Assessment of Periodontal Disease

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Outline
- Why is Periodontal assessment needed? The Basics of Periodontal assessment
- Probing: Basic Periodontal Examination for adults and children. Detailed periodontal assessment
- Radiographic Assessment for Periodontal Disease

Why is Periodontal assessment needed? The Basics of Periodontal assessment
Why is it periodontal assessment and diagnosis important?

- Because the GDC expects it!
  “Be competent at completing a periodontal examination and charting, diagnosis and treatment plan”
- To provide a good standard of care and primary disease control for our patients

How do we assess periodontal health (or not)

- Gingival colour
- Gingival contour
- Pocket depth and gingival recession
- Bleeding on probing
- Tooth mobility
- Furcation involvement
- Radiographs

Clinically healthy periodontal tissues

- Pink
- Stippled
- No bleeding
- Little recession
- No mobility
- Pocket depths < 3mm
Gingival inflammation

Chronic gingivitis:
• Inflammation of the gingivae due to the presence of bacterial plaque
• Very common
• Almost always present in all forms of periodontal disease
• Slow onset
• Usually painless

Gingival Inflammation

- Colour change
- Change in consistency
- Changes in contour
- Plaque and calculus in contact with inflamed tissue

Stages in developing dentition

<table>
<thead>
<tr>
<th>Age 6</th>
<th>Age 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age 16</td>
<td>Age 8 after brushing</td>
</tr>
</tbody>
</table>
Oral Health Habits in UK 2003
Proportion of children with unhealthy gums, plaque and calculus by age (United Kingdom 2003)

<table>
<thead>
<tr>
<th>Year</th>
<th>Gum Inflammation %</th>
<th>Plaque %</th>
<th>Calculus %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>24</td>
<td>56</td>
<td>32</td>
</tr>
<tr>
<td>2003</td>
<td>59</td>
<td>31</td>
<td>60</td>
</tr>
</tbody>
</table>

Gingivitis

60% - 90% children
Peak prevalence:
Girls 12-13 years
Boys 13-14 yrs

Periodontal pocketing?
• Periodontal Disease is very common!
• Looking at probing depths from the Adult Dental Health Survey: overall increase in 6mm pocketing from 6-9% (1998-2009)
Practical problems of measuring periodontal disease

- Full assessment of plaque, calculus, bleeding and pocketing is very time consuming
- We can use an index to get a quick rough measure of these e.g. plaque index
- We can use a screening method to identify those who need a more complete assessment (BPE)

Probing: Basic Periodontal Examination for adults and children

What is a periodontal pocket?

- In periodontitis, due to the disease process the gums come away from the teeth and form spaces (called “pockets”)
• False pockets
  • Increased probing due to gingival swelling or overgrowth
  • No attachment loss

• True Pockets
  • Increased probing due to loss of periodontal attachment

Basic concepts:
• Probing is the act of walking the tip of the probe along the junctional epithelium within the sulcus or pocket
• Aim is to assess the health status of the periodontal tissues

Periodontal Probing
The side of the probe should be kept in contact, and parallel with the tooth root surface. It is then “walked around” the circumference of the tooth
Basic Periodontal Examination (BPE)

- Should be used as part of all routine dental examinations in adults and children (aged 7+)
- It is intended to identify those with established periodontitis
- BPE is based upon the CPITN (Community Periodontal Index of Treatment Needs)

BPE Method

- The dentition is divided into sextants (molar/premolar and canine)
- Examination is carried out with a WHO probe
- The probe is gently inserted into the gingival crevice and ‘walked around’
- For each sextant only the highest score is recorded

WHO Probe

- 11.5 mm
- 8.5 mm
- 3.5 - 5.5 mm
- 0.5 mm
Each sextant is given a score (code 0 - 4) representing the worst site in that sextant. X signifies a sextant that is edentulous or has only 1 functioning tooth. * signifies furcation involvement.

### BPE / CPITN: Sextants

<table>
<thead>
<tr>
<th>Code</th>
<th>Probing depth</th>
<th>Black Band</th>
<th>Bleeding</th>
<th>Overhangs/ Calculus</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>&lt;3.5mm</td>
<td>Completely Visible</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1</td>
<td>&lt;3.5mm</td>
<td>Completely Visible</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>&lt;3.5mm</td>
<td>Completely Visible</td>
<td>+/-</td>
<td>+</td>
</tr>
<tr>
<td>3</td>
<td>3.5-5.5mm</td>
<td>Partially Visible</td>
<td>+/-</td>
<td>+/-</td>
</tr>
<tr>
<td>4</td>
<td>&gt;5.5mm</td>
<td>Entirely within pocket</td>
<td>+/-</td>
<td>+/-</td>
</tr>
</tbody>
</table>

BPE - Codes and Treatment Needs

0  healthy periodontium - black band fully visible
   • no treatment required
1  as above but bleeding on probing
   • CHI
2  as above but supra/subgingival calculus &/or local factor
   • Scaling + CHI + eliminate plaque retentive restorative margins
3  black band partly disappears below gingival margin
   • Scaling/root surface debridement + CHI + eliminate plaque retentive restorative margins
   • full 6 point probing chart needed
4  black band wholly disappears
   • complex treatment in addition to (S/RSD + CHI)
   • full 6 point probing chart needed

BPE Paediatric

Only Uses 6 reference teeth

<table>
<thead>
<tr>
<th>UR6</th>
<th>UR1</th>
<th>UL6</th>
</tr>
</thead>
<tbody>
<tr>
<td>LR6</td>
<td>LL1</td>
<td>LL6</td>
</tr>
</tbody>
</table>

- Age 7-12 – Use only codes 0, 1 and 2
- 12+ - Use all codes (full range)
- Only in cooperative children!

http://www.bspeno.org.uk/publications/downloads/
Young_Practitioners_Guide.pdf
Screening: the BPE

**THE GOOD**
- Simple and rapid screening to identify those at risk of periodontal disease
- The system gives a good indication of treatment appropriate to the codes assigned, suggests when specialist referral is necessary

**THE BAD**
- Not designed to monitor patients: need full charting
- No distinction between true and false pockets
- Lack of detail within sextants
- No detail about recession
- No detail about furcation involvement
- Often misused.....

Periodontal Probing: six point pocket chart (6PPC)
- Used when we need a full periodontal assessment- when we record BPE scores of 3 or 4
- Gives 6 measurements for each tooth- much more detail than a BPE
- Same walking technique as a BPE
- Uses specific probe: Williams or UNC15
- We also note bleeding on probing when carrying out a 6PPC
Bleeding on Probing

- Bleeding from within the periodontal pocket, showing inflammation in the deeper periodontal tissues

Williams Probe

Invented in 1936 by periodontist Charles H.M. Williams.
These probes have a thin stainless steel tip of 13 mm in length and a blunt tip end with a diameter of 1 mm

Gradations at 1, 2, 3, 5, 7, 8, 9 & 10 mm

NO marks at 4mm and 6mm

Technique

- Probing along anatomy of root surface
- Gentle pressure - 20g
- Finger rest
- Reproducibility
Probing Errors

- Reading errors may arise from:
  - interference from the calculus on the tooth or root surface
  - the presence of an overhanging restoration
  - incorrect angulation of the probe
  - the amount of pressure applied to the probe,
  - Misreading the probe

What else do we assess?
(covered in Periodontology Lab sessions)

- Mobility
- Recession
- Furcation involvement
Radiographic Assessment for Periodontal Disease

Alveolar bone

- The part of the maxilla and mandible that forms when the teeth erupt and is a ‘tooth dependent’ structure
  - Has an external plate of cortical bone
  - Inner socket of thin compact bone which is seen as the lamina dura on radiographs
  - Cancellous trabeculae between the external plates which acts as supporting alveolar bone
Bone loss

- The bony crest is usually 1 to 2 mm apical to the cementoenamel junction (CEJ).
- Clinical crown to-root (C:R) ratios are determined according to the amount of root remaining in bone compared with the amount of tooth above the bone level.

Horizontal bone loss

- If the level of the bone is essentially equal interdentally, it is called horizontal bone loss and measured as the percentage of bone lost (e.g., 20% of the original bone height is lost).
Vertically/Angular bone loss

- Angular bone loss occurs when one tooth has lost more bone than the tooth next to it.
- Vertical (angular) bone defects are suggested when the bone crest is more apical to the CEJ adjacent to one tooth than to the other.

Radiographs:

- Look at bone levels
- Look at the root length and shape
- Look at the furcation area in multi-rooted teeth
- Look at restorative status of the tooth (fillings/caries/root canal treatment)
Which rads should I take?

- **Horizontal bitewings** show crestal bone and are indicated if pocketing is less than 5 mm. They also give detail of overhanging restorations or dental caries that may act as local plaque traps.
- **Vertical bitewings** (where the film is turned 90° from the conventional horizontal bitewing) show the bone levels in moderate to severe periodontitis around several teeth.
- **Periapicals** are indicated when severe periodontitis is. They will also allow an assessment of the root morphology, furcation involvement, root shape, and periodontal-endodontic status.
- **Panoramic radiographs** allow visualization of all teeth on one film.

Bone loss on a bitewing

Bone loss on a DPT
Summary

- Periodontal disease is very common and ranges from gingivitis to more severe forms of periodontitis
- A BPE is a screening examination to identify patients with periodontitis
- A more thorough periodontal assessment is required for those patients with BPE scores of 3 and 4
- Radiographs are useful special tests in patients with periodontitis to assess alveolar bone levels
RESOURCES

Clinical Problem Solving in Periodontology and Implant Dentistry

DISCUSSION QUESTIONS/PROMPT

If you would like to open a discussion on QMPLUS following this lecture – please provide a question or image to prompt discussion.

QUIZ QUESTIONS?

What is the correct answer to this question?

The correct answer

An incorrect answer

Plus an incorrect answer

Also an incorrect answer

And another incorrect answer

FEEDBACK:
Add some feedback here.
Horizontal bone loss

- If the level of the bone is essentially equal interdentally, it is called horizontal bone loss and measured as the percentage of bone lost (e.g., 20% of the original bone height is lost).

Radiographs:

- Look at bone levels
- Look at the root length and shape
- Look at the furcation area in multi rooted teeth
- Look at restorative status of the tooth

Types of Radiographs

- Bitewings
- Vertical bitewings
- Periapicals
- OPT

- When would you take each one?