Objectives

After periodontal instrumentation session, student should be able to demonstrate

- Proper position of the patient and the operator (Accessibility)
- Visibility, illumination and retraction
- Condition of instruments (sharpness)
- Maintaining a clean field
- Instrument stabilization: Instrument grasp, Fulcrum or Finger rest
- Instrument activation: Adaptation, Angulation, Lateral pressure, and Stroke
- Selection of the proper instrument
- Technique for periodontal probing, determining attachment loss, using dental explorer, furcation detection
- Technique for tooth mobility quantification
- Technique for using Chisel, Sickle and Wing shaped, Curette
- Manual Scaling and root planing technique in different areas of the mouth
PHASES OF PERIODONTAL THERAPY

- **Phase I therapy**
  - Started after E&D and treatment planning
  - Removal bacterial plaque and all irritants (periodontal instrumentation)
  - OH Instruction

- **Maintenance phase**
  - All patients that undergo periodontal therapy
  - Patients return to clinic for evaluation, periodontal instrumentation, and reinforcement of OH techniques.

- **Phase II therapy**
  - Surgical (periodontal instrumentation)

All phases need periodontal instrumentation
Periodontal Instrumentation

- Scaling: to remove plaque and calculus
- Root planing: to remove plaque, calculus, endotoxin
- Stain removal
- Surgery
Principles of Instrumentation

1. Accessibility (positioning of patient and operator)
2. Visibility, illumination and retraction
3. Condition of instruments (sharpness)
4. Maintaining a clean field
5. Instrument stabilization
6. Instrument activation
7. Selection of the proper instrument
1. Positioning

- prevent clinician and patient from discomfort and injury
- permit a clear view, the best is direct vision
- allow easy access to the teeth
- efficient: time and energy
Clinical/Operator position
Neutral position
Figure 2-13. Neutral shoulder position.

Figure 2-16. Neutral hand position.
Figure 2-10. Neutral seated position.

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**Figure 2-18.** Neutral position in relation to the patient.

**Figure 2-19A.** Incorrect position—patient too high.

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Figure 2-17B. Correct position for the patient chair back.
Figure 2-19B. Incorrect clinician position.

Figure 2-19C. Incorrect clinician position.

Figure 2-19D. Incorrect clinician position.
Figure 2-20A. Easy technique for establishing neutral position in relation to the patient.

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Figure 2-20B. Correct clinician position.

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Patient Head Position
Supine patient position: The patient’s heels should be slightly higher than the tip of his or her nose.

Adjust his/her head to provide best view: chin up/down, toward/straight/away.
Visibility, illumination and retraction

- Direct vision with direct illumination
- Indirect vision by using mouth mirror
- Indirect illumination by using mouth mirror
- Retraction provides visibility, accessibility and illumination by using mirror or fingers
- Softening the lips with petroleum jelly/vaseline to prevent cracking and bleeding
Dental light position

mandibular

maxilla

30/10/08
Sharpness

- When the instrument is sharp, the cutting edge is a fine line
- Light reflected from the rounded cutting edge of a dull instrument appears as a bright line.
Maintaining a clean field

- From saliva, blood, and debris
- Pooling saliva interferes: visibility, firm finger rest cannot be established
- Blood and debris can be removed by wiping with gauze
- Operative field should be flushed occasionally with water
Instrument stabilization

- Instrument grasp
- Finger rest
Fulcrum (finger rest)

- Stabilizes the clinician’s hand during instrumentation
- Intraoral and extraoral fulcrum
Instrument activation

- Adaptation
- Angulation
- Lateral pressure
- Strokes
Adaptation

- Is placing the first one or two millimeters of the side of the working end in contact with the tooth surface.
Angulation

- Is the angle formed between the face of instrument and the tooth surfaces
Incorrect

![Diagram showing incorrect technique for dental instruments.](image)

- Tooth surface
- 0°
- 45°
- 90°

30/10/08
Subgingival scaling procedure.
A, Curette inserted with the face of the blade flush against the tooth.
B, Working angulation (45 to 90 degrees) is established at the base of the pocket.
C, Lateral pressure is applied, and the scaling stroke is activated in the coronal direction.
Lateral pressure

- Is the act of using the thumb and index finger to engage (press) the cutting edge against the tooth surface or calculus deposit
- The amount of pressure must be varied according to the nature of the calculus and according to whether the stroke is intended to remove calculus or to smooth the root surface.
- Lateral pressure may be firm, moderate, or light
- The careful application of lateral pressure during instrumentation is important
Wrist motion activation

- Is the act of rotating the hand and wrist as a unit
- Similar with turning a doorknob
- Recommended for calculus removal with hand activated instr.
- More powerful and less fatigue than digital motion activation
Digital motion activation

- Is moving the instrument by flexing the fingers
- It may be used with periodontal probes, explorers, and ultrasonic instruments or where movement is very restricted, such as in furcation areas
Instrumentation Strokes

- Strokes Direction

Horizontal  Oblique  Vertical
Instrumentation for calculus removal

- **A,** Calculus is removed by engaging the apical or lateral edge of the deposit with the cutting edge of a scaler; vertical movement of the instrument will remove the fragment of calculus engaged by the instrument.

- **B,** The instrument is moved laterally and again engages the edge of the calculus, overlapping the previous stroke to some extent.

- **C,** The final portion of the deposit is engaged and removed. Note how the procedure is performed in an interdental space by entering **facially** and **lingually.**
## CHARACTERISTICS OF INSTRUMENTATION STROKES

### TABLE 10-1. Reference Sheet: Stroke Characteristics With Hand-Activated Instruments

<table>
<thead>
<tr>
<th></th>
<th>Assessment Stroke</th>
<th>Calculus Removal Stroke</th>
<th>Root Debridement Stroke</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Purpose</strong></td>
<td>To assess tooth anatomy, level of attachment; detect calculus and other plaque-retentive factors</td>
<td>To remove calculus deposits</td>
<td>To remove residual calculus; remove or disrupt bacterial plaque and byproducts</td>
</tr>
<tr>
<td><strong>Used with</strong></td>
<td>Probes/explorers, curets</td>
<td>Sickle scalers, curets, files</td>
<td>Curets</td>
</tr>
<tr>
<td><strong>Insertion</strong></td>
<td>$0^\circ$ to $40^\circ$</td>
<td>$0^\circ$ to $40^\circ$</td>
<td>$0^\circ$ to $40^\circ$</td>
</tr>
<tr>
<td><strong>Working angulation</strong></td>
<td>$50^\circ$ to $70^\circ$</td>
<td>$70^\circ$ to $80^\circ$</td>
<td>$60^\circ$ to $70^\circ$</td>
</tr>
<tr>
<td><strong>Lateral pressure</strong></td>
<td>Contacts tooth surface, but no pressure</td>
<td>Moderate to firm; scraping</td>
<td>Light to moderate</td>
</tr>
<tr>
<td><strong>Character</strong></td>
<td>Flowing strokes of moderate length</td>
<td>Powerful strokes; short in length</td>
<td>Lighter strokes of moderate length</td>
</tr>
<tr>
<td><strong>Direction</strong></td>
<td>Vertical, oblique, and horizontal</td>
<td>Vertical, oblique, and horizontal</td>
<td>Vertical, oblique, and horizontal</td>
</tr>
<tr>
<td><strong>Number</strong></td>
<td>Many, covering entire root surface</td>
<td>Limited to areas where needed</td>
<td>Many, covering entire root surface</td>
</tr>
</tbody>
</table>
SCALING IN DIFFERENT AREAS OF THE MOUTH

- MAXILLARY TEETH
Maxillary right posterior sextant: facial aspect

- **Operator**: Side position (9 o'clock).
- **Illumination**: Direct.
- **Visibility**: Direct (indirect for distal surfaces of molars).
- **Retraction**: Mirror or index finger of the non-operating hand.
- **Finger rest**: Extraoral, palm up. Backs of the middle and fourth fingers on the lateral aspect of the mandible on the right side of the face.
Maxillary right posterior sextant: lingual aspect.

- **Operator:** Side position (9 o’clock).
- **Illumination:** Direct and indirect.
- **Visibility:** Direct or indirect.
- **Retraction:** None.
- **Finger rest:** Extraoral, palm up. Backs of the middle and fourth fingers on the lateral aspect of the mandible on the right side of the face.
Maxillary anterior sextant: facial aspect, surfaces away from the operator

- **Operator**: Back position (12 o’clock)
- **Illumination**: Direct.
- **Visibility**: Direct.
- **Retraction**: Index finger of the non-operating hand.
- **Finger rest**: Intraoral, palm up. Fourth finger on the incisal edges or occlusal surfaces of adjacent maxillary teeth
Maxillary anterior sextant: facial aspect, surfaces toward the operator

- **Operator**: Front position (8 o’clock)
- **Illumination**: Direct.
- **Visibility**: Direct.
- **Retraction**: Index finger of the nonoperating hand.
- **Finger rest**: Intraoral, palm down. Fourth finger on the incisal edges or the occlusal or facial surfaces of adjacent maxillary teeth.
Maxillary anterior sextant: lingual aspect, surfaces away from the operator (surfaces toward the operator are scaled from a front position).

- **Operator**: Back position (12 o’clock)
- **Illumination**: Indirect.
- **Visibility**: Indirect.
- **Retraction**: None.
- **Finger rest**: Intraoral, palm up. Fourth finger on the incisal edges or the occlusal surfaces of adjacent maxillary teeth
Maxillary left posterior sextant: facial aspect

- **Operator**: Side position (9 o’clock).
- **Illumination**: Direct or indirect.
- **Visibility**: Direct or indirect.
- **Retraction**: Mirror.
- **Finger rest**: Intraoral, palm up. Fourth finger on the incisal edges or the occlusal surfaces of adjacent maxillary teeth.
Maxillary left posterior sextant: lingual aspect

- **Operator:** Side position (9 o’clock).
- **Illumination:** Direct.
- **Visibility:** Direct.
- **Retraction:** None.
- **Finger rest:** Intraoral, palm up. Fourth finger on the occlusal surfaces of adjacent maxillary teeth.

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Mandibular left posterior sextant: facial aspect

- **Operator:** Side position (9 o’clock).
- **Illumination:** Direct.
- **Visibility:** Direct or indirect.
- **Retraction:** Index finger or mirror of the nonoperating hand.
- **Finger rest:** Intraoral, palm down. Fourth finger on the incisal edges or the occlusal or facial surfaces of adjacent mandibular teeth.
Mandibular left posterior sextant: lingual aspect

- **Operator:** Side position (9 o’clock).
- **Illumination:** Direct and indirect.
- **Visibility:** Direct.
- **Retraction:** Mirror retracts tongue.
- **Finger rest:** Intraoral, palm down. Fourth finger on the incisal edges or the occlusal surfaces of adjacent mandibular teeth.
Mandibular anterior sextant: facial aspect, surfaces toward the operator

- **Operator:** Front position (8 o’clock)
- **Illumination:** Direct.
- **Visibility:** Direct.
- **Retraction:** Index finger of the nonoperating hand.
- **Finger rest:** Intraoral, palm down. Fourth finger on the incisal edges or the occlusal surfaces of adjacent mandibular teeth
Mandibular anterior sextant: facial aspect, surfaces away from the operator

- **Operator**: Back position (12 o’clock)
- **Illumination**: Direct.
- **Visibility**: Direct.
- **Retraction**: Index finger or thumb of the nonoperating hand.
- **Finger rest**: Intraoral, palm down. Fourth finger on the incisal edges or the occlusal surfaces of adjacent mandibular teeth.

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30/10/08
Mandibular anterior sextant: lingual aspect, surfaces away from the operator

- **Operator**: Back position (12 o’clock)
- **Illumination**: Direct and indirect.
- **Visibility**: Direct and indirect.
- **Retraction**: Mirror retracts tongue.
- **Finger rest**: Intraoral, palm down. Fourth finger on the incisal edges or the occlusal surfaces of adjacent mandibular teeth
Mandibular anterior sextant: lingual aspect, surfaces toward the operator

- **Operator**: Front position (8 o’clock)
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- **Visibility**: Direct and indirect.
- **Retraction**: Mirror retracts tongue.
- **Finger rest**: Intraoral, palm down. Fourth finger on the incisal edges or the occlusal surfaces of adjacent mandibular teeth.
Mandibular right posterior sextant: facial aspect

- **Operator**  Side position (9 o’clock).
- **Illumination:** Direct.
- **Visibility:** Direct.
- **Retraction:** Mirror or index finger of the nonoperating hand.
- **Finger rest:** Intraoral, palm down. Fourth finger on the incisal edges or the occlusal surfaces of adjacent mandibular teeth.
Mandibular right posterior sextant: lingual aspect

- **Operator:** Side position (9 o’clock).
- **Illumination:** Direct and indirect.
- **Visibility:** Direct and indirect.
- **Retraction:** Mirror retracts tongue.
- **Finger rest:** Intraoral, palm down. Fourth finger on the incisal edges or the occlusal surfaces of adjacent mandibular teeth.
Instruments for scaling and root planing

- Universal curettes
- Gracey curettes
Universal Curettes

- **A**, Columbia #4R-4L universal curette.
- **B**, Younger-Good #7-8, McCall's #17-18, and Indiana University #17-18 universal curettes.
Gracey’s curettes

- Gracey #5-6 (Yellow): For Anterior teeth and premolars
- Gracey #7-8 (Green): For Posterior teeth: facial and lingual
- Gracey #11-12 (Orange): For Posterior teeth: mesial
- Gracey #13-14 (Blue): For Posterior teeth: distal
Chisel  Wing-shaped  Hygienist
• **Push Scaler or Chisel.**
  - A pushing instrument used parallel to the occlusal plane. This instrument can be used supra-gingivally especially in the anterior. Great care need to be taken to avoid soft tissue damage.

• **Hygienist Sickle.**
  - Is a single-ended instrument can be used for mesial, distal, facial, and lingual surfaces of supra and sub gingival calculus. Adaptation of Sickle scaler is important to prevent damage to the tissue

• **Wing-shaped scaler**
  - This instrument has a wing blade shape and a sharply pointed end. The mode of use is pull coronally for the supra and sub gingival area of the tooth
Conclusion: Principles of scaling and root planing

- Determine the correct cutting edge
- Finger rest
- Concentrate on using the lower third of the cutting edge for calculus removal (adaptation)
- Allow the hand-forearm to carry the burden of the stroke, rather than flexing the fingers (digital motion activation)
- Modulate lateral pressure
Calculus detection

- Supragingival calculus can be detected visually or by using compressed air and dental mirror
- Dry calculus has contrast visually with enamel
- Subgingival calculus are hidden beneath gingiva
technique to identify the presence of supra and subgingival calculus
Furcation involvement

- Occurs when periodontal infection invades the area between and around the roots of bifurcated or trifurcated teeth
- Access to furcation area
  - Mandibular molars (bifurcated) → examined from the facial and lingual surfaces
  - Maxillary first premolar (bifurcated) → from the mesial and distal surfaces
  - Maxillary first molars (trifurcated) from the facial, mesial, distal surfaces
# SCHEDULE FOR PERIODONTAL INSTRUMENTATION SKILL
## Year 3 2008/2009

<table>
<thead>
<tr>
<th>Thursday 8-10am</th>
<th>Activities</th>
<th>Venue(Supervisor)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30/10/08</td>
<td>8-9 am Lecture Periodontal Instrumentation</td>
<td>DK 1 (ERRY)</td>
</tr>
<tr>
<td></td>
<td>9-10 am Putting Artificial Calculus on Frasaco model</td>
<td>MDL (HT, ERRY, WW, RARA, AKH, SLA)</td>
</tr>
<tr>
<td>6/11/08</td>
<td>8-9 am Demo Scaling and Root planning on real teeth</td>
<td>PROSTHO LAB (HT, ERRY, WW, RARA, AKH, SLA)</td>
</tr>
<tr>
<td></td>
<td>(All supervisor)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9-10 am Mounting 16 real teeth* on POP</td>
<td></td>
</tr>
<tr>
<td>13/11/08</td>
<td></td>
<td>KKKKK</td>
</tr>
</tbody>
</table>
Activity: **Supra and Subgingival scaling of artificial calculus on maxillary teeth, manually**
**Supra and Subgingival scaling of artificial calculus on mandibular teeth, manually**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Grade*</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Preparation:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Tray set up and cleanliness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Identification of instruments</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Probing and exploring technique</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Correct probing technique</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Correct exploring technique</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ergonomic position:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appropriate positioning of dummy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correct working position of operator</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Scaling technique:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of appropriate instrument</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use appropriate technique</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Calculus free:</strong> Teeth are free from calculus</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Grading: 1=poor, 2=average, 3=good*
Activity: **Scaling and root planing on 16 real teeth, manually**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Grade*</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Scaling:</strong> Use of appropriate instrument and appropriate site (anterior and posterior) and good finger rest (left and right)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>1. Exploring technique</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>1. Ergonomic position:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Appropriate positioning of dummy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Correct working position of operator</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>1. Scaling technique:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Use of appropriate instrument</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Use appropriate technique</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>1. Root Planing:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Use of appropriate instrument</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Use appropriate technique</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>1. Removal of calculus:</strong> Teeth are free from calculus</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Grading: 1=poor, 2=average, 3=good*
thank you
Positioning for the anterior sextant

Anterior surface toward

Turn slightly toward the clinician chin-down position

Turn slightly toward the clinician chin-up position

Figure 2-33. The 8 o'clock position

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Figure 2-34. Mandibular anterior surfaces toward, right-handed clinician

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Figure 2-36. Maxillary anterior surfaces toward, right-handed clinician

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Figure 2-37. The 12 o'clock position.

Figure 2-38. Mandibular anterior surfaces away, right-handed clinician.

Figure 2-40. Maxillary anterior surfaces away, right-handed clinician.
Positioning for the posterior sextant

Posterior aspects facing toward

Figure 2-25. The 9 o'clock position (option 1).

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Figure 2-26. The 9 o'clock position (option 2).

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Turned slightly away from the clinician chin-down position

Turned slightly away from the clinician chin-up position
Positioning for the posterior sextant

Posterior aspects facing away

Turned slightly away from the clinician chin-down position

Turned slightly away from the clinician chin-up position

Figure 2-25. The 9 o’clock position (option 1).

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Option 1

Figure 2-26. The 9 o’clock position (option 2).

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Option 2

Figure 2-46. Mandibular posterior aspects facing away, right-handed clinician.

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Figure 2-48. Maxillary posterior aspects facing away, right-handed clinician.

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Figure 2-32. Flow chart: Sequence for Establishing Position.