

## Instruments used for scaling & root planing are classified as:

- ❖ Hand instruments.
- ❖ Ultrasonic & sonic instruments.
- ❖ Motor driven devices incorporating diamond coated tips.
- ❖ Rotating instruments.
- ❖ Laser instruments.

**Hand instruments:** A hand instrument is composed of three parts:

- The working part (the blade) which is often made of carbon steel, stainless or tungsten carbide.
- The shank.
- The handle.

**Curettes:** are fine instruments used for sub gingival S&RP thus designed to adapt to the root surfaces and good access to deep pockets without causing trauma to the soft tissue. When curette is used it should be hold in modified pen grasp with finger rest support, the curette is gently inserted into the pocket with its distal end facing the soft tissue, when the instrument reach the base of the pocket, it turned to cutting position and moved coronally with a pulling stroke (scaling stroke), that followed by moderate to light pulling stroke (finishing stroke) to produce a smooth surface. Curette have spoon shaped blade with a rounded tip. There are 2 types of curettes

1. Universal curettes: have 2 cutting edges that afford access to all areas and root surfaces by altering their position and angulation.
2. Area specific curettes: a set of many curettes with only one cutting edge are designed to adapt to specific areas of the dentition and instrument specific root surfaces (e.g. Gracey curettes).

**Sickles:** the sickle is manufactured with either a curved or a straight blade which has triangular cross section and 2 cutting edges that converge into a sharp tip. They should not use subgingivally as they will traumatize the gingiva.

**Hoes:** has only one cutting edge. The blade is turned at a 100 angle to the shank with the cutting edge beveled at a 45 angle. The blade can be positioned at 4 different inclinations in relation to the shank: facial, lingual, distal and mesial. Two of them used for anterior and two for posterior teeth. The hoes are used for subgingival scaling by insertion the blade to the base of the periodontal pocket then a firm pull stroke toward the crown is activated.

**Chisel:** is designed for the proximal surfaces of the spaced anterior teeth. The blades are slightly curved and have a straight cutting edge beveled at 45. the chisel is inserted from the facial surfaces and activated with a push motion.

**Cumine:** is used for the removal of supragingival calculus with pulling action, and manufactured with two ends; spoon shape end for labial / buccal and lingual / palatal surfaces and sickle shape end for interproximal surfaces.

### **Ultrasonic scalers:**

Ultrasonic scalers convert electrical current to mechanical energy into the form of high frequency vibrations at the instrument tip (the vibration frequencies ranging from 18000\_45000 HZ) that lead to fracture & dislodge the calculus.

**Sonic scalers:** use air pressure to create mechanical vibration of the instrument tip (frequencies of vibration ranging from 2000-6000 HZ); thus it is considerably slower than ultrasonic scalers. Studies demonstrated that scaling with hand & ultrasonic instruments are equally effective.

Ultrasonic scalers are, contraindicated in

1. Individuals with infectious disease due to the risk of airborne infection.
2. Individuals with cardiac pacemaker & hearing aids.
3. Individuals with strong gag reflex.
4. Young children.
5. Individuals who experience pain on use.

### **The advantages of ultrasonic scalers over hand instruments:**

1. requires less effort, less pressure, less trauma & less time; thus, it is quicker, simple & better for the patients comfort.
2. stain removal easier.
3. water spray cleans the area of loose debris.

### **Disadvantages of ultrasonic instruments:**

1. Production of heat, thus requires coolant water spray.
2. Good suction is required.
3. Loss of visibility due to coolant spray.
4. Water spray droplets will contain microorganisms from the mouth & these droplets remain in the air for some time which leads to the risk of airborne infections.
5. Loss of tactile sensation that may produce uneven root surfaces.
6. Interfere with cardiac pacemaker and hearing aids.

7. Damage of restoration (porcelain).
8. Enamel abrasion.
9. Pain and patient discomfort.

**Reciprocating instruments:** a special designed hand piece will give 20000\_30000 strokes per min.with a 1.2mm reciprocating motion of a specially designed working tips for S & RP, less time consuming than hand instrument, less root surfaces loss and produce equivalent clinical outcome compared to hand, sonic or ultrasonic scalers.

**Rotating instruments:** used to debride root furrows, furcation areas and root surfaces in deep narrow pockets because in these situations cannot be properly debride with hand inst.afine grained diamond bur is usually used with great care to avoid excessive removal of tooth substances.

**Laser:** recently laser devices been introduced to be used in different aspects of periodontal therapy including S &RP.

**Polishing:** technique used to remove plaque, pellicle, materia alba, exogenous stain and to produce smooth surface thus reduce surface roughness ,by using rubber cup ,brushes on a slow speed hand piece ,dental tape, air powder abrasive system and prophylaxis pastes that contain fluoride should be used ;and kept moist to minimize friction heat.

### **Evaluation of the effect of the initial, cause-related therapy:**

Reevaluation of the patient's periodontal conditions & caries activity should be performed no earlier than 6-8 weeks following the last session of the S&RP procedures, in order to provide time for the tissues to heal by the formation of a long junctional epithelium & sufficient practice with oral hygiene skills.

Clinical attachment level (CAL); is the distance from the cementoenamel junction (CEJ) to the location of inserted periodontal probe tip (bottom of gingival crevice or periodontal pocket).

When we evaluate the results of our treatment, we can see one of the following conditions:

1. Patient with improved oral hygiene, no gingival inflammation, no bleeding on probing with marked reduction in probing pocket depth, in such situation no further periodontal treatment is required and the patient directly advanced to maintenance phase of periodontal therapy.
2. Patient with proper standard of oral hygiene but having some sites of bleeding on probing with no significant reduction in probing depth. Such patient may need to be advanced to corrective phase including the periodontal surgery.

3. Patient with inadequate oral hygiene due to lack of motivation or lack of ability to do proper home care, such patient should be remotivated and reinstructed to improve their oral hygiene because if the oral hygiene not improved the periodontal disease will recurrent even if we conduct periodontal surgery.

**Periodontal instruments are classified according to the purposes they serve as follows:**

1. Periodontal probes are used to locate ,measure and mark pockets as well as determine their course on individual tooth surfaces,usually long, thin,and blunted at the end
2. Explorer are used to locate calculus deposits and caries.

**Periodontal probes:**

- a. marquis colour couded probe.
- b. Unc\_15 probe.
- c. University of Michigan “o” probe.
- d. Michigan “o”probe with marking 3,6 and 8.
- e. W.H.O. probe.
- f. NABERS PROBE.

**Kinds of grasp:**

**1. Standerd pen grasp**

The side of the middle finger rests on the shank.

**2. Palm and thumb grasp:**

Used for stabilizing instruments during sharpening and manipulating air and water syringe,but not recommended for periodontal instrumentation.

**3. Modified pen grasp**

-most effective and stable grasp.

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

-produces tripod effect which

- a. enhances control.
- b. enhances tactile sensitivity.