



## OCTOBER 2012 NEWSLETTER - PERI-IMPLANT DISEASE: A REVIEW

As dental professionals, most of us can agree that dental implants are a highly predictable and long lasting modality to replace missing teeth. Each year, implant design and materials continue to mature, enabling us to offer such tooth replacement options to an ever broadening spectrum of patients. Recently, however, biologic complications around dental implants have drawn more attention from the scientific community. Peri-implant disease may be described utilizing the following classification:

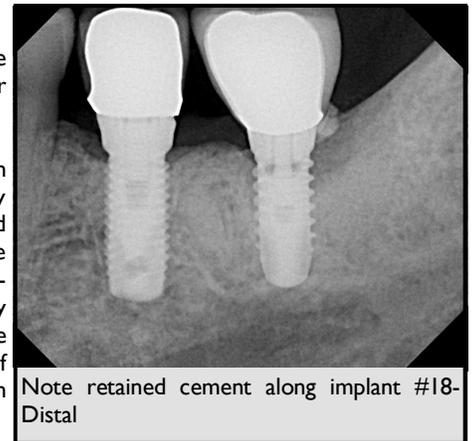
- **Peri-implant Mucositis**—the presence of inflammation in the peri-implant mucosa with no sign signs of loss of supporting bone
- **Peri-implantitis**—Inflammation in the peri-implant mucosa accompanied by loss of supporting bone (Lindhe and Meyle, 2008)

Approximately 46% of all implants demonstrate peri-implant mucositis and 7% of all implants placed exhibit some form of peri-implantitis.

### WHAT WE CAN DO TO PREVENT PERI-IMPLANT DISEASE

Statistically, some of the biggest contributing factors to peri-implant disease and implant failure are iatrogenic. Retained cement, open contacts, open margins and occlusal discrepancies are often overlooked and contribute to more implant failures than many people realize.

There are several relatively easy steps we can take to reduce the incidence of peri-implant disease in our practices. A radiograph taken at the time of crown insertion will give us an idea if there is any remaining cement, open margin or contact. Check the occlusion of the restoration. Lateral and oblique forces transmit up to 90% of their load to crestal bone, thus accelerating peri-implant bone loss. Early detection of disease and management with non surgical means may prevent a small problem from becoming a larger issue. Professional maintenance is key, if the tissue looks angry (erythematous, edematous, retractable, suppuration etc), then there is probably some form of disease process occurring around the affected implant. If you suspect retained cement or the presence of sub gingival foreign debris, then surgical treatment may be necessary. In many instances regeneration of bone is possible.



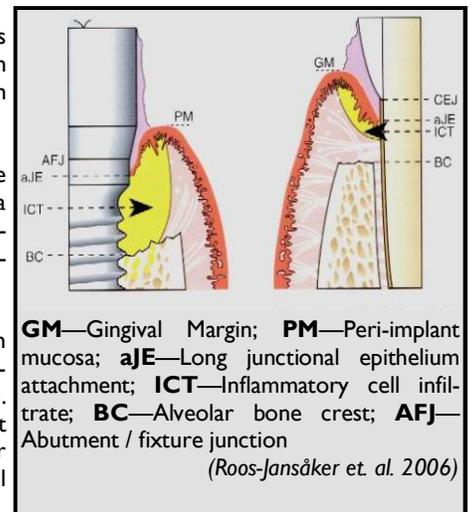
Note retained cement along implant #18-Distal

### PERIODONTAL VS PERI-IMPLANT ANATOMY

Peri-implant disease, much like periodontal disease is a chronic inflammatory process that results from the body's response to an offending agent such as bacteria, retained cement or other foreign debris. Unlike natural teeth affected by periodontal disease, peri-implantitis tends to cause much more rapid loss of bone around dental implants.

The first line of defense for natural teeth lies with the seal established by the gingiva. The connective tissue and junctional epithelial seal along root surface (dento-gingival and trans-septal fibers) act as a very potent barrier to bacteria and foreign debris affecting the root surface and alveolar bone. Furthermore, the periodontal ligament provides a crucial blood supply that nourishes, supports and provides immunity to the surrounding hard and soft tissues.

Dental implants, on the other hand, rely on a tunic of circumferential fibers and junctional epithelium adhesion to provide a rudimentary biologic width of soft tissue. Peri-implant mucosa lacks dento-gingival and trans septal fibers which provide much of the protective seal afforded to natural teeth. Furthermore, dental implants have no PDL attachment to the surrounding bone. This means that peri-implant alveolar bone must rely on its limited marrow spaces and over-lying peri-osteum for nourishment and source of immunologic response to infection. As a result, peri-implant bone will have a tendency to break down much faster than periodontal tissue.

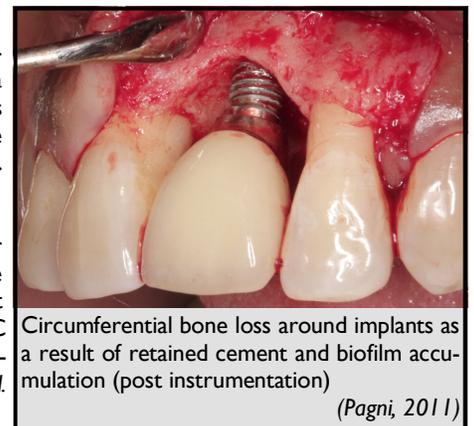


GM—Gingival Margin; PM—Peri-implant mucosa; aJE—Long junctional epithelium attachment; ICT—Inflammatory cell infiltrate; BC—Alveolar bone crest; AFJ—Abutment / fixture junction  
(Roos-Jansåker et. al. 2006)

### RISK FACTORS FOR PERI-IMPLANT DISEASE

Historically, patients with untreated periodontal disease are at a greater risk for developing peri-implant disease than those without a history of periodontal disease. These patients tend to have a significantly lower implant survival rate (91% vs. 97%) and more biological complications than patients who are periodontally healthy. In fact, patients with active periodontal disease are five times more likely to develop peri-implantitis than those who are periodontally healthy (Roos-Jansåker et. al. 2006). This is very closely related to home and professional maintenance.

While we know that smoking adversely affects implant survival, patients who smoke < 1/2 pack per day will have far fewer complications and a higher overall implant success rate (>90%) than those who smoke > 1/2 PPD. Diabetes is another risk factor that is commonly associated with poor implant survivability. Like smoking, there appears to be a gradient effect. Well controlled diabetics (Hb A1C <7 and Fasting blood glucose < 130 mg/dl) will respond similar to healthy individuals, whereas uncontrolled or poorly controlled diabetes is associated with reduced implant success rates (Renvert S et al. 2008).



Circumferential bone loss around implants as a result of retained cement and biofilm accumulation (post instrumentation)  
(Pagni, 2011)