

NON SURGICAL PERIODONTOL THERAPY

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Abstract: Nonsurgical therapy for the control of periodontitis consists of sub-gingival debridement, with oral hygiene instructions. Sub-gingival debridement without oral hygiene measures results in a limited healing response. Instruction on oral hygiene in the absence of sub-gingival debridement results in a suboptimal response clinically. The basic approach to periodontal infection has always been the removal of supra & sub-gingival bacterial deposits by scaling & root planning. Certain other aids such as the irrigants which are used by home or professional methods are also there other than mouth washes and systemic antibiotics. Newer advancements such as the local drug delivery the vector system and the probiotics also help in improving the maintenance of the oral hygiene status.

Keywords: periodontitis, scalers, curettes, subgingival debridement, local drug.

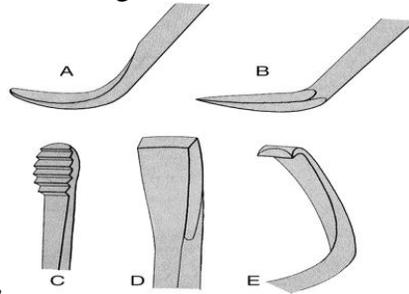
1. INTRODUCTION:

Scaling is the removal of plaque and calculus from both supra, subgingival tooth surfaces. Root planing is the residual embedded calculus and portion of altered cementum removal from the roots to produce a hard, smooth and cleansurface. Removal done with manual and mechanical methods. And there are availability of certain aids for maintenance

MECHANICAL: INSTRUMENTATION:

Manual scalers: **Sickle Scalers** have flat surface and two cutting edges which converge in sharply pointed tip. The sickle is used to remove supra-gingival calculus, used with pull stroke. **Hoe scalers** are used for scaling ledges of calculus. The cutting edge is formed by joining flattened terminal surface with blade's inner aspect. The cutting edge is bevelled at 45 degrees. **Files:** Files have a base with series of blades. The primary function of them is to crush, tenacious calculus. Files are used for removing overhanging margins of dental restorations. **Chisel Scalers:** for the proximal surfaces of teeth which are too closely spaced. They are

usually used in the anterior region. The blades are slightly curved with straight cutting edge



bevelled at 45 degrees.

FIG 1 A-CURETTE, B-SICKLE SCALER, C-FILES, DCHISEL, E- HOE, Pc:google.com

Universal Curettes:

are inserted in most areas of dentition. The face of blade is at a 90-degree angle to lower shank when seen in cross section from the tip whereas its size blade and the angle and length of shank may vary. **GRACEY CURETTES** are best instruments for sub-gingival scaling and root planing since they provide best adaptation. Double-ended Gracey curettes are paired as such: Gracey #1-2, 3-4: Anterior #5-6: Anterior and premolars #7-8 and 9-10: Posterior : facial and lingual #11-12: Posterior : mesial #13-14: Posterior: distal Recent additions are #15-16 and 17-18. The Gracey #15-16 is modification of 11-12 and is designed for the mesial surfaces of posterior . It consists of Gracey #11-12 blade with acute angle and shank of #13-14



fig2: graceycurrettes set pc: google.com

EXTENDED SHANK CURETTES Extended shank curettes (after five) are modifications of standard Gracey. The terminal shank is 3mm longer allowing entry into deeper periodontal pockets. Other features include thinner blade for smoother and easier insertions subgingivally. **MINI BLADE CURETTE** such as HU- Friedy mini five are modification of after five , they feature blades which are half the length of after five or standard gracey. The shorter the blade the easier its insertion and adaptation in deep tight, facial, lingual palatal pockets. The mini five curettes are used with vertical strokes with reduced distension and tissue trauma. The mini five curettes are available as finishing and rigid design. (1).

SONIC & ULTRASONIC Power driven instruments consist of sonic and ultrasonic scalers. Generated to tip the ultrasonic devices convert alternating current into a frequency of 25,000 to 35,000Hz. Since heat is generated water is necessary to cool magnetostrictive stack. The ability

of magnetic field to change the length of ferromagnetic materials is the basis of magnetostrictive stack. In dental scaler, the hand piece contains a wire coil which produces a magnetic field when current is applied from unit generator. A hand piece insert consists of transducer which is being connected to working tip. The alternating electromagnetic field generated in the stack causes it to shorten by about one thousandth of an inch which then return to original length with high frequency thus producing an ultrasonic vibration in the working tip. **Piezoelectric units** are second generation ultrasonic devices which utilize a crystal of quartz. They generate lesser heat and hence no water coolant is needed. They have frequencies in range of 40,000 to 50,000 Hz and move in linear motion. The ability of crystals to produce negative as well as positive electrical charges on their surface when subjected to mechanical stress is called piezoelectric effect. The converse effect is being utilized in dental scaler where alternating electrical energy when applied to piezoelectric substance produces a great dimensional change, which can be then transmitted to working tip in the form of ultrasonic vibration. The Sonic devices operate at much lower frequency usually less than 6000 Hz and use air and water from dental unit. The ultrasonic vibrations of the working tip in contact with the tooth surface remove deposits of plaque and calculus.(2)

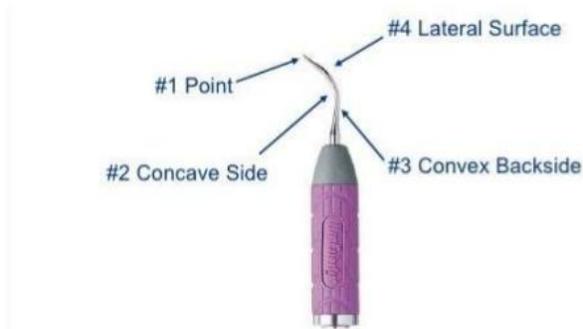


fig 3: ultrasonic scaler pc: google.com

IRRIGATION DEVICES Irrigation is targeted application of pulsated stream of water or other irrigants for therapeutic purpose. Oral irrigation is an adjunctive method for arrest and control of gingival infections which keep subgingival bacteria at levels compatible with oral health.(3)
1. SUPRAGINGIVAL IRRIGATION Here point of delivery of the irrigation is at or coronal to free gingival margin.
2. SUBGINGIVAL IRRIGATION Intentional irrigation of gingival crevice or periodontal pocket when the point of delivery is directed under gingival margin. Irrigation are further classified as a. Home irrigation professional irrigation .Based on the pressure: 1. Power-driven devices 2. Nonpower-driven devices
1. POWER-DRIVEN DEVICES The device generates intermittent or pulsating jet of fluid with adjustable dial for regulation of pressure, that delivers fluid through handheld interchangeable tip that rotates 360 degrees for application at gingival margin. It maintains steady flow or pulsation of irrigant from there reservoir. A reservoir container helps in measurement of antimicrobial or other agent.
2. NON-POWER-DRIVEN DEVICE The device attaches to household water supply. It delivers through handheld interchangeable tip that can be turned for application at gingival margin. Non pulsating flow of irrigant is present and the flow of the irrigant cannot be controlled.
SUPRAGINGIVAL IRRIGATION DEVICE The various jet tips available are 1. Monojet tips in which only low pressures are recommended. 2. Fractionated microjet tips .
SUBGINGIVAL IRRIGATION

DEVICES These devices use specialized tips. The various specialized tips available for home irrigation are 1. Soft rubber tip designed to be placed 2mm below the gingival margin. 2. Tapered plastic tip designed to be placed at the gingival margin.



FIG 4: WATERPIK IRRIGANT PC: google.com

MOUTHWASH:

Chlorhexidine was first developed as an antiseptic for skin wounds. The use of chlorhexidine in dentistry was initially for presurgical disinfection of the mouth. Chlorhexidine is an effective antimicrobial agent. Most products used digluconate salt, which are water soluble (4). **POVIDONE-IODINE** is an iodophor that consists of iodine and a solubilizing agent. No significant antiplaque effect when used as 1 % mouth wash. Iodine sensitivity is seen in sensitized individuals as water soluble combination of molecular iodine and soluble povidone. **PHENOLIC COMPOUNDS** Have been known over the years as germicidal and shown to be safe. The mode of action is against bacteria is complex and involves protein denaturation along with damage to the cell membrane which results in leakage of intercellular components. **LISTERINE MOUTHWASH** has antiplaque and anti-gingivitis action. It has thymol, eucalyptol, methylate, benzoic acid, boric acid and 20% alcohol. **Triclosan**: is a phenol derivative, recently been included in mouth rinses and tooth pastes in order to reduce plaque formation. It is synthetic, non-ionic and used as antimicrobial agent. Triclosan has a broad spectrum of activity on gram positive and negative bacteria, mycobacterium, anaerobes, spores



and fungi of Candida.

fig 5: mouth wash pc: google.com

SYSTEMIC ANTIBIOTICS:

Substances produced by various species of microorganisms that suppress growth of other microbes and eventually may destroy them. **MECHANISM OF ACTION** The aim of the antibiotics is to kill (bactericidal) or inhibit (bacteriostatic) invading bacteria without adversely affecting the patient. The different classes of antimicrobial agents achieve this selective toxicity in different ways. **DURATION OF THERAPY** A significant misconception in antibiotic therapy is that antibiotic use requires a complete course of therapy. The ideal duration is the shortest that will prevent clinical and micro-biological relapse.(5)

LOCAL DRUG DELIVERY:

The use of locally delivered antimicrobials is relatively new addition in management of periodontitis. Objectives of Local Drug Delivery and maintenance of therapeutic levels of drug, is to inhibit or kill the putative pathogen, to provide adequate concentration without any harm to tissues and can be used to deliver antimicrobials as part of regenerative periodontal therapy. **Indications:** A local route of drug delivery can attain 100 fold higher concentrations of antimicrobial agent in subgingival sites compared with systemic drug regimen. For E.g. Local placement of tetracycline releasing ethylene vinyl acetate monolithic fibre can yield tetracycline concentration in excess of 1300 µg/ml in GCF over 10 days. In comparison, repeated systemic doses of tetracycline HCl can only provide tetracycline levels of 4.8µg/ml in GCF.(6)



fig:6, placement of local drug .pc:google .com

HOST MODULATORY THERAPY:

Host modulatory therapy (HMT) is a treatment concept that aims to reduce tissue destruction and stabilize or even regenerate the periodontium by modifying the destructive aspects of the host response and levelling up the protective or regenerative responses. HMT's are systemically or locally administered pharmaceuticals that are prescribed as part of periodontal therapy and are used as adjuncts to conventional periodontal treatments, such as scaling and root planing (SRP) and surgery.

PHOTODYNAMIC THERAPY:

It could be used as alternative to conventional therapeutic methods. It essentially involves use of light activated drugs to kill periodontal pathogen. It also enhances reparative process, is anti-inflammatory in action and used in killing of tumour cells.

PROBIOTICS:

'probiotic' means 'for life' which is currently used when referring to bacteria associated with beneficial effects on humans and animals. Observations showing that relatively harmless bacteria can be introduced into indigenous microbiota of humans, either to enhance resistance or treat infections.(7)

VECTOR :

is a ultrasonic instrument which is characterized by a different working principle from conventional instrument, and it utilizes tips that oscillate in linear fashion parallel to root surface(8).

2. CONCLUSION:

Thus, nonsurgical therapy can help with prevention of periodontitis in the future and also while treating a periodontitis patient if the non surgical procedures are used as a adjunct with the surgical therapy and the maintenance is good, the prognosis will also be good.

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