BACHELOR OF DENTAL SURGERY

Periodontally related Surgery (Reasons and general principals)

DCP 4 A

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- Reference:Carranza’s Clinical Periodontology. 13th Edition.
- Chapters 57 and 59.

Learning Outcomes

- At the end of this lecture, you

1. should know the reasons for carrying out periodontal surgery.

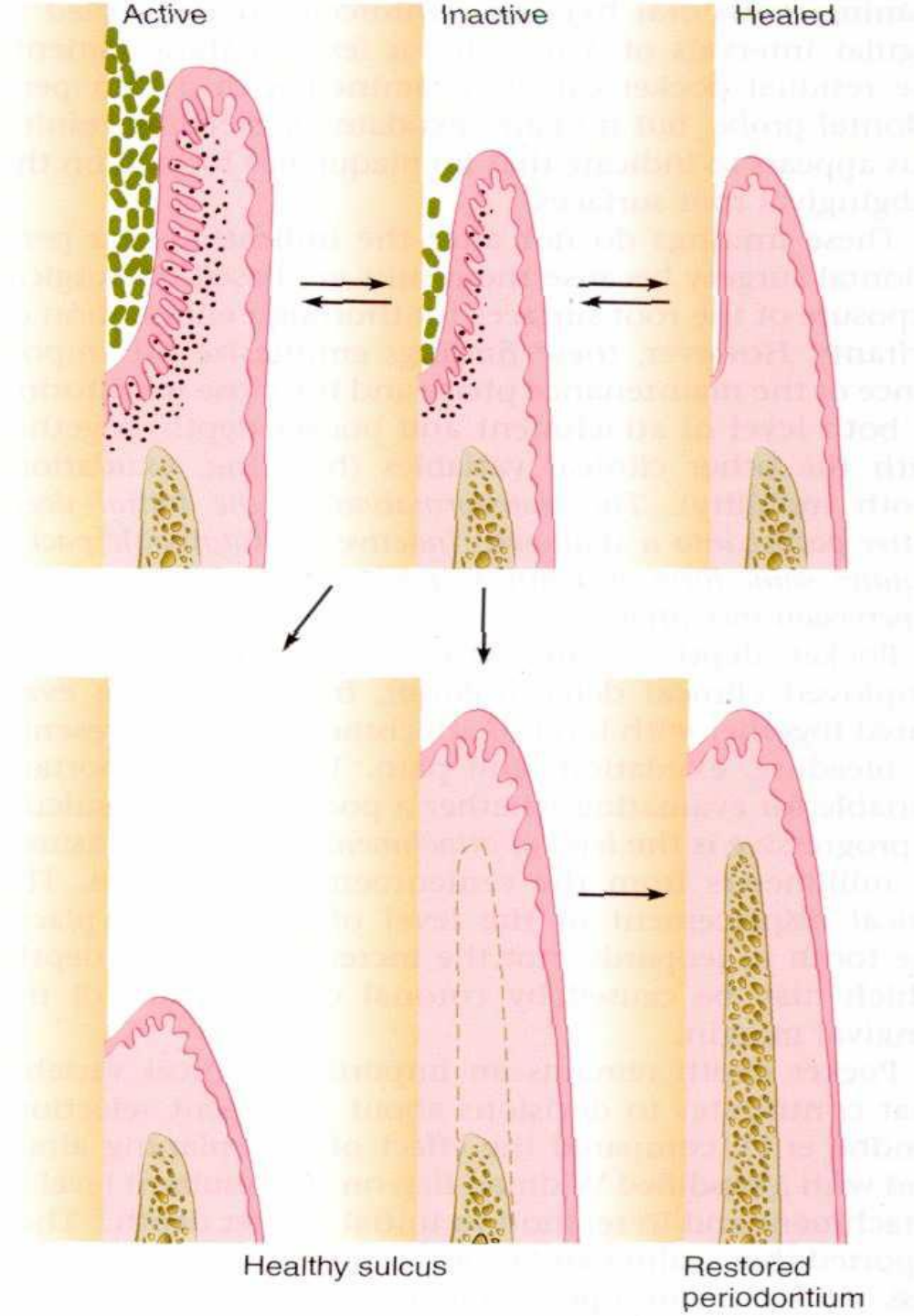
2. should know indications, contraindications and general principals of periodontal surgery

Is surgery for the treatment of periodontitis necessary?

- A periodontal pocket can be active or inactive. In an active pocket, underlying bone is being lost. It can be diagnosed clinically by bleeding, either spontaneously or on probing, exudation and pain during probing
- After phase I therapy the inflammatory changes in the pocket wall subside, pockets become inactive and reduced in depth
- Inactive pockets can sometimes heal with a long junctional epithelium.

Is surgery for the treatment of periodontitis necessary?

- Studies have shown that inactive pockets can be maintained for long periods with little loss of attachment by means of frequent scaling and root-planing procedures.
- However a more reliable and stable result is obtained by transforming the pocket into a healthy sulcus.
- The creation of a healthy sulcus and a restored periodontium requires a total restoration of the status that existed before periodontal disease began, which is the ideal result of treatment.



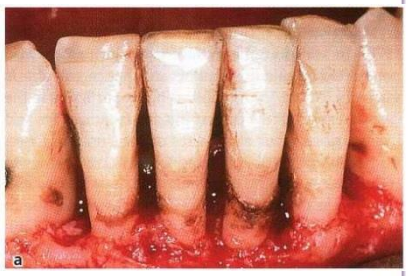
Possible results of pocket therapy. An active pocket can become inactive and heal by means of a long junctional epithelium. Surgical pocket therapy can result in a healthy sulcus, with or without gain of attachment.
Improved gingival attachment promotes restoration of bone height, with re-formation of periodontal ligament fibers and layers of cementum.

Is surgery for the treatment of periodontitis necessary?

- Different types of surgical therapy produce similar results as nonsurgical debridement. This effect is particularly apparent 3-5 years after treatment.
- Surgical therapy may result in greater pocket depth reduction in initially deep sites(deeper than 4.2 mms) and more gain of attachment than does nonsurgical treatment.
- The success of surgical periodontal therapy depends on completely eliminating plaque, calculus and diseased cementum by increasing the accessibility to the root surfaces and maintenance therapy every 3 months

Reasons for carrying out periodontal surgery

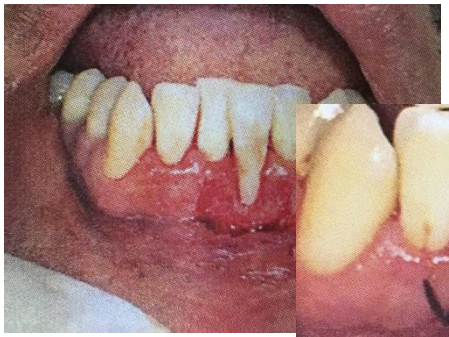
- improve access to root surfaces in the treatment of periodontitis



- removal of diseased tissues (periodontal pockets, granulation tissue)
- pocket elimination/ pocket depth reduction
- regenerative techniques: guided tissue regeneration/ defect fill/ biochemical conditioning/ growth factors

Reasons for carrying out periodontal surgery

- removal of severely hyperplastic gingival tissues
- exploration of defects/ detection of cracks
- restorative - crown lengthening
- Improvement of esthetics, periodontal plastic surgery
- Correction of bony defects (alveoloplasty)



Indications For Periodontal Surgery

1. Areas with irregular bony contours, deep craters, and other defects usually require surgical approach.

2. Pockets on teeth in which a complete removal of root irritants is not clinically possible may call for surgery. (molar and premolar areas).

3. Furcation involvement of grade II or III, a surgical approach ensures the removal of irritants; any necessary root resection or hemisection also requires surgical intervention.

4. Intrabony pockets on distal areas of last molars are usually unresponsive to nonsurgical methods.

5. Persistent inflammation in areas with moderate to deep pockets may require a surgical approach. In areas with shallow pockets or normal sulci, persistent inflammation may point to the presence of a mucogingival problem that needs a surgical solution.

Contra-indications to any type of periodontal surgery

- Severely medically compromised (Addison's disease, poorly controlled diabetes, severe cardiac disease; bleeding disorders, people taking anticoagulants, e.g. Warfarin, aspirin)
- Patient's emotional state, poor response to previous surgery.

Periodontal surgery

- The surgical phase consists of techniques performed for

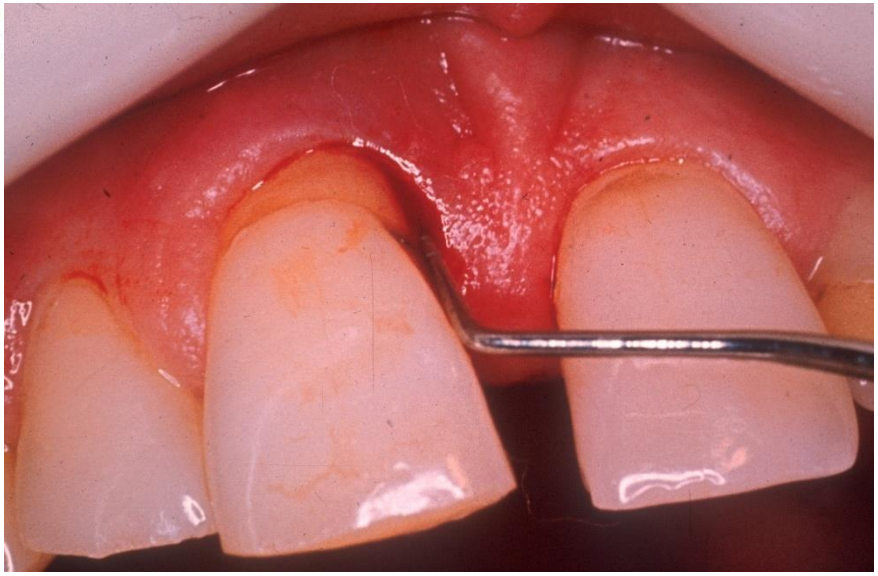
1. Pocket therapy
2. Correction of morphologic problems (mucogingival defects).

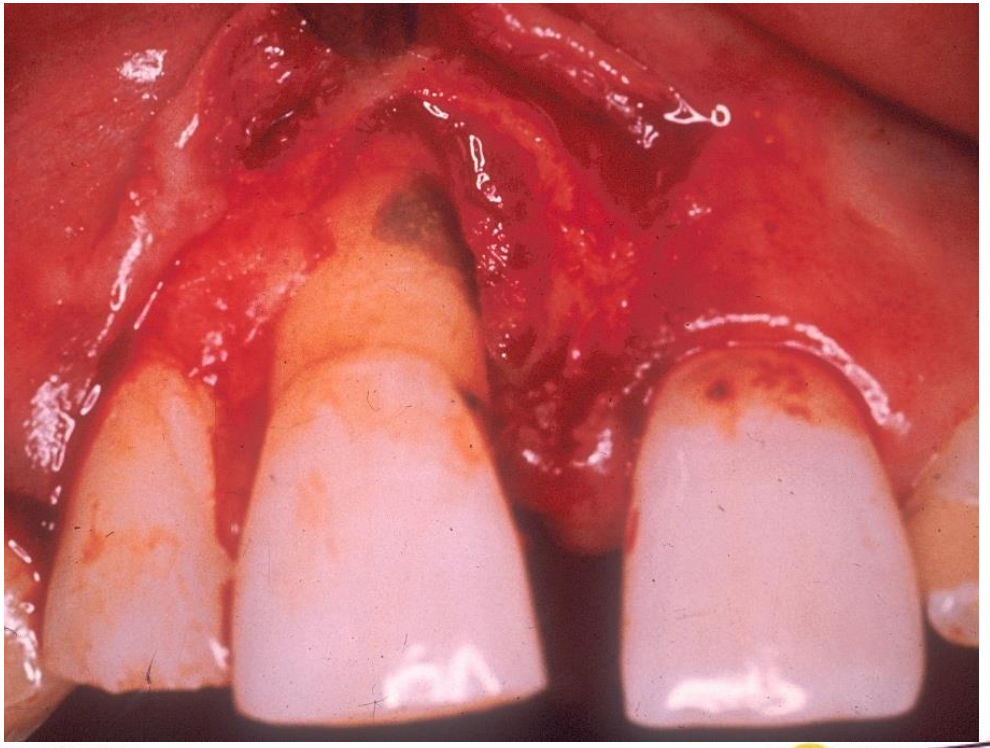
1.Surgical Pocket Therapy

Purpose:

a. Access surgery to ensure the removal of irritants(calculus, plaque, and diseased cementum) from the tooth surface

b. Elimination or reduction of the periodontal pocket.





1.Surgical Pocket Therapy

Types:

- Resective (papillectomy, gingivectomy, apically displaced flap, undisplaced flap with or without osseous resection)

- Regenerative (flaps with grafts, membranes, etc.)

2.Correction of anatomic/morphologic defects

- These procedures are not directed to treat disease but aim to alter the gingival and mucosal tissues to correct defects that may predispose to disease:

1. Plastic surgery to widen attached gingiva (free gingival grafts)
2. Esthetic surgery (root coverage, recreation of gingival papilla)
3. Preprosthetic surgery to adapt the periodontal and neighboring tissues to receive prosthetic replacements;these include crown lengthening, ridge augmentation, and vestibular deepening.
4. Placement of dental implants

General Principals of Periodontal Surgery

A. Patient Preparation

1.Re-evaluation after Phase 1 Therapy

Scaling and root planing procedures done in phase 1:

a. Eliminate some lesions entirely;

b. The tissues become more firm and consistent, permitting a more accurate and delicate surgery.

The re-evaluation phase consists of re-probing and re-examining all findings that previously indicated the need for the surgical procedure. Persistence of these findings confirms the indication for surgery

2.Premedication

- Some studies have reported when antibiotics are given before periodontal surgery and continued for 4 to 7 days after surgery reduced postoperative complications, including reduced pain and swelling.
- The prophylactic use of antibiotics in patients who are otherwise healthy has been advocated for bone-grafting procedures and claimed to enhance the chances of new attachment.

Other presurgical medications include administration of a nonsteroidal antiinflammatory drug (NSAID) such as ibuprofen 1 hour before the procedure and one oral rinse with 0.12% chlorhexidine gluconate (Peridex,Curasept,PerioGard)

3.Smoking

Patients are requested to quit or stop smoking for a minimum of 3 to 4 weeks after the periodontal surgical procedure.

4.Informed Consent

The patient should be informed at the initial visit about the diagnosis, prognosis, different possible treatments, with their expected results and all pros and cons of each approach.

At surgery the patient should again be informed, verbally and in writing, of the procedure to be performed, and he or she should indicate agreement by signing the consent form.

5. Emergency Equipment

- The clinician, all assistants, and office personnel should be trained to handle all possible emergencies that may arise. Drugs and equipment for emergency use should be readily available at all times.
- The most common emergency is syncope, which is a transient loss of consciousness caused by a reduction in cerebral blood flow.
- The most common causes of syncope are fear and anxiety. Syncope is usually preceded by a feeling of weakness, and then the patient experiences pallor, sweating, coldness of the extremities, dizziness, and a slowing of the pulse.
- The patient should be placed in a supine position with the legs elevated; tight clothes should be loosened, and a wide-open airway should be ensured. The administration of oxygen should be started. Unconsciousness may persist for a few minutes.
- A previous history of syncope during dental appointments should be explored before the treatment is started. If the patient has had other experiences with syncope, every effort should be made to minimize the patient's fear and anxiety, as well as considering the use of oral sedatives.

B. Tissue Management

1. Operate gently and carefully.

Tissue manipulation should be precise, deliberate, and gentle.

Thoroughness is essential, but roughness must be avoided because it produces excessive tissue injury, causes postoperative discomfort, and delays healing.

2. Observe the patient at all times.

It is essential to pay careful attention to the patient's reactions. Facial expressions, pallor, and perspiration are distinct signs that may indicate the patient is experiencing pain, anxiety, or fear.

The physician's responsiveness to these signs can be the difference between success and failure.

3. Be certain the instruments are sharp.

Instruments must be sharp to be effective; successful treatment is not possible without sharp instruments.

Dull instruments inflict unnecessary trauma because of poor cutting and excessive force applied to compensate for their ineffectiveness

C. Scaling and Root Planing

All exposed root surfaces should be carefully explored and planed as needed

D. Haemostasis:

- Good control of intraoperative bleeding provides the operator with a clear view of the surgical site, which is essential for wound debridement and scaling and root planing.

- Good haemostasis prevents excessive loss of blood into the mouth, oropharynx, and stomach.

- Periodontal surgery can produce profuse bleeding, especially during the initial incisions and flap reflection.
- After flap reflection and removal of granulation tissue, bleeding disappears or is considerably reduced.
- Intraoperative bleeding can be managed with aspiration.
- Application of pressure to the surgical wound with a cold moist gauze can be a helpful adjunct to control site specific bleeding.

- The use of a local anaesthetic with a vasoconstrictor may also be useful in controlling minor bleeding from the periodontal flap

- If a medium or large vessel is lacerated, a suture around the bleeding end may be necessary to control haemorrhage.

- For slow, constant blood flow and oozing, haemostasis may be achieved with haemostatic agents:

- Absorbable gelatin sponge (Gelfoam)
- Oxidized cellulose (Oxycel)
- Oxidized regenerated cellulose (Surgicel Absorbable Hemostat)
- Microfibrillar collagen hemostat (Collacote, Collatape, Collaplug)
- Thrombin

Generic (Brand)	Directions	Adverse Effects	Precautions
Absorbable gelatin Sponge (Gelfoam)	May be cut into various sizes and applied to bleeding surfaces	May form nidus for infection or abscess	Should not be overpacked into extraction site or wound—may interfere with healing
Oxidized cellulose (Oxycel)	Most effective when applied to wound dry as opposed to moistened	May cause foreign body reaction	Extremely friable and difficult to place; not to be used adjacent to bone,impairs bone regeneration;not to be used as a surface dressing, inhibits epithelialization
Oxidized regenerated Cellulose (Surgicel Absorbable Hemostat)	May be cut to various shapes and positioned over bleeding sites; thick or excessive amounts should not be used	Encapsulation, cyst formation, and foreign-body reaction possible	Should not be placed in deep wounds—may physically interfere with wound healing and bone formation
Microfibrillar collagen Hemostat (Avitene, CollaCote, CollaTape, CollaPlug)	May be cut to shape and applied to bleeding surface	abscess formation, hematoma, and wound dehiscence; possible allergic reaction or foreignbody reaction	May interfere with wound healing; placement in extraction sockets has been associated with increased pain
Thrombin (Thrombostat)	May be applied topically to bleeding surface	Allergic reaction in patients sensitive to bovine materials	Must not be injected into tissues or vasculature—can cause severe (and possibly fatal) clotting


Gelfoam®
absorbable gelatin sponge USP
éponge de gélatine
absorbable USP
Size 12—7 mm
Format 12—7 mm


SURGICEL®
absorbable hemostat
ETHICON


zimmer | dental
ColloCote®

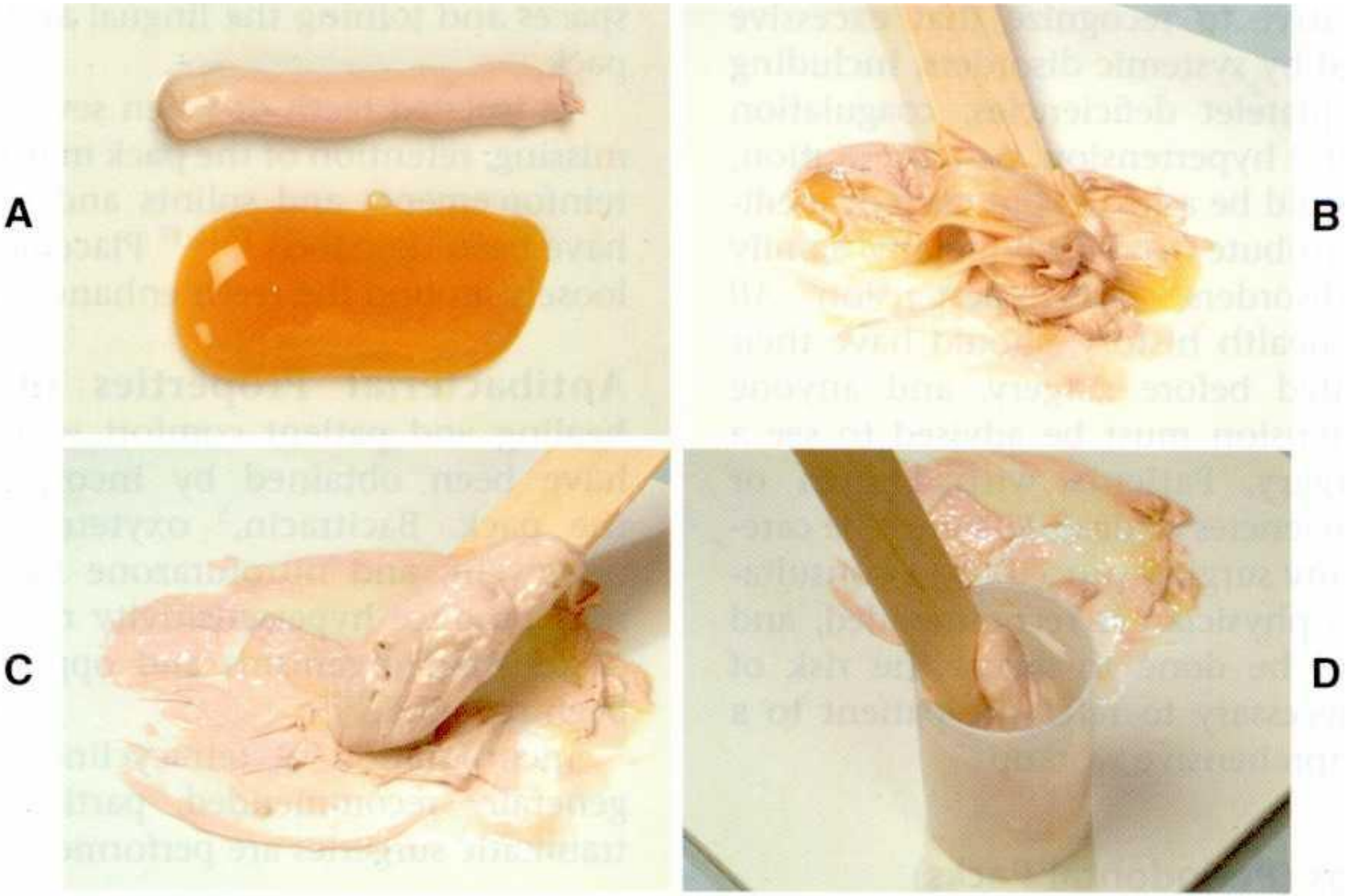
Periodontal Dressings (Periodontal Packs)

- In most cases, after the surgical periodontal procedures are completed, the area is covered with a surgical pack.
- In general, dressings have no curative properties; they assist healing by protecting the tissue rather than providing “ healing factors”.
- The pack minimizes the likelihood of postoperative infection and hemorrhage,
- Facilitates healing by preventing surface trauma during mastication,
- Protects against pain induced by contact of the wound with food or the tongue during mastication.

Periodontal Packs

- **Zinc Oxide - Eugenol Packs:** Zinc oxide powder is mixed with eugenol liquide (eugenol may induce allergic reactions)
- **Noneugenol Packs:** The reaction between a metallic oxide and fatty acids is the basis for Coe-Pak.

One tube contains zinc oxide, an oil (for plasticity), a gum (for cohesiveness), and lorothidol (a fungicide); the other tube contains liquid coconut fatty acids thickened with colophony resin and chlorothymol (a bacteriostatic agent)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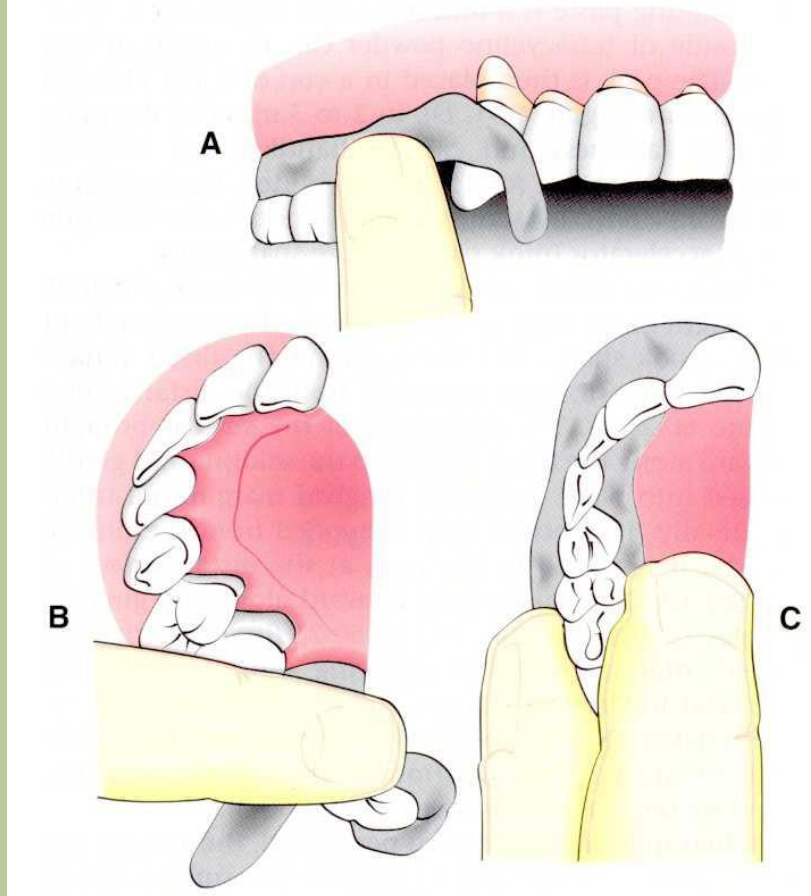
- Coe-Pak is prepared by mixing equal lengths of paste from tubes containing the accelerator and the base until the resulting paste is a uniform color. A capsule of tetracycline powder can be added at this time. The pack is then placed in a cup of water at room temperature. In 2 to 3 minutes the paste loses its tackiness and can be handled and molded; it remains workable for 15 to 20 minutes. Working time can be shortened by adding a small amount of zinc oxide to the accelerator (pink paste) before spatulating.



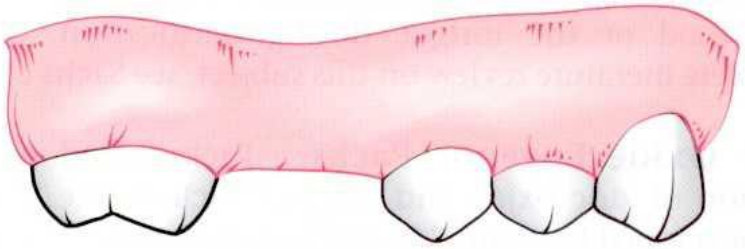
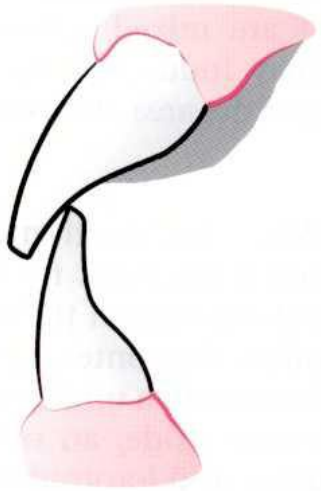


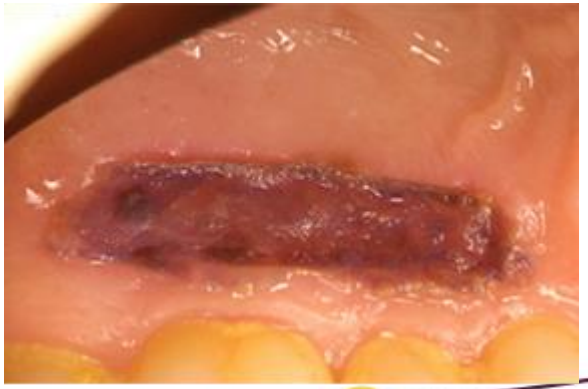
Figure 60-3 Continuous pack covers the edentulous space.



Post operative instructions are given and patient is called after 1 week to remove the pack.

Cyanoacrylate (periacryl):

- A liquid dressing to protect donor sites, sealant for biomaterials , secondary closure over sutures, securing agent to attach dental materials, impermeable barrier to prevent the ingress of bacteria
- It is useful because it provides rapid hemostasis in the presence of moisture due to polymerization. It accelerates initial healing by acting as a protective barrier maintaining precise positioning of a flap or free gingival graft and also possesses antimicrobial properties



Postoperative complications and management:

1. Persistent bleeding after surgery:

The pack is removed, the bleeding points are located, and the bleeding is stopped with pressure or electro-cautery. After the bleeding is stopped, the area is repacked.

2. Sensitivity to percussion:

- Extension of inflammation into the periodontal ligament may cause sensitivity to percussion. Gradually diminishing severity is a favourable sign. The pack should be removed and the gingiva checked for localized areas of infection or irritation, which should be cleaned or incised to provide drainage. Particles of calculus that may have been overlooked should be removed. Relieving the occlusion is usually helpful.
- Excess pack, which interferes with the occlusion. Removal of the excess usually corrects the condition.

3. Swelling

- In the first 2 postoperative days soft, painless swelling of the cheek in the surgical area.
- Lymph node enlargement and slightly elevated temperature .
- The area of operation itself is usually symptom free.
- This type of involvement results from a localized inflammatory reaction to the procedure. It generally subsides by the fourth postoperative day, without necessitating removal of the pack.

- If swelling persists, becomes worse and painful, amoxicillin (500 mg) every 8 hours for I week, and moist heat application intermittently over the area. The antibiotic should also be used as a prophylactic measure starting before the surgical appointment

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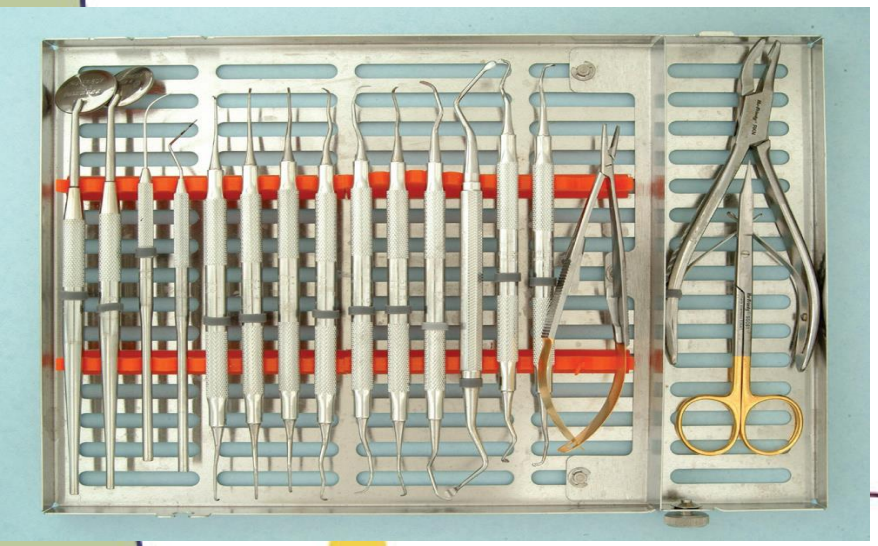
4. Feeling of weakness:

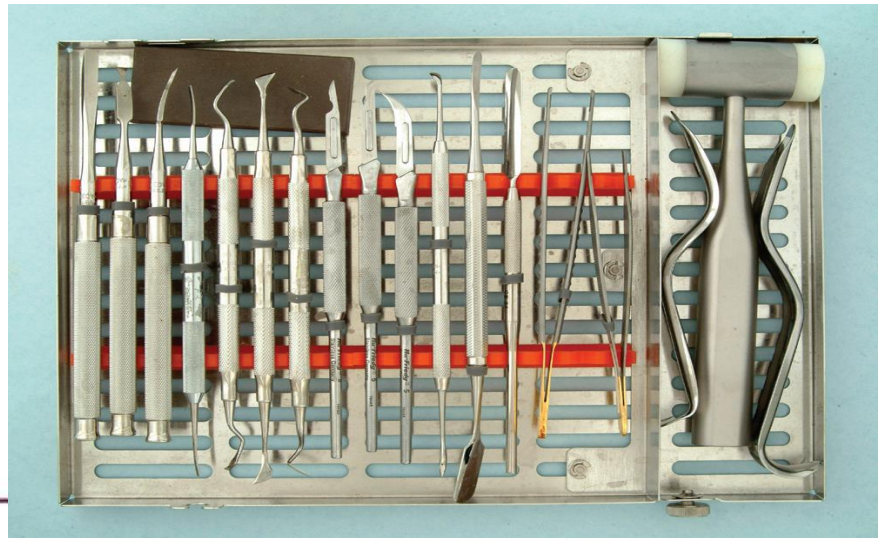
Occasionally, patients report a "washed-out," weakened feeling 24 hours after surgery. This represents a systemic reaction to a transient bacteraemia induced by the procedure. This reaction is prevented by premedication with amoxicillin (500 mg) every 8 hours, beginning 24 hours before the procedure and continuing for 5 days postoperatively.

Surgical Instruments

Periodontal surgery is accomplished with numerous instruments;
Periodontal surgical instruments are classified as follows:

1. Excisional and incisional instruments
2. Surgical curettes and sickles
3. Periosteal elevators
4. Surgical chisels
5. Surgical files
6. Scissors
7. Hemostats and tissue forceps





Excisional and Incisional Instruments

- ***Periodontal Knives (Gingivectomy Knives).*** The Kirkland knife is representative of the knives that are typically used for gingivectomy. These knives can be obtained as either double ended or single-ended instruments. The entire periphery of these kidney-shaped knives is the cutting edge

- ***Interdental Knives.*** The Orban knife (nos. 1 and 2) and the Merrifield knife (nos. 1 through 4) are examples of knives that can be used for interdental areas. These spear-shaped knives have cutting edges on both sides of the blade, and they are designed with either double-ended or single-ended blades.

- ***Surgical Blades.*** Scalpel blades of different shapes and sizes are used in periodontal surgery. The most common blades are nos.12D, 15, and 15C.

The no. 12D blade: beak shaped blade with cutting edges on both sides, which allow the operator to engage narrow, restricted areas.

The no. 15 blade: for thinning flaps and general purposes.

The no. 15C blade: a narrower version of the no. 15 blade, is useful for making the initial, scalloping-type incision. The slim design of this blade allows for incising into the narrow interdental portion of the flap. All of these blades are discarded after one use.


Hu-Friedy Stainless Germany
Hu-Friedy Stainless Germany
Hu-Friedy Stainless Germany

Surgical Curettes and Sickles

- Larger and heavier curettes and sickles are often needed during surgery for the removal of granulation tissue, fibrous interdental tissues, and tenacious subgingival deposits.

Prichard curette

Periosteal Elevators

- The periosteal elevators are needed to reflect and move the flap after the incision has been made for flap surgery.

The Woodson elevators

Surgical chisels

- They are used for bone removal and contouring.

Ochsenbein chisels

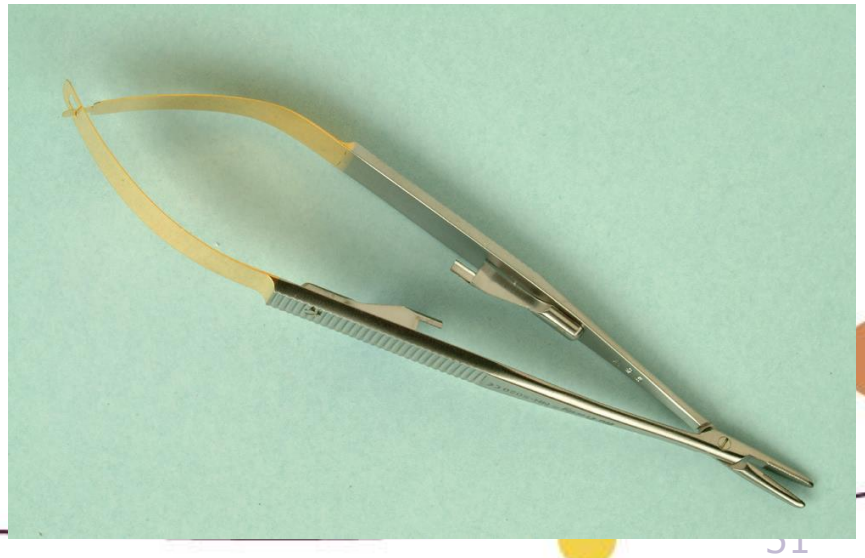
Scissors

- Scissors and are used in periodontal surgery to remove tabs of tissue during gingivectomy, to trim the margins of flaps, to enlarge incisions in periodontal abscesses, and to remove muscle attachments in mucogingival surgery.

Goldman fox scissors

Needleholders

- Needleholders are used to suture the flap at the desired position after the surgical procedure has been completed. In addition to the regular types of needleholders, the Castroviejo needleholder is used for delicate, precise techniques that require the quick and easy grasp and release of the suture



Thank you