

Periodontal flaps

DCP 4 A Semester 2

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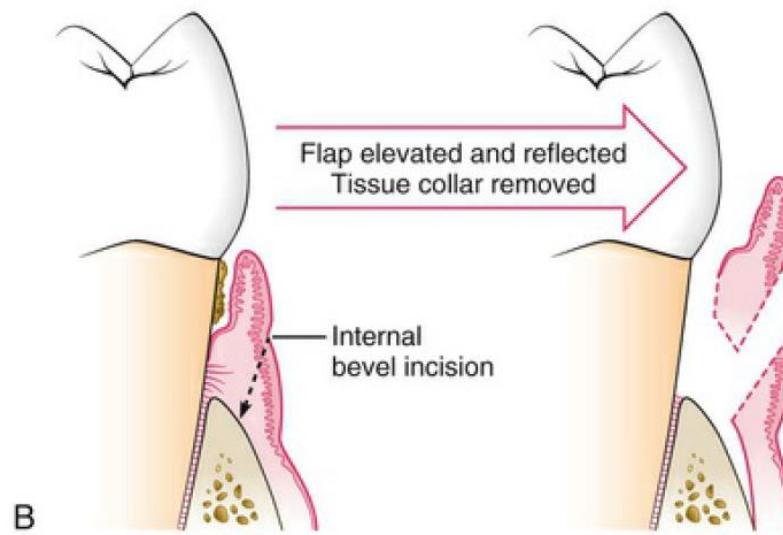
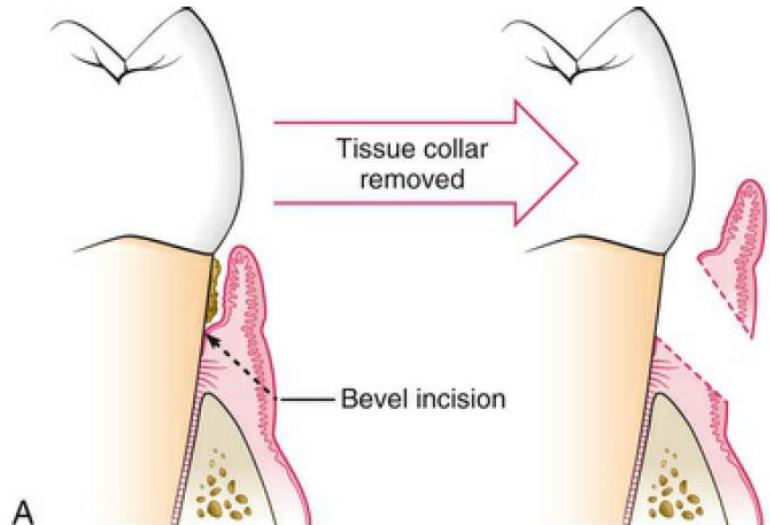


Learning Outcomes

- At the end of this lecture, you
 - 1. should know the description, classification ,uses and techniques of periodontal flaps
 - 2. should know the indication and procedure of papillectomy surgery

Periodontal flap surgery

- The most widely used form of periodontal surgery.
- Involves removal of variable amounts of gingival tissue(to eliminate or reduce pocket depth) and ‘reflecting’ the gingiva from the teeth and bone.
- Permits visualization of the periodontal defect and root surfaces & allows placement of regenerative materials.



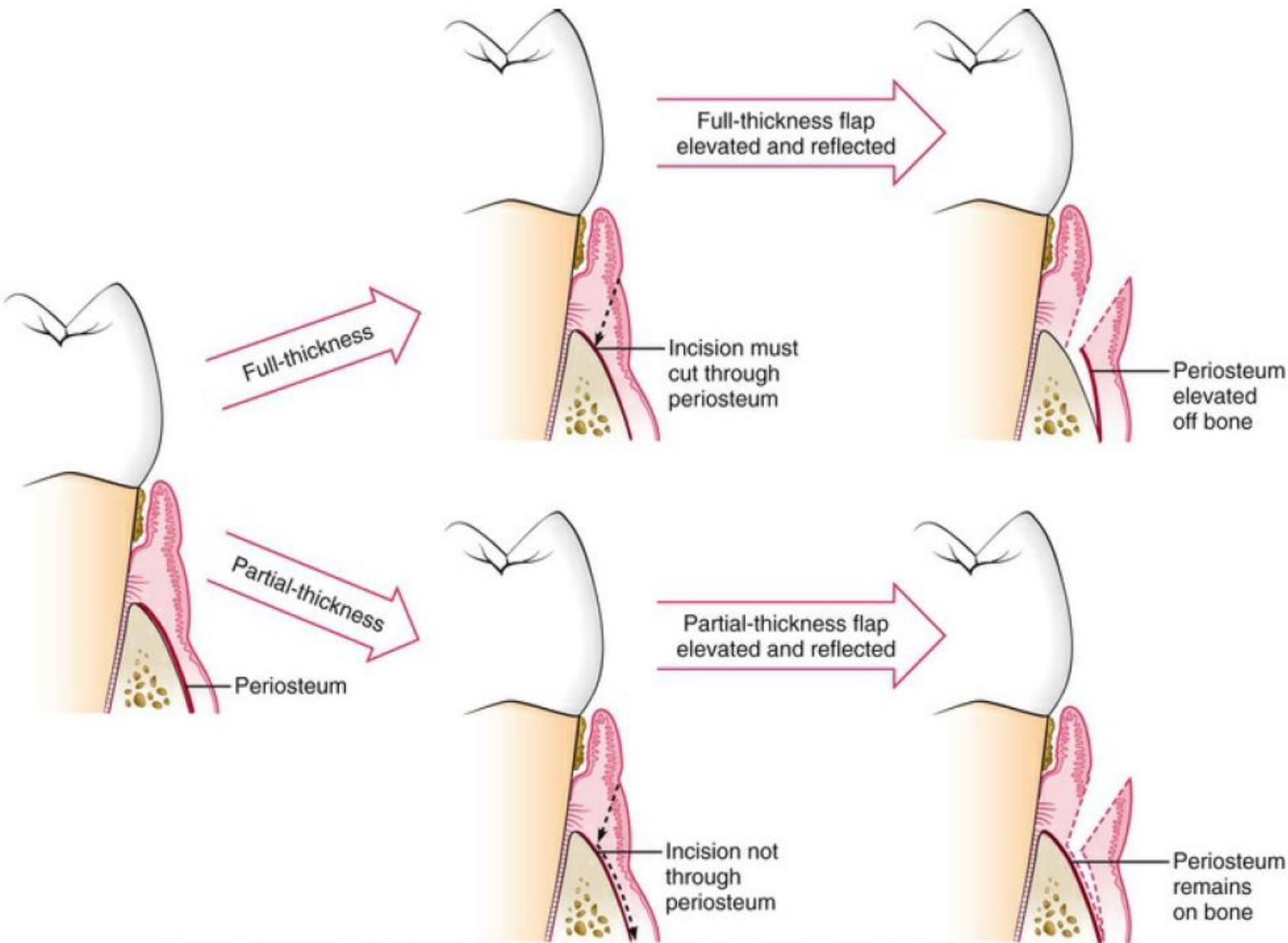
CLASSIFICATION OF FLAPS

Periodontal flaps can be classified based on the following:

- Bone exposure after flap reflection
- Placement of the flap after surgery
- Management of the papilla

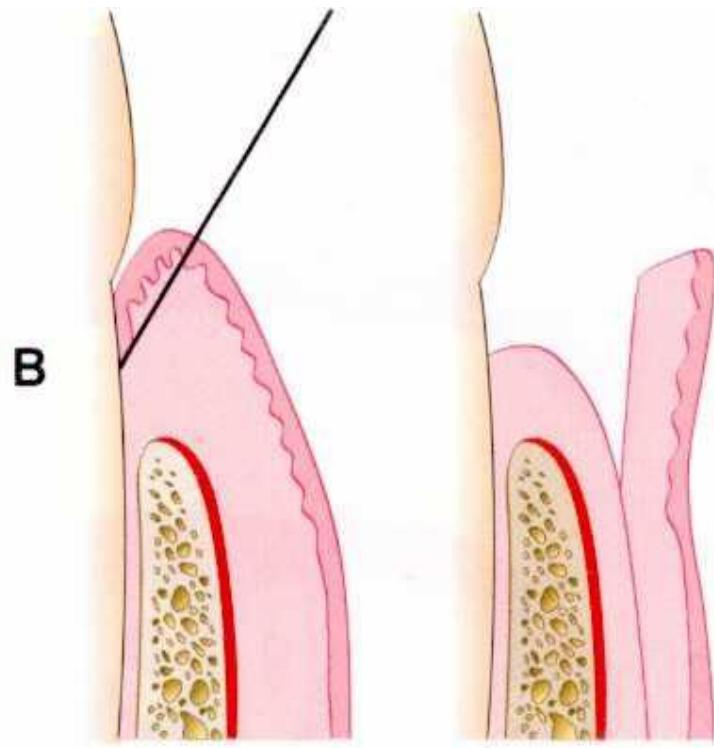
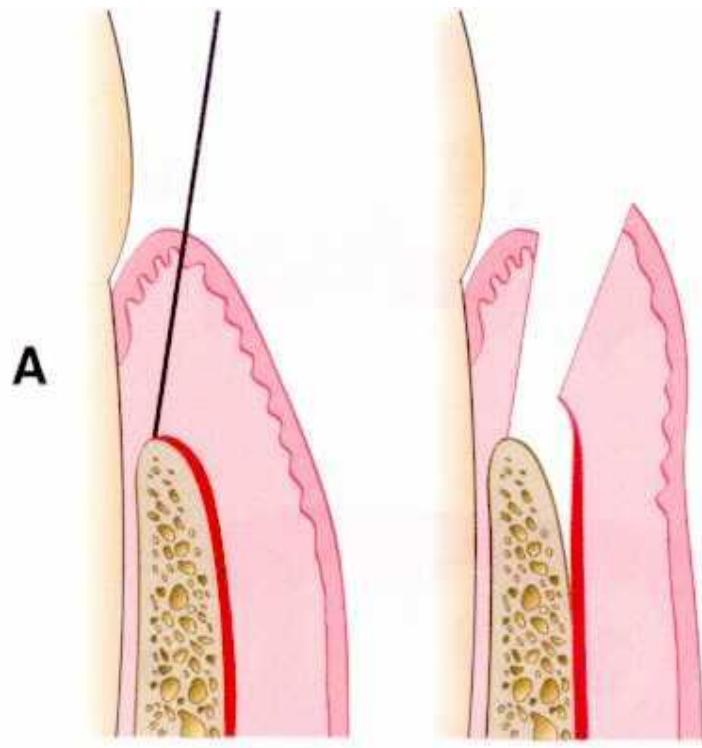
Based on bone exposure after reflection:

- **Full-thickness (mucoperiosteal) flaps:** All the soft tissue, including the periosteum reflected to expose the underlying bone.
It is indicated when resective or regenerative osseous surgery is needed.
- **Partial-thickness (mucosal) flaps (split thickness flap)** : includes only the epithelium and a layer of the underlying connective tissue. The bone remains covered by a layer of connective tissue, including the periosteum.
Indicated when the flap is to be positioned apically or when the operator does not want to expose bone.



In full thickness flaps, periosteum is elevated by blunt dissection.

In partial thickness flaps, flap is split by sharp dissection to leave the periosteum and connective tissue intact over the bone.

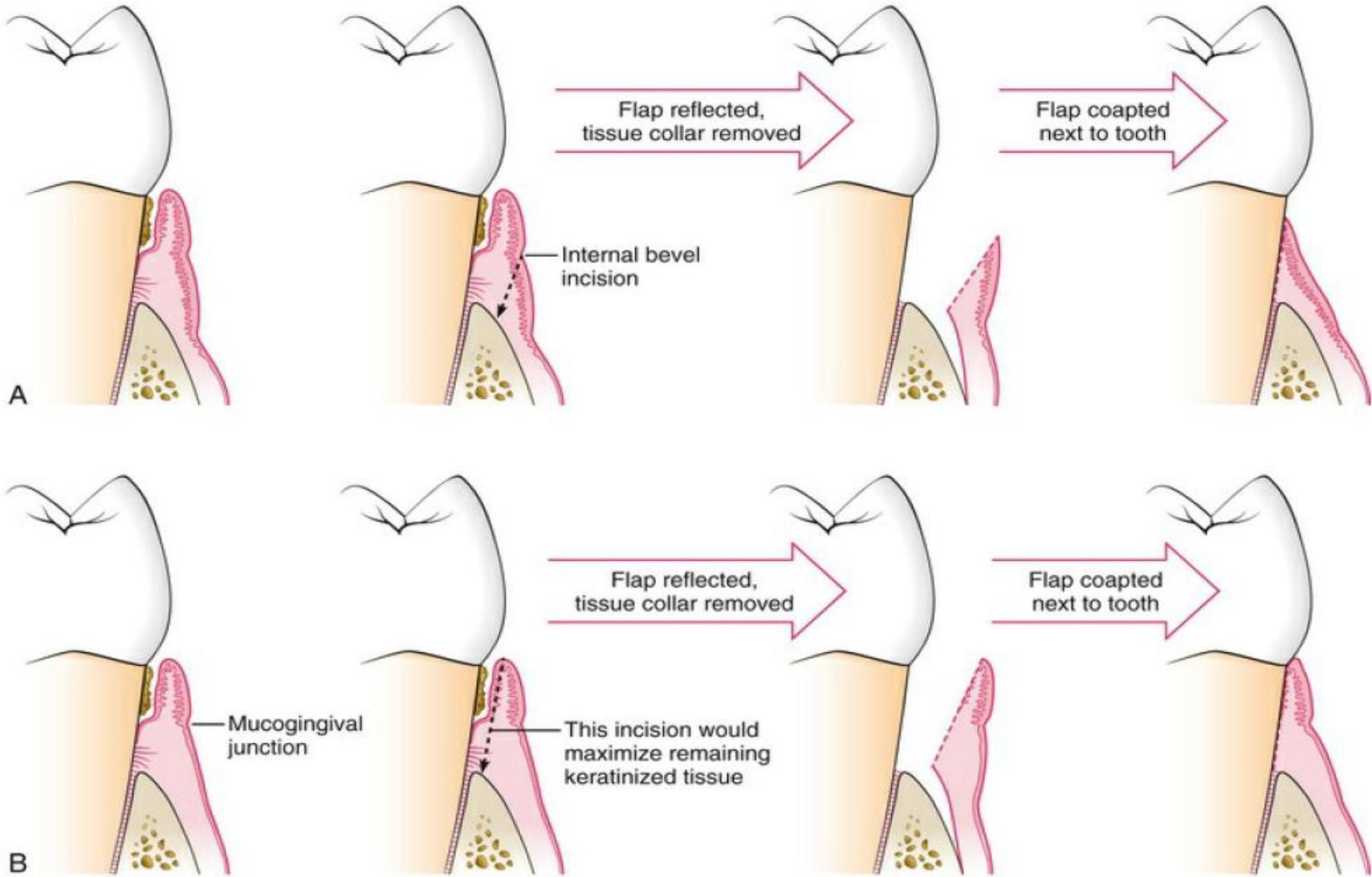


A, Diagram of the internal bevel incision (first incision) to reflect a fullthickness (mucoperiosteal) flap. Note that the incision ends on the bone to allow for the reflection of the entire flap. **B**, Diagram of the internal bevel incision to reflect a partial-thickness flap. Note that the incision ends on the root surface to preserve the periosteum on the bone.

Based on flap placement after surgery

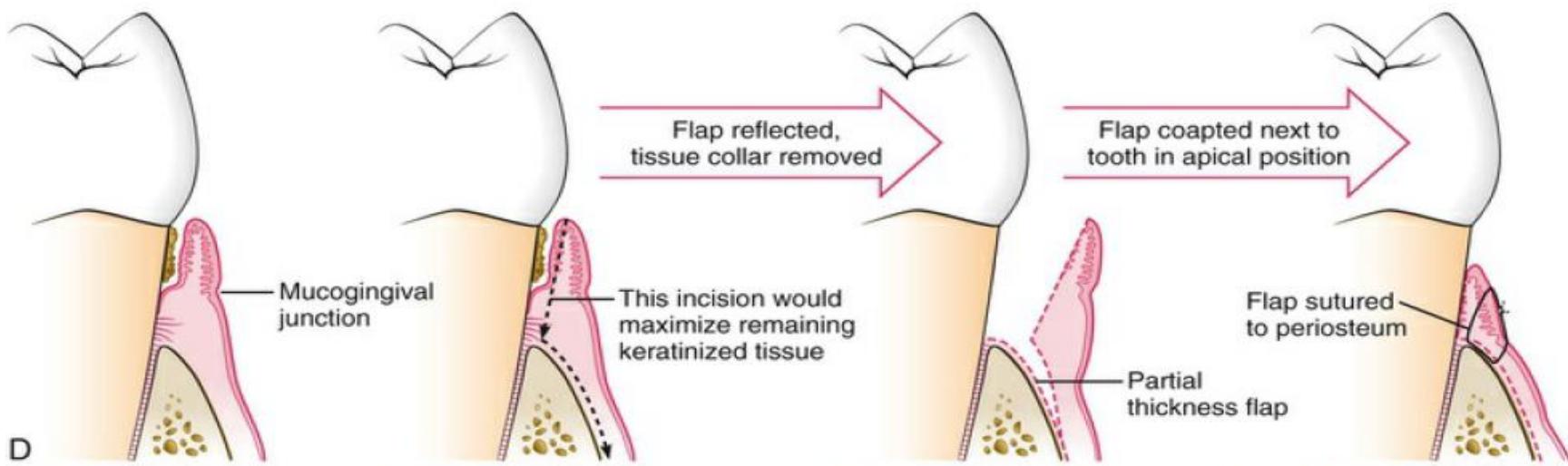
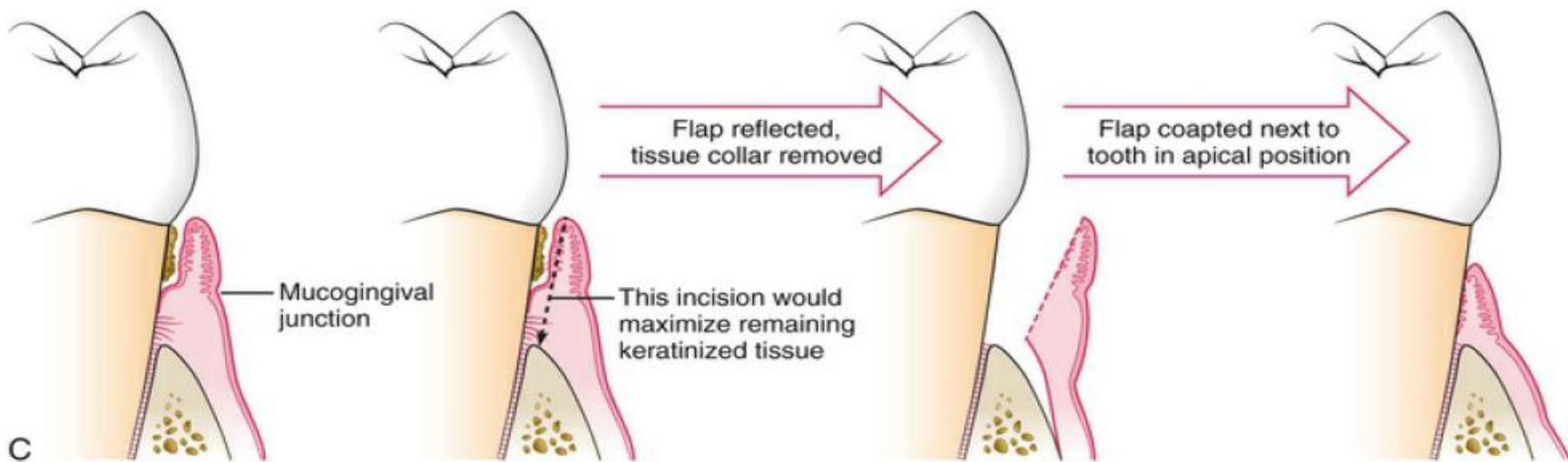
- **Undisplaced flaps :** When the flap is returned and sutured in its original position
- **Displaced flaps:** When the flap is placed apically, coronally, or laterally to its original position. Both full-thickness and partial thickness flaps can be displaced, but to do so, the attached gingiva must be totally separated from the underlying bone
Apically displaced flaps have the important advantage of preserving the outer portion of the pocket wall and transforming it into attached gingiva, eliminating the pocket and increasing the width of the attached gingiva.

Non-displaced flap



- A. In the presence of abundant keratinized tissue, soft tissue height is reduced by a submarginal scalloped incision
- B. A marginal incision is used to maximize remaining keratinized tissue. A non-displaced flap results in thick soft tissue height

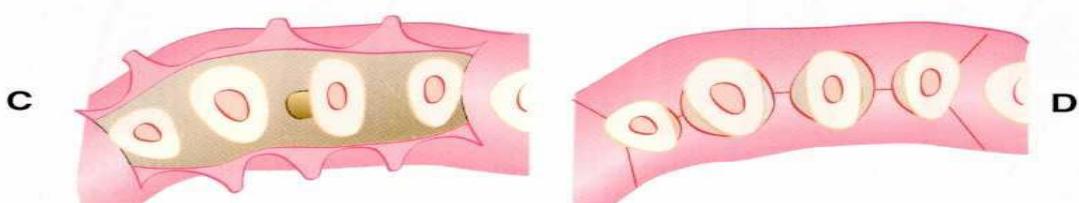
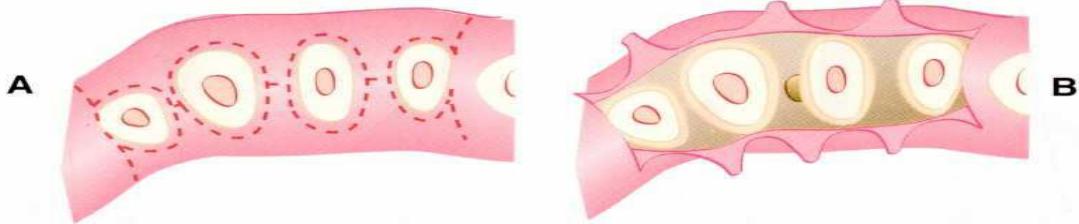
Apically displaced flap



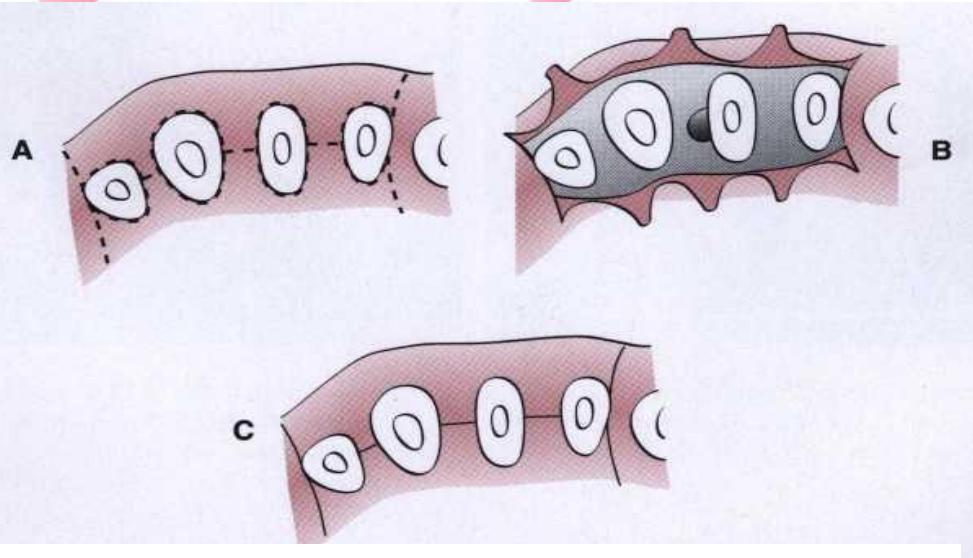
- C. Marginal incision to maximize keratinized tissue is combined with an apically displaced flap
D. Partial thickness flap is used to allow stabilization of an apically positioned flap with a periosteal suture

Based on management of the papilla

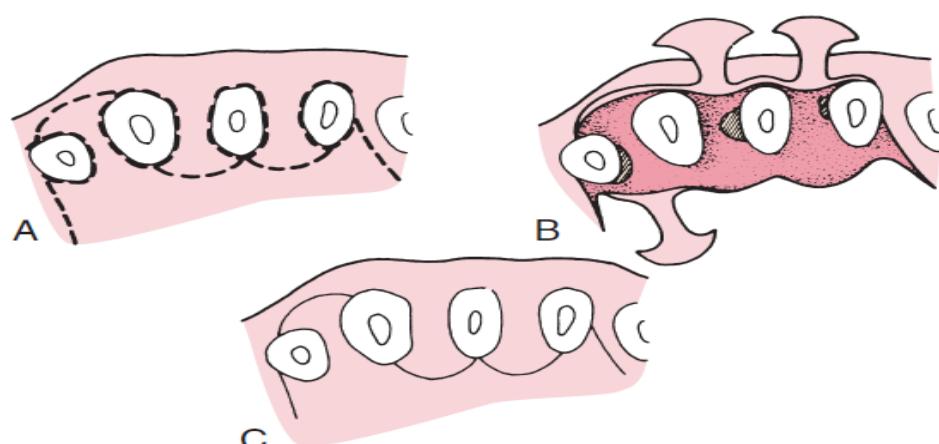
- **Conventional flap:** Split the papilla into facial half and lingual or palatal half with incision reach the top of interdental papilla. (Modified Widman flap, apically displaced flap, flap for regenerative procedures)
- **Papilla preservation flap:** incorporates the entire papilla in one of the flaps .



Flap design for the conventional or traditional flap technique



Flap design for a sulcular incision flap



Papilla Preservation Flap design

Incisions

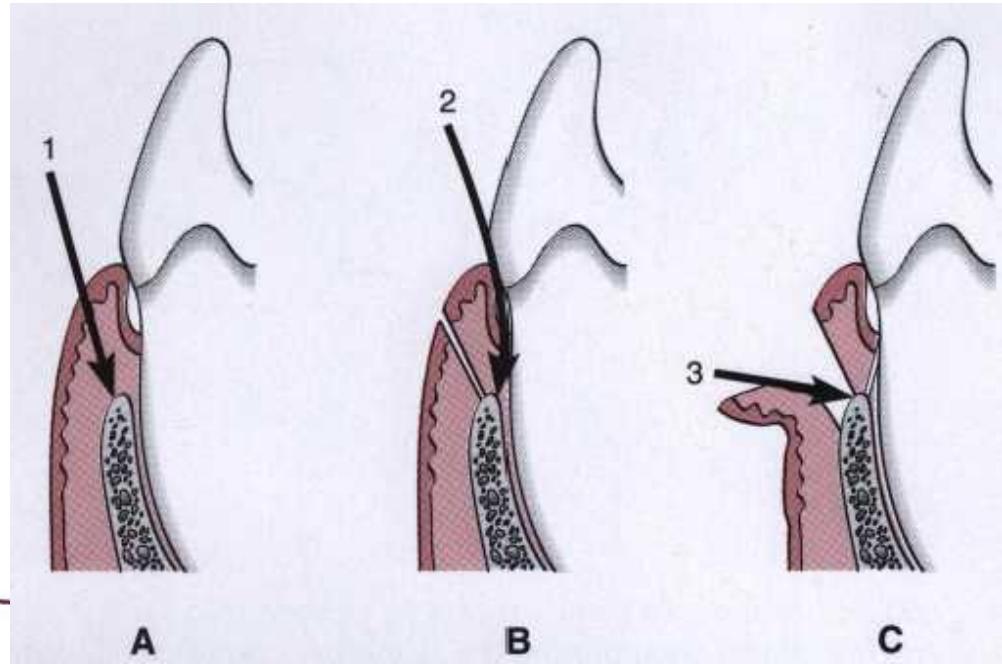
For conventional flap , the incision is horizontal or vertical

Types of horizontal incision

From the margin of the gingiva in mesial or distal direction

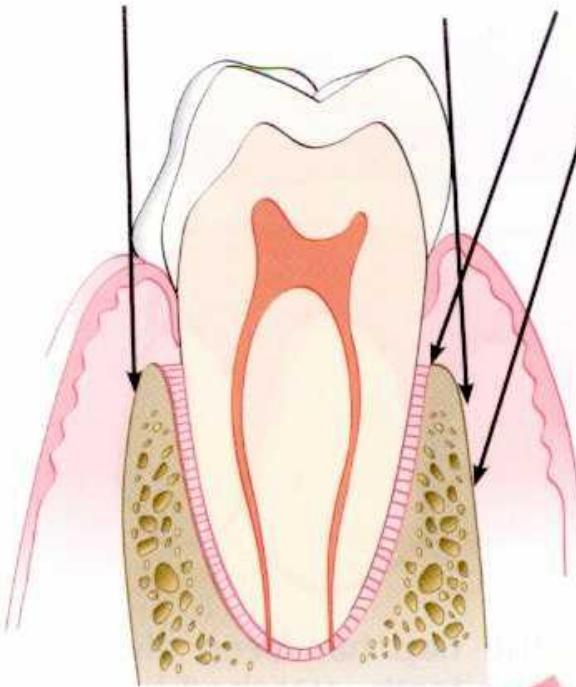
- 1.Internal bevel incision
- 2.Crevicular(sulcular) incision
- 3.Interdental incision

Envelope Flap;
Only horizontal
incision. No
vertical incision

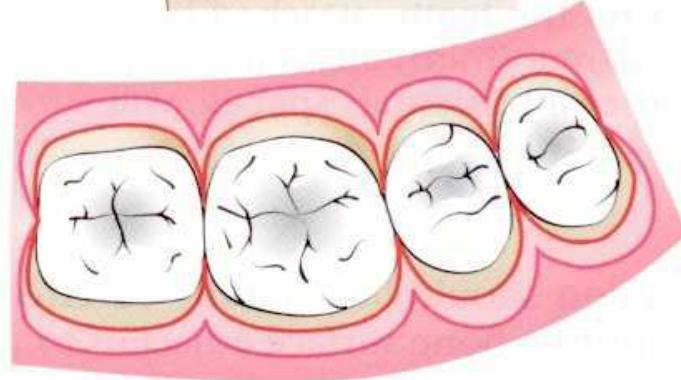


Internal bevel (1st) incision

Starts from the designated area on the gingiva & directed to an area at or near the crest of bone



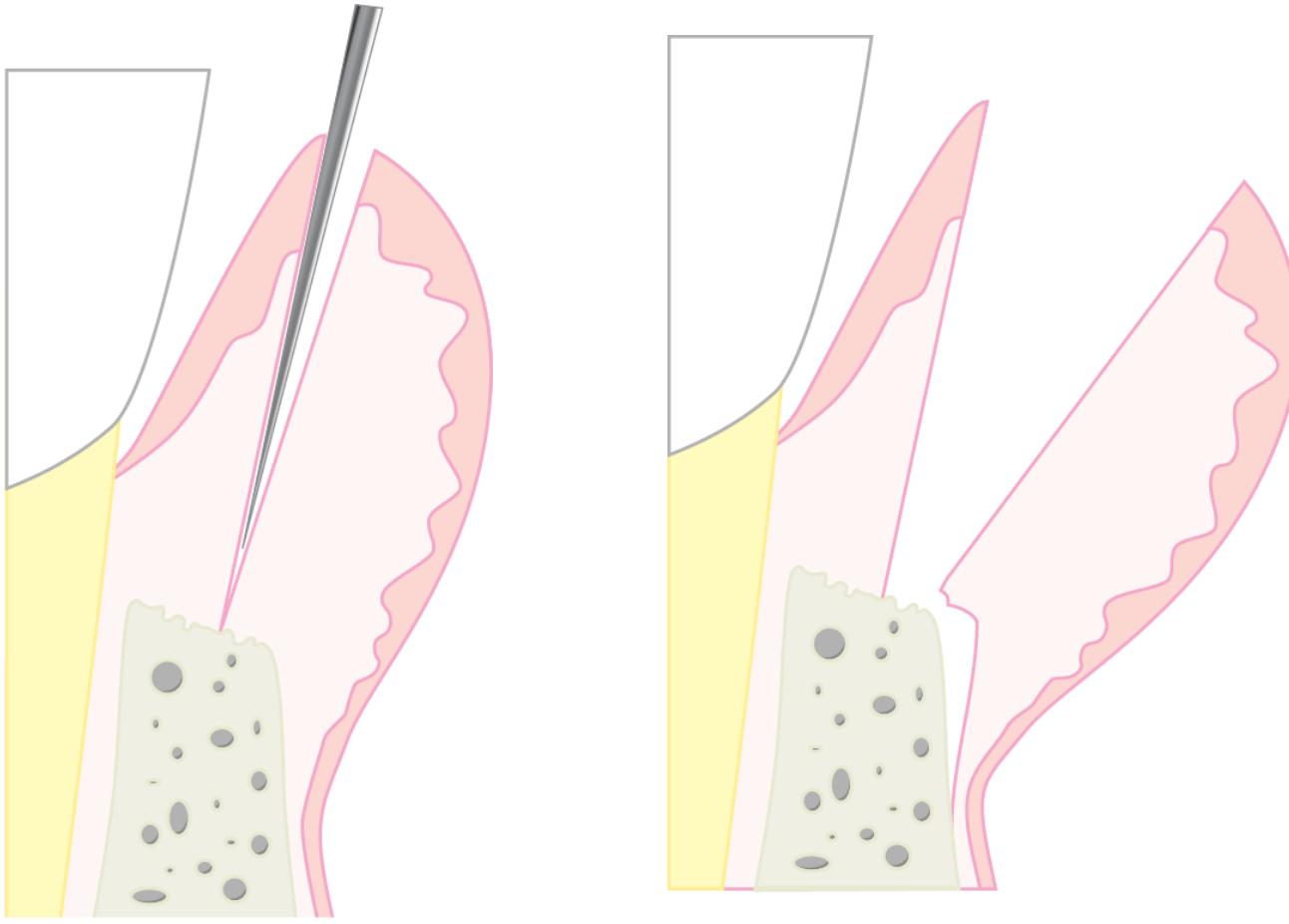
A



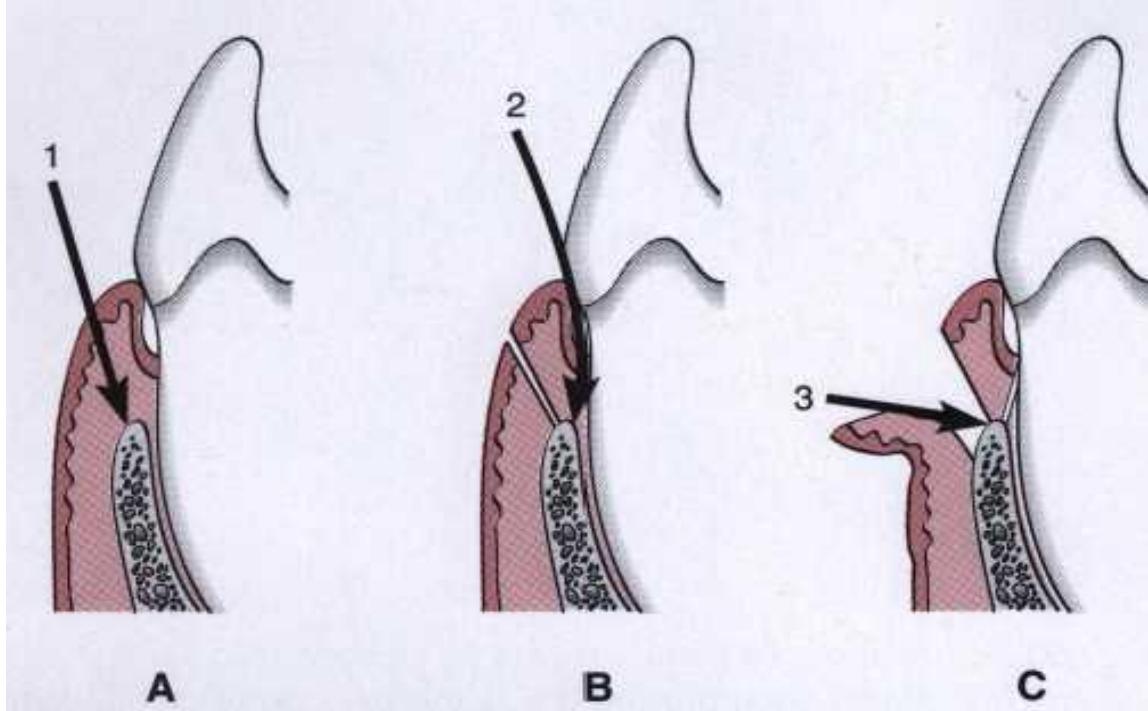
B

Used to

- To remove the pocket lining
- Produce sharp, thin flap margins



Internal bevel incision

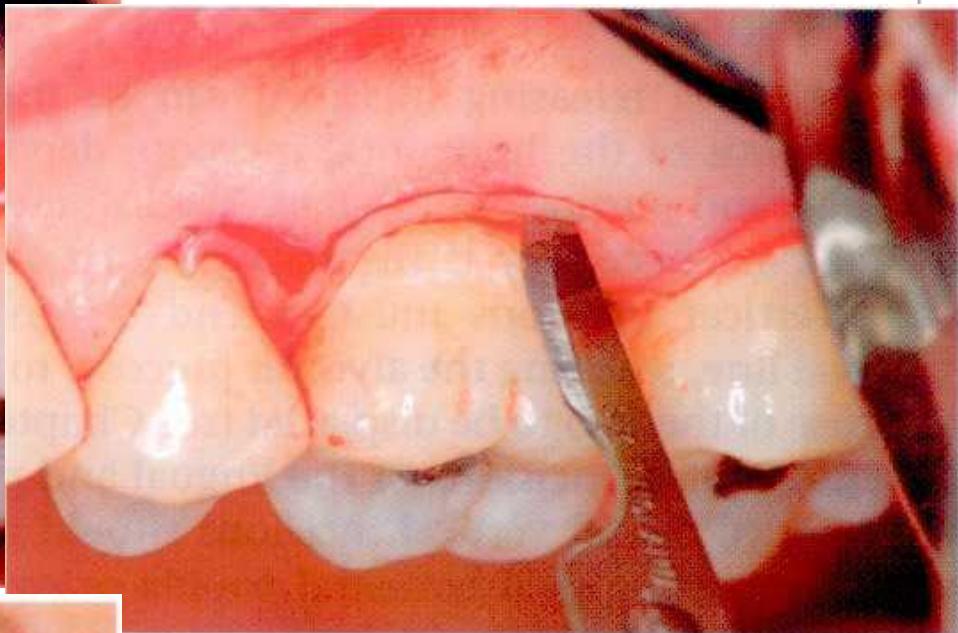


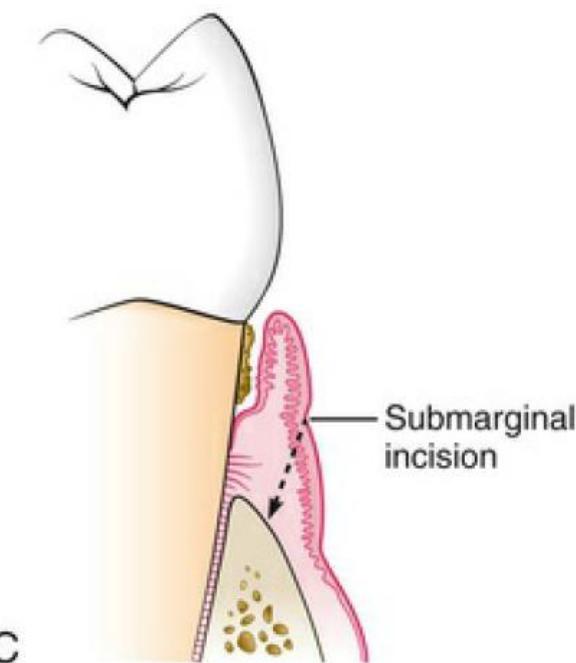
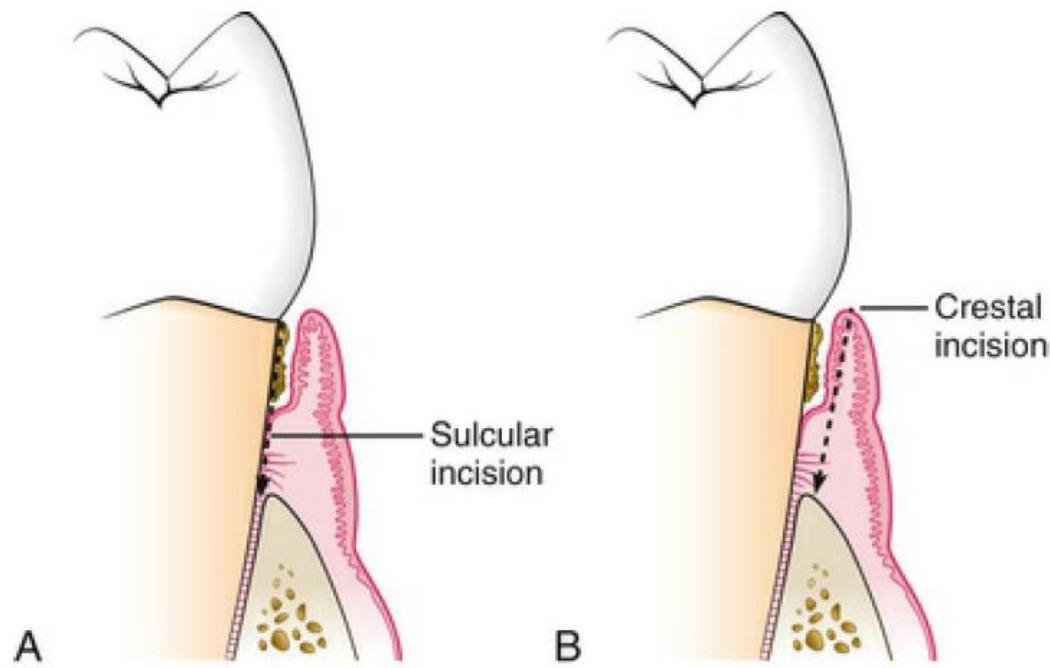
Crevicular (2nd) incision

- From the bottom of the pocket to the crest/ margin of the bone

Interdental (3rd) incision

- Used to remove the V –shaped wedge between the 1st and 2nd incision that contains granulation tissue and inflamed area, which constitute the lateral wall of the pocket, JE & CT between the bottom of pocket & crest of the bone

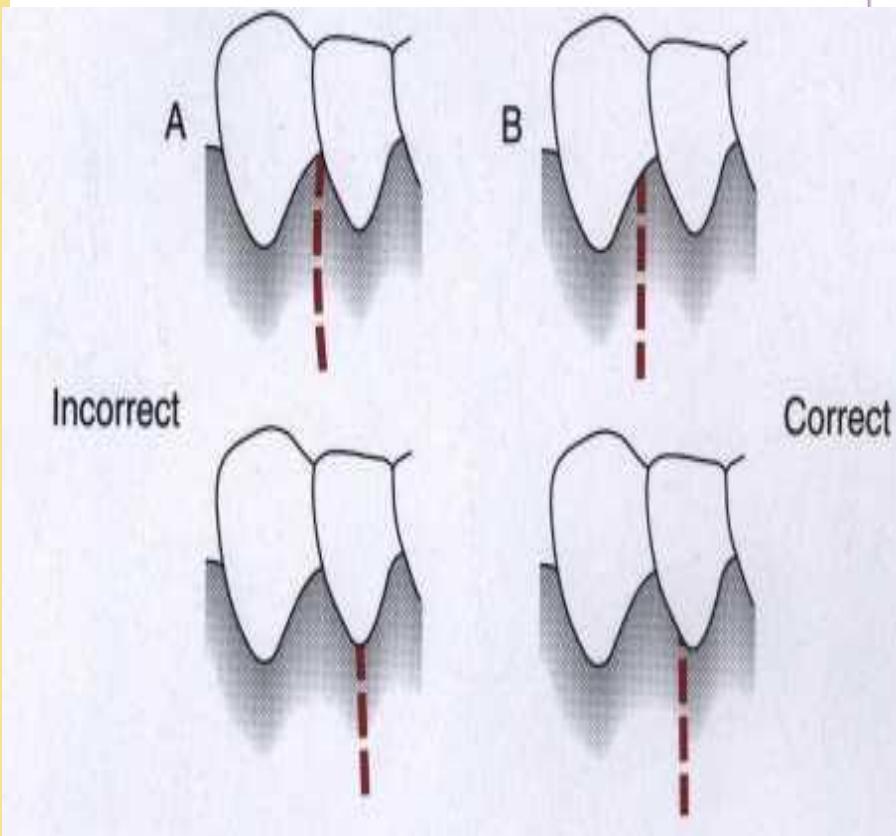




Vertical /incision

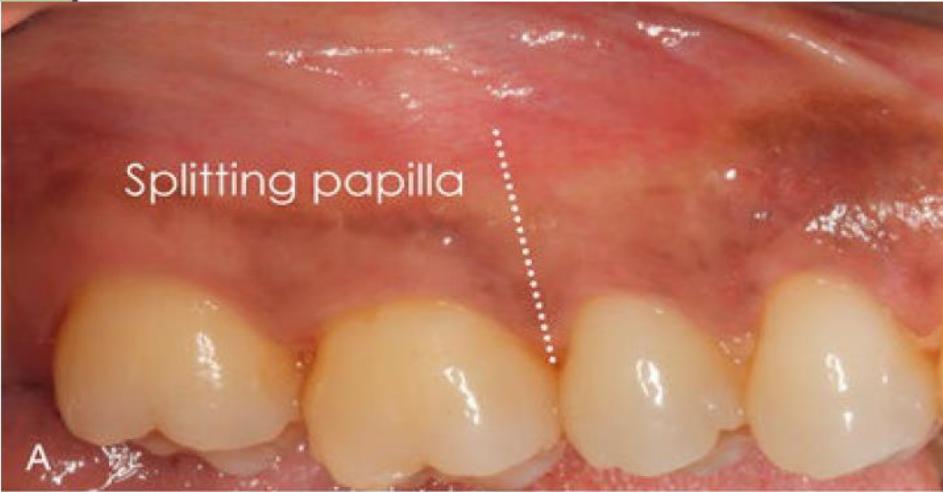
Vertical (Oblique releasing) incision at one or both end of horizontal incision

- Must extend beyond MG Line to the alveolar mucosa
- Usually on facial; avoid lingual or palatal
- Made at the line angles of a tooth to include papilla in flap or avoid it completely
- Not made in the center of interdental papilla or radicular surface of tooth



Mistakes in vertical incisions

A Splitting papilla



C Long, narrow flap



B Incision over radicular surface of a tooth



D Base < Margin



Periodontal flaps are used in surgical periodontal therapy to accomplish the following:

1. Access for root instrumentation
2. Gingival resection
3. Osseous resection
4. Periodontal regeneration

To fulfill these purposes, five different flap techniques are used:

(1) the modified Widman flap (2) the undisplaced flap, (3) the apically displaced flap, (4) the papilla preservation flap, (5) and the distal terminal molar flap.

Modified Widman Flap Procedure

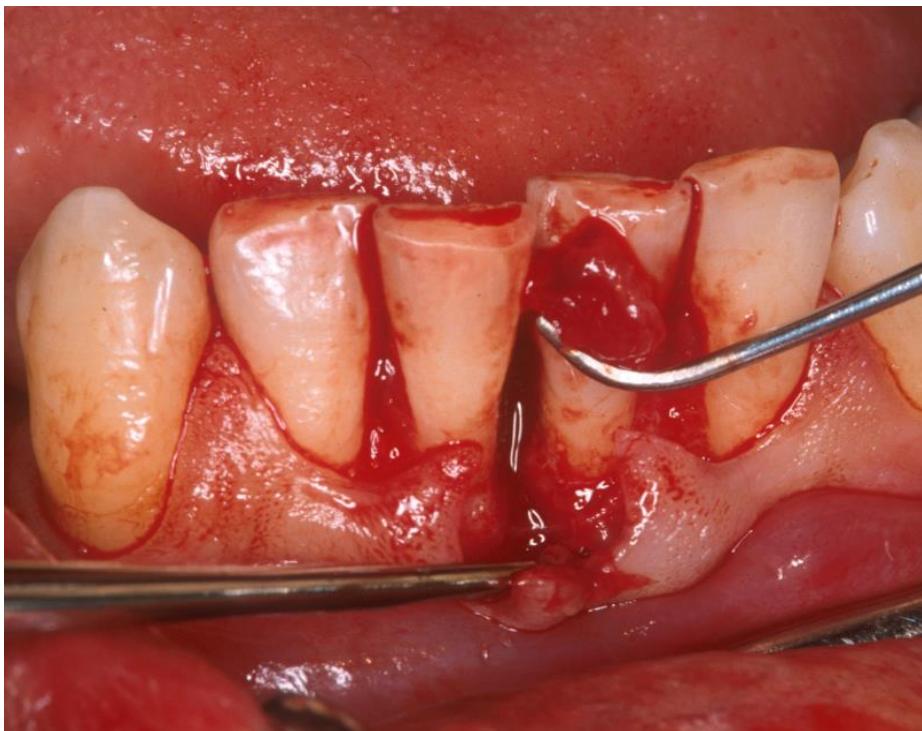
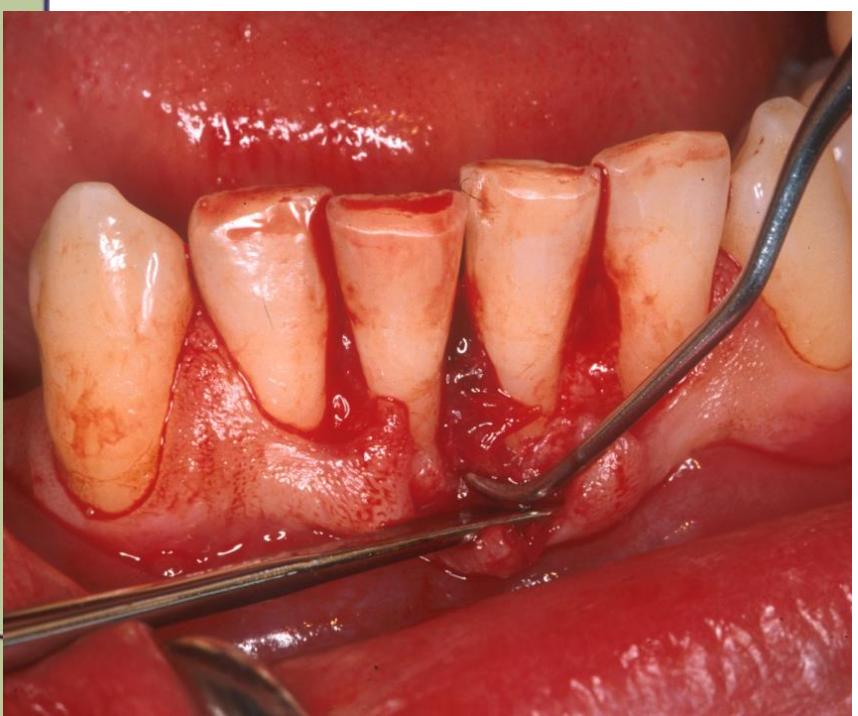
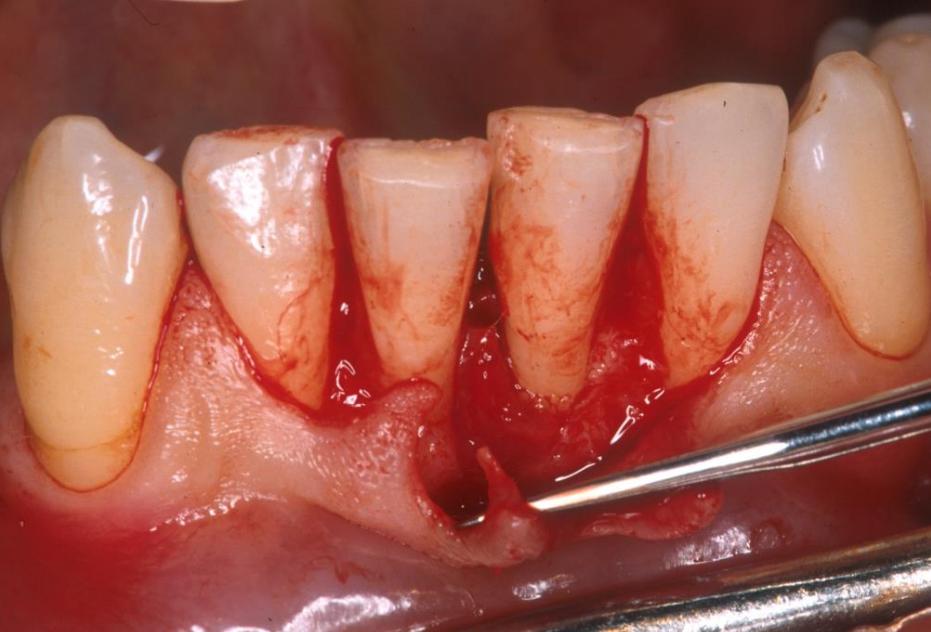
- Exposes the root surfaces for meticulous instrumentation and for removal of the pocket lining.
- It is not intended to eliminate or reduce pocket depth, except for the reduction that occurs in healing by tissue shrinkage.
- **Step 1:** The initial incision is an internal bevel incision to the alveolar crest starting 0.5 to 1 mm away from the gingival margin. Scalloping follows the gingival margin. Care should be taken to insert the blade in such a way that the papilla is left with a thickness similar to that of the remaining facial flap.
Vertical relaxing incisions are usually not needed.
- **Step 2:** Gingiva is reflected with a periosteal elevator

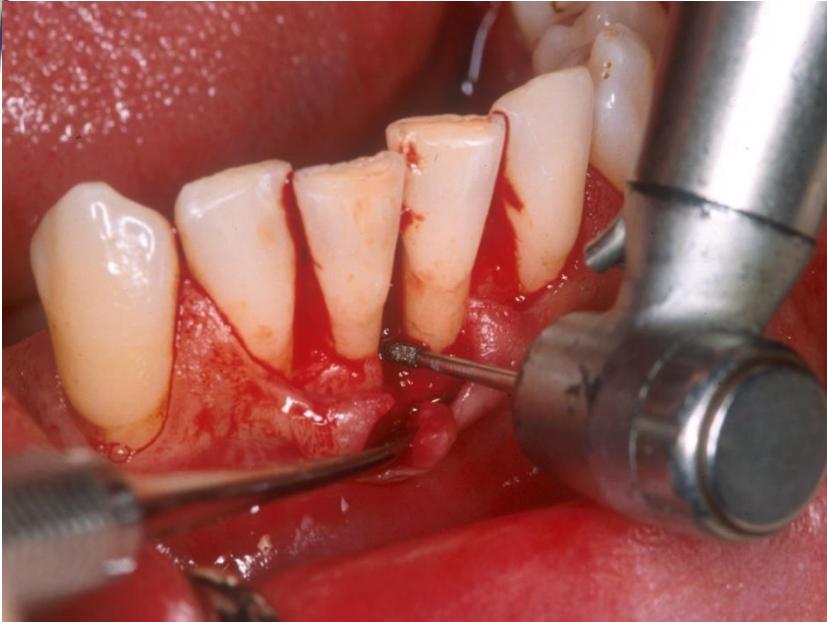
- **Step 3:** Tissue tags and granulation tissue are removed with a curette. The root surfaces are checked, then scaled and planed if needed.
- **Step 4:** Every effort is made to adapt the facial and lingual interproximal tissue adjacent to each other in such a way that no interproximal bone remains exposed at the time of suturing. The flaps may be thinned to allow for close adaptation of the gingiva around the entire circumference of the tooth and to each other interproximally.
- **Step 5:** Interrupted direct sutures are placed in each interdental space











Root surface debridement:
curettes first, then fine diamond



Sutures (Dyloc in preference to Silk)

No dressing required

Chlorhexidine mouthwash 2x daily for 1 week

No brushing or flossing in this area of the mouth

Post-op panadol?

Review in 1 week; remove sutures, check healing

Apically Displaced Flap:

- Improves accessibility and eliminates the pocket, by apically positioning the soft tissue wall of the pocket.
- It preserves or increases the width of the attached gingiva by transforming the previously un-attached keratinized pocket wall into attached tissue.





Partial thickness apically displaced flap



Apically displaced flap.

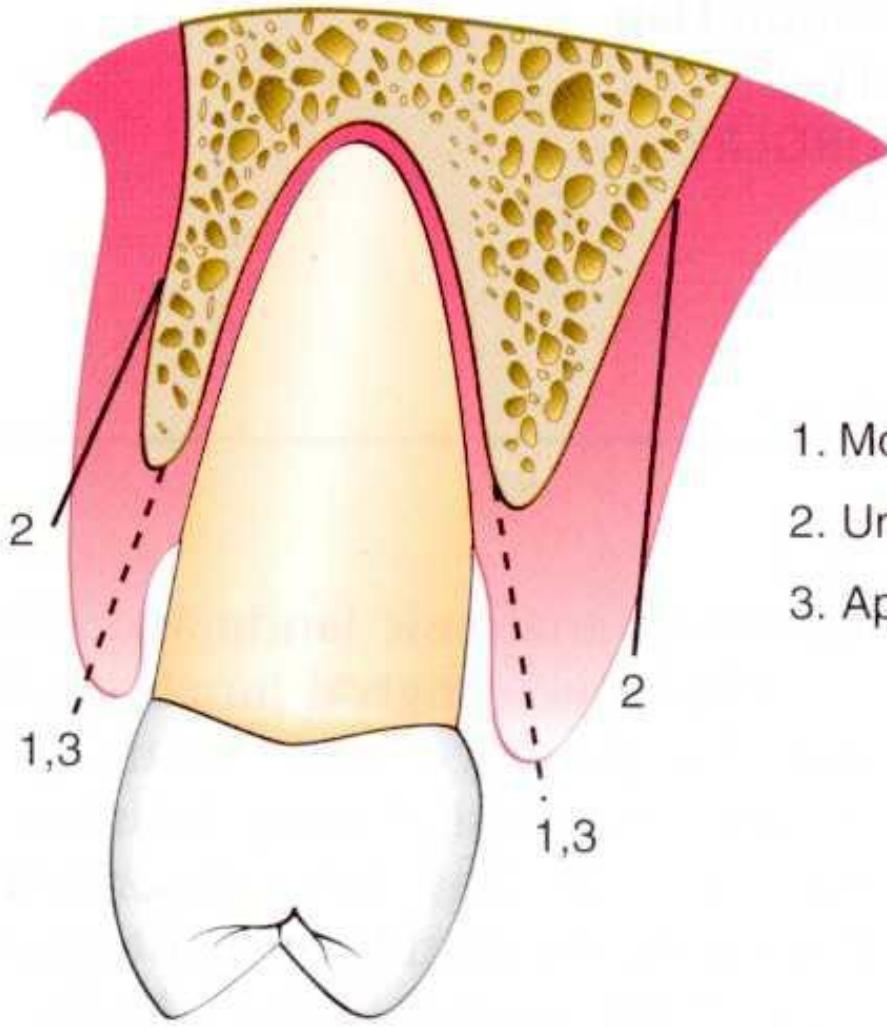


Undisplaced Flap:

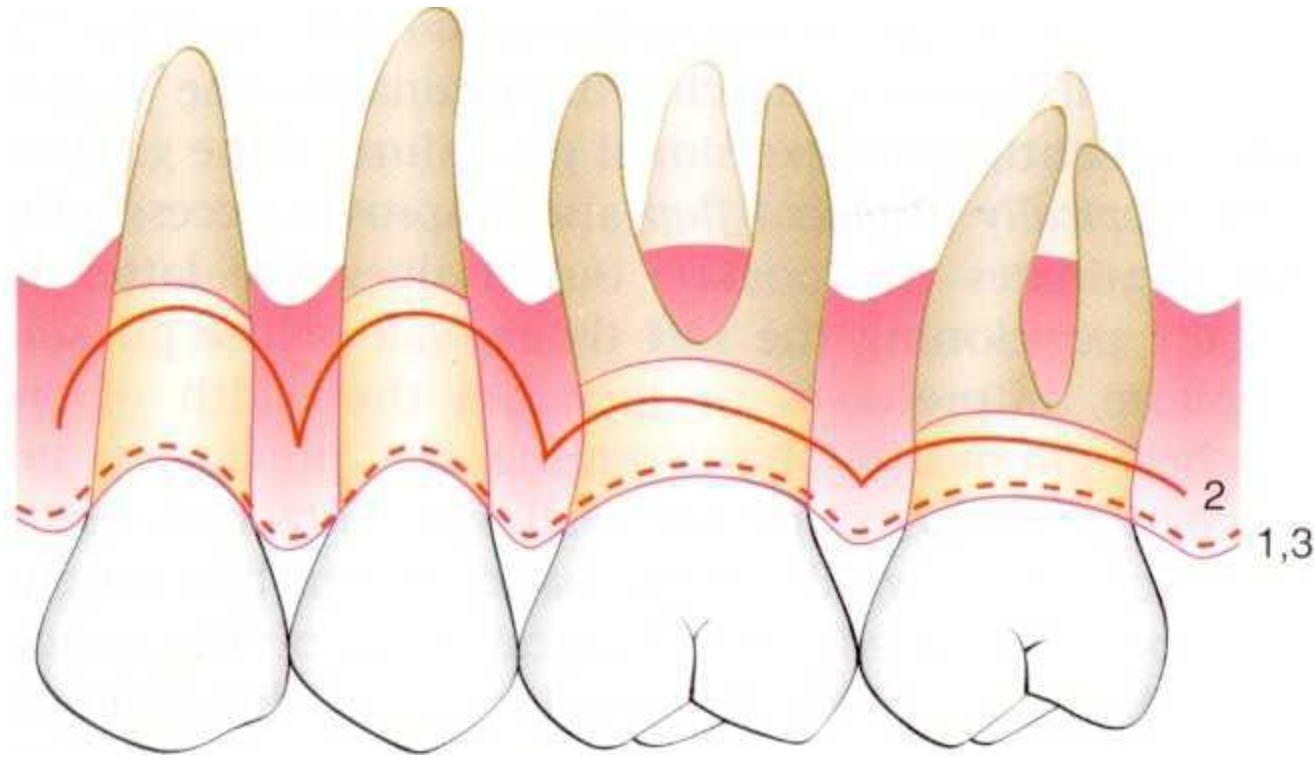
- In addition to improving accessibility for instrumentation, removes the pocket wall, thereby reducing or eliminating the pocket.
- This is essentially an excisional procedure of the gingiva.
- The Undisplaced flap differs from the modified Widman flap in that the soft tissue pocket wall is removed with the initial incision; thus it may be considered an “internal bevel gingivectomy”.
- The undisplaced flap and the gingivectomy are the two techniques that surgically remove the pocket wall.

Undisplaced flap





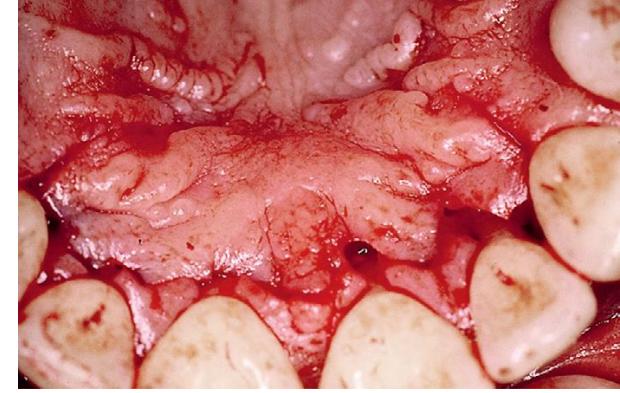
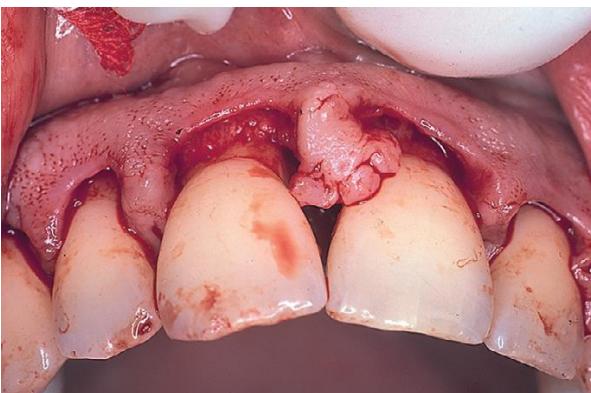
Locations of the internal bevel incisions for the different types of flaps.



Scalloppings required for the different types of flaps

Papilla preservation flap

The papilla preservation flap is used when possible in regenerative and aesthetic cases to minimize recession and loss of interdental papillae.



Distal molar surgery

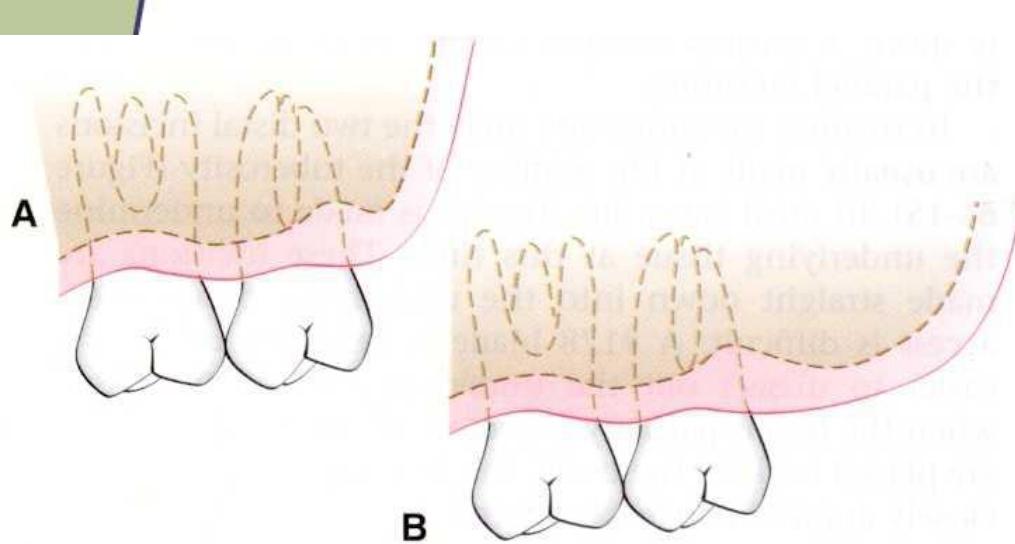
Treatment of periodontal pockets on the distal surface of last molars is often complicated by:

- the presence of bulbous fibrous tissue over the maxillary tuberosity
- prominent retromolar pads in the mandible.
- Deep vertical defects are also often present in conjunction with the fibrous tissue.

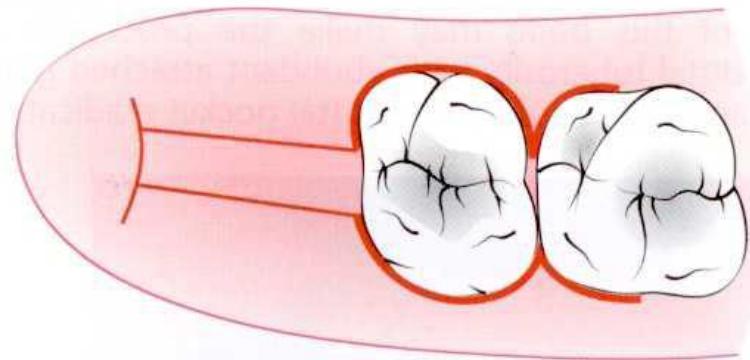
Some of these osseous lesions may result from incomplete repair after the extraction of impacted third molars

Considerations determine the location of the incision for distal molar surgery:

- accessibility,
- amount of attached gingiva,
- pocket depth,
- distance from the distal aspect of the tooth to the end of the tuberosity or retromolar pad.

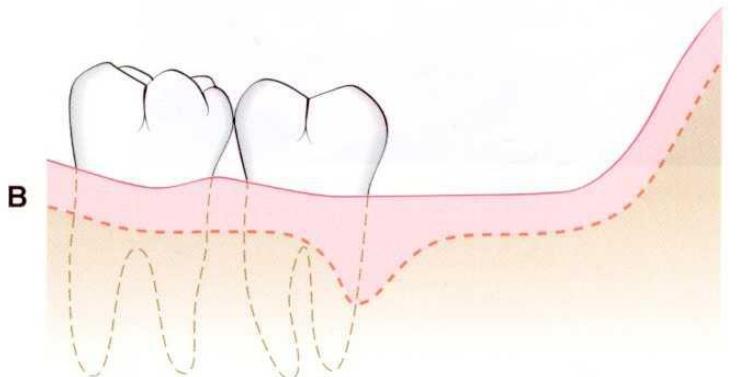
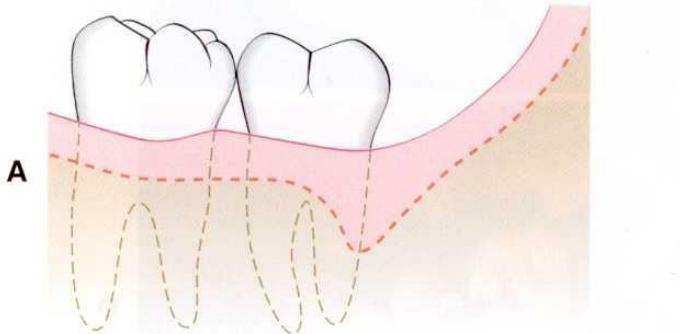


A, Removal of a pocket distal to the maxillary second molar may be difficult if there is minimal attached gingiva.
B, Long distal tuberosity with abundant attached gingiva is an ideal anatomic situation for distal pocket eradication.



Two parallel incisions, beginning at the distal portion of the tooth and extending to the mucogingival junction distal to the tuberosity or retromolar pad, are made. A transversal incision is made at the distal end of the two parallel incisions.





A, Pocket eradication distal to a mandibular second molar with minimal attached gingiva and a close ascending ramus is anatomically difficult.

B, For surgical procedures distal to a mandibular second molar, abundant attached gingiva and distal space are ideal.

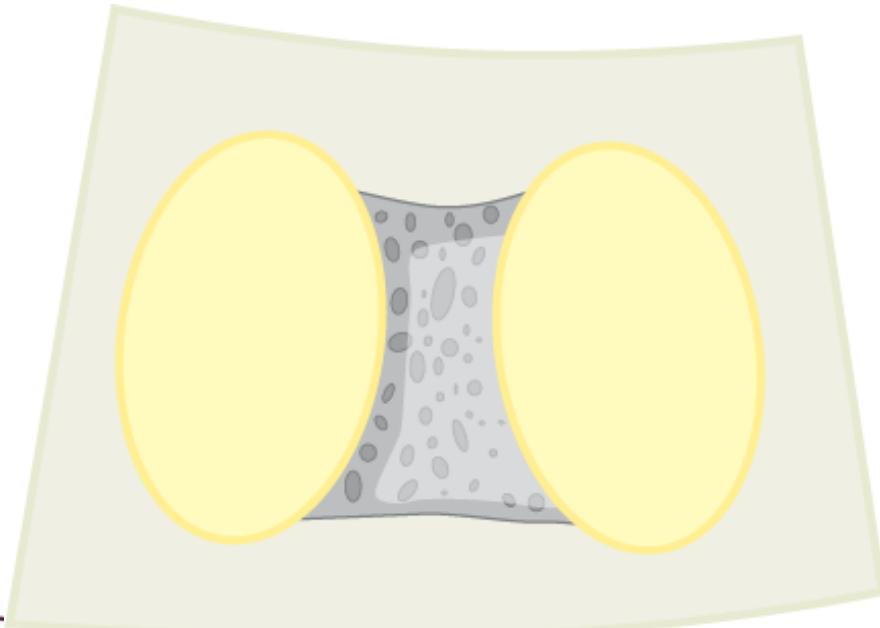


Incision designs for surgical procedures distal to the mandibular second molar.

The incision should follow the areas of greatest attached gingiva and underlying bone.

Papillectomy

- One of the simplest forms of periodontal surgery.
- Involves removal of the interproximal papilla to gain improved instrumental access to bony defects and the roots of the teeth.
- the main indication is when there is an interproximal defect / pocket only (ie no buccal or lingual bone loss).



Papillectomy

- Diagnosis of the problem,
- is the case suitable for papillectomy / do you expect you will achieve a better result than with conventional scaling only?
(issues of pocket depth, site in the mouth / aesthetic considerations, patient compliance etc)

Papillectomy

Procedure:

- Decide how many interproximal spaces you will treat
- Give LA directly into the buccal & lingual papillae; a few drops usually is enough (you can get surprisingly good local anaesthesia this way, even for conventional scaling)



LA – few drops in papillae,
note tissue blanching

Scalpel: No 11 blade, inverse
bevel incision



Incision through base of papilla (buccal & lingual), into underlying interproximal defect.





Use curettes to remove papilla,
granulation tissue in bony defect
and to scale tooth surfaces
under direct vision.

Papillectomy

- Use a periodontal pack (Coepak) to fill interproximal spaces
- Chlorhexidine mouthwash for a week, then review, remove Coepak, special OH advice to patients.
- Defects gradually fill with gingiva, little or no regeneration can be expected.



6 months after papillectomy

- All flaps result in some postoperative gingival recession and bone resorption.
- In esthetic regions, flap surgery for treatment of periodontal bone loss may be contraindicated because of the inevitable postoperative gingival recession