



# Periodontology- Fourth stage



## First semester-periodontal instrument and sharpening, Position of the dentist Lec-5-Part2

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  - **Positioning of Patient and Operator**
  - **Visibility, Illumination, and Retraction**
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    - ✓ **Angulation**
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  - **Subgingival Scaling and Root-Planing Technique**

# General Principles of Instrumentation

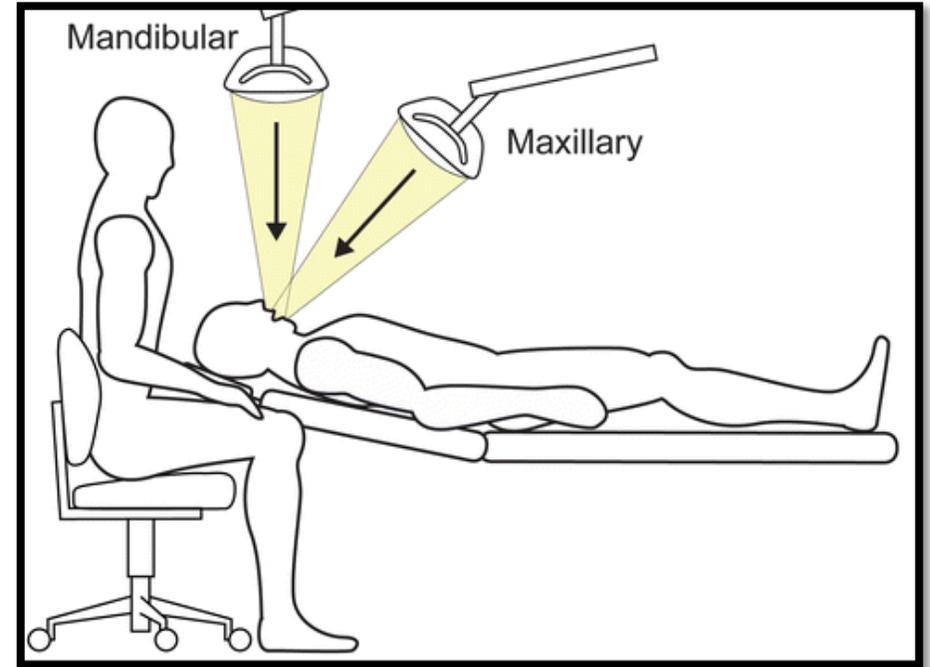
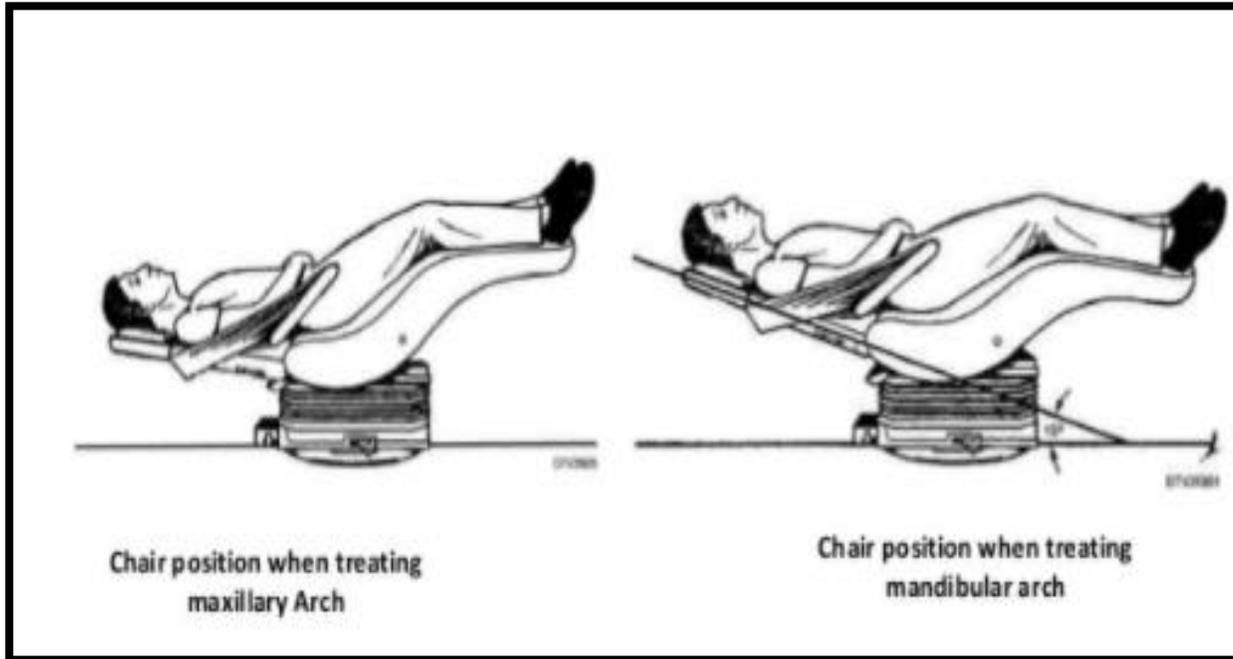
- ✓ Effective instrumentation is governed by a number of general principles that are common to all periodontal instruments.
  - Proper positioning of the patient and the operator,
  - Illumination and retraction for optimal visibility,
  - Sharp instruments are fundamental prerequisites for effective instrumentation.
  
- ✓ In addition to these principles, the basic concepts of grasp, finger rest, adaptation, angulation, and stroke must be understood before clinical instrument-handling skills can be mastered.

# Positioning of Patient and Operator

- ✓ The clinician should be seated on a comfortable operating stool that has been positioned so that his or her feet are flat on the floor, with the thighs parallel to the floor. The clinician should be able to observe the field of operation while keeping the back straight and the head erect.
- ✓ The patient should be in a supine position and placed so that the mouth is close to the resting elbow of the clinician.
- ✓ For instrumentation of the maxillary arch, the patient should be asked to raise the chin slightly to provide optimal visibility and accessibility.
- ✓ For instrumentation on the mandibular arch, it may be necessary to raise the back of the chair slightly and request that the patient lower the chin until the mandible is parallel to the floor. This will especially facilitate work on the lingual surfaces of the mandibular anterior teeth.



# Position of Patient



# Operating Position

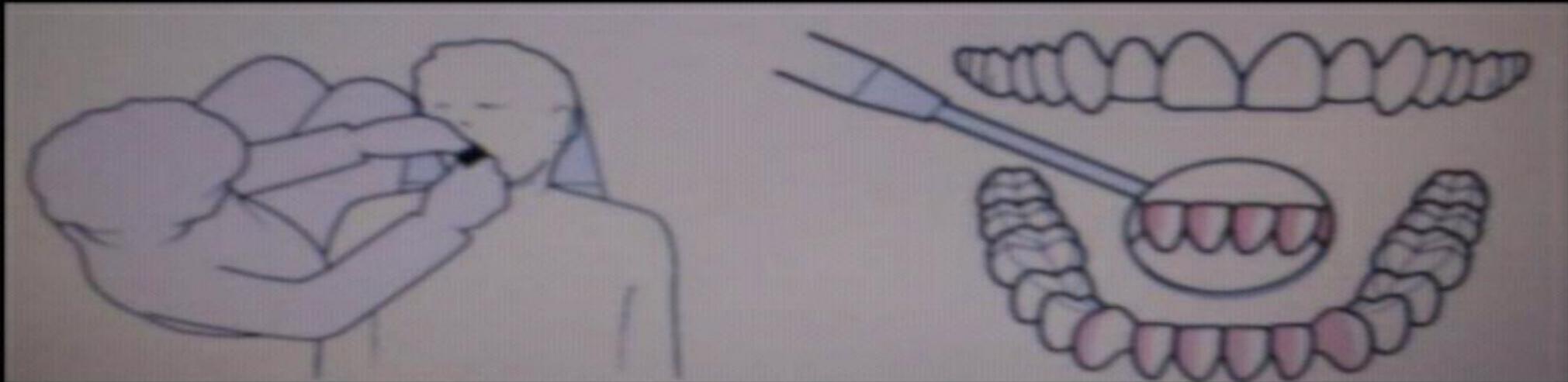


# positions

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## POSITIONING FOR THE ANTERIOR

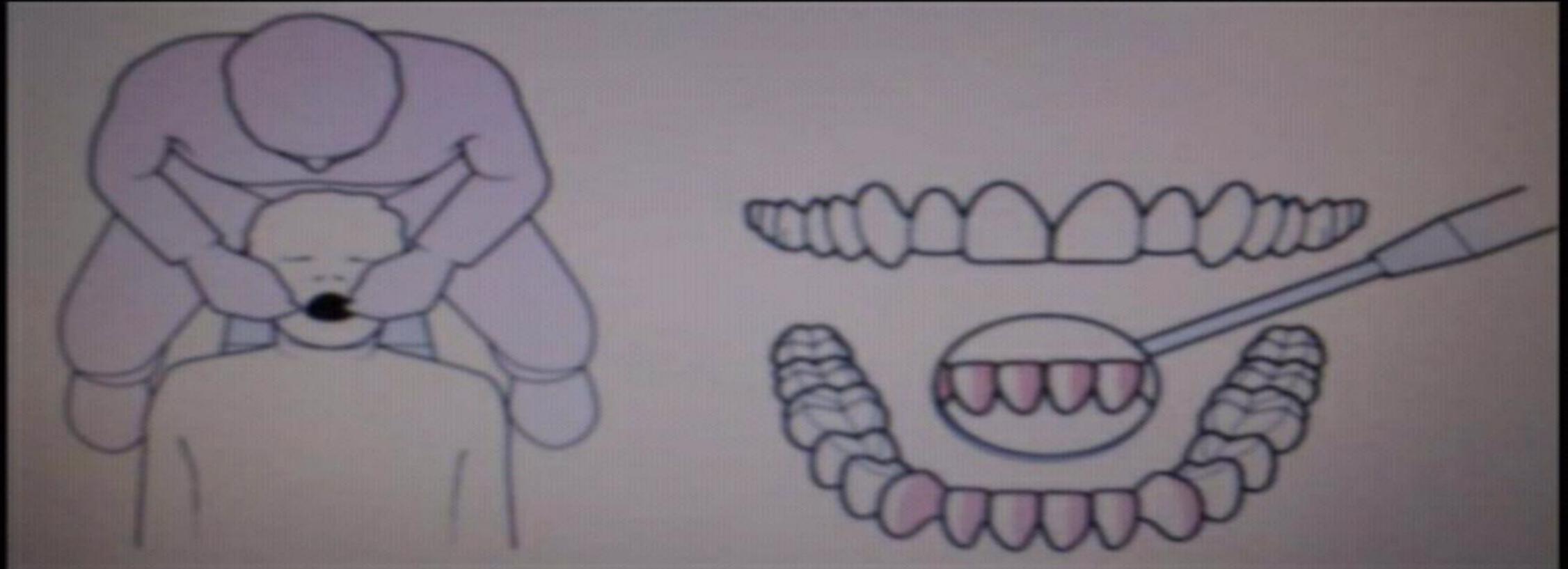
Anterior Surfaces TOWARD My Non-dominant Hand



**7 TO 9 O'CLOCK (8:00 OPTION SHOWN)  
TURNED SLIGHTLY TOWARD THE CLINICIAN  
CHIN-DOWN POSITION**

## POSITIONING FOR THE ANTERIOR

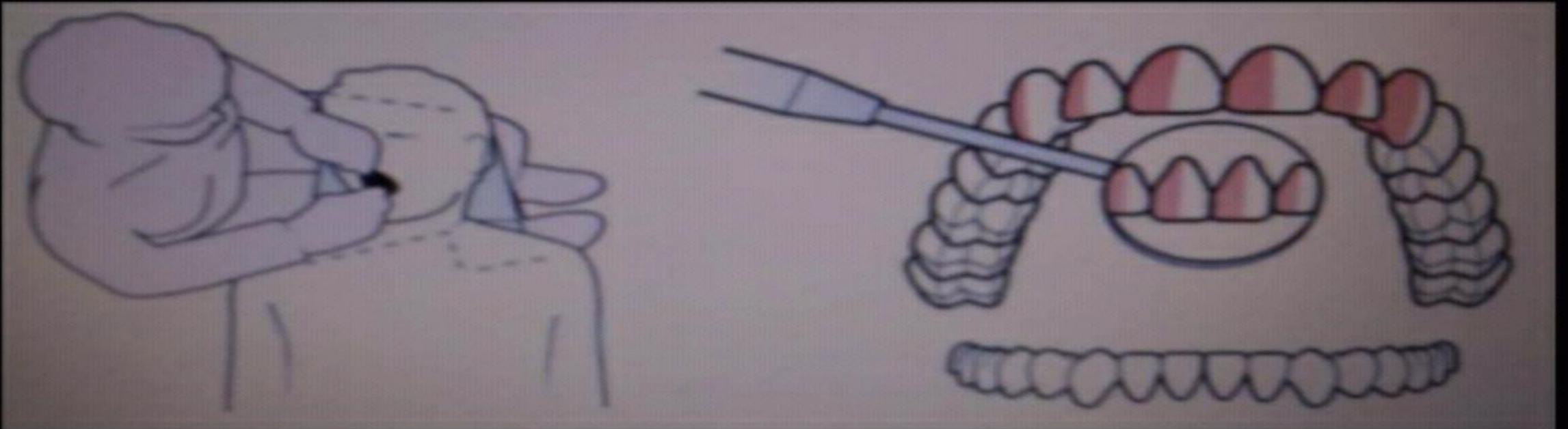
Anterior Surfaces AWAY From My Non-dominant Hand



**12 O'CLOCK POSITION  
TURNED SLIGHTLY TOWARD THE CLINICIAN  
CHIN-DOWN POSITION**

## POSITIONING FOR THE ANTERIOR

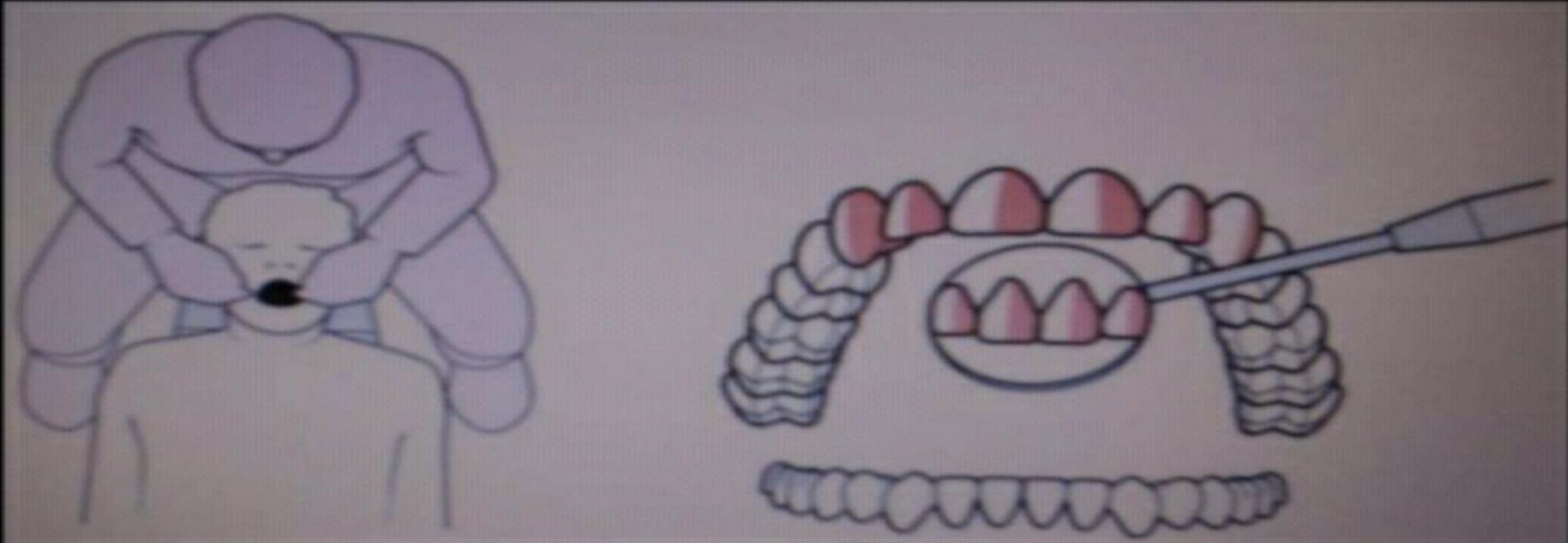
Anterior Surfaces TOWARD My Non-dominant Hand



**7 TO 9 O'CLOCK (9:00 OPTION SHOWN)  
TURNED SLIGHTLY TOWARD THE CLINICIAN  
CHIN-UP POSITION**

## POSITIONING FOR THE ANTERIOR

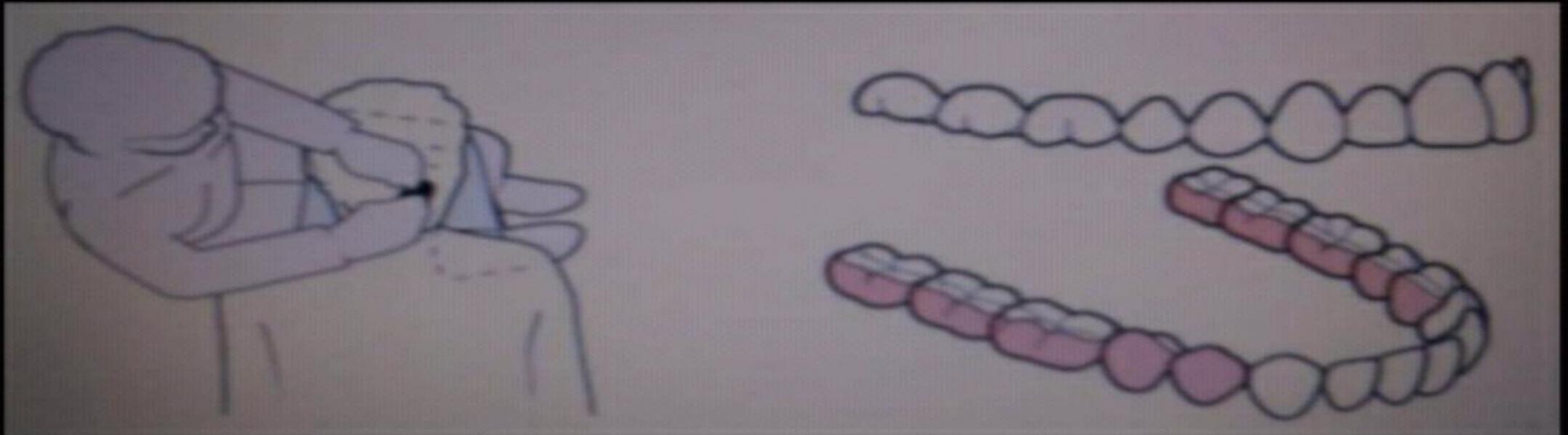
Anterior Surfaces *AWAY* From My Non-dominant Hand



**12 O'CLOCK POSITION**  
**TURNED SLIGHTLY TOWARD THE CLINICIAN**  
**CHIN-UP POSITION**

# POSITIONING FOR THE POSTERIOR

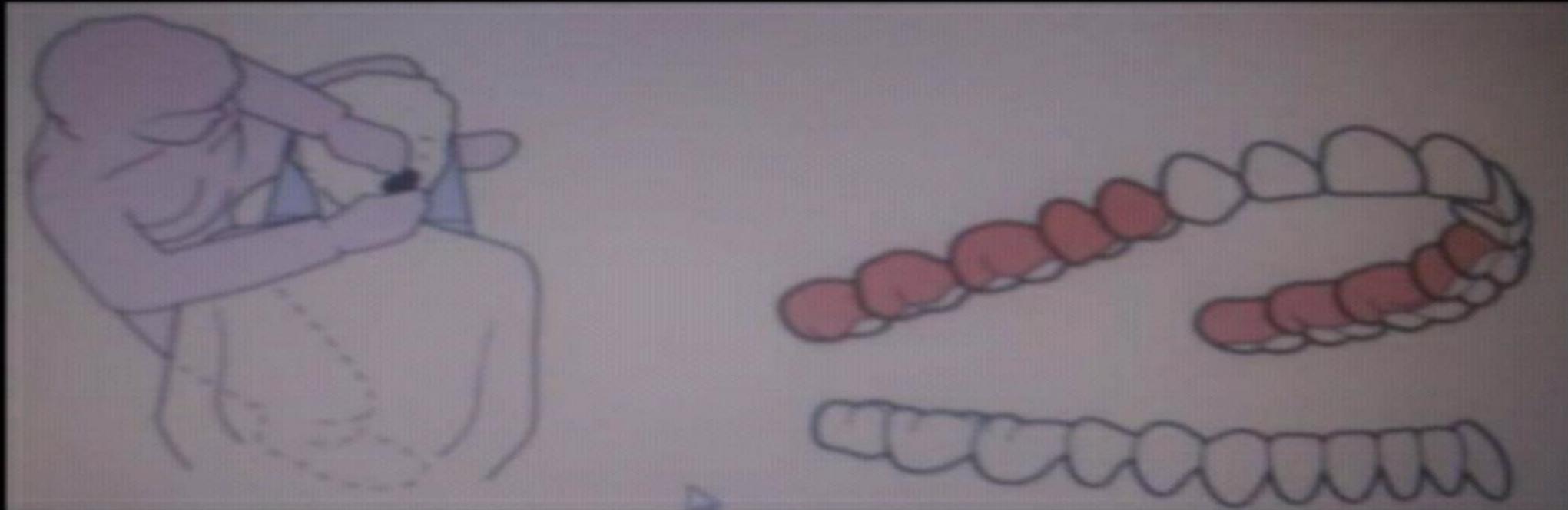
Posterior Aspects Facing TOWARD Me



**9 O'CLOCK (OPTION 1 FOR 9:00)  
TURNED SLIGHTLY AWAY FROM THE CLINICIAN  
CHIN-DOWN POSITION**

## POSITIONING FOR THE POSTERIOR

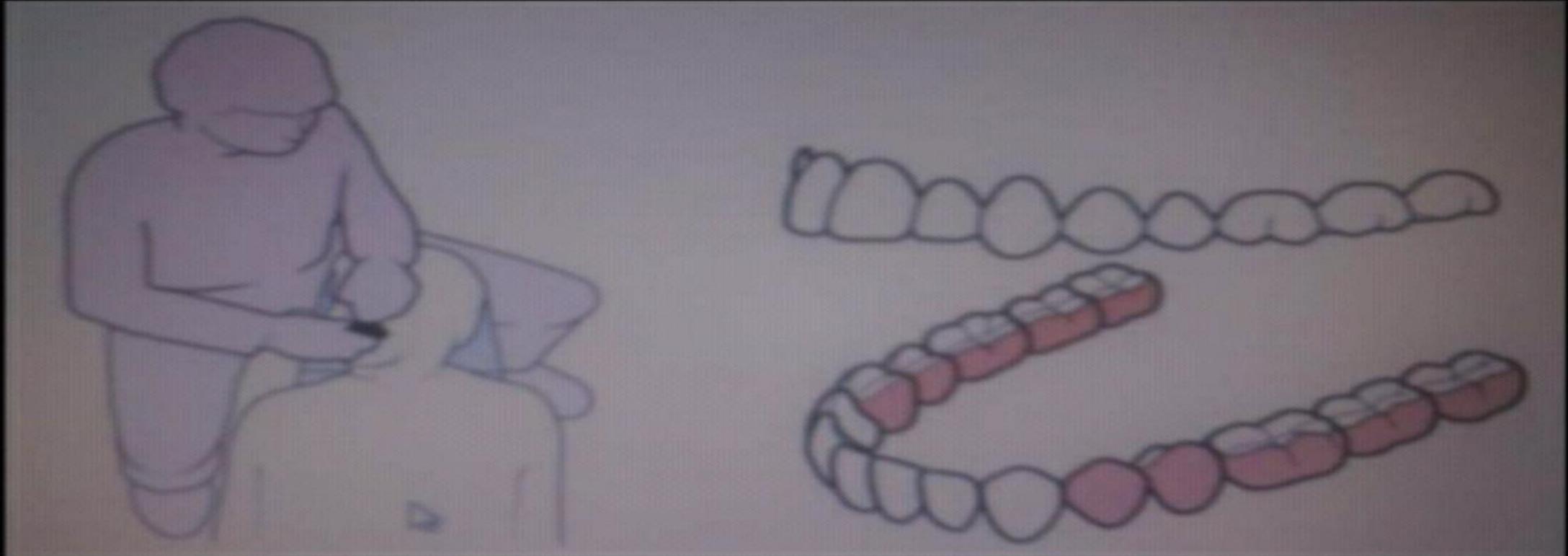
Posterior Aspects Facing TOWARD Me



**9 O'CLOCK (OPTION 2 FOR 9:00)  
TURNED SLIGHTLY AWAY FROM THE CLINICIAN  
CHIN-UP POSITION**

## POSITIONING FOR THE POSTERIOR

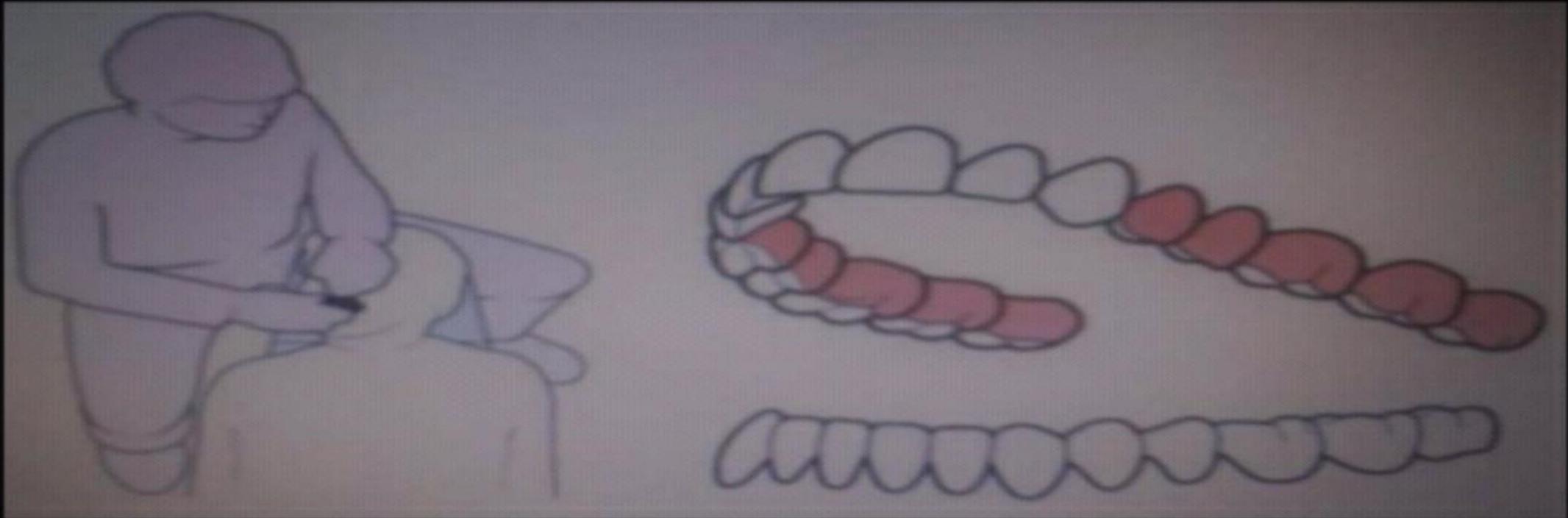
Posterior Aspects Facing AWAY From Me



**10 TO 11 O'CLOCK  
TURNED TOWARD THE CLINICIAN  
CHIN-DOWN POSITION**

# POSITIONING FOR THE POSTERIOR

Posterior Aspects Facing AWAY From Me



**10 TO 11 O'CLOCK  
TURNED TOWARD THE CLINICIAN  
CHIN-UP POSITION**

# Visibility, Illumination, and Retraction

- ❑ Direct vision with direct illumination from the dental light is most desirable. If this is not possible, indirect vision may be obtained by using the mouth mirror, and indirect illumination



Direct vision and direct illumination in the mandibular left premolar area

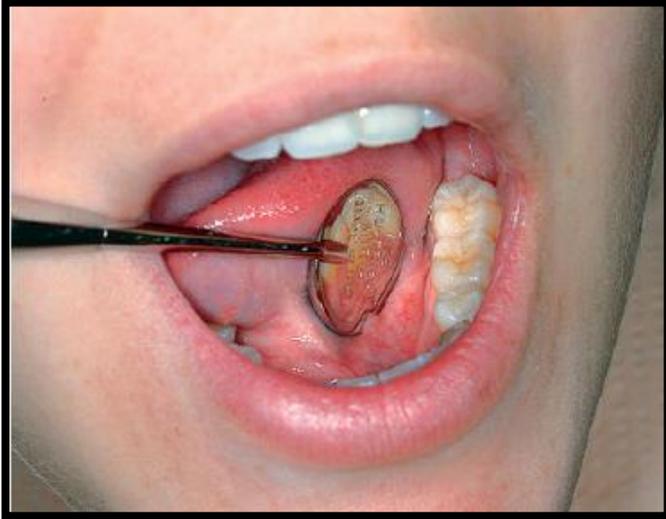


Indirect vision using the mirror for the lingual surfaces of the mandibular posterior teeth.



Indirect illumination using the mirror to reflect light onto the maxillary left posterior lingual region.

- ❑ **Retraction** provides visibility, accessibility, and illumination. Depending on the location of the area of operation, the fingers or the mirror, or both, may be used for retraction. **The mirror may be used for retraction of the cheeks or tongue; the index finger is used for retraction of the lips or cheeks.**



**Retracting the tongue with the mirror**



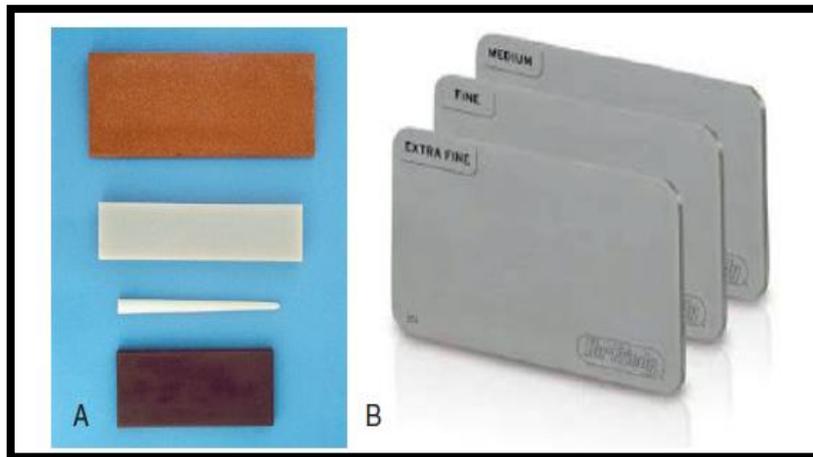
**Retracting the cheek with the mirror**



**Retracting the lip with the index finger of the non-operating hand.**

# Condition and Sharpness of Instruments

- Before any instrumentation, all instruments should be inspected to make sure that they are clean, sterile, and in good condition. The working ends of pointed or bladed instruments must be sharp to be effective.
- Sharp instruments enhance tactile sensitivity and allow the clinician to work more precisely and efficiently. Dull instruments may lead to incomplete calculus removal and unnecessary trauma because of the excess force usually applied to compensate for their ineffectiveness.



A) Sharpening stones. *Top to bottom*, A flat India stone, a flat Arkansas stone, a cone-shaped Arkansas stone, and a ceramic stone. (B) Diamond sharpening cards. Left to right: Extra fine grit, fine grit and medium grit one-sided diamond sharpening cards.

# Instrument Stabilization

❖ Stability of the instrument and the hand is the primary requirement for controlled instrumentation. Stability and control are essential for effective instrumentation and avoidance of injury to the patient or clinician.

✓ The two factors of major importance in providing stability:-

1. instrument grasp
2. finger rest

# Instrument Grasp



**Standard pen grasp**

- The side of the middle finger rests on the shank.



**Palm and thumb grasp**

- used for stabilizing instruments during sharpening



**Modified pen grasp**

- The pad of the middle finger rests on the shank.

# Intraoral finger rest

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## **Intraoral conventional finger rest.**

- The fourth finger rests on the occlusal surfaces of adjacent teeth



## **Intraoral cross-arch finger rest.**

- The fourth finger rests on the incisal surfaces of teeth on the opposite side of the same arch.

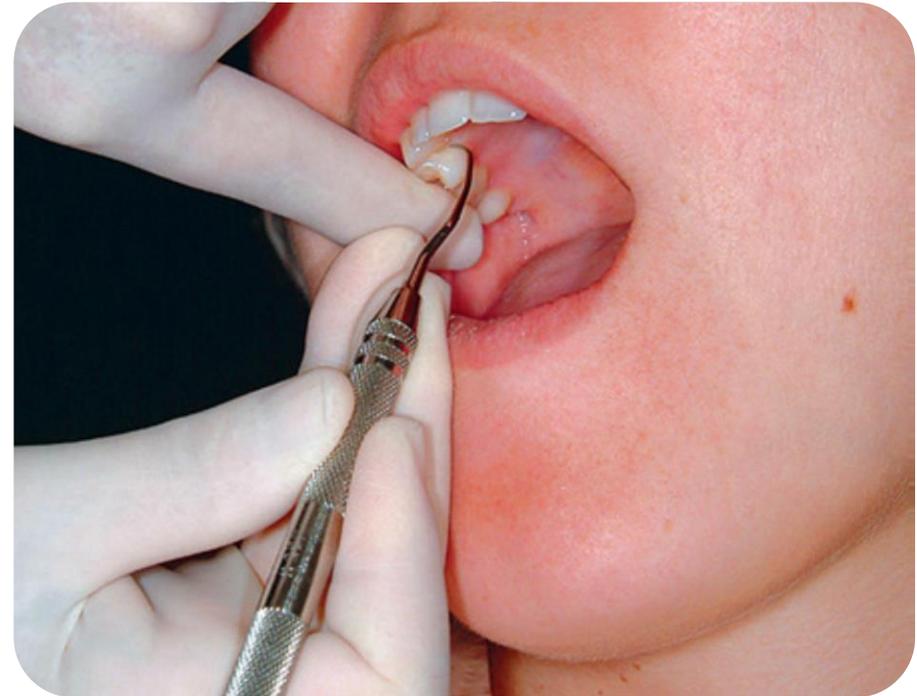
# Intraoral finger rest

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## **Intraoral opposite-arch finger rest**

- The fourth finger rests on the mandibular teeth while the maxillary posterior teeth are instrumented.



## **Intraoral finger-on-finger rest.**

- The fourth finger rests on the index finger of the non-operating hand.

# Extra oral Fulcrum

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## Extraoral palm-up fulcrum.

- The backs of the fingers rest on the right lateral aspect of the mandible while the maxillary right posterior teeth are instrumented



## Extraoral palm-down fulcrum

- The front surfaces of the fingers rest on the left lateral aspect of the mandible while the maxillary left posterior teeth are instrumented.

# Extra oral Fulcrum

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## **Index finger–reinforced rest.**

- The index finger is placed on the shank for pressure and control in the maxillary left mesial and lingual region.



## **Thumb-reinforced rest.**

- The thumb is placed on the handle for control in the maxillary right posterior lingual region.

- ❑ Both intraoral finger rests and extraoral fulcrums may be reinforced by applying the index finger or thumb of the non-operating hand to the handle or shank of the instrument for added control and pressure against the tooth.

# Instrument Activation

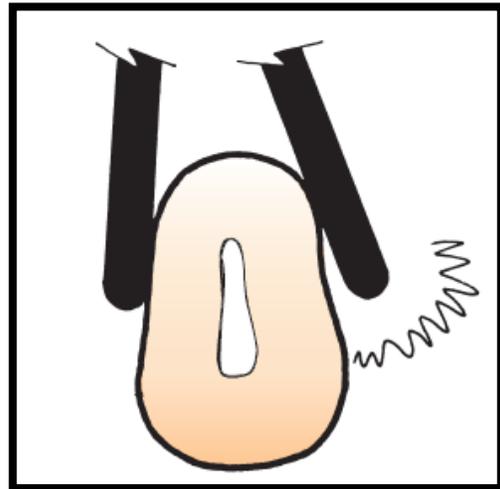
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## ❑ **Adaptation**

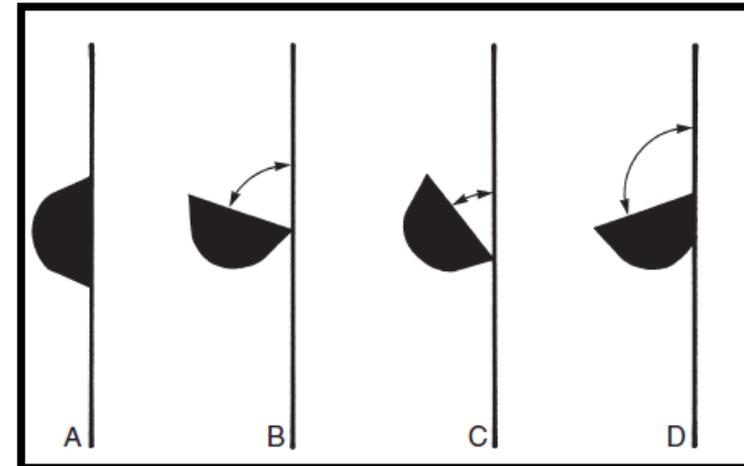
Adaptation refers to the manner in which the working end of a periodontal instrument is placed against the surface of a tooth.

## ❑ **Angulation**

Angulation refers to the angle between the face of a bladed instrument and the tooth surface. It may also be called the tooth-blade relationship.



**Blade adaptation.** The curette on the *left* is properly adapted to the root surface. The curette on the *right* is incorrectly adapted; the toe juts out, lacerating the soft tissues



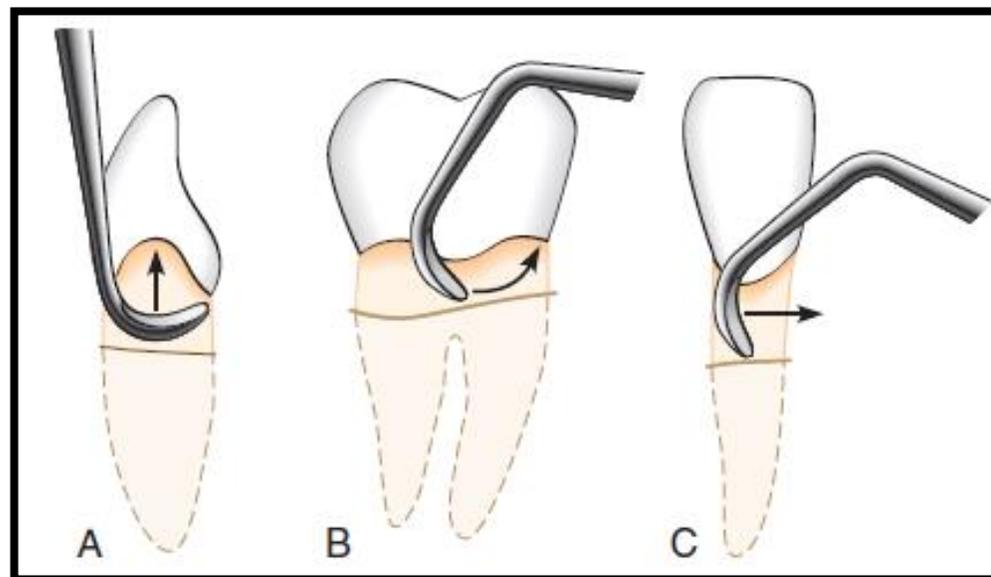
**Blade angulation.** (A) **0 degrees:** correct angulation for blade insertion. (B) **45 to 90 degrees:** correct angulation for scaling and root planing. (C) **Less than 45 degrees:** incorrect angulation for scaling and root planing. (D) **More than 90 degrees:** incorrect angulation for scaling and root planing, but correct angulation for gingival curettage

## ❑ **Lateral Pressure**

Lateral pressure refers to the pressure created when force is applied against the surface of a tooth with the cutting edge of a bladed instrument.

## ❑ **Strokes**

Three basic types of strokes are used during instrumentation: the exploratory stroke, the scaling stroke, and the root-planing stroke.



**Three basic stroke directions.** (A) Vertical; (B) oblique; (C) horizontal.

- ❖ **The exploratory stroke** is a light “feeling” stroke that is used with probes and explorers to evaluate the dimensions of the pocket and to detect calculus and irregularities of the tooth surface.
- ❖ **The scaling stroke** is a short, powerful pull stroke that is used with bladed instruments for the removal of both supragingival and subgingival calculus.
- ❖ **The root-planing stroke** is a moderate to light pull stroke that is used for final smoothing and planing of the root surface.

# Principles of Scaling and Root Planing

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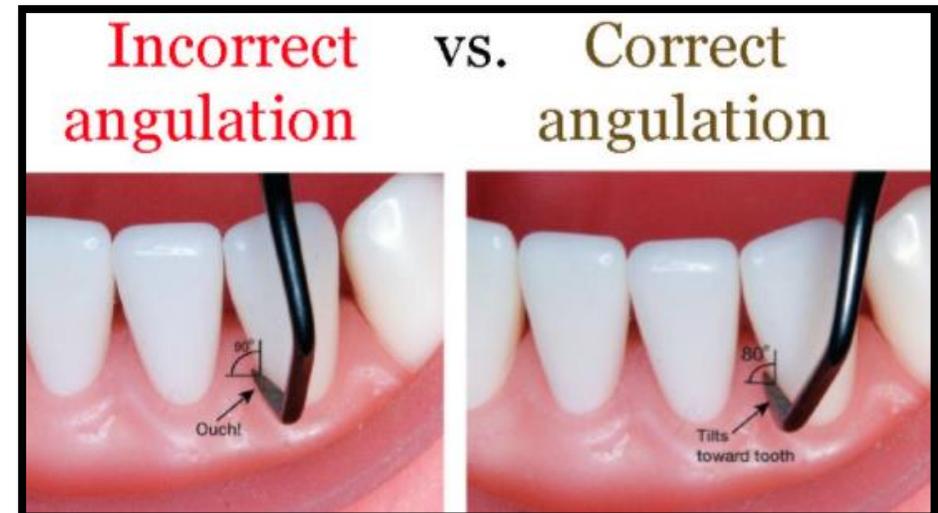
- ❖ **Scaling** is the process by which biofilm and calculus are removed from both supragingival and subgingival tooth surfaces.
- ❖ **Root planing** is the process by which residual embedded calculus and portions of cementum are removed from the roots to produce a smooth, hard, clean surface

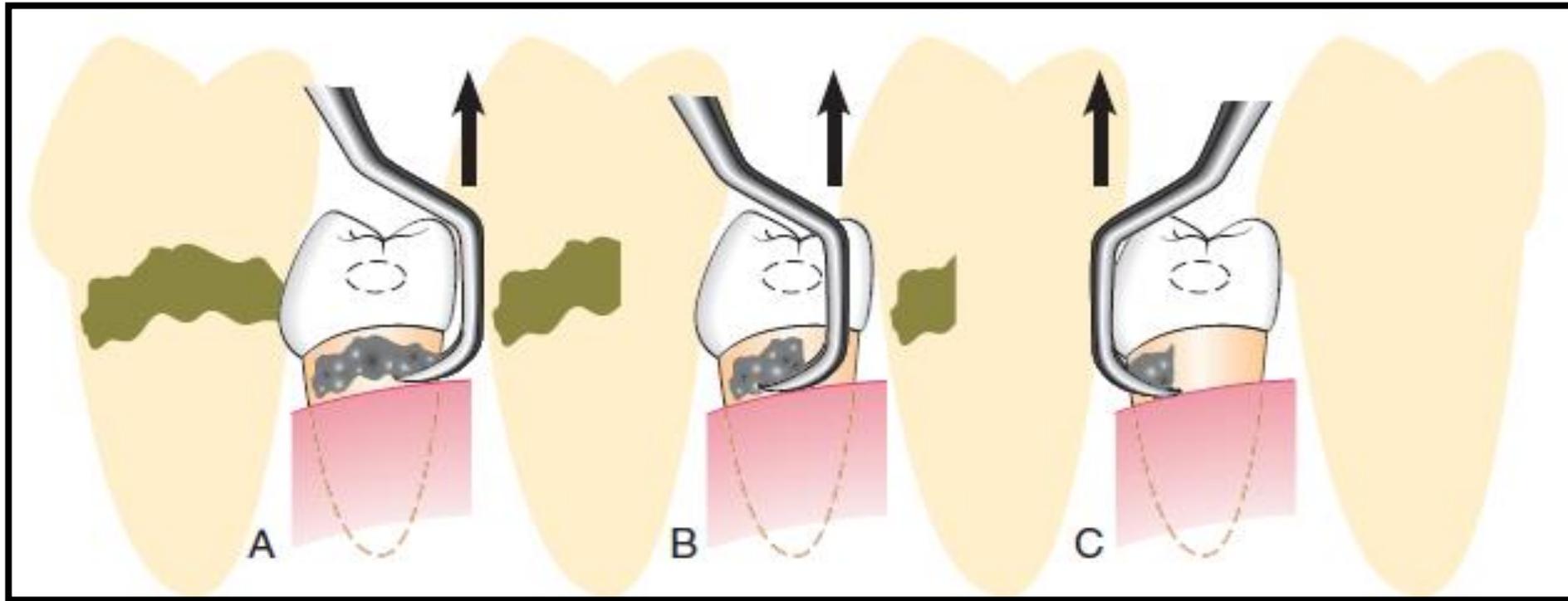
The primary objective of scaling and root planing is to restore gingival health by completely removing elements that provoke gingival inflammation (i.e., biofilm, calculus, and endotoxin) from the tooth surface.

# Supragingival Scaling Technique

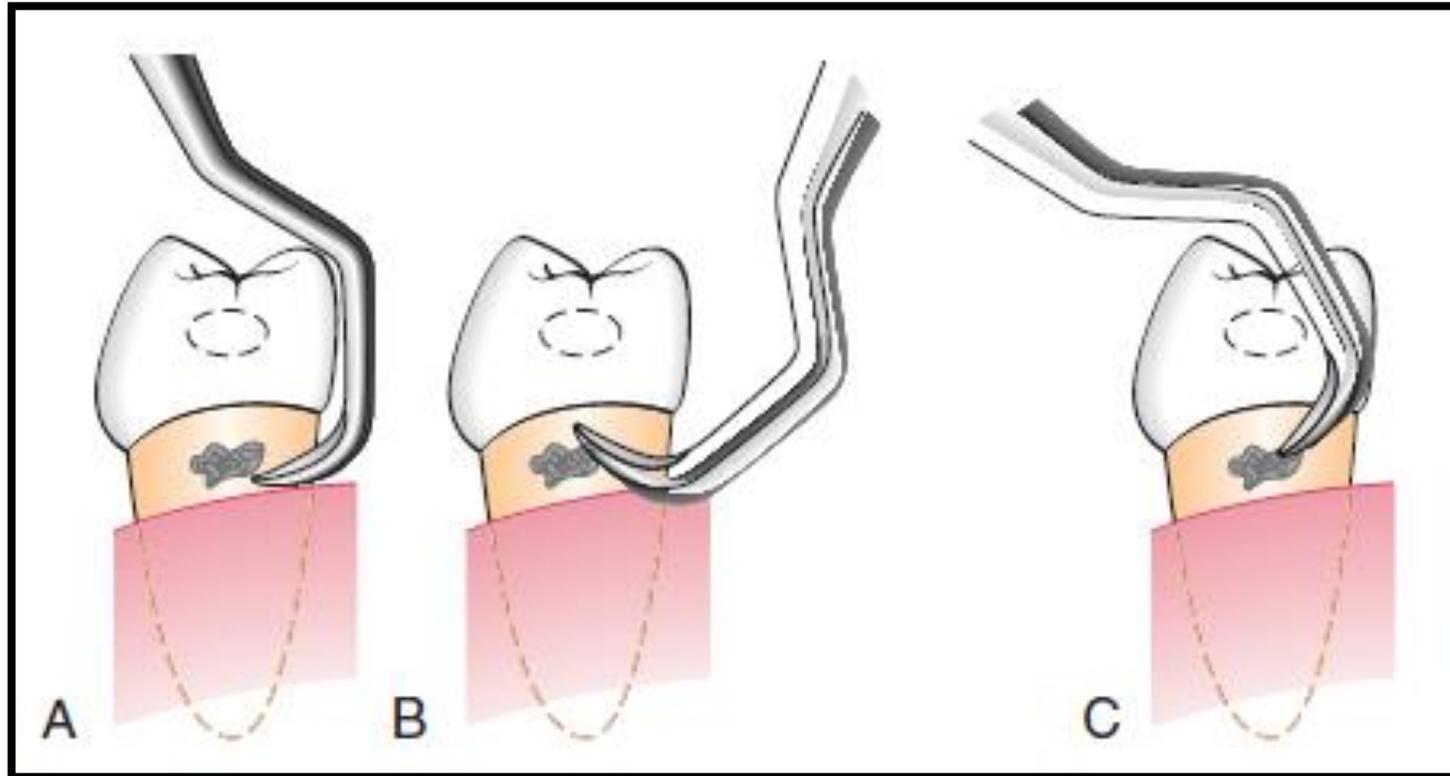
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- ❑ To perform supragingival scaling
  - The sickle or curette is held with a modified pen grasp, and a firm finger rest is established on the teeth adjacent to the working area.
  - The blade is adapted with an angulation of slightly less than 90 degrees to the surface being scaled.
  - The cutting edge should engage the apical margin of the supragingival calculus while short, powerful, overlapping scaling strokes are activated coronally in a vertical or oblique direction.
- ❑ Ultrasonic scaling should be followed by careful assessment with an explorer and further instrumentation with curettes when necessary.





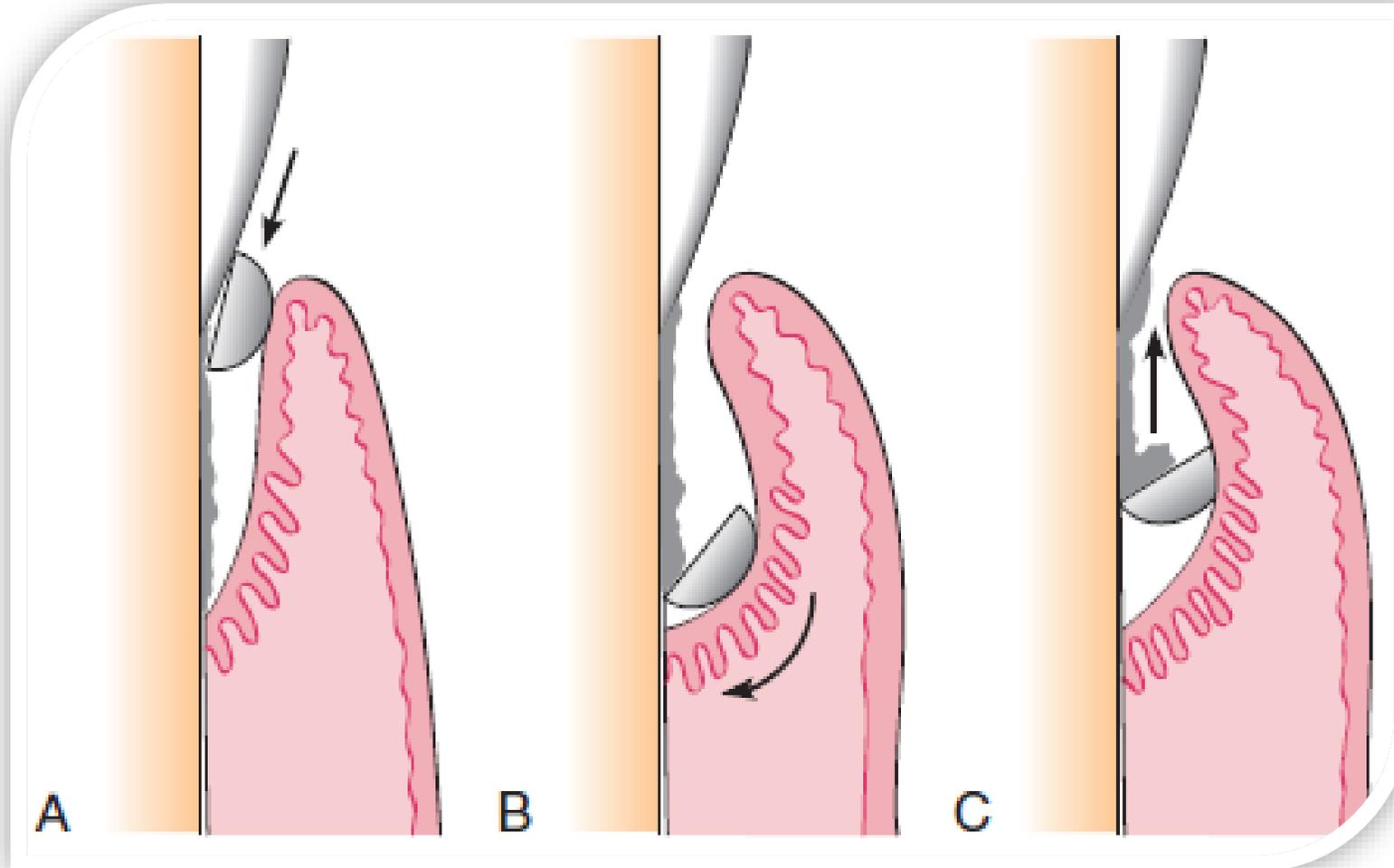
**Instrumentation for calculus removal.** (A) Calculus is removed by engaging the apical or lateral edge of the deposit with the cutting edge of a scaler; vertical movement of the instrument will remove the fragment of calculus engaged by the instrument, as seen in the *shaded drawing*. (B) The instrument is moved laterally and again engages the edge of the calculus, thus overlapping the previous stroke to some extent; the *shaded drawing* shows further removal. (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



**Shank position for scaling proximal surfaces.** (A) Correct shank position, parallel to the long axis of the tooth. (B) Incorrect shank position, tilted away from the tooth. (C) Incorrect shank position, tilted too far toward the tooth. Sextant: lingual aspect.

# Subgingival Scaling and Root-Planing Technique

- ❖ **Subgingival scaling and root planing are accomplished with either universal or area-specific (Gracey) curettes by using the following basic procedure:**
  - The curette is held with a modified pen grasp, and a stable finger rest is established.
  - The correct cutting edge is slightly adapted to the tooth, with the lower shank kept parallel to the tooth surface.
  - The lower shank is moved toward the tooth so that the face of the blade is nearly flush with the tooth surface.
  - The blade is then inserted under the gingiva and advanced to the base of the pocket by a light exploratory stroke.
  - When the cutting edge reaches the base of the pocket, a working angulation of between 45 and 90 degrees is established, and pressure is applied laterally against the tooth surface. Calculus is removed by a series of controlled, overlapping, short, powerful strokes primarily using wrist-arm motion.
  - Longer, lighter root-planing strokes are then activated with less lateral pressure until the root surface is completely smooth and hard.



**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.

# The examples shown provide maximal efficiency for the clinician and comfort for the patient

## Maxillary right posterior sextant (facial aspect)

- Operator position: Side position.
- 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: facial aspect.**

## Maxillary right posterior sextant: Lingual aspect

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- Operator position: Side or front position.
- 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 right posterior sextant: lingual aspect.**

# Maxillary anterior sextant: facial aspect

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- Operator position: Back position.
- 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 away from the operator.**

## Maxillary anterior sextant: Lingual aspect, surfaces away from the operator

- Operator position: Back position.
- 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 anterior sextant: lingual aspect, surfaces away from the operator (surfaces toward the operator are scaled from a front position).**

# Bibliography

- *Newman and Carranza's Clinical Periodontology, THIRTEENTH EDITION.*

thank  
you