

*Principles*

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J.P. Nagar I Phase,

Bangalore - 560 078.

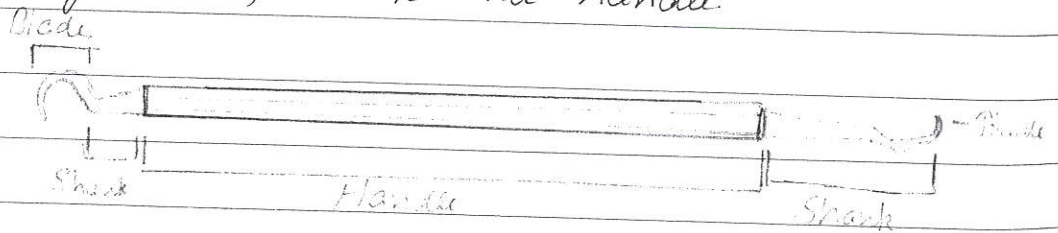
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- Ultrasonic and sonic instruments - used for scaling and cleaning tooth surfaces and smoothening soft tissue wall of periodontal pocket.

iv) Periodontal endoscopes - used to visualize deeply into subgingival pockets and furcations allowing detection of deposits.

v) Cleaning and polishing instruments - such as rubber cups, brushes, dental tape are used to clean and polish tooth surfaces. Also available are air powder abrasive systems for tooth polishing.

→ The parts of each instrument are referred to as working end, shank and handle.



→ Periodontal probes

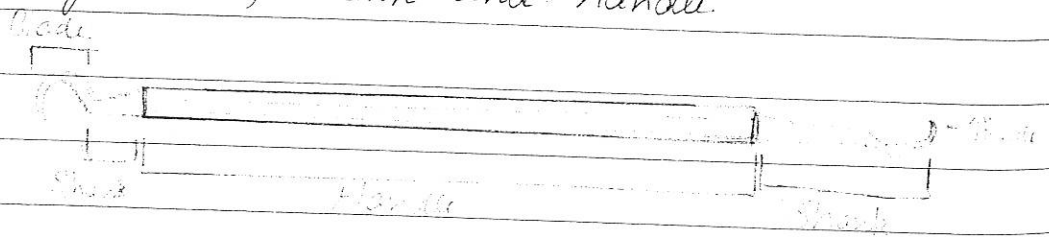
- Periodontal probes are used to measure depth of pockets and to determine their configuration.
- The ~~typical~~ typical probe is a tapered, rodlike instrument calibrated in millimeters, with a blunt, rounded tip. There are several other designs with various millimeter calibrations.

- Ultrasonic and sonic instruments - used for scaling and cleansing tooth surfaces and wetting soft tissue wall of periodontal pocket

iv) Periodontal endoscopy - used to visualize deeply into subgingival pockets and furcations allowing detection of deposits.

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→ Periodontal probes

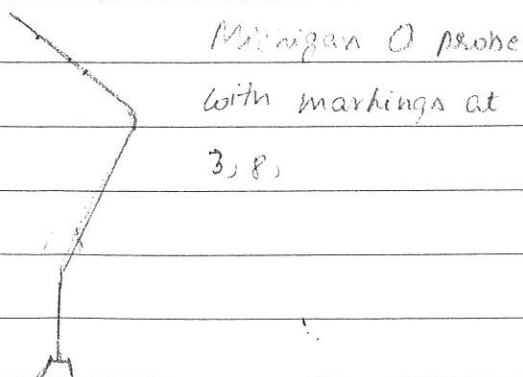
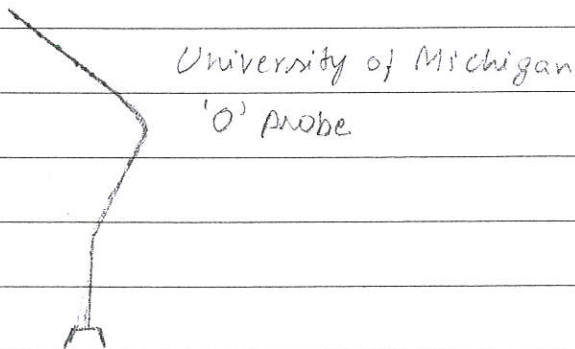
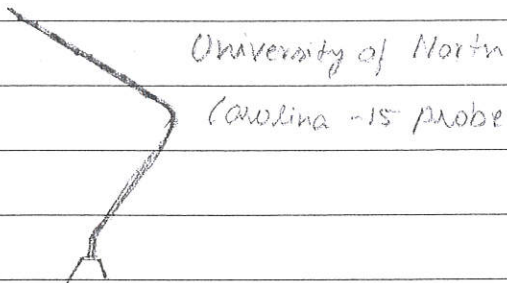
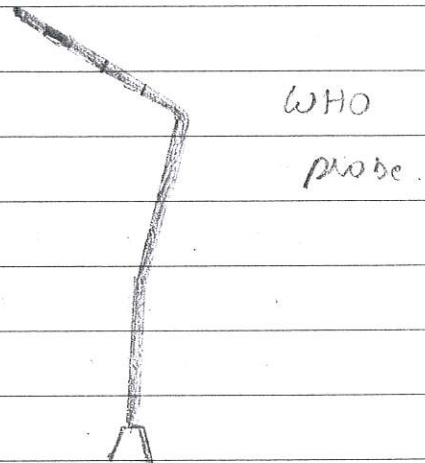
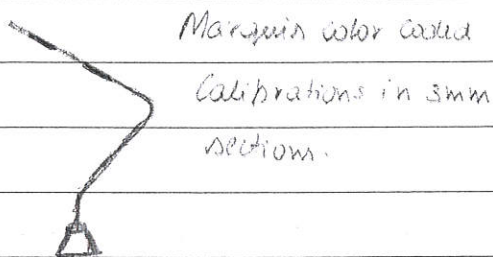
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- The WHO probe has millimeter markings and a small round ball at the tip. Ideally these probes are thin and shank is angled to allow easy insertion into pocket. Furcation areas can best be evaluated with curved, blunt Nabers probe.



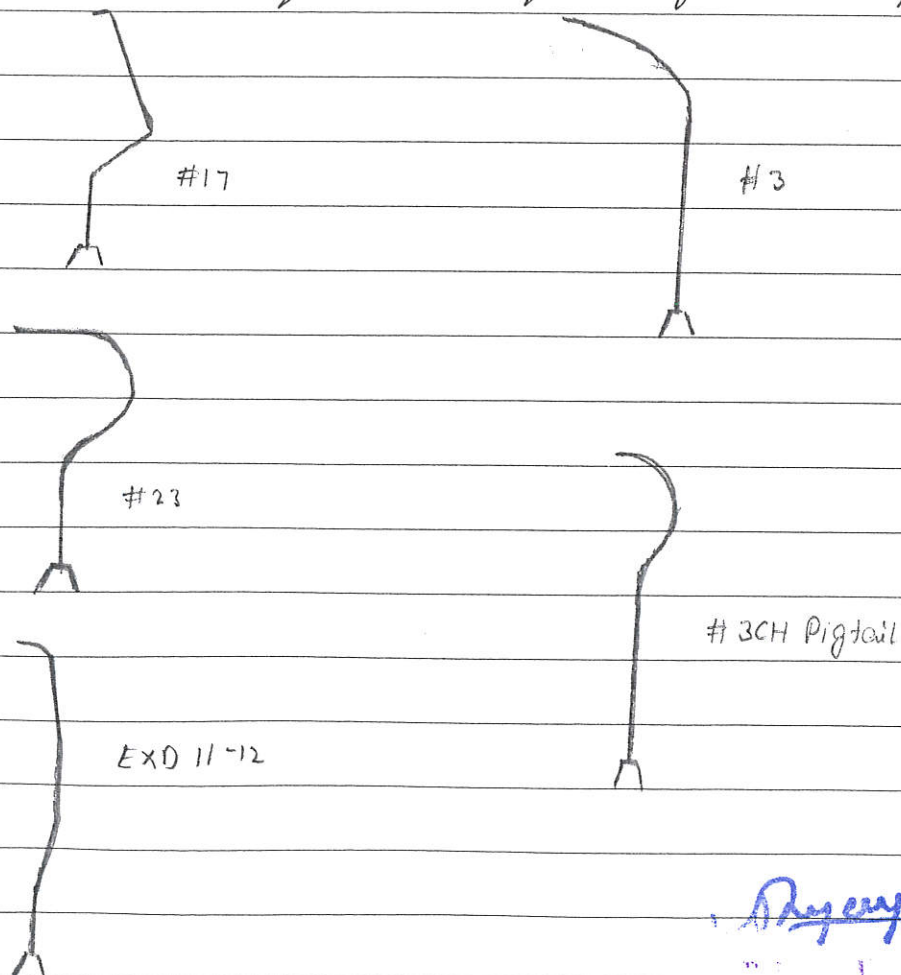
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When measuring a pocket, probe is inserted with a firm, gentle pressure to the bottom of pocket. The shank should be aligned with long axis of tooth surface to be probed. Several measurements are made to determine the level of attachment along surface of tooth.

→

### Explorers

Explorers are used to locate subgingival deposits and carious areas and to check the smoothness of root surfaces after root planning.



*Dr. Jayaram*

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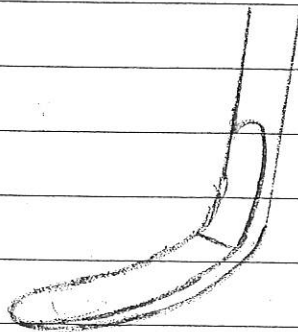
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ii)

Curettes - is the instrument of choice for removing deep gingival calculus, root ~~pa~~ planing altered cementum and removing soft tissue lining periodontal pocket.

- Each working end has a cutting edge on both sides of blade and rounded toe.
- The curette is finer than the sickle scalers and does not have any sharp points or corners other than the cutting edges of blade.
- Curettes can be adapted and provide good access to deep pockets with minimal soft tissue trauma.
- In cross section, blade appears semicircular with a convex base. The lateral border of convex base forms a cutting edge with face of semicircular blade. Thus are cutting edges on both sides of blade.
- Curved blade and rounded toe of curette allow blade to adapt better to root surface unlike the straight design and pointed end of sickle scaler, which can cause tissue laceration and trauma.



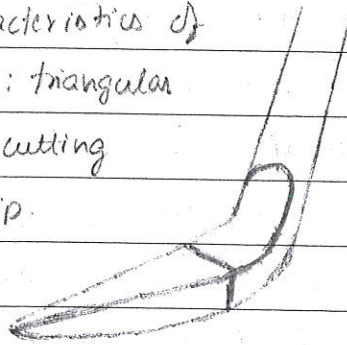
Basic characteristics of a curette : spoon shaped blade and rounded tip

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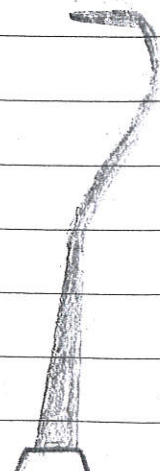
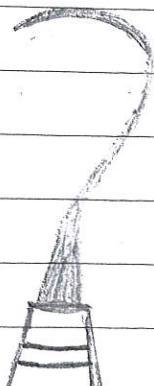
blades.

- The Montana Jack sickle scaler and Nevi 2, Nevi 3, Nevi 4 curved posterior sickle scalars are all thin enough to be inserted several millimeters subgingivally for removal of light to moderate ledges of calculus. The section of these instruments should be based on area to be scaled.
- Sickle scalars with straight shanks are designed for use on anterior ~~to~~ teeth and premolars.
- Sickle scalars with contraangled shanks adapt to posterior teeth.

Basic characteristics of a sickle scalar: triangular shape, double cutting edge, pointed tip.



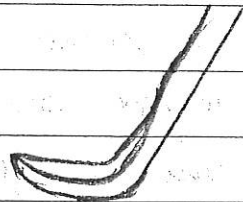
Both ends of a U15/30 scalar



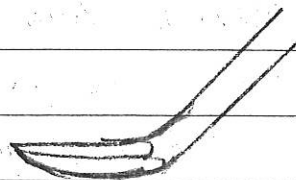
*Prayansh*

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→ Scaling and curettage instruments



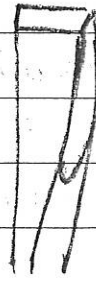
Curette



Sickle



File



Chisel



Hoe

- i) Sickle scalers - they have a flat surface and two cutting edges that converge in a sharply pointed tip. The shape of instrument makes the tip strong so that it will not break off during use. The sickle scaler is used primarily to remove supragingival calculus. Due to the design of this instrument, it is difficult to insert a large blade under gingiva without damaging the surrounding gingival tissues. Small, curved sickle scaler blades such as 204SD can be inserted under ledges of calculus several millimeters below gingiva. Sickle scalars are used with a pull stroke.
- Sickle scaler with same basic design can be obtained with different blades sizes and shank types to adapt to specific uses.
  - The 015/30, ball, and Indiana University sickle

2 basic types of currettes — Universal currettes

↳ Area specific currettes

— Universal currettes

- They have cutting edges that may be inserted in most areas of dentition by altering and adapting finger rest, fulcrum and hand position of operator.
- The blade size and angle and length of shank may vary, but face of blade of every ~~and~~ universal curette is  $90^\circ$  angle to lower shank.
- The blade is curved in one direction from head to toe of blade.

Ex: Barnhart currettes # 1-2 and 5-6

Columbia currettes # 13-14 and 2R-22 and 4R-4L

Younger Good # 7-8

McCall's # 17-18

Indiana University # 17-18

— Area specific currettes

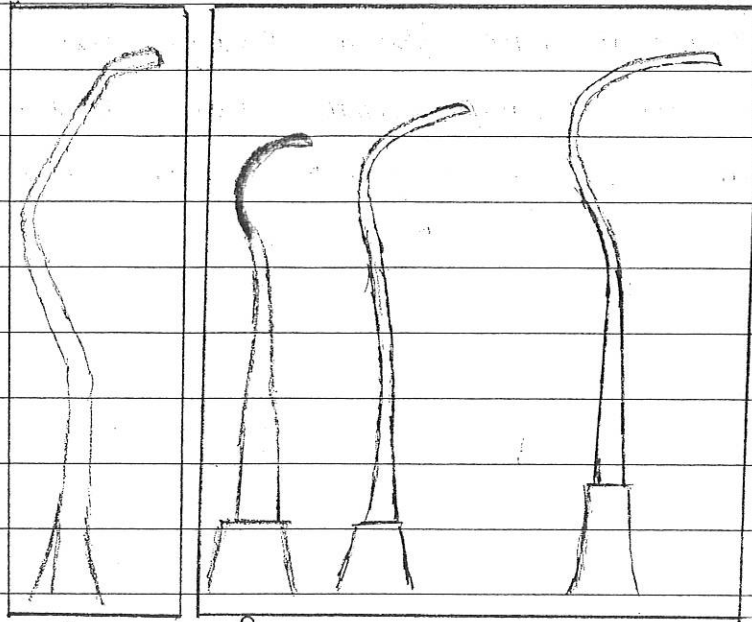
a) Gracey currettes

- Designed and angled to adapt to specific anatomical areas of dentition.
- Best instruments for subgingival scaling and root planing because they provide best adaptation to complex root anatomy.
- Double ended gracey currettes are paired as follows: -



Combined with versatility of universal uncutte blade.

→ Universal uncuttes



Columbia #4R-4L  
universal uncutte

Younger Good #78

McCall's #17-18

Indiana University #17-18

→ Gracy uncutte



Gracy #17-12

- For heavy and tenacious calculus removal, rigid after 5 curettes should be used
- For light scaling or ~~depolimerization~~ deplaqueing in a periodontal maintenance patient, the thinner, finishing after 5 curettes will insert subgingivally more easily.

c) Mini bladed curettes

- Modifications of after 5 curettes
- Blades are half the length of after 5 or standard Gracy curettes.
- Shorter blade allows easier insertion and adaptation in deep narrow pockets, furcations, developmental grooves, line angles and deep, tight, facial, lingual or palatal pockets.
- In any area in which root morphology or tight tissue prevents full insertion of standard Gracy or after 5 curette blade, the mini five curettes can be used with vertical strokes with reduced tissue distention and without tissue trauma.

d) Langer and Mini Langer Curette

Set of 3 curettes combining the shank design of the standard Gracy curette with a universal blade honed at  $90^\circ$  rather than offset blade of Gracy curette. This marriage of Gracy and universal curette designs allows advantage of area specific shank to be

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- Gracey # 1-2 and 3-4 : anterior teeth
- Gracey # 5-6 : anterior teeth and premolars
- Gracey # 7-8 and 9-10 : posterior teeth : facial and lingual
- Gracey # 11-12 : posterior teeth : mesial
- Gracey # 13-14 : posterior teeth : distal.

Comparison of area specific (gracey) and universal currettes

	<u>Gracey curette</u>	<u>Universal currettes</u>
1	Area of use Set of many currettes designed for specific area and surfaces	One curette designed for all areas and surfaces.
2	Cutting edge use One cutting edge used, work with other outer edge only	Both cutting edges used work with either outer or inner edge.
3	Curvature Curved in 2 planes, blades curve up and to side	Curved in 1 plane, blade curves up, not to side
4	Blade angle Offset blade, face of blade beveled at 60° to shank	Blade not offset, face of blade beveled at 90° to shank

b) Extended shank currettes

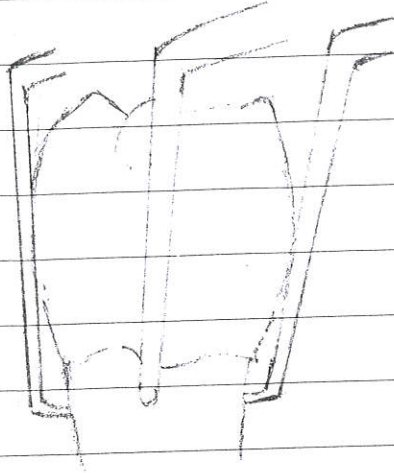
- Modification of standard Gracey curette design.
- Terminal shank is 3mm longer, allowing extension into deeper periodontal pocket of 5mm or more
- The after 5 currettes are available in finishing or rigid designs.

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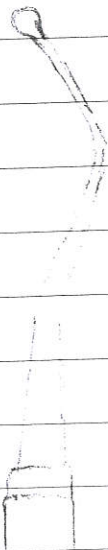
File Scalers



→ Files

- They have a series of blades on a base. Their primary function is to fracture or crush large deposits of tenacious calculus or burnished sheets of calculus.
- Files can easily gouge and roughen root surfaces when used improperly. Therefore, they are not suitable for fine scaling and root planing.
- Minibladed currettes are currently preferred for fine scaling in areas where files were once used.
- Files are sometimes used for removing overhanging margins of dental restorations.

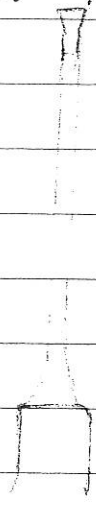
File scaler



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→ Chisel scaler

- Designed for proximal surfaces of teeth too closely spaced to permit use of other scalars, is usually used in anterior part of mouth.
- It is a double ended instrument with a curved shank at one end and a straight shank at other; the blades are slightly curved and have a straight cutting edge ~~but~~ beveled at 45°.



→ Guertin Furcation Curettes

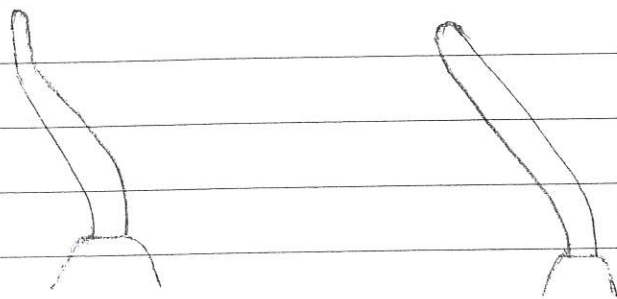
- Actually has with a shallow, half moon radius that fits into roof or floor of furcation.
- Curvature of tip also fits into developmental depressions on the inner aspects of roots.
- These remove burrished calculus from recessed areas of furcation when curettes, even the mini bladed curettes are often too large to gain access.

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### → Schwartz ~~Perio~~ Periotriever

- Set of 2 double ended highly magnetized instruments designed for retrieval of broken instrument tips from periodontal pocket.
- They are indispensable when clinician has broken a curette tip in a furcation or deep pocket.



Schwartz Periotriever tip design

### → Hoar scalers

- Used for scaling of ledges or rings of calculus.
- Blade is bent at 90° angle
- Cutting edge is beveled at 45°.
- Used in following manner:-
  - Blade is inserted to base of periodontal pocket so that it makes two point contact with tooth. This stabilizes instrument and prevents nicking of root
  - The instrument is activated with a firm pull stroke forward down, with every effort being made to preserve the 2 point contact with tooth

6 hoar scalers:-

- McCall's #3, 4, 5, 6, 7, 8

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→ Diamond - coated files

- Used for final finishing of root surfaces
- They do not have cutting edges but are coated with very fine grit diamond.
- New diamond files are sharply abrasive and should be used with light, even pressure against root surface to avoid gouging or grooving.
- Can produce a smooth, even, clean and highly polished root surface.

→ Ultra sonic

→ Ultrasonic and sonic instruments

- Used for removing plaque, scaling, wetting and removing stain.

i) Dental endoscopus

- Introduced for use subgingivally in diagnosis and treatment of periodontal disease
- It permits operators to detect presence and location of subgingival deposits and guides them in through removal of deposits.
- Magnification ranges from 34 to 48 times, enabling visualization of even minute deposits of plaque and calculus.
- Using this device, operators can achieve levels of root debridement and cleanliness that are much more difficult or impossible to produce without it.
- The perioscopy system can also be used to evaluate subgingival areas for caries, defective

Area should be cleaned with warm water to remove all remnants of paste.

### - Air powder polishing

The device, Prophy-Jet is very effective for removal of extrinsic stains and soft deposits.

The slurry of warm water and sodium bicarbonate, removes stains rapidly and efficiently by mechanical abrasion and provides warm water for rinsing and lavage.

### → Surgical instruments

#### 1 Excisional and incisional instruments:

##### a) Periodontal knives (gingivectomy knives)

- The Kirkland knife is representative of knives that are used for gingivectomy

- Either single ended or double ended

##### b) Intudental knives

- Ex: Orban knife, Merifield knife

- Used for interdental areas

- Either double ended or single ended

##### c) Surgical blades

- Most common - 12D, 15 and 15C

↳ beak shaped - for pushing and pulling cutting motions

15 - For thinning flaps

15C - scalloping type incision



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d) Surgical curettes and sickles

Used for removal of granulation tissue, fibrous interdental tissues, tenacious subgingival deposits.

Ex: Prichard curette  
Kirkland

Heavy curettes

Ball scaler B2 and B3 - heavy sickle

e) Periosteal elevators

- Used to reflect and move flap after incision for flap surgery.

Ex: Woodson

Prichard

f) Surgical chisels

Back action chisel - pull motion

Straight chisel - push motion

Ex: Wedelstaedt, Ochsenbein, Rhodes chisel

g) Tissue forceps

Used to hold flap during suturing, and to displace flap after flap has been reflected.

Ex: DeBakay forceps

h) Scissors and Nippers

Used to remove tabs of tissue during gingivectomy, to trim margins of flap, to enlarge incisions in periodontal abscesses and to remove muscle attachments in

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restorations, root fractures and resorption.

→ Cleansing and polishing instruments

- Rubber cups:-

Consists of rubber shell with or without webbed configurations in hollow interior.

Used in handpiece with a special prophylaxis angle. A good cleansing and polishing paste that contains fluoride should be used and kept moist to minimize frictional heat as cup revolves.

Aggressive use of rubber cups with any abrasive may remove layer of cementum which is thin in cervical area.

- Bristle brushes

Available in wheel and cup shapes

Used in prophylaxis of angle with a polishing paste. Since bristles are stiff, use of brush should be confined to crown to avoid injuries to cementum and gingiva.

- Dental tape

Along with polishing paste is used for polishing proximal surfaces that are inaccessible to other polishing instruments.

Tape is passed interproximally while being kept at right angle to long axis of tooth.

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muco gingival surgery.

Ex: Goldman - Fox no. 16

i) Needleholders

- Used to suture flaps at desired position after surgical procedure has been completed.

- Castrovieja needleholder - used for delicate, precise techniques.

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