Update on Implants Dr. Michael Matsuda March 24, 2014

Peri-implantitis: Inflammatory process affecting the tissues around an osseointegrated implant in function that results in a loss of supporting bone

Peri-implant mucositis: A reversible inflammatory lesion confined to peri-implant mucosal tissues without bone loss

- How you restore your implant will affect the ability to maintain a successful result
  - Restorative abutment
    - Stock, Custom, CAD/CAM
  - Occlusal table (?)
  - Emergence profile
    - Flat
  - Cement versus screw retained
    - Retrieveability
    - Cement options
    - Depth of abutment margin

- At the conclusion of restoring an implant several aspects should be evaluated:
  - Occlusal contacts
  - Keratinized tissue present
  - Seating of abutment
  - Presence of cement

- Considerations for maintenance intervals
  - What was the previous maintenance schedule?
  - Is there active disease in adjacent sites?
  - Was there previous disease at implant site?
  - Is there a history of periodontal therapy?
  - How good is the patient's OH?

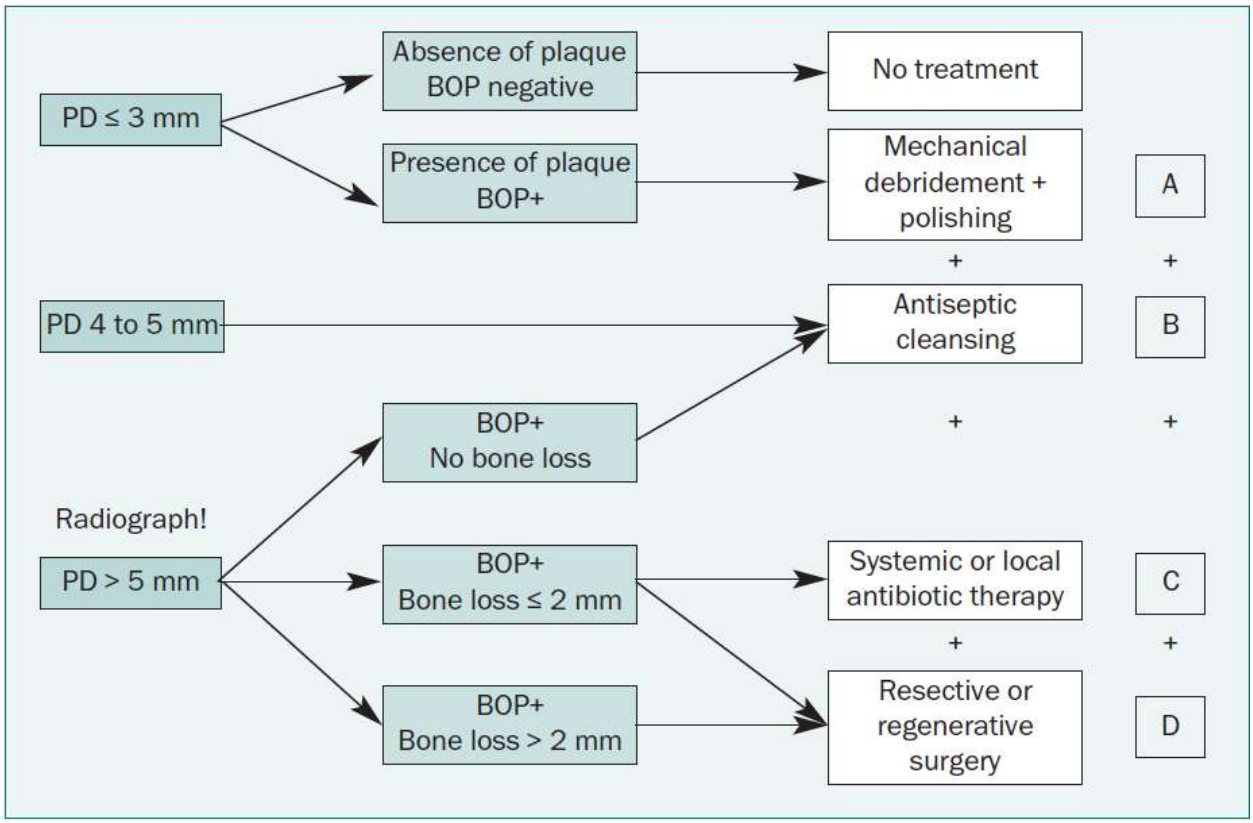
- Implant patients must be on a regular periodontal maintenance schedule & given explicit oral hygiene instructions
- Evaluate compliance at each maintenance visit & the intervals should be changed based on the patient's clinical presentation
- Record periodontal parameters
    - PD, recession, BOP, CAL, recession, keratinized tissue, mobility, purulence, OH, furcations (natural teeth)
- Take radiographs as needed
    - Annual periapical of implants
- Can diagnostic parameters used around natural teeth be applied to implants to determine health?
    - Probing depth, Attachment level (CAL), Bleeding on probing, Purulence
- Attachment apparatus of implants is different that natural teeth
    - Highly variable long junctionable epithlium
    - Parallel fibers

- Should you be probing implants with a plastic probe?
    - A recent study from the department of periodontics at Temple school of dentistry showed that metal probes seem to have no effect on implant abutment surfaces. In contrast, plastic probes were found to potentially cause surface roughness

- What is the ideal probing force around implants?
    - The threshold force to probe around implants and not cause false positives for BOP is 0.15N

- Does implant instrumentation cause damage to the implant surface?
    - In vitro study using 10 Branemark titanium abutment cylinders showed that metal scalers & cavitrons may create a surface conducive to plaque accumulation on implants
        - Rapley et al., IJOMI 1990

    - In vitro study comparing the effect of ultrasonic scalers on titanium surfaces showed that ultrasonics with carbon or plastic tips were effective at removing artifical debris and produce no significant damage to titanium surfaces (similar to plastic scalers).
        - Sato S, Kishida M, J Periodontol 2004



Cumulative Interceptive Supportive Therapy (CIST) protocol. Note that PDs may exceed the normal range stated here, so that PDs used to determine the protocol may have to be adjusted for these differences. In part A of the CIST protocol, typically initiated when plaque and BOP are present but PDs are 3 mm or less, patients are re-instructed in oral hygiene and motivated to initiate and continue maintenance; mechanical debridement is performed using nonmetallic curettes; and polishing takes place using a rubber cup and nonabrasive polishing paste.

Part B, when PDs of 4 to 5 mm are found, consists of antiseptic treatment. Here, chemical plaque control is performed using chlorhexidine digluconate, typically as mouthrinses with 0.1% to 0.2% chlorhexidine for 30 seconds using approximately 10 mL, application of local chlorhexidine gel (0.2%), and/or local irrigation with chlorhexidine (0.2%), 2 times a day for 3 to 4 weeks.

Protocol C, systemic or local antibiotic treatment, is initiated when PDs are greater than 5 mm. In addition, radiography should be used to supplement clinical findings. Typical systemic treatment is with ornidazole (1,000 mg 1x) or metronidazole (250 mg 3x) for 10 days, or a combination of amoxicillin (375 mg 3x) and metronidazole (250 mg 3x) for 10 days. Local treatment might include local application of antibiotics using a controlled-release device for 10 days, eg, tetracycline fibers and minocycline microspheres.

Once treatment modalities A, B, and C have been completed, a surgical approach (D) may be considered. Surgical therapy for peri-implantitis should be performed in conjunction with systemic antibiotics and implant surface decontamination. If regenerative treatment is chosen, a barrier membrane technique alone or in combination with autogenous grafts and/or bone substitutes (deproteinized bovine bone mineral) may be considered. Resective surgery may be considered when the peri-implant defect is not suitable for regenerative techniques

- Pharmacological properties of Tetracycline
  - Antibacterial (Duggar 1948)
  - Collagenase inhibition (Golub et al. 1991)
  - Inhibition of bone resorption (Golub et al. 1991)
  - Anti-inflammatory (Martin et al. 1974)
  - Promote fibroblast attachment (Wikesjo, Terranova 1986)
  - Connective tissue attachment to root surfaces (Wikesjo, Terranova 1986)

Lang et al., Consensus Report Annals of Periodontology Dec 1999

- Common features of localized and generalized forms of Aggressive Periodontitis are:
  - Except for the presence of periodontitis, patients are otherwise clinically healthy
  - Rapid attachment loss and bone destruction
    - The radiographic pattern of bone loss is distinctive, with bilateral angular defects around 1st molars and horizontal bone loss around incisors. (Heasman, Master Dentistry, 2003)
  - Familial aggregation (?)
  - Secondary features that are generally, but not universally, present are:
  - Amounts of microbial deposits are inconsistent with the severity of periodontal tissue destruction
  - Elevated proportions of A.a and, P. gingivalis may be elevated in some populations
  - Phagocyte abnormalities
  - Hyper-responsive macrophage phenotype, including elevated levels of PGE2 and IL-1β
  - Progression of attachment loss and bone loss may be self-arresting

Lang et al., Consensus Report Annals of Periodontology Dec 1999

Generalized Aggressive Periodontitis

- Usually affecting persons under 30 years of age, but patients may be older
- Poor serum antibody response to infecting agents
- Pronounced episodic nature of the destruction of attachment and alveolar bone
- Generalized interproximal attachment loss affecting at least three permanent teeth other than first molars and incisors
- P. gingivalis and T. forsythia frequently are detected in the plaque that is present
  - Tonetti MS, Ann Periodontol 1999
  - Socransky et al., J Clin Perio 1984

- Asynchronous Multiple Burst Model- the majority of destructive disease activity takes place within a few years of an individual's life specifically

- Continuous model- slow and progressive disease
- Random burst model- disease activity occurs at random at any site

- Antibiotic regimen- combination therapy (MA)
  - Metronidazole
    - 500 mg- 20 tabs b.i.d. beginning 1 day prior to S/RP
  - Amoxicillin
    - 500 mg- 30 tabs t.i.d. beginning 1 day prior to S/RP

Indications for use
Emdogain is intended as an adjunct to periodontal surgery as a topical application onto exposed root surfaces. Emdogain is indicated for the treatment of the following conditions:

- Intrabony defects due to moderate or severe periodontitis
- Mandibular degree II furcations with minimal interproximal bone loss
- Coronally Advance Flap for treatment of gingival recession defects
- Minimally invasive surgery technique in esthetic zones

Hatakka K, et al. Journal of Dental Research. 2007

- 16 week randomized, double-blind, placebo-controlled study
- 276 elderly patients consumed 50 g of probiotics (136) or control cheese (140)
- Primary outcome measure was prevalence of a high salivary yeast count analyzed by the Dentocult® method
- The prevalence decreased in the probiotic group from 30% to 21% (32% reduction), and increased in the control group from 28% to 34%
- Probiotic intervention reduced the risk of high yeast counts by 75%, & the risk of hyposalivation by 56%
- Probiotic bacteria can be effective in controlling oral Candida & hyposalivation in the elderly