Principles of Periodontal Instrumentation

Periodontology I - 4th year
23/2/2012
Dr. Murad Shaqman
Outline

- Classification of periodontal instruments
- General principles of instrumentation
- Principles of scaling and root planing
- Ultrasonic and sonic instruments
- Instrument sharpening
Classification of periodontal Instruments

1. Periodontal probes.
2. Explorers
3. Scaling, root planing and curettage instruments
4. The Periodontal Endoscope.
5. Cleaning and polishing instruments
Parts of Periodontal Instruments

- Blade
- Handle
- Shank
Periodontal Probes

- Used to locate and measure the periodontal pocket and determine its configuration.
- Typically tapered, rodlike instrument calibrated in millimeters, with a blunt, rounded tip
- Furcation areas ==> Nabers probe
Periodontal Probes

A  B  C  D  E
Periodontal Probes

- Nabers probe
Explorers

- Used to locate subgingival deposits and carious areas and to check the smoothness of the root surfaces after root planing.
- Designed with different shapes and angles
Explorers
Scaling and curettage

Instruments

A

B

C

D

E
Scaling and curettage

Instruments

- Sickle scalers:
  - flat surface
  - 2 cutting edges
  - pointed tip
  - triangular cross section
Scaling and curettage

Instruments

- Sickle scalers:
  - supra-gingival scaling
  - available in different sizes and shank types
  - straight and curved shanks
Scaling and curettage
Instruments

- Curettes:
  - removes:
    - sub G calculus
    - root planing
    - gingival curettage
Scaling and curettage

Instruments

Curettes:

- universal or site-specific
- round tip
- semicircular cross section
Scaling and curettage

Instruments

- Curettes:
  - Universal:
    - 2 cutting edges
    - used on any tooth surface
    - blade curves in one plane only
  - Area-specific (Gracey)
    - site-specific
    - single cutting edge
    - blade curves in 2 planes
    - blade is offset/ beveled 60 to the terminal shank
Scaling and curettage

Instruments
Scaling and curettage

Instruments
Scaling and curettage
Instruments

- **Universal curettes:**
Scaling and curettage

Instruments

- Gracey curettes:
  - #1-2 (anterior teeth)
  - #3-4 (anterior teeth)
  - #5-6 (anterior and PM teeth)
Scaling and curettage

Instruments

- **Gracey curettes:**
  - #7-8 (posterior teeth; facial and lingual)
  - #9-10 (posterior teeth; facial and lingual)
  - #11-12 (posterior teeth; mesial)
  - #13-14 (posterior teeth; distal)
Scaling and curettage

Instruments

- Gracey curettes:
  - Modifications:
    - Rigid/Finishing shank
    - After-five curettes
    - Mini-five
    - Micro Mini five
Dental Endoscope

- **Perioscope**
  - identify:
    - deep subgingival deposits,
    - open margins
    - caries, ...

(Courtesy Perioscopy Incorporated, Oakland, CA)
Cleaning & Polishing Instruments

- Rubber cups
- Bristle brushes
- Polishing tape
- Air-powder polishing
General principles of Instrumentation

- Proper position of the patient and the operator
- Visibility, illumination and retraction
- Condition and sharpness of instrument
General principles of Instrumentation

- Proper position of the patient and the operator:
  - feet flat on the floor
  - thighs parallel to the floor
  - back and neck straight
  - resting elbows close to the patient’s mouth
  - Patient in supine position
General principles of Instrumentation

- Visibility, Illumination & Retraction
  - direct or indirect vision
  - direct or indirect lighting
  - retraction with mirror or index or both.
General principles of Instrumentation

- Condition & Sharpness of the Instruments
  - dull instruments:
    - fatigue
    - burnishing of calculus
Other aspects...:

- Maintain a clean field
- Effective suction
- Gauze, cotton rolls
General principles of Instrumentation

- Other aspects...:
  - Instrument stabilization:
    - instrument grasp
    - finger rest
General principles of Instrumentation

Other aspects...:

- Instrument activation:
  - adaptation
  - angulation
  - lateral pressure
  - strokes
General principles of Instrumentation

- Other aspects...:
  - Instrument activation:
    - adaptation
    - angulation
    - lateral pressure
    - strokes
General principles of Instrumentation

- Other aspects...:
  - Instrument activation:
    - adaptation
    - angulation
    - lateral pressure
    - strokes
principles of Scaling and Root Planing

- **Scaling**: the process by which biofilm and calculus are removed from both supragingival and subgingival tooth surfaces. No deliberate attempt is made to remove tooth substance along with the calculus.

- **Root planing**: the process by which residual embedded calculus and portions of cementum are removed from the roots to produce a smooth, hard, clean surface.
Scaling & root planing (SRP) are not 2 separate procedures.

Proficiency in SRP is difficult and takes exercise.

Tactile and visual detection

Left-over calculus results in persistent inflammation and BOP
Ultrasonic and sonic instruments

- **Sonic**: consist of a handpiece that attaches to a compressed-air line and uses a variety of specially designed tips. Vibrations at the sonic tip range from 2500 to 7000 Hz.

- **Ultrasonic**:
  - Magnetostrictive: Cavitron® (elliptical)
  - Piezoelectric: Piezon®, P5 Newtron® (linear)

- Alternating electrical current generates oscillations in materials in the handpiece that cause the scaler tip to vibrate.

  - Vibrations range from 18,000 to 50,000 Hz.
Ultrasonic and sonic instruments

- **Ultrasonic SRP:**
  - No difference between hand & US instruments, choice depends on clinical situation and clinician’s judgement and experience.
  - US perform better in removing calculus from furcations.
Ultrasonic and sonic instruments

- **Ultrasonic SRP:**
  - Contraindications:
    - Pacemakers??
    - Patients with communicable diseases
    - Respiratory disease of immunosuppressed
    - Dental implants
Instrument Sharpening

http://youtu.be/YRH4OJW0VCA
The End