GINGIVAL SURGICAL TECHNIQUE

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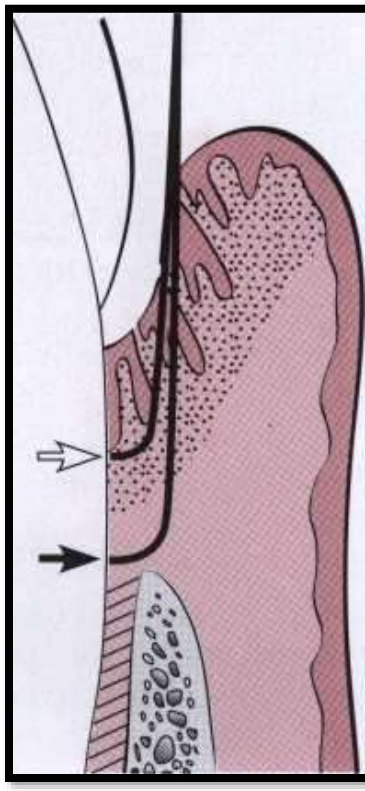
CONTENTS

- **Gingival curettage**
  - Rationale
  - Indications
  - Procedure
- Basic technique
- Other techniques
- Healing after scaling and curettage
- Clinical appearance after scaling and curettage

GINGIVAL CURETTAGE

- Curettage ⟹ Scraping of the gingival wall of periodontal pocket to separate diseased soft tissue .
- Scaling ⟹ Removal of deposits from the tooth surface
- Root planing ⟹ Smoothing the root to remove infected and necrotic tooth substance.

***Gingival curettage* :** Consists of the removal of the inflamed soft tissue lateral to the pocket



Subgingival curettage refers to the procedure that is performed apical to the epithelial attachment, severing the connective tissue attachment down to the osseous crest.

Some degree of curettage is done unintentionally when scaling and root planing is performed. This is called ***inadvertent curettage.***

RATIONALE

- Curettage accomplishes the **removal of the chronically inflamed granulation tissue** that forms in lateral wall of periodontal pocket.

- In addition to usual component of granulation tissues, it contains area of chronic inflammation, and pieces of **dislodged calculus and bacterial colonies.**

- Curettage may also **eliminate all or most of the epithelium that lines the pocket wall** and the underlying junctional epithelium.

However:

i. When the root is planed, the major source of bacteria disappears, and pathologic changes adjacent to bacteria resolves with no need to eliminate the inflamed granulation tissue by curettage.

ii. Curettage may not remove the pocket lining and junctional epithelium consistently.

iii. Curettage done in anterior esthetic zone may results in more shrinkage compared to root planing alone.

INDICATIONS:

- Curettage can be attempted as non definitive procedure to reduce inflammation prior to pocket elimination using other technique.

- In patients in whom more aggressive surgical techniques are contraindicated.

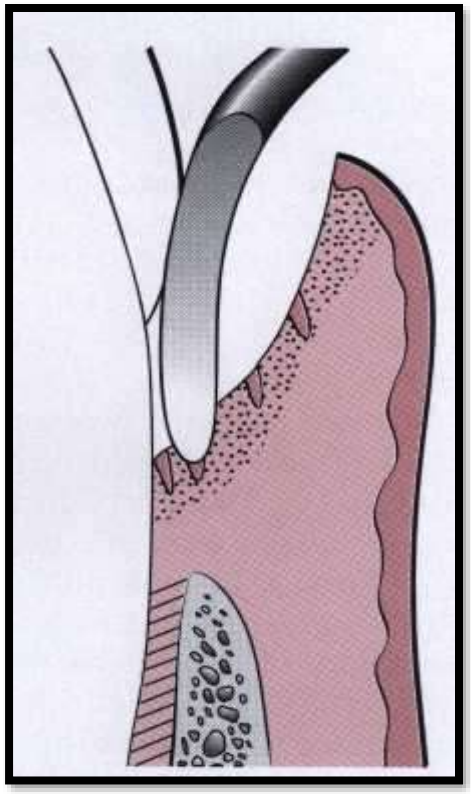
- Performed on recall visits as a method of maintenance treatment for area of recurrent inflammation and pocket.

PROCEDURE

BASIC TECHNIQUE:

- Curettage does not eliminate the cause of inflammation (i.e. bacterial plaque and deposits).
- Thus, curettage should always be preceded by scaling and root planing.

STEPS



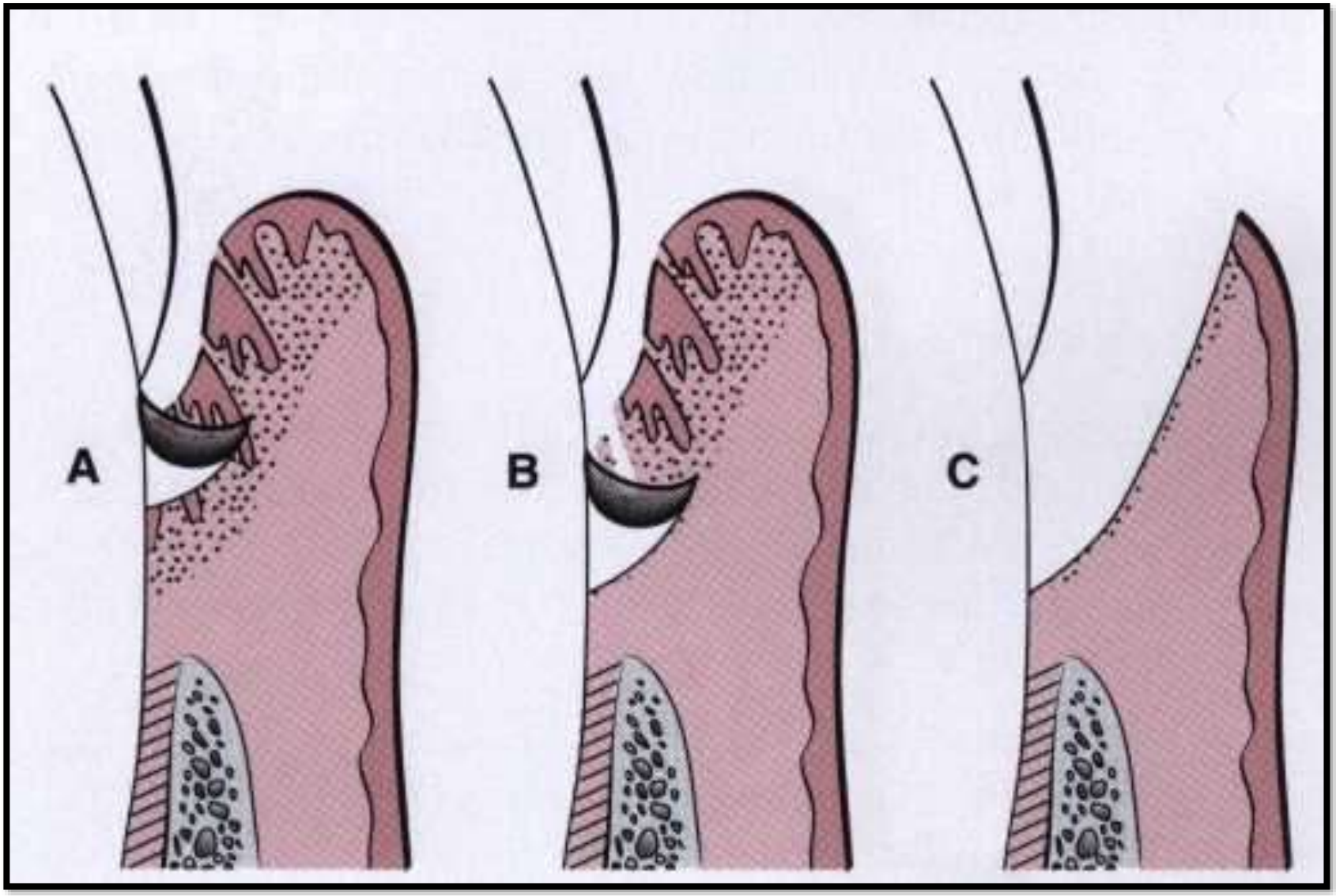
i. Local Anasthesia

ii. Selection of curette
(Gracey curette or Colombia universal curette)

iii. The instrument is inserted so as to engage the inner lining of the pocket wall and is carried along the soft tissue, usually in a horizontal stroke.

iv. The pocket wall may be supported by gentle finger pressure on the external surface.

v. The curette is then placed under the cut edge of the junctional epithelium to undermine it.

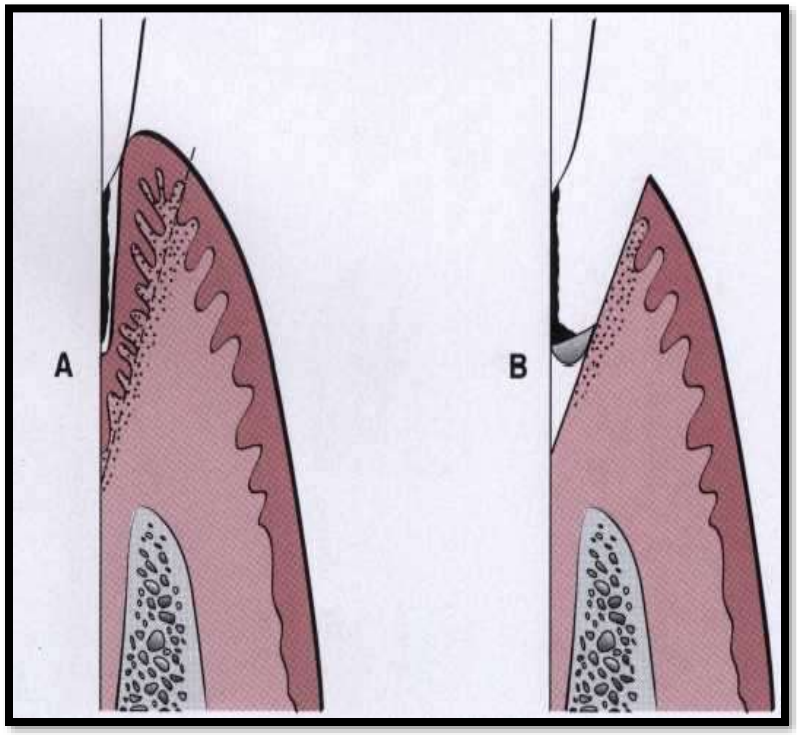


Subgingival curettage. A, Elimination of pocket lining.
B, Elimination of junctional epithelium and granulation tissue.
C, Procedure completed.

- **OTHER TECHNIQUES:**

i. Excisional new attachment procedure
ii. Ultrasonic curettage
iii. Caustic drugs
iv. Laser

Excisional New Attachment Procedure (ENAP)



- Developed and used by the **U.S. Naval Dental Corps**.
- It is definitive subgingival curettage procedure performed with knife.
- **STEPS:**

i. Local Anesthesia
ii. Internal bevel incision (from free gingival margin to bottom of pocket)
iii. Remove the excised tissue with a curette, and carefully root plane
iv. Approximate the wound edges. Place sutures and a periodontal dressing.

ULTRASONIC CURETTAGE

- Ultrasound is effective for debriding the epithelial lining of periodontal pockets; it results in a narrow band of necrotic tissue (microcauterization), which strips off the inner lining of the pocket.

- The Morse scaler-shaped and rod-shaped ultrasonic instruments are used for this purpose.

CAUSTIC DRUGS

- The use of caustic drugs has been recommended to induce a chemical curettage of the lateral wall of the pocket or even the selective elimination of the epithelium.
- Drugs such as **sodium sulfide, alkaline sodium hypochlorite solution (Antiformin), and phenol** have been proposed and then discarded after studies showed their ineffectiveness.
- The extent of tissue destruction with these drugs cannot be controlled.

LASERS

- Types of lasers use are carbon dioxide lasers, Er: YAG lasers, and Nd: YAG lasers.

- It has **bactericidal and detoxification effects** and can remove the epithelium lining and granulation tissue within the pocket.

- However studies have shown that curettage of granulation tissue had no added benefit over scaling and root planing.
(*Lindhe & Nyman 1985; Ramjford et al 1987*)

HEALING AFTER SCALING AND CURETTAGE

- Immediately after curettage, a blood clot fills the pocket area, which is totally or partially devoid of epithelial lining.

- Abundant polymorphonuclear leukocytes appear shortly thereafter on the wound surface.

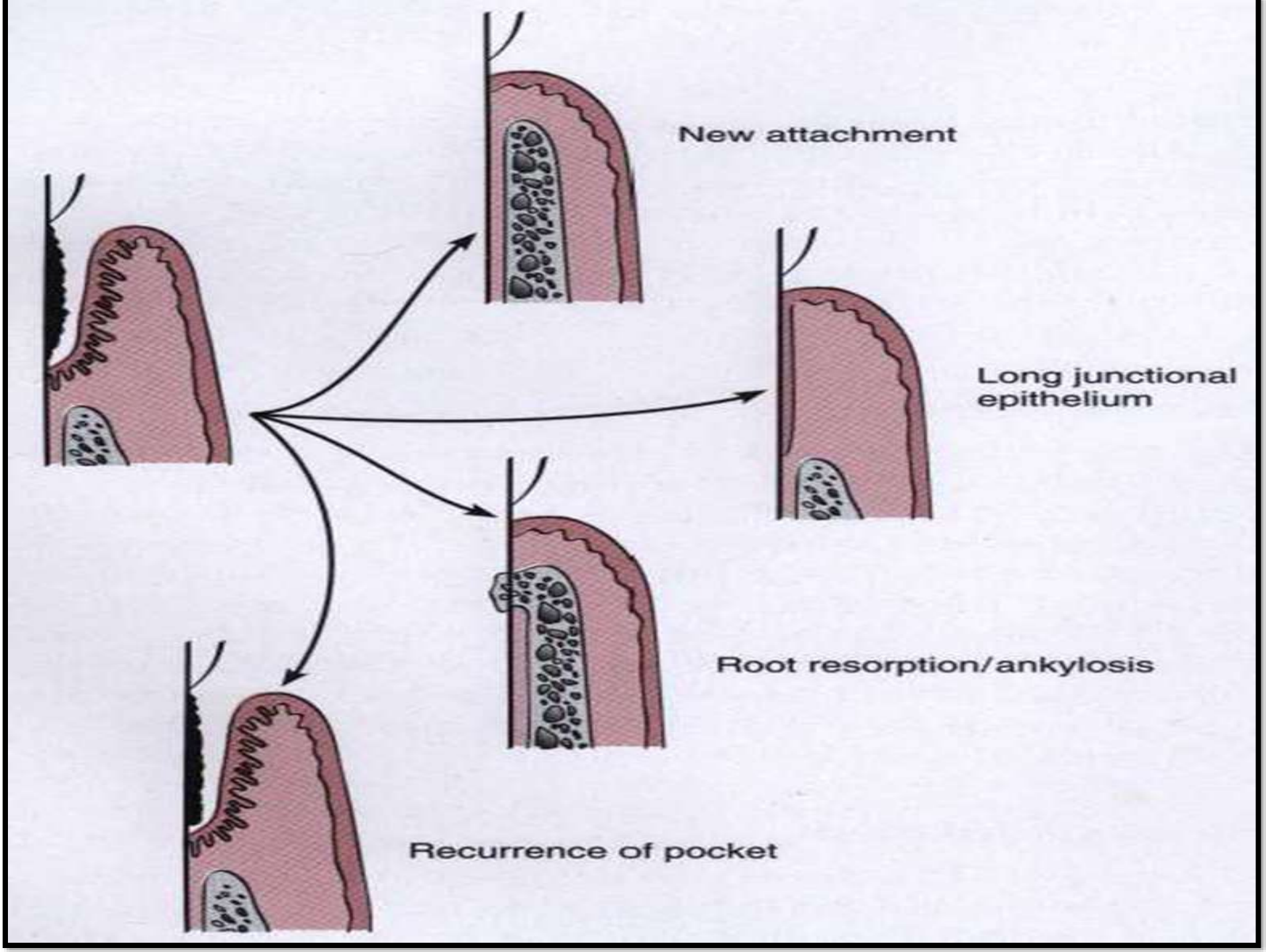
- Followed by a rapid proliferation of granulation tissue.

- **Restoration and epithelialization** of the **sulcus** generally require from **2 to 7 days,**

- Restoration of the **junctional epithelium** occurs in animals as early as **5 days** after treatment.

- **Immature collagen fibers** appear within **21 days.**

- Healing results in the formation of a **long, thin junctional epithelium** with no new connective tissue attachment.


New attachment
Long junctional epithelium
Root resorption/ankylosis
Recurrence of pocket

CLINICAL APPEARANCE AFTER SCALING AND CURETTAGE

- **Immediately** after scaling and curettage, the gingiva appears **hemorrhagic and bright red**.

- **After 1 week**, the gingiva appears reduced in height owing to an **apical shift** in the position of the gingival margin.

- **After 2 weeks** and with proper oral hygiene by the patient, the **normal** color, consistency, surface texture, and contour of the gingiva are attained, and the gingival margin is well adapted to the tooth.

THE GINGIVECTOMY TECHNIQUE

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CONTENTS

- **Gingivectomy is defined** as "*excision of soft tissue wall of a periodontal pocket*". **(Grant et al 1979)**

- **Robicsek (1884)** pioneer of gingivectomy procedure.

INDICATIONS AND CONTRAINDICATIONS

INDICATIONS:

1. Elimination of suprabony pockets, regardless of their depth, if the pocket wall is fibrous and firm.
2. Elimination of gingival enlargements.
3. Elimination of suprabony periodontal abscesses.

CONTRAINDICATIONS

1. The need for bone surgery or examination of the bone shape and morphology.
2. Situations in which the bottom of the pocket is apical to the mucogingival junction.
3. Esthetic considerations, particularly in the anterior maxilla.

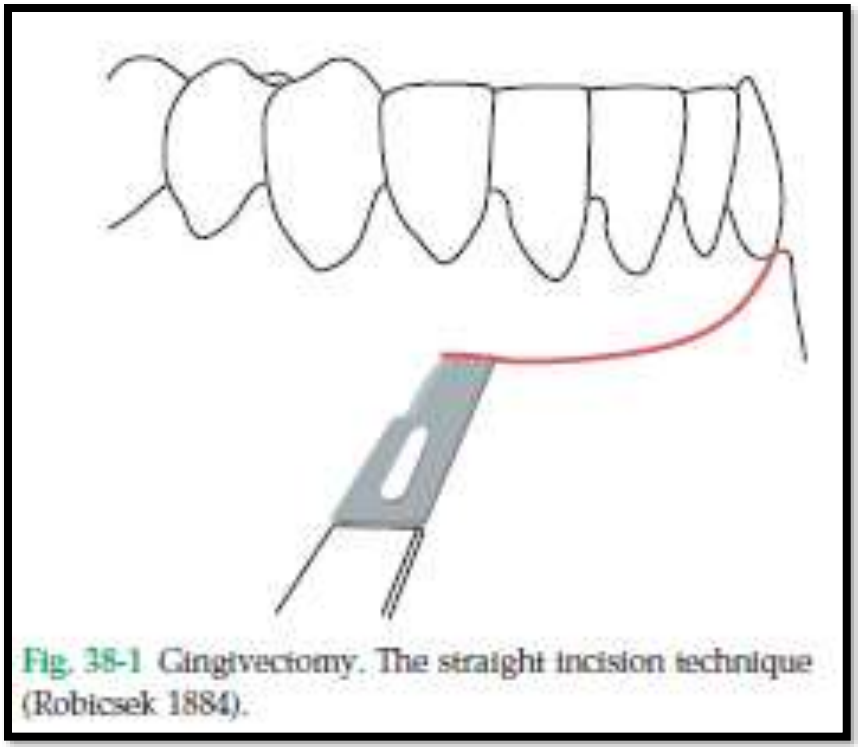


Fig. 38-1 Gingivectomy. The straight incision technique (Robicsek 1884).

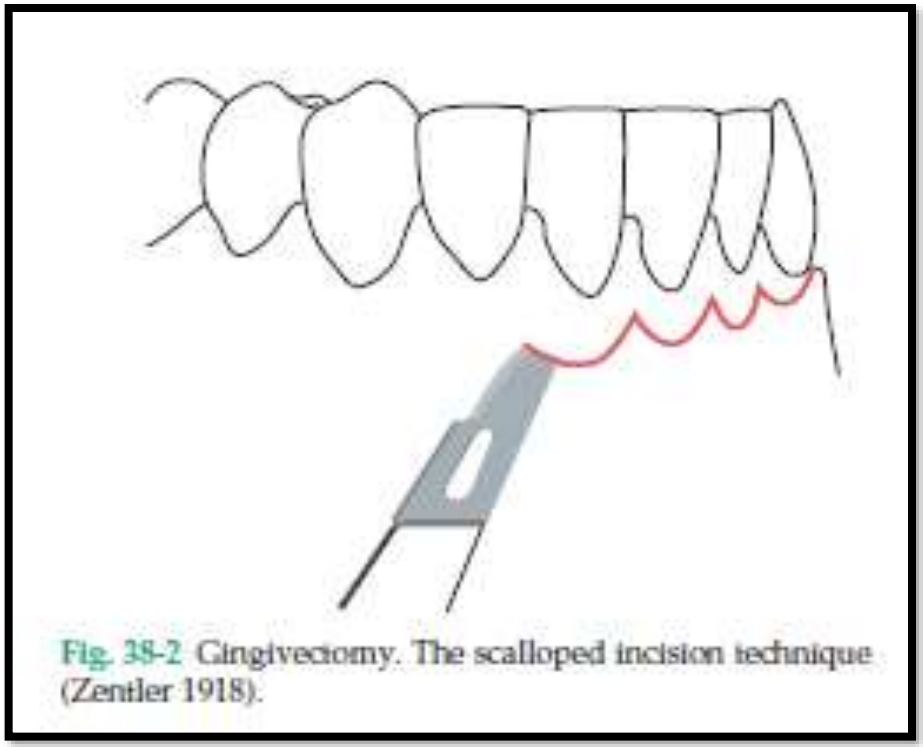
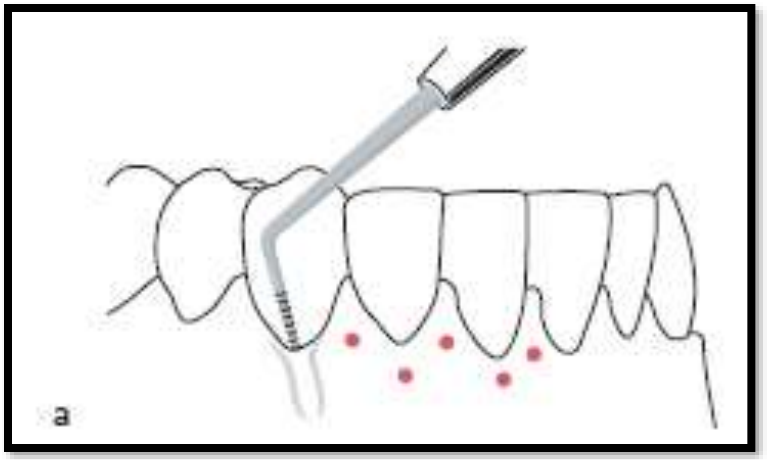


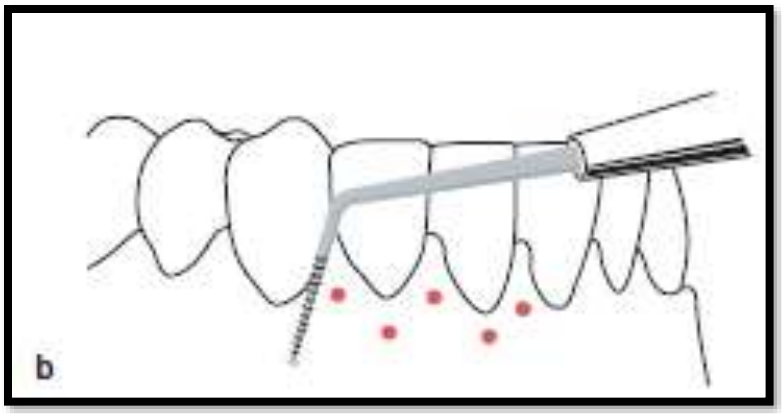
Fig. 38-2 Gingivectomy. The scalloped incision technique (Zentler 1918).

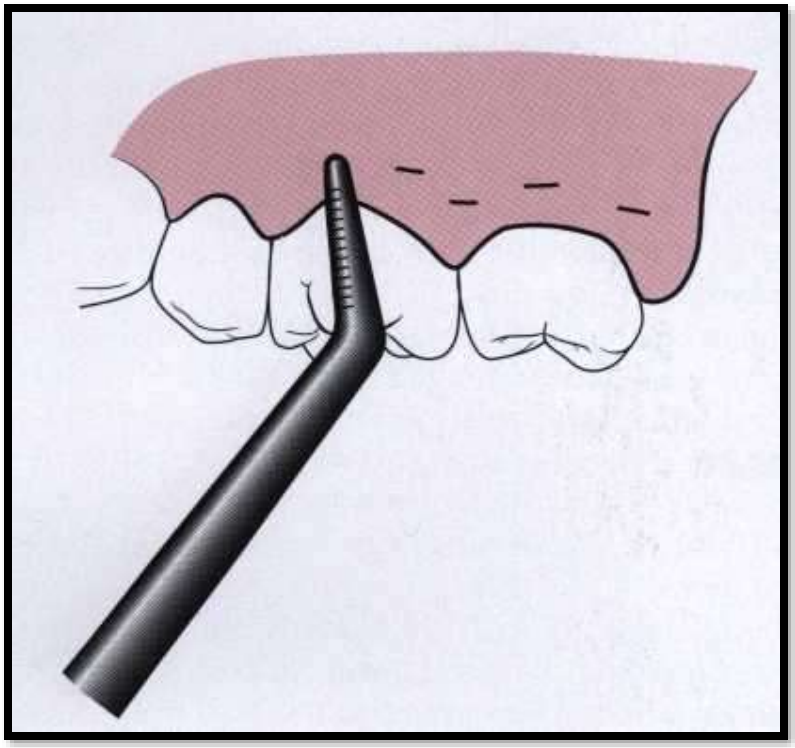
SURGICAL GINGIVECTOMY

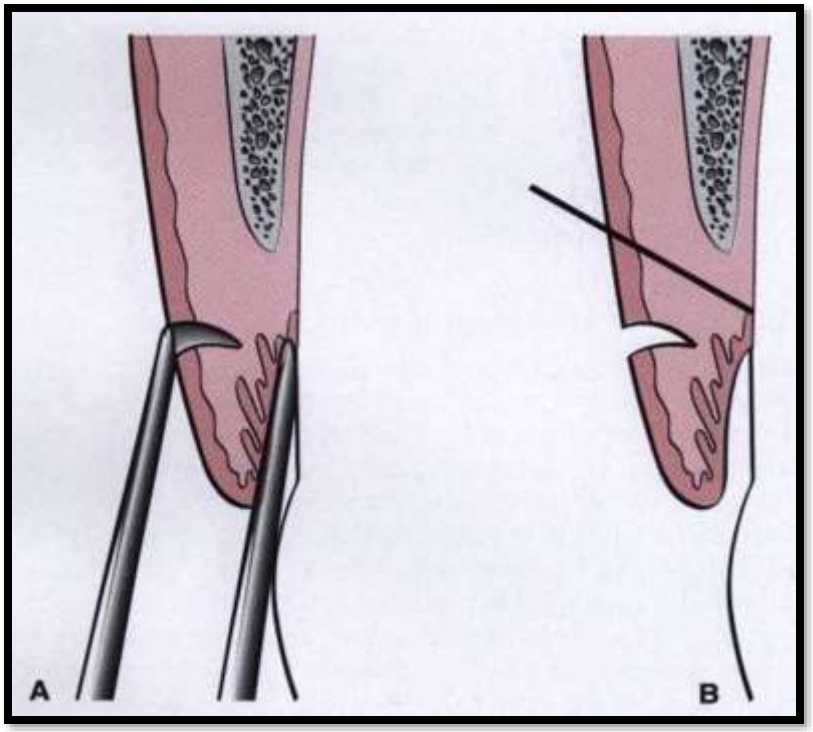
The gingivectomy procedure described by Goldman in 1951.

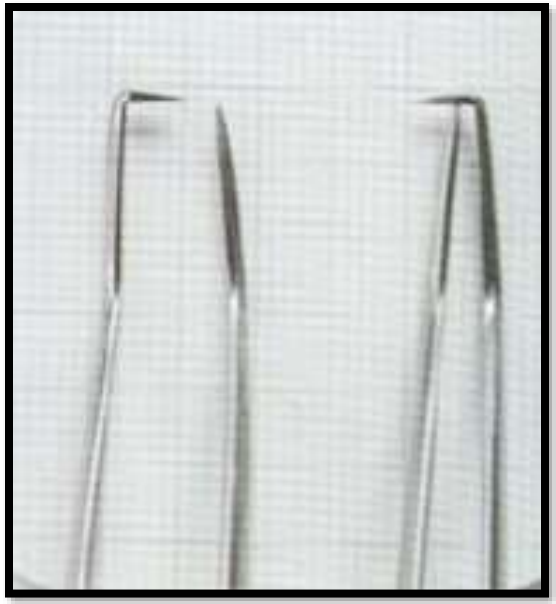
Step 1: The pockets on each surface are explored with a periodontal probe and marked with a pocket marker. Each pocket is marked in several areas to outline its course on each surface.







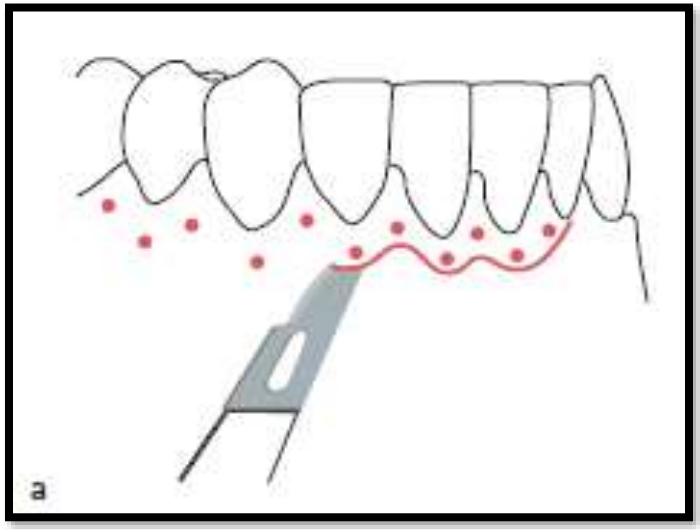


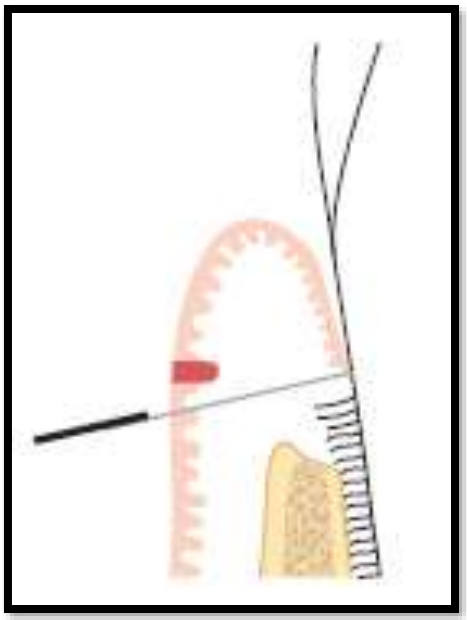


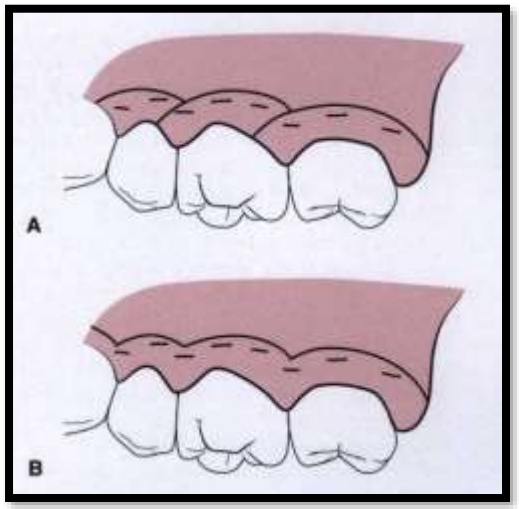
Pocket Marker

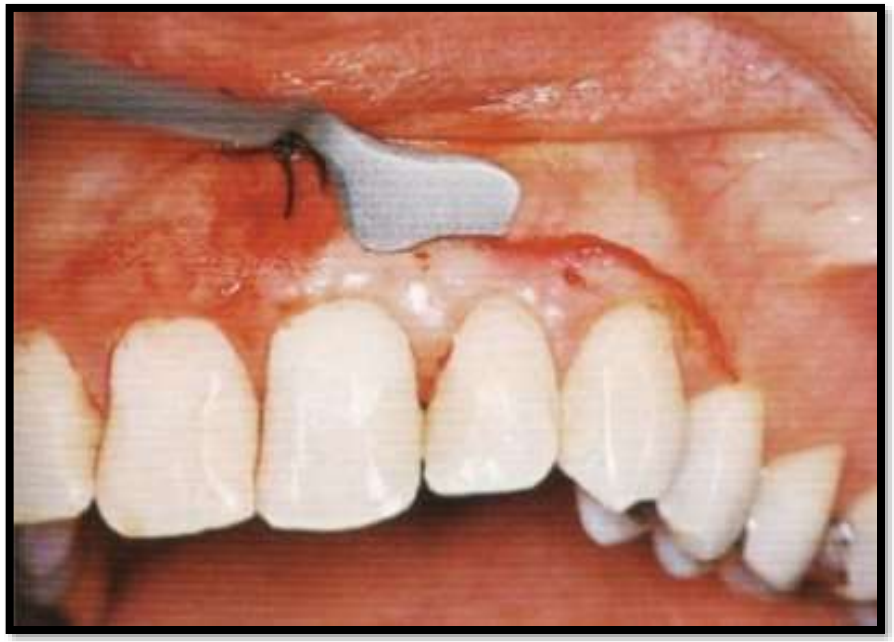
Step 2:

- Periodontal knives (Kirkland knives) Incisions on the facial and lingual surfaces and those distal to the terminal tooth in the arch.
- Orban periodontal knives are used for supplemental interdental incisions, if necessary, and Bard-Parker knives #11 and 12 and scissors are used as auxiliary instruments.

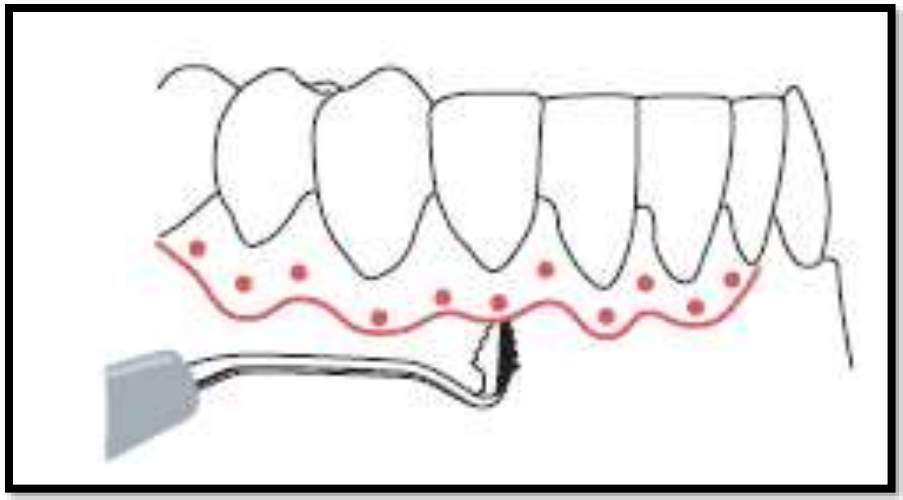








GV Knife (Kirkland Knife L & R)
Papilla Knife (Orbans Knife L & R)
Universal Knife



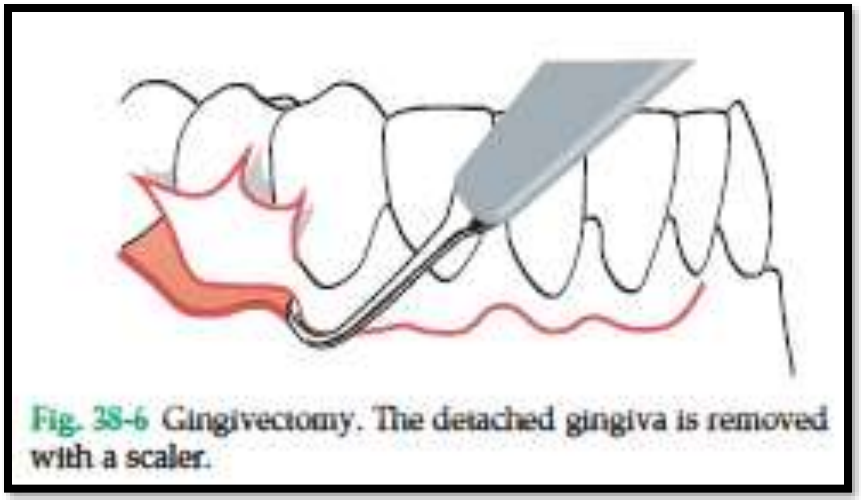


Fig. 38-6 Gingivectomy. The detached gingiva is removed with a scaler.

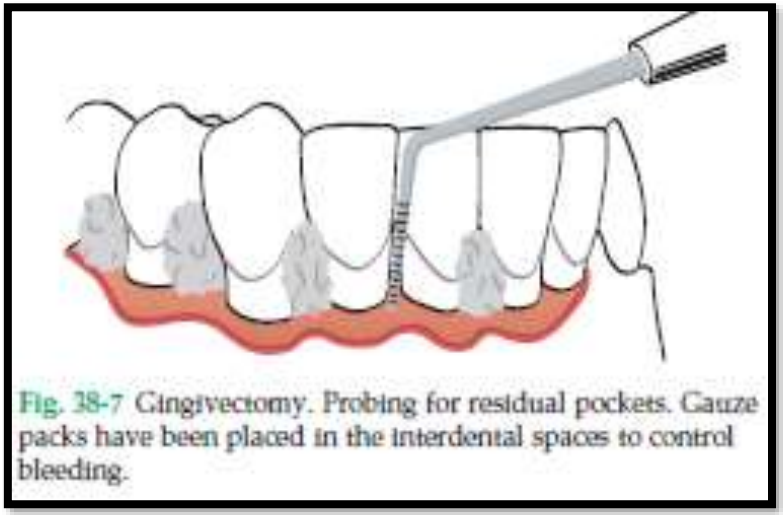
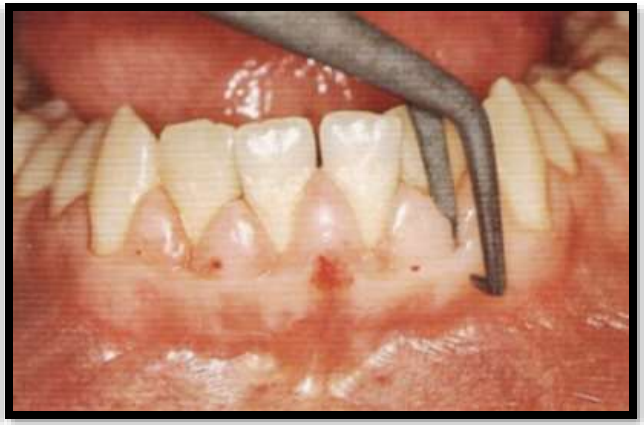
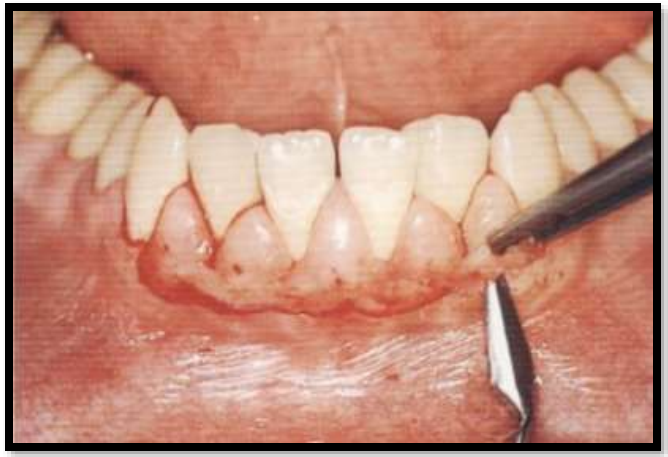
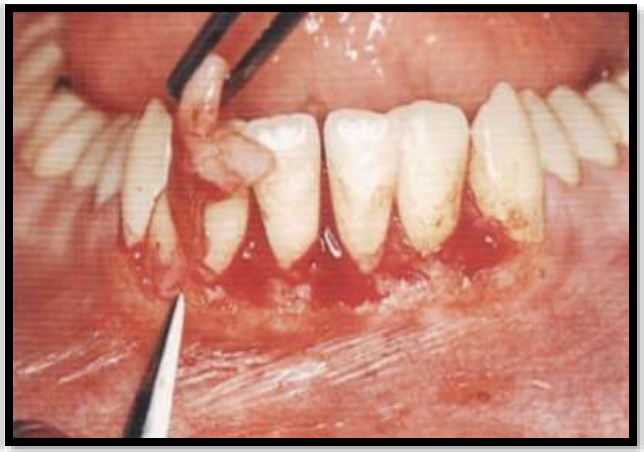
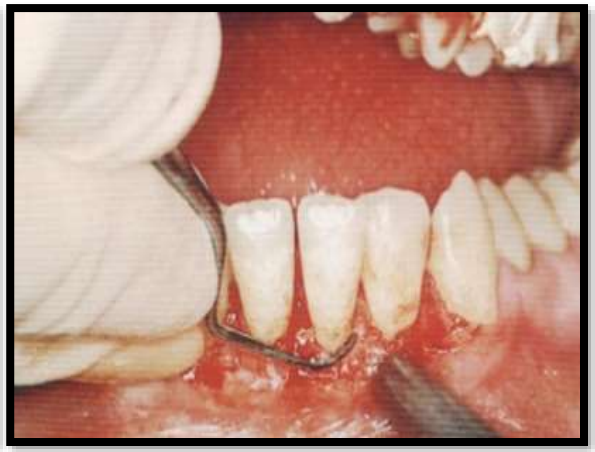


Fig. 38-7 Gingivectomy. Probing for residual pockets. Gauze packs have been placed in the interdental spaces to control bleeding.

Step 3: Remove the excised pocket wall, clean the area, and closely examine the root surface.

Step 4: Carefully curette out the granulation tissue and remove any remaining calculus and necrotic cementum so as to leave a smooth and clean surface.

Step 5: Cover the area with a surgical pack

GINGIVOPLASTY

- Gingivoplasty is a **reshaping of the gingiva** to create physiologic gingival contours, with the sole purpose of recontouring the gingiva **in the absence of pockets.**

- Gingival and periodontal disease often produce deformities in the gingiva that collect plaque and food debris, and prolong and aggravate the disease process.

- Gingival clefts and craters, shelflike interdental papillae caused by acute necrotizing ulcerative gingivitis, and gingival enlargement are examples of such deformities.

- Gingivoplasty may be done with a periodontal knife, a scalpel, rotary coarse diamond stones, or electrodes.

- Tapering the gingival margin, creating a scalloped marginal outline, thinning the attached gingiva, and creating vertical interdental grooves and shaping the interdental papillae to provide sluiceways for the passage of food.

HEALING AFTER SURGICAL GINGIVECTOMY

- The **initial** response is the formation of a protective surface **clot**

- **By 24 hours**, there is an increase in new connective tissue cells, mainly **angioblasts**, just beneath the surface layer of inflammation and necrosis

- **Third day**, numerous young fibroblasts are located in the area. The highly vascular granulation tissue grows coronally, creating a new free gingival margin and sulcus. Capillaries derived from blood vessels of the periodontal ligament migrate into the granulation tissue.

- Surface epithelization is generally complete after 5 to 14 days.
- First 4 weeks after gingivectomy, keratinization is less than it was prior to surgery.
- Complete epithelial repair takes about 1 month.
- The flow of gingival fluid in humans is initially increased after gingivectomy and diminishes as healing progresses.

GINGIVECTOMY BY ELECTROSURGERY

Advantages

- Electrosurgery permits an adequate contouring of the tissue and controls hemorrhage.

Disadvantages

- Electrosurgery cannot be used in patients who have noncompatible or poorly shielded **cardiac pacemakers.**
- The treatment causes an **unpleasant odor.**
- If the electrosurgery point touches the **bone**, irreparable **damage** can be done
- The heat generated by injudicious use can cause **tissue damage** and loss of periodontal support.
- When the electrode touches the root, areas of **cementum burn** are produced.

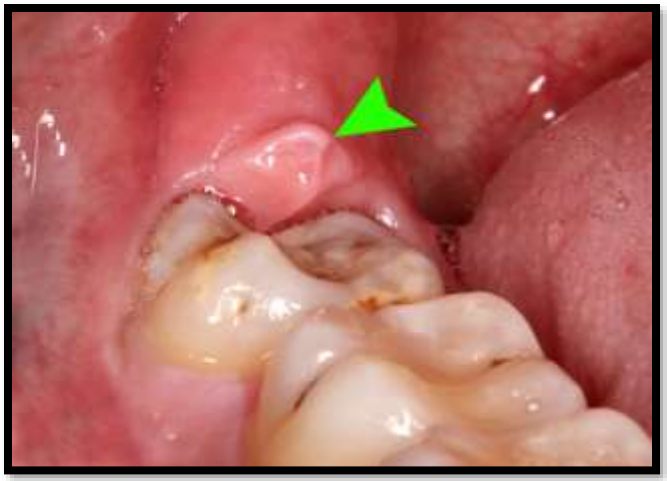
- Therefore the use of electrosurgery should be limited to superficial procedures such as:
  - removal of gingival enlargements,
  - gingivoplasty,
  - relocation of frenum and muscle attachments, and
  - incision of periodontal abscesses and pericoronal flaps;
- Extreme care should be exercised to avoid contacting the tooth surface.
- It should not be used for procedures that involve proximity to the bone, such as flap operations, or mucogingival surgery.

TECHNIQUE

- The removal of **gingival enlargements and gingivoplasty** is performed with the needle electrode, supplemented by the small ovoid loop or the diamond-shaped electrodes for festooning.
- A blended cutting and coagulating (fully rectified) current is used.
- In all reshaping procedures, the electrode is activated and moved in a concise "shaving" motion.

- In the treatment of **acute periodontal abscesses**, the incision to establish drainage can be made with the needle electrode without exerting painful pressure.
- The incision remains open because the edges are sealed by the current.
- After the acute symptoms subside, the regular procedure for the treatment of the periodontal abscess is followed.

- **For hemostasis**, the ball electrode is used. Hemorrhage must be controlled by direct pressure (via air, compress, or hemostat) first; then the surface is lightly touched with a coagulating current.
- Electrosurgery is helpful for the control of isolated bleeding points.
- Bleeding areas located interproximally are reached with a thin, bar-shaped electrode



- **Frenum and muscle attachments** can be relocated to facilitate pocket elimination using a loop electrode.
- For this purpose, the frenum or muscle is stretched and sectioned with the loop electrode and a coagulating current.
- For cases of acute **pericoronitis**, drainage may be obtained by incising the flap with a bent needle electrode.
- A loop electrode is used to remove the flap after the acute symptoms subside.

HEALING AFTER ELECTROSURGERY

- Some investigators report no significant differences in gingival healing after resection by electrosurgery and resection with periodontal knives.

- Other researchers find delayed healing, greater reduction in gingival height, and more bone injury after electrosurgery.

LASER GINGIVECTOMY

- The lasers most commonly used in dentistry are:

I. carbon dioxide (CO_2)

II. the neodymium:yttriumaluminum-garnet (Nd:YAG),

- Wavelengths 10,600 nm and 1064 nm, respectively,
- Both in the infrared range; they must be combined with other types of visible lasers for the beam to be seen and aimed.

- The CO2 laser beam has been used for the excision of gingival growths,
- Although healing is delayed when compared with healing after conventional scalpel gingivectomy.

Precautions:

- avoid reflecting the beam on instrument surfaces, which could result in injury to neighboring tissues and the eyes of the operator.

GINGIVECTOMY BY CHEMOSURGERY

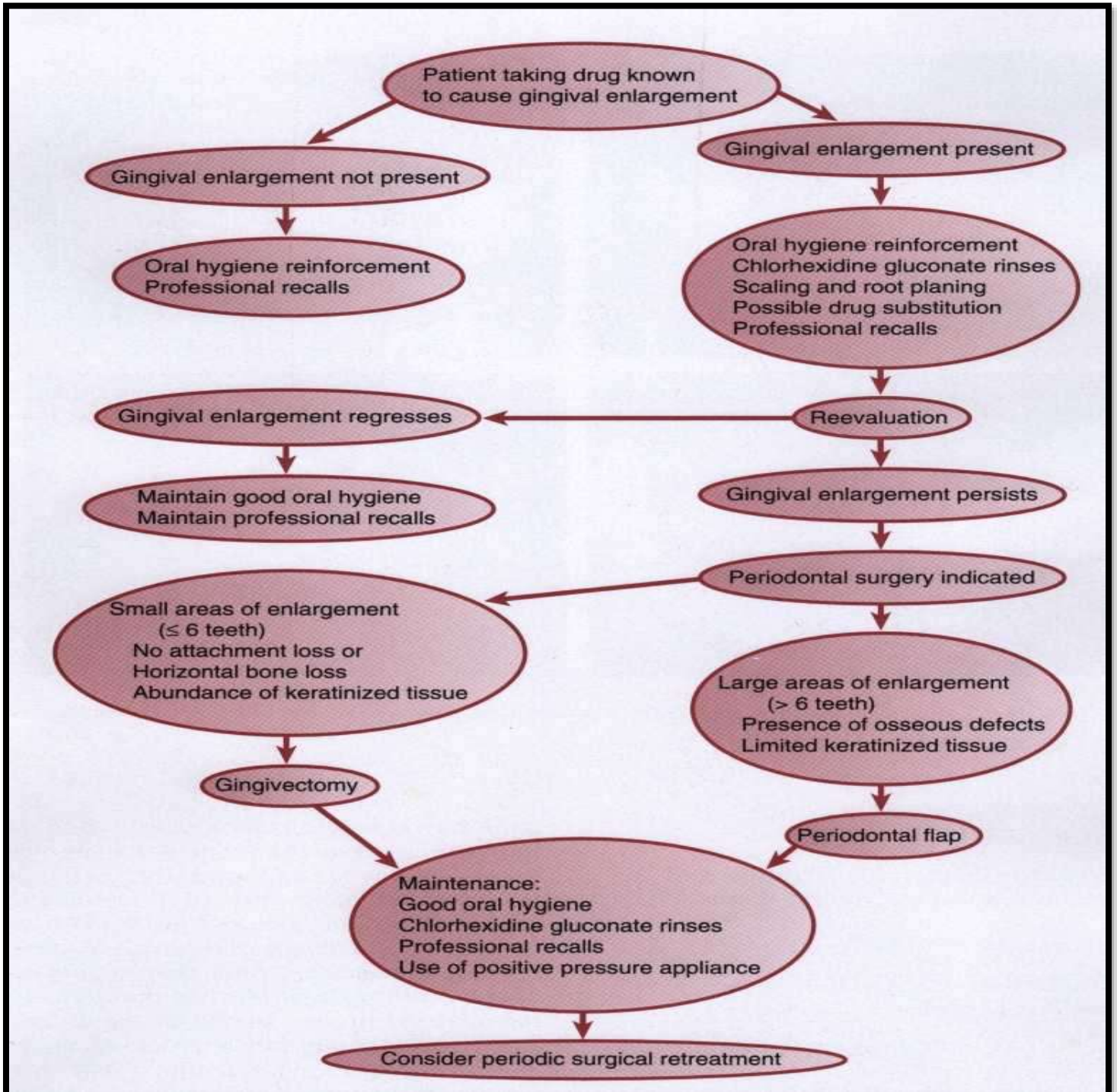
- Gingivectomy using chemicals, such as **5% paraformaldehyde or potassium hydroxide**, have been described in the past but are not currently used.

Disadvantages:

1. The depth of action cannot be controlled, and therefore healthy attached tissue underlying the pocket may be injured.
2. Gingival remodeling cannot be accomplished effectively.
3. Epithelialization and reformation of the junctional epithelium and reestablishment of the alveolar crest fiber system are slower in chemically treated gingival wounds than in those produced by a scalpel.

- ***The use of chemical methods therefore is not recommended.***

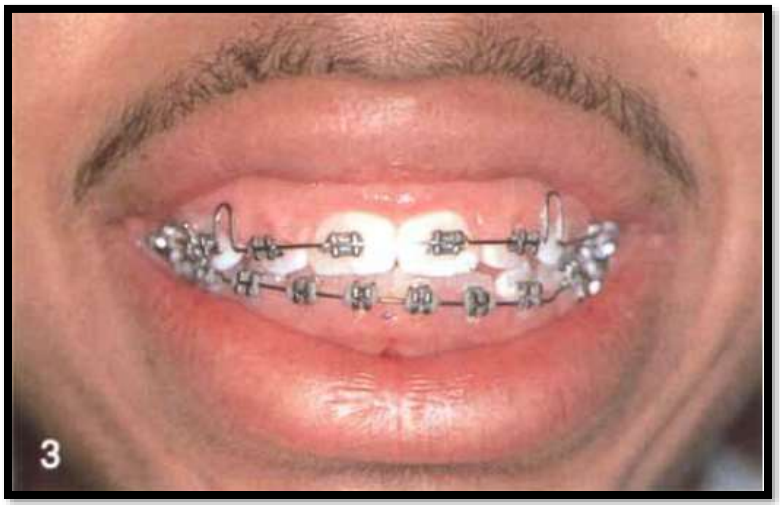
Treatment For DIGO


Patient taking drug known to cause gingival enlargement
Gingival enlargement not present
Oral hygiene reinforcement
Professional recalls
Gingival enlargement present
Oral hygiene reinforcement
Chlorhexidine gluconate rinses
Scaling and root planing
Possible drug substitution
Professional recalls
Reevaluation
Gingival enlargement regresses
Maintain good oral hygiene
Maintain professional recalls
Gingival enlargement persists
Periodontal surgery indicated
Small areas of enlargement
(≤ 6 teeth)
No attachment loss or
Horizontal bone loss
Abundance of keratinized tissue
Large areas of enlargement
(> 6 teeth)
Presence of osseous defects
Limited keratinized tissue
Gingivectomy
Periodontal flap
Maintenance:
Good oral hygiene
Chlorhexidine gluconate rinses
Professional recalls
Use of positive pressure appliance
Consider periodic surgical retreatment


A
B
C
D
E
F
G
H

SMILE DESIGNING PROCEDURE

GUMMY SMILE



Surgical crown lengthening

Gingivectomy Procedure

Insufficient Crown Height

Gingivectomy Done

Crown Height Increased and Crown Given

SUBGINGIVAL RESTORATIONS