Peri-implant Disease: Diagnosis, Management, and Maintenance
PNDC
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Disclaimer: each program attendee must always use his/her own personal and professional judgment when considering further application of this information, particularly as it may relate to patient diagnostic or treatment decisions including, without limitation, FDA-approved uses and any off-label uses.

- Defining success
- Defining Peri-implant disease entities
- Etiology and Pathogenesis
- Diagnostic Parameters
- Treatment
- Patient Case Examples
- Maintenance Strategies
  - home care
  - office

- The desired outcome of successful implant therapy is maintenance of a stable, functional, esthetically acceptable tooth replacement for the patient.

Variations from the desired outcome of implant placement include:

- 1. Implant mobility or loss
- 2. Persistent pain and/or loss of function
- 3. Progressive bone loss
- 4. Persistent peri-implant radiolucency
- 5. Persistent uncontrolled inflammation/infection
- 6. Inability to restore the implant
- 7. Increased probing depths
- 8. Implant fracture

Implant Success Criteria
- Clinically immobile
- Vertical bone loss <0.2mm annually after 1st year
- No: radiographic radiolucency
- No: Violation of anatomic structures
- No: Pain, Infection, Neuropathy, Paresthesia

What we Know?
- Difficulty defining Peri-implantitis
- No perfect understanding of root cause
- Inflammatory
- Hard and soft tissue, progressive
- Similar to periodontitis
- Risk indicators
Peri-Implant Health:
Diagnosis:
1. Visual inspection = absence of inflammation (erythema, edema, enlarged tissues)
2. Lack of BOP
3. Probing depths depend on soft tissue height
   - Increasing = health change
4. Absence of further bone loss following initial healing (<2 mm).

Peri-Implant Mucositis:
- Inflammatory lesion of the mucosa surrounding an endosseous implant without loss of supporting peri-implant bone.
- Clinically: BOP, erythema, swelling, and/or suppuration
- REVERSIBLE (may take > 3 weeks)

Peri-implant Mucositis Risk Indicators
- Biofilm accumulation (oral hygiene)
- Cigarette smoking
- Radiation therapy
- Diabetes
- Excess Cement
- Hormonal Changes
- Menopause
- Chemotherapy
- Thyroid alterations
- Cardiac problems
PERI-IMPLANTITIS DEFINITION
• Pathological condition occurring in tissues around dental implants...inflammation in peri-implant mucosa and progressive loss of supporting bone.
• Clinically detected by Probing (BOP)
• Radiographic progressive bone loss
• Peri-implantitis may commence early
• Progression Implants > Teeth
• Incidence: Subjects enrolled in maintenance (18%) vs. patients without maintenance (43%)

Peri-Implantitis Case definitions
• 1. Visual: inflammation, BOP and/or suppuration
• 2. Increasing probing depths
• 3. Progressive bone loss
• **In absence of initial radiographs and probing depths:
  • radiographic bone level ≥3 mm and/or probing depths ≥6 mm with profuse bleeding

Peri-Implantitis Risk Indicators:
• History of periodontitis*
• Smoking
• Diabetes
• Poor plaque control/lack of maintenance*

Hard-tissue deficiencies prior to implant placement
• TOOTH LOSS
• TRAUMA FROM TOOTH EXTRACTION
• PERIODONTITIS
• ENDODONTIC INFECTIONS
• LONGITUDINAL ROOT FRACTURES
• GENERAL TRAUMA
• POSTERIOR MAXILLA BONE HEIGHT
• SYSTEMIC DISEASE

Hard-tissue deficiencies after implant placement
• DEFECTS IN HEALTHY SITUATIONS
• MALPOSITIONING OF IMPLANTS
• PERI-IMPLANTITIS
• MECHANICAL OVERLOAD
• SOFT-TISSUE THICKNESS
• SYSTEMIC DISEASES

Soft-Tissue Deficiencies Prior to Implant Placement
• TOOTH LOSS
• PERIODONTAL DISEASE
• SYSTEMIC DISEASE

Soft-Tissue Deficiencies After implant Placement
- LACK OF BUCCAL BONE
- PAPILLA HEIGHT
- KERATINIZED TISSUE
- MIGRATION OF TEETH AND LIFE-LONG SKELETAL CHANGES

Diagnosis:
- Probing
- Bleeding
- Suppuration
- Mobility
- Radiographs
- Pain
- Percussion
- Keratinized gingiva
- Crestal bone loss

Clinical Implications:
- Identify peri-implant disease risk factors
- Baseline radiographs: surgery, prosthesis
- Baseline radiographs prosthesis delivery
- Monitor implant health & determine inflammatory complications
- Establish early diagnosis and intervention
- Peri-implant mucositis can be successfully treated early non-surgically

Peri-implantitis Treatment:
- Not predictable
- Complex
- Difficult to perform
- Non-surgical therapy = ineffective
- Multiple modes therapy

Balance Risk vs. Prevention:
Risk Factors
- Periodontitis history
- Poor home care
- Chronic inflammatory disease
- Diabetes
- Poor prosthetic fit
- Smoking

Positive Factors
- Cement removal
- Screw retained
- Ideal occlusion
- Keratinized dimension
- Cleansable contours
- Case selection

Peri-Implantitis Treatment Goals:
- Arresting further bone loss
• Reestablish healthy peri-implant mucosal seal
• Shallow pocket depths
• Eliminate osseous defects

Or

• Bone regeneration

Cement-induced Peri-Implant disease:
  • 81% Peri-implant disease associated with excess dental cement
  • 74% resolved with excess removal
  • Excess cement associated with peri-implant disease should be removed by whatever methods necessary
  • Surgical justification

Treatment Options:
Non-surgical Tx
Surgical-nonregenerative
Surgical-regenerative
Implant removal
Laser surgery
MAINTENANCE:

Probing
- 9 months post implant placement
- Every 6 months
- Plastic-coated probes?

Maintenance program:
- After successful treatment, tailor program to patient needs
- Examination, reevaluation, diagnosis of problems
- *PROBE IMPLANTS
- Factors of success include:
  - Motivation
  - Oral Hygiene education
  - Instrumentation (enough time for appt)
- Treat infected sites immediately
- Determine interval based upon:
  - Risk factors
  - Systemic health
  - Home care effectiveness
  - Motivation
  - Local factors
- Do not let insurance dictate maintenance protocol
- If patients NEED to be seen every 3 or 2 months, then they MUST come that often

- Antimicrobials: Chlorhexidine
- Phenolic compounds
- Cetylpyridium Chloride
- Sodium Hypochlorite (dilute) rinse

Hypochlorite dilute rinse:
- Dilution of regular Clorox bleach
- Mix 2 teaspoon bleach + 8oz water.
- Rinse 30 sec and spit out
*for pts intolerant of CHX, CPC, Listerine

Home Care:
- Toothbrushes
- Tufted brushes
- Floss
- Interdental brushes
- Antimicrobials
- Oral irrigators
- Tongue Scrapers

Povidone Iodine:
- Povidone Iodine
  - Rosling et al. 1986
•  Christersson et al. 1988
•  Rosline et al. 2001

Cost effective for SRP and maintenance only (not at home)
Buy generic povidone iodine, dilute 1:3 for ultrasonic or 1:2 for syringe
*use adequate suction
*Not for thyroid disease patients

•  Metallic ultrasonic, sonic scalers = detrimental
•  Stainless steel tipped instruments = detrimental
•  Ultrasonic Plastic/rubber sleeves = safe
•  Air polishers = safe
•  Non-metallic: plastic, graphite, nylon, Teflon, titanium scalers = safe
•  Rubber cup, points, untufted rotary brushes (light pumice) = safe