New Age of Periodontal Medicine: 
Periodontal and Peri-Implant Disease 
Susan S. Wingrove RDH, BS  
22nd Annual SC Dental Hygiene Symposium 2014

Educational Objectives:
1. Gain an understanding of the protocols and treatments for periodontal medicine; periodontal and peri-implant disease including cement residue peri-implantitis.
2. Assess, monitor, and maintain dental implant protocols for safe effective implant maintenance.
3. Provide the new advanced comprehensive exam (ACE) for natural teeth that includes new protocol for gingival tissue and furcation evaluation.
4. Gain an understanding on when is the optimal time to refer for guided tissue/bone regeneration (GTR/GBR).
5. Learn the importance of 3D technology for a comprehensive level of disease diagnosis and implant treatment planning by viewing doctor treatment cases.

Periodontal medicine looks at the risk for certain systemic diseases—
increased by periodontal and peri-implant disease from patients’ inflammatory response to the oral mucosal infection. Over 90% of adults over 55 and more than 70% of adults 35-44 are affected by periodontal disease. Now with dental implants clinicians must include peri-implantitis that can affect 28%-56% of patients in 12-40% of implant sites.

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Periodontal Disease AAP Case Types: Localized ≤ 30% sites and Generalized ≥ 30% sites involved

<table>
<thead>
<tr>
<th>Case Type</th>
<th>Definition</th>
<th>Clinical Attachment Loss (CAL)</th>
<th>SW Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case Type 0</td>
<td>Clinically Healthy</td>
<td>No CAL</td>
<td>Maintain</td>
</tr>
<tr>
<td>Case Type I</td>
<td>Early/Chronic Gingivitis</td>
<td>No CAL, ≤ 4mm Pseudopockets possible, no bone loss</td>
<td>Important to reverse and maintain.</td>
</tr>
<tr>
<td>Case Type II</td>
<td>Established Gingivitis / Early Periodontitis</td>
<td>Slight CAL = 1 – 2 mm, BOP, ≤ 5 mm, No Furc’s, Redness, Suppuration</td>
<td>Radiographic: &lt;10% attachment loss (slight/crestal) Early attachment loss, SRP and/or Antibiotic TX</td>
</tr>
<tr>
<td>Case Type III</td>
<td>Moderate / Chronic Periodontitis</td>
<td>Moderate CAL = 3 – 4 mm, ≤ 6mm, Early Furc’s, Redness, Suppuration</td>
<td>Radiographic: 30% attachment loss (crown/root ratio) horizontal and/or vertical, bone loss. Possible furcation, mobility. See Specialist- Regeneration Treatment</td>
</tr>
<tr>
<td>Case Type IV</td>
<td>Advanced Periodontitis</td>
<td>Severe CAL = 5 ≥ mm, BOP, ≥ 7mm, Advanced Furc’s, Redness, Suppuration</td>
<td>Radiographic: &gt;30% attachment loss (crown/root ratio) major horizontal and/or vertical, bone loss. Probable furcation, mobility. See Specialist- Regeneration Treatment</td>
</tr>
<tr>
<td>Case Type V</td>
<td>Refractory Periodontitis</td>
<td>BOP, ≥ 7mm, Advanced Furc’s, Redness, Suppuration Patient &lt; 30 years old.</td>
<td>Radiographic: &gt;30% bone loss Aggressive Periodontitis Recurrent disease. Fails to respond to treatment. See Specialist.</td>
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Implant Protocols: Peri-Implantitis including Cement Residue

Peri-Implant Mucositis- affects only the soft tissues with no sign of bone loss.
Peri-Implantitis- Inflammatory reaction with bone loss that affects both soft tissues and supporting bone around implants.

2013 Clinical Recommendations—AAP Peri-Implant Disease
- Identify risk factors associated with peri-implant disease
- Establish radiographic baseline at placement and at final prosthesis.
- Monitor implants health and determines inflammatory complications as a part of a regular periodontal maintenance program.
- Establish an early diagnosis and intervention.
Risk Factors for Peri-Implant Disease

- Previous periodontal disease
- Smoking
- Poor plaque control- inability to clean
- Uncontrolled diabetes
- Occlusal overload combined with excessive plaque

Peri-Implantitis Classification

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Classification of peri-implantitis</th>
<th>Comment</th>
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</thead>
<tbody>
<tr>
<td>Early</td>
<td>PD&gt; 4mm bleeding and/or suppuration on probing* Bone loss&lt; 25% of the implant length**</td>
<td>Important to reverse and maintain</td>
</tr>
<tr>
<td>Moderate</td>
<td>PD&gt; 6mm bleeding and/or suppuration on probing* Bone loss 25% -50% of the implant length**</td>
<td>See Specialist for Regenerative Treatment</td>
</tr>
<tr>
<td>Advanced</td>
<td>PD&gt; 8mm bleeding and/or suppuration on probing* Bone loss &gt; 50% of the implant length**</td>
<td>See Specialist</td>
</tr>
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Note: *Bleeding and/or suppuration on two or more aspects of the implant.
**Measure on radiographs ideally from baseline radiograph and at time of prosthesis loading to current radiograph. If baseline not available, the earliest available radiograph following loading should be used to current radiograph.

Froum SJ, Rosen PS. A proposed classification for peri-implantitis 2012

Five Step Implant Assessment Protocol

- Visual soft tissue assessment
- Probe and/or palpate for signs of infection
- Assess for calculus and cement
- Assess for mobility and/or pain
- Assess for bone level

Guidelines for Probing

Use a flexible probe, record baseline at 6 months post loading and gently probe using light 0.15N of pressure. Record if inflammation, bleeding, cement, or exudate is present and report findings to the dentist.

Guidelines for Radiographic Monitoring

1-4 Implants: Make Vertical Bitewing or Periapical (PA) of each implant.
5 or more implants: panorex or individual PA's of all implants. Note: All taken at implant placement, cover screw, restoration, 6 months and 1 year. If inflammation or systemic health risk continue on 1 year interval and if healthy on an every 2-3 year interval for subsequent years.
3D Technology—Implant Dentistry: CBCT (Cone beam computed tomography) facilitates detection of bone lesions on the facial, lingual, and proximal aspects. If unexplained inflammation is identified for 2 consecutive recare visits—obtain a CBCT.

**Protocol for Cement Residue Implantitis – Non-Surgical**
- Chart review – type of cement and ease of removal
- Radiograph if cement present and ease of removal
- Apply anesthetic, debride with titanium implant scaler (Win N128)
- Re-evaluate in 1 month to assess if symptoms are resolved.
- If cement is not able to be removed by titanium instrument – Flap surgery

**Instrumentation**

**Narrow Base Implants**
Scale with longer, multi-bent implant scaler (e.g. **Wingrove L3-4**) using short horizontal strokes to dislodge if calculus present on these implants, crowns/bridge or frameworks.

**Wide Base Implants**
Scale with universal posterior implant scaler (e.g. **Wingrove B5-6**) using short horizontal strokes to dislodge if calculus present on implants, crowns or bridge.

**Single implant, ball /locator attachment, bar-retained implants (includes Mini implants)** - Scale with designated implant scaler (e.g. **Wingrove N128-L5 mini**) using short horizontal strokes if calculus present. Debride the screw indentation on top of bar and in locator implant with tip of designated instrument (e.g. **Wingrove N128-L5mini**).

**Exposed threads** - Posterior or anterior implants scale any exposed threads with shorter radius blade tip of an implant scaler (e.g. **Wingrove N128-L5mini**) in horizontal side-to-side motion one thread at a time gently like stairs.

**Full Fixed Prosthesis/ Supra Structures (includes All-on-4™)** - Scale with longer multi-bent blade implant scaler (e.g. **Wingrove L3-4**) using short horizontal strokes.

**Mucositis/ Implantitis** - Debride with proper implant scaler for the design of implant/prosthesis. Apply antimicrobial 2-4 times daily. Re-evaluate in 3-6 weeks.

**Cement Residue** - Debride with titanium implant scaler to dislodge the cement using short horizontal strokes (e.g. **Wingrove N128-L5mini**) and curette any granulation tissue.

**GPAP—Subgingival Air Polishing Protocol** - Only EMS Air-Flow® proven safe for implants with use of Perio glycine powder. Use first prior to implant maintenance to remove biofilm. Insert implant safe tip into peri-mucosal seal carefully and active the tip 5 seconds per site. Not intended to remove calculus, compliments power and hand scalers in elimination of biofilm.


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Unique Products for Implant Maintenance- EMS Perio glycine powder- biofilm remover (Hu-Friedy), Directa CCS prophy paste Extra Fine, OptraGate and Cervitec Plus Varnish (Ivoclar Vivadent), Wingrove Titanium Implant Scalers Go-to-Kit (PDT)

Recare Implant Maintenance Interval
- First year every 3 months
- After first year every 4-6 months if healthy, 3 months any risk factors

A.C.E. Your Exam- Advanced Comprehensive Exam Protocol
Advancing the comprehensive exam is the first step to evolve into the regenerative dentistry era. It includes the traditional comprehensive exam with protocols and tools to identify the optimal time for regeneration treatments.

Miller Marginal Tissue Classification

<table>
<thead>
<tr>
<th>Classification</th>
<th>Definition</th>
<th>Recommended Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I</td>
<td>Marginal tissue recession that does not extend to mucogingival junction. There is attached gingiva on the facial. There is no clinical attachment loss interdentally. Complete root coverage is attainable.</td>
<td>Root coverage surgery is elective. Recommend root coverage if esthetics are a concern or there is persistent sensitivity</td>
</tr>
<tr>
<td>Class II</td>
<td>Marginal tissue recession that extends to or beyond the mucogingival junction. Any gingiva present on the facial is unattached. There is no clinical attachment loss interdentally. Complete root coverage is attainable.</td>
<td>Recommended root coverage surgery</td>
</tr>
<tr>
<td>Class III</td>
<td>Marginal tissue recession that may or may not extend to the mucogingival junction. There is clinical attachment loss interdentally. Partial root coverage is anticipated.</td>
<td>Suggest root coverage. Explain limitations of treatment.</td>
</tr>
<tr>
<td>Class IV</td>
<td>Clinical attachment loss is so severe both facially and interdentally that root coverage cannot be attempted.</td>
<td>No treatment</td>
</tr>
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</table>

Glickman Furcation Guidelines

<table>
<thead>
<tr>
<th>Grade / Class</th>
<th>Definition</th>
<th>SW Comments</th>
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</thead>
<tbody>
<tr>
<td>Grade / Class I</td>
<td>Probe enters the furcation area up to first black mark (1-3mm).</td>
<td>Identify and maintain</td>
</tr>
<tr>
<td>Grade / Class II</td>
<td>Probe inserts to the first black marking (3-6mm) or enters the orifice.</td>
<td>Refer to specialist for regenerative treatment</td>
</tr>
<tr>
<td>Grade / Class III</td>
<td>Probe inserts past the first black markings (6-9mm).</td>
<td>Refer to specialist for regenerative treatment</td>
</tr>
<tr>
<td>Grade / Class IV</td>
<td>Probe goes through the furcation past the orifice, visible on radiograph. Often referred to as ‘though &amp; though’.</td>
<td>Refer to specialist-options for extraction / implant</td>
</tr>
</tbody>
</table>


Wingrove Advanced Comprehensive Exam (A.C.E.) Protocol

Gingival Tissue Evaluation

Step 1: Recession
- a. Have the patient open mouth, using an intra-oral mirror and periodontal probe; examine the patient for recession and attached gingiva.
- b. Using a periodontal probe take your first measurement from the cemental enamel junction (CEJ) to the gingival margin on the facial and lingual. Record the Tooth #'s and measurements of any teeth with recession.

Step 2: Attached Gingiva
- c. Gently retract the patient’s lip or cheek out to gain access, place the periodontal probe on the outside of the tissue, and measure from the gingival margin to the mucogingival junction.
- d. Second measure the clinical probing depth (pocket depth to the sulcus).
- e. To calculate the attached gingiva, subtract the clinical probe depth (d) from sum of first two measurements (b and c) and record the width of the attached gingiva.
- f. Record tooth # of any teeth with recession that also have loss of attached gingiva width of less than 2mm to indicate a tissue regenerative treatment. Also note more urgency for treatment if any evidence of inflammation (i.e. edema, bleeding point).

Note: Report to the dentist any teeth with recession and loss of attached gingiva that is less than 2mm width, Miller class I-III for a tissue regenerative treatment.

Furcations

Step 3: Furcation Evaluation
- a. Select a furcation probe (i.e. Nabers, or ACE probe featured below)
b. Insert probe into the furcation locations as shown on the chart.


Note: Report to the dentist any furcations with grade II-III and at least one wall present for possible regenerative treatment. If the furcation progresses to a grade IV the studies now recommend extraction and/or implant placement due to the oral systemic risk to the patient.

3 Reasons Why We Need A New Comprehensive Exam—The ‘A.C.E.’

- A unique step-by-step exam that enhances patient’s oral health & esthetics.
- To be able to identify the optimal time for periodontal medicine therapy for periodontal and peri-implant disease.
- To identify the optimal time to for guided tissue/bone regenerative treatments.

Regeneration and Procedure Terms to Know

Alveolar ridge and sinus augmentation: A surgical procedure to regenerate bone due to bone resorption.

Guided Tissue Regeneration (GTR): A surgical procedures to regenerate lost periodontal structures through differential tissue responses to regenerate periodontal attachment apparatus.

Guided Bone Regeneration (GBR): A surgical procedure utilizing a barrier membrane to hold the epithelial and connective tissue cells away from the bone defect, stabilize the blood clot, and graft.

Implants: Titanium cylinders that are surgically placed in the bone to replace the root lost and preserve the bone level.

Regeneration: Body remakes lost tissue and / or bone to its original form. Re-creation of structure and function of periodontium; new cementum, periodontal ligament and alveolar bone.

Root Coverage: A surgical procedure (soft tissue graft) to improve gingival margin symmetry, maintain adequate gingival attachment.

Socket preservation: A procedure to preserve bone after extractions and as an adjunctive procedure to implant placement.
**Post-Regenerative / Surgical Therapy Protocol**
- No probing the site for 6 months
- No movement at the site for 3-6 weeks

**Post-Regenerative/ Surgical Home Care Protocol**
- First day drink only clear liquids, soft diet for first few days
- Take antibiotics and pain medications as needed
- Brush with extra soft toothbrush to clean teeth and gums (do not brush incision area), power toothbrushes – wait 1-2 weeks.
- Floss once a day except incision surgical site.
- Avoid wearing temporary prosthesis to let tissue heal
- Use salt-water rinses or a non-alcohol antimicrobial rinse if prescribed by surgeon 2 times daily.

**Unique Tools for Regeneration**
ACE Probe-the next generation of probes, a straight furcation probe that is both flexible and more accurate with a newly designed periodontal probe on the other end that is designed for patient comfort. PDT, Inc.
Queen of Hearts- a universal, periodontal finishing curette with longer closed-face cutting edges capable of reaching all furcations and difficult-to-reach root concavities. PDT, Inc.

**Regeneration Dentistry Summary**
- New A.C.E. protocol and standard of care regenerative procedures
- Dentists evaluating for soft tissue and bone loss in exams
- Hygienists evaluating for soft tissue and tooth replacement to enhance overall health, function, and esthetic outcomes for patients.
- Administration and Assistants discussing new procedure options for patients.

**Are you ready to take the challenge?**

**Key Research**

Armitage GC, Commentary: Evolution and Application of Classification Systems for Periodontal Diseases—A Retrospective Commentary. *J of Periodontol* 2014: 85 (3); 369-371

Avila-Ortiz G. The dental hygienist plays an important role in the prevention, detection, and clinical management of peri-implant diseases. *Dimensions of Dental Hygiene.* 2013; Vol 11 (5) 57-64.


Daubert, D. Subgingival Air Polishing—Use of glycine powder with New Technique may offer benefits to periodontal and implant maintenance therapy. *Dimension of Dental Hygiene Journal* December 2013


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