Corrective phase (Periodontal surgery)

Introduction

The decision concerning what type of periodontal surgery should be performed and how many sites should be included is usually made after the effect of initial and Cause-related measures has been evaluated. The time lapse between termination of the cause-related phase of therapy and this evaluation may vary from 1 to 6 months. The successful cause related therapy depends on.:

1. Removal of calculus and bacterial plaque will eliminate or reduce the inflammatory cell infiltrate in the gingiva (edema, hyperemia, and flabby tissue consistency), thereby making assessment of gingival contours and pocket depths possible.

2 .Reduction of gingival inflammation (makes the soft tissues more fibrous and thus firmer, which facilitates surgical handling of the soft tissues. The propensity for bleeding is reduced, making inspection of the surgical field easier.

3.A better basis for a proper assessment of the prognosis has been established. The effectiveness of the patient's home care, which is of decisive importance for the long-term prognosis, can be properly evaluated. Lack of effective self-performed infection control will often mean that the patient should be excluded from surgical treatment.

Objectives of surgical treatment

1. Creating accessibility for proper professional scaling and root planning.

2. Establishing a gingival morphology which facilitates the patient's self- performed infection control.

3. Regeneration of periodontal attachment lost due to destructive disease.

4. Reduction or elimination of plaque retentive area especially periodontal pockets that have not responded to initial therapy.

5. Eliminate inflamed periodontal tissue example exudates, hemorrhage, suppuration that means to stop progression of disease process.

6. Correct mucogingival defect and improved periodontal esthetic.

7. Provide access to correct bony defect

indication for surgical treatment

1. Impaired access for scaling and root planning due to presence of certain impeding factors as a wide tooth surface, root fissures, root furrows & furcations involvement. These factors may make even a shallow pocket demanding a surgical access gaining.

2. Impaired access for self-performed plaque control such as gingival hyperplasia or crater that complicates such procedures.

3. Correction of gross gingival abnormalities (for esthetic reason).

4. Shifting of gingival margin apically to a plague retaining restoration.

5. To facilitate a proper restorative therapy.

(Contraindications) for periodontal surgery

1. Uncooperative patient:

Patient who don't cooperate during cause related phase of therapy because we are going to do more destruction to the connective tissue than if leave the patient without operation. In few days after surgery, we have loss of attachment. If the patient left without surgery he will have loss of attachment but within longer period of time in the patient with the poor oral hygiene.

2. Cardiovascular disease:

a. Arterial hypertension: Local anesthesia without adrenaline, and used aspirating syringe.

b. Angina pectoris: Local anesthesia without adrenaline, and used aspirating syringe.

c. Anticoagulant treatment: Aspirin and other non-steroidal anti- inflammatory drugs should not be used for post-operative pain control since they increase bleeding tendency. Furthermore, tetracyclines are contraindicated in patients on anticoagulant drugs due to interference with prothrombin formation.

d. Rheumatic endocarditis: Used prophylactic antibiotic regimen.

3. Organ transplantation:

Medications are used to prevent transplant rejection. The drug of choice is cyclosporine. The adverse effects following cyclosporine include an increased risk for gingival enlargement and hypertension.

Prophylactic antibiotics are recommended in transplant patients taking immunosuppressive drugs. In addition, antiseptic mouth rinsing (0.2% chlorhexidine) should precede the surgical treatment.

4. Blood disorders:

Patients suffering from acute leukemia, agranulocytosis, and lymphogranulomatosis must not be subjected to periodontal surgery. Anemia in mild and compensated forms does not preclude surgical treatment. More severe and less compensated forms may entail lowered resistance to infection and increased propensity for bleeding. In such cases, periodontal surgery should only be performed after consultation with the patient's physician.

5. Hormonal disorders:

a. Diabetes mellitus.

b Adrenal function: may be impeded in patients receiving large doses of corticosteroids over an extended period. The doses of corticosteroid may have to be altered during the period of surgery. The patient's physician should be consulted.

6. Neurologic disorders:

a. Multiple sclerosis and Parkinson's disease.

b.Epilepsy: Is often treated with phenytoin that in 50% of cases, may mediate the formation of gingival enlargement.

7. Smoking.

Although smoking negatively affects wound healing, it may not be considered as a contraindication for surgical periodontal treatment. The clinician should be aware, however, that less resolution of probing pocket depth and smaller improvement in clinical attachment may be observed in smokers than in non-smokers.

Instruments used in periodontal surgery:

The instrument tray:

1) Mouth mirrors and graduated periodontal probe\explorer.

(2) Handles for disposable surgical blades:

a) Bard-Parker handle (ordinary handle).

b) Blacks handle with screw key (special handle).

(3.) Mucoperiosteal elevator and tissue retractor.

(4.) Scalers and curettes.

5. Cotton pliers and tissue pliers (ad modum Ewala).

6 .Tissue scissors, suture scissors and Needle holder.

7. Burs.

8. Plastic instrument.

9. Hemostat.

Additional equipment:

10.Syringe for local anesthesia and syringe for irrigation

11.Aspirator tip.

12. Physiologic saline.

13) Draping for the patient.

14. Surgical gloves, surgical mask, surgeon's hood

The characteristic oozing type of bleeding can be controlled by a pressure pack (sterile gauze moistened with saline). Bleeding from small vessels can be stopped by a hemostat and resorbable sutures.

Sterile physiologic saline is used for rinsing and moistening the field of operation and for cooling when burs are employed. The application of saline to the wound by means of a sterile disposable plastic syringe and a needle with a blunt tip.

Visibility in the field of operation is secured by using effective suction. The lumen of the aspirator tip should have a smaller diameter than the rest of the tube in order to prevent clogging.

Surgical instruments:

1.Knives:

a. Fixed blade: The advantage (can be given any desired shape and orientation in a relation to the handle), while disadvantage (needs resharpening),

b.Replaceable blade: The advantage (sharp and can be replaced rapidly), while disadvantage (cutting edge follows the long axis of handle which limit their use

Special handles make it possible to mount blades in angulated positons, which facilitate the use of such knives for both gingivectomy excisions and reverse bevel incisions.

2. Scalers and curettes:

Scaling and root planing in conjunction with periodontal surgery take place on exposed root surfaces. Access to the root surfaces for debridement may therefore be obtained with the use of comparatively sturdy

3. Surgical burs:

The burs should operate at low speed and ample rinsing with sterile physiologic saline should ensure cooling and removal of tissue remnants. Rotating fine-grained diamond stones (Figure 6) may be used for debridement of infrabony pockets, root concavities, and entrances to furcations

4. Instruments for bone removal:

Sharp bone chisels or bone rongeurs (Figure 7) cause the least tissue damag ana should be employed whenever access permits. With reduced access, surgical burs or files may be used.

5. Instruments for handling flaps:

The proper healing of the periodontal wound is critical for the success of the operation. It is therefore important that the manipulations of flaps are performed with the minimum of tissue damage. Care should be exercised in the use of periosteal elevators when flaps are deflected and retracted for optimal visibility. Surgical pliers and tissue retractors that pierce the tissues should not be used in the marginal of the flaps. Needle holders with small beaks should be used.

Types of incision in periodontal surgery:

1.Crevicular or sulcular incisions: in those incisions we insert the blade into the sulcus. So we are cutting through the sulcus.

2.Internal bevel incision (inverse bevel incision) and External bevel incision reverse bevel incision): It's different from the sulcular incision that here we will cut 1-2mm away from the gingival margin.

Types of periodontal surgery

1.Gingivectomy & Gingivoplasty procedures: The surgical approach as an alternative to sub gingival scaling for pocket therapy was already recognized by Robicsek (1884). Gingivectomy was later defined by Grant et al. (1979) as being "the excision of the soft tissue wall of a pathologic periodontal pocket". The surgical procedure, which aimed at "pocket elimination",

was usually combined with recontouring of the diseased gingiva (to) restore physiologic form. While, the gingivoplasty is the minor alterations in the gingival morphology.

Robicsek (1884) and, later, Zentler (1918) described the gingivectomy procedure in the following way. The line to which the gum is to be resected is determined first. Following a straight (Robicsek) or scalloped (Zentier) incision.

Indications of gingivectomy & gingivoplasty:

1.The presence of deep supra-aleveolar pockets.

2.Reshape abnormal gingival contours such as gingival craters and gingival hyperplasia.

3.Minor corrective procedure.

4.Idiopathic gingival fibromatosis.

Contraindications of gingivectomy & gingivoplasty:

1.When the bottom of probable pocket be excised is located at or below the mucogingival junction.As an alternative in such a situation,an internal beveled gingivectomy may be performed

2. Infrabony pocket.

3.Thickening of marginal alveolar marginal bone and the need for bone surgery.

Advantage:

1.Technically simple good visual accesses.

2.Complete pocket elimination.

3.Restoration of a physiologic gingival contour.

Disadvantage:

1.Gross wound post operative pain

2.Healing by secondary intention.

3.Danger of exposing bone.

4.Loss of attached gingiva.

5.Phonetic and esthetic problem in the anterior area with sensitivity due to exposure cervical area of the tooth.

Technique:

It was described in 1951 by Godman.

When the dentition in the area scheduled for surgery has been properly anesthetized, the depth of pathological pockets is identified with a conventional periodontal probe. At the level of the bottom of the pocket, the gingiva is prierced with probe and a bleeding point is produced on the outer surface of the soft tissue. The series of bleeding point produced describes the depth of the pockets at several location point around each tooth in the area scheduled treatment and is used as a guideline for incision.

properly festooned margin of the remaining gingiva. Thus, in areas where the gingiva is bulky, the incision must be placed at a level more apical to the level of the bleeding points than in areas with a thin gingiva, where a less accentuated bevel is needed. The beveled incision is directed towards the base of the pocket or to a level slightly apical to the apical extension of the junctional epithelium. In areas where the interdental pockets are deeper than the buccal or lingual pockets, additional amounts of buccal and/or lingual (palatal) gingiva must be removed in order to establish a "physiologic" contour of the gingival margin. This is often accomplished by initiating the incision at a more apical level, (a) The primary incision. The incision is terminated at a level apical to the "bottom" of the pocket and is angulated to give the cut surface a distinct bevel. The interproximal soft tissue is separated from the interdental periodontium by a secondary incision using an Orban knife (No. 1 or 2) or a Waerhaug knife (No. 1 or 2; a saw-toothed modification of the Orban knife). The secondary incision through the interdental area is performed with the use of a Waerhaug knife. The incised tissues are carefully removed by means of a curette or a scaler. Pieces of gauze packs often have to be placed in the interdental areas to control bleeding. When the field of operation is properly prepared, the exposed root surfaces are carefully scaled and planed.

The gingival contour is checked and, if necessary, corrected by means of knives or rotating diamond burs. To protect the incised area during the period of healing, the wound surface must be covered by a periodontal dressing. The dressing should be closely adapted to the buccal and lingual wound surfaces as well as to the interproximal spaces. Care should be taken not to allow the dressing to become too bulky, since this is not only uncomfortable for the patient, but also facilitates dislodgement of the dressing. The dressing should remain in position for 10-14 days. After removal of the dressing, the teeth must be cleaned and polished

2. Flap procedures:

Main objectives of the flap procedures:

1. Facilitate the debridement of the root surfaces, the removal of the pocket epithelium and the inflamed connective tissue.

2. Eliminate the deepened pockets (the original Widman flap and the Neumann flap).

3. Cause a minimal amount of trauma to the periodontal tissues and discomfort to the patient.

Advantages of flap operations include:

1. Existing gingiva is preserved.

2.The marginal alveolar bone is exposed where by the morphology of bony defects can be identified.

3.Furcation area are exposed ,the degree of involvement and the tooth bone relationship can be identified.

4. The flap can be repositioned at its original level or shifted apically ,thereby making it possible to adjust the gingival margin to local conditions.

5.The flap procedure preserves the oral epithelium and often makes the use of surgical dressing superfluous.

6.The post-operative period is usually less un-pleasant to the patient when compared to gingivectomy.

Flaps are divided into 2 types depend on thickness of flap:

1.Full thickness flap: flap includes , epithelia,connective tissue,periosteum reflected from underneath bone(mucoperiosteal flap).

2.partial thickness flap:flap includes epithelia and connective tissue reflected from bone and periosteum (split flap).

Comparison of Full – thickness flap and partial – thickness flap:

		Full – Thickness flap	Partial – Thickness flap
1	Healing	Primary healing	Secondary healing
2	Technical defficulty	Relatively easy	Difficult
3	Bone defect treatment	Possible	Difficult
4	Blood supply to flap	Sufficient	Decrease
5	Elimination or reduction of periodontal pocket	Possible	Possible
6	Use with mucogingival surgery	Impossible	Possible
7	Bleeding	Less	Much
8	Post – Operative swelling	Less	Severe
9	Postoperative pain and discomfort	Less	Much
10	Fixation of flaps		Firm fixation with periosteal suture
11	Thin flap prepration by primary incision	Difficult	easy
12	Possibility to flap penetration	Less	Much
13	Augmentation of the band of attached gingiva	Possible	Possible