a supportive peri-implant recall program should be structured, including periodical assessment of peri-implant tissue health.

If peri-implant mucositis or peri-implantitis are detected, appropriate treatments for their management must be immediately initiated.

However, since peri-implantitis is becoming so prevalent, saving teeth should always be considered first, as it may be a better option than dental implants for many patients.

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