Periodontal and Peri-implant Diseases

SHAUN M. WHITNEY, DDS

INLAND EMPIRE PERIODONTAL STUDY CLUB

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Roadmap

- Historical Perspectives
- Current Model
- Future Discussions

Historical Perspectives

- Armitage 1999 Periodontal Disease Classification Scheme
- Gold Standard for periodontal disease(s) diagnosis

Chronic Periodontitis (1999)

- Chronic Periodontitis (Formerly "Adult Periodontitis")
  - 1-2mm CAL ~ mild disease
  - 3-4mm CAL ~ moderate disease
  - >5mm CAL ~ severe disease
  - Generalized ~ > 30% sites
  - Localized ~ < 30% sites
  - Generally considered slow rate of progression

Aggressive Periodontitis (1999)

- Aggressive Periodontitis (Formerly Early Onset or Juvenile Perio)
  - 1-2mm CAL ~ mild disease
  - 3-4mm CAL ~ moderate disease
  - >5mm CAL ~ severe disease
  - Generalized ~ >30% sites
  - Localized ~ <30% sites
  - Affecting 1st molars/mandibular incisors
  - Can occur at any age
  - Fast rate of progression

Periodontitis as Manifestation of Systemic Diseases (1999)

- Systemic diseases
  - Leukemia
  - Genetic syndromes
    - Ehlers Danlos, Down, Chediak Higashi, etc
    - Histiocytosis
  - Acquired neutropenia
  - *Diabetes was not considered in this classification scheme

Peri-implant Diseases

- 1999 Disease Classification failed to address peri-implant diseases
- Peri-implant mucositis ~ gingivitis imposed on normal peri-implant bone levels
- Peri-implantitis ~ inflammation and/or suppuration imposed on peri-implant bone loss
- Ailing implant ~ Peri-implant bone loss but not showing steady progression of attachment loss
- Failing implant ~ Progressive attachment loss
- Failed implant ~ Failed osseointegration

Problems with 1999 Classification Scheme

- Only addressed severity of disease
- Failed to recognize risk factors for progression of disease
- Difficulties in articulating to patient/providers disease severity
- Failed to address peri-implant diseases
- Failed to address refractory periodontitis

Periodontal World Workshop 2018

- Task force of American and European Periodontology Societies
- Goal was to update and provide new diagnostic criteria based on emerging scientific evidence and understanding of systemic modifying diseases

Periodontal Health, Gingival Diseases and Conditions

- Intact Periodontium
  - In health and gingivitis
    - No attachment loss and PD <=3mm
    - No bone loss
    - <10% BOP in health, >10% in gingivitis

Periodontal Health

- Reduced Periodontium (Non-periodontitis patient)
  - Probing attachment loss, pocket depths <=3mm
  - Likely radiological bone loss
  - Health <10% BOP, >10% BOP in gingivitis

Periodontal Health

- Successfully Treated Periodontal Patient
  - Probing attachment loss
  - Pocket depths <=4mm with no BOP in 4mm or greater pockets
  - Radiologic bone loss
  - Health <10% BOP, gingivitis >10% BOP

Periodontitis

- Grouped "Chronic" and "Aggressive" into same category
- Stages
  - Dependent upon severity of disease at presentation
  - Dependent on complexity of disease management
  - Stages I-IV
- Grading
  - Provides supplement features about biology of disease
  - Evaluates rate of disease progression
  - Evaluates risk of disease progression/Anticipation of outcomes
  - Grades A,B, C

Periodontitis Stage I

- Stage I
  - Interproximal CAL 1-2mm
  - <15% radiographic bone loss
  - No history of tooth loss to periodontal disease
  - Mostly horizontal bone loss
  - Max probe depth <=4mm
  - Localized <30%, Generalized >30%

Periodontitis Stage II

- Stage II
  - Interproximal CAL 3-4mm
  - 15-33% bone loss
  - No tooth loss to periodontitis
  - Mostly horizontal bone loss
  - Max probe depths <=5mm
  - Localized <30%, Generalized >30%

Periodontitis Stage III

- Stage III
  - Interproximal CAL >=5mm
  - Bone loss to mid-root or beyond
  - Tooth loss of <=4 from periodontitis
  - In addition to Stage II
    - Probing depths >=6mm
    - Vertical bone loss >=3mm
    - Class II or III furcation involvements
    - Ridge defects
  - Localized <30%, Generalized >30%

Periodontitis Stage IV

- Stage IV
  - Interproximal CAL >=5mm
  - Bone loss to midroot or beyond
  - Periodontal tooth loss of >=5 teeth
  - In addition to stage III
    - Need for complex rehabilitation due to
      - Masticatory dysfunction
      - Occlusal trauma with advanced mobility
      - Bite collapse, drifting, flaring
      - Less than 20 remaining teeth
      - Severe ridge defects

Periodontitis Grading

- Grade A (Slow Rate of Progression)
  - No evidence of bone loss or change in CAL in 5 years
  - Heavy biofilm deposits with low level of destruction
  - Non-smokers
  - Normoglycemic

Periodontitis Grading

- Grade B (Moderate Rate of Progression)
  - <2mm bone loss or CAL over past 5 years
  - Destruction commensurate with biofilm deposits
  - Smoker <10 cigarettes/day
  - HbA1c <7% in patients with diabetes

Periodontitis Grading

- Grade C (Rapid Rate of Progression)
  - >/= 2mm of bone loss or CAL over past 5 years
  - Destruction exceeds expectation given biofilm deposits
  - Molar/incisor patterns suggesting aggressive periodontitis
  - Lack of expected response to standard therapies (refractory)
  - Smoking >/=10 cigarettes/day
  - HbA1c >/= 7% in diabetics

Periodontal Manifestations of Systemic Disease

- World Workshop added another 20-30 entities (Most Notably)
- Diabetes
- Obesity
- Smoking
- Rheumatoid arthritis
- Osteoporosis
- Hyperparathyroidism
- HIV
- Inflammatory bowel disease

Peri-implant Diseases

- Peri-implant Health
  - Absence of erythema, BOP, swelling or suppuration
  - May see greater PD than natural tooth
  - Papillary height may be shorter than natural tooth papillae
  - Less stress on pocket depth and more value on clinical health
  - Peri-implant health may exist around implants with reduced support

Peri-implant Mucositis

- Peri-implant Mucositis
  - Bleeding on gentle probing
  - Erythema, swelling and or suppuration may be present
  - Increase in pocketing related to swelling or decreased tissue resistance
  - Strong evidence that plaque is the main etiological agent
  - Limited evidence of non-plaque induced peri-implant mucositis
  - Bone loss may be present

Peri-implantitis

- Peri-implantitis
  - Inflammation in peri-implant mucosa with subsequent progressive loss of supporting bone
  - BOP/suppuration with or without marginal recession
  - No features or conditions that signify transition form mucositis to implantitis
  - Lesion moves in a non-linear and accelerating pattern
  - Faster progression that periodontitis
  - History of severe periodontitis, poor plaque control and poor compliance strongly associated implantitis

Peri-implantitis

- Limited evidence associating peri-implantitis with:
  - Submucosal cement
  - Positioning of implants that do not facilitate oral hygiene and maintenance
- Lack of evidence associating peri-implantitis with:
  - Lack of keratinized gingiva
  - Occlusal overload
  - Titanium particles
  - Bone compression necrosis
  - Overheating
  - Micromotion
  - Biocorrosion

Peri-implantitis

- Diagnosis of Peri-implantitis requires
  - Presence of BOP and/or suppuration on gentle probing
  - Increased probe depth from previous exams
  - Probing depths >/=6mm
  - Bone levels >/=3mm beyond most coronal portion of intraosseous part of implant

Hard and Soft Tissue Deficiencies

- Recession of Peri-implant Mucosa
  - Malposed implants
  - Lack of buccal bone
  - Thin biotype
  - Lack of keratinized tissue
  - Status of attachment on adjacent teeth
  - *Keratinized gingiva may add in plaque control and patient comfort but equivocal on long term health of peri-implant tissues

Future Discussions of World Workshop Classifications

- Mucogingival defects
- Endo-Perio and Periodontal Abscesses
- Occlusal trauma
- Necrotizing diseases