

FACULTY OF DENTISTRY



## Basic Periodontal Surgery

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13<sup>th</sup> November 2016

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BASIC PERIODONTAL SURGERY



Learning objectives: At the end of the lecture student should be able to

- List the indications and contraindications of periodontal surgeries
- List the types of periodontal surgeries
- Identify the differences between resective periodontal surgeries and regenerative periodontal surgeries
- Define and classify periodontal flaps
- Identify the need and techniques for gingivectomy
- Broad options for treating gingival recession.

### Phases of Dental therapy:

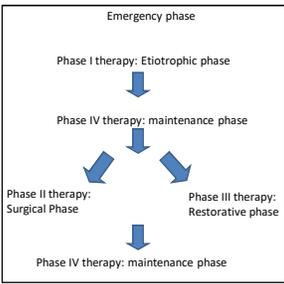
**Emergency phase**  
 Extraction of hopeless teeth, Drainage of abscess

**Phase I therapy: Etiotrophic phase**  
 Oral hygiene instructions  
 Scaling and polishing, Root debridement  
 Temporary restorations

**Phase II therapy: Surgical Phase**  
**PERIODONTAL SURGERIES**, Endodontic therapies  
 Placement of implants

**Phase III therapy: Restorative phase**  
 Fixed and removable prosthetic therapies  
 Permanent restorations

**Phase IV therapy: Maintenance phase**  
 Review of cases



**General Dental Practitioner's (GDP's)** screen patients with periodontal disease

Basic Periodontal Examination (BPE); Periodontal charting; Gingivitis, Chronic periodontitis, Aggressive periodontitis

Mild periodontitis, Moderate periodontitis → General Dental Practitioners

Severe periodontitis }  
 Aggressive periodontitis } → Periodontitis

Gingival enlargement that does not subside after Phase I therapy

4 mm to 6 mm → Scaling and polishing, root debridement(planing) → **General dentist**

>> 6 mm of pocket depth → Scaling, root debridement(planing), **periodontal surgeries** → **Periodontist**

Park CH, Thomas MV, Branscum AJ, Harrison E, Al-Sabbagh M. Factors influencing the periodontal referral process. J Periodontol. 2011 Sep;82(9):1288-94.

Patients undergoing orthodontic therapy:  
 commonest side effects is gingival enlargement



Certain drugs cause gingival enlargement

- Anti-hypertensives: Calcium channel blockers: Amlodipine, Verapamil, Diltiazem
- Immunosuppressants Eg: cyclosporine
- Anti-epileptics: Eg: Phenytoin




Gingival enlargement due to cyclosporine.



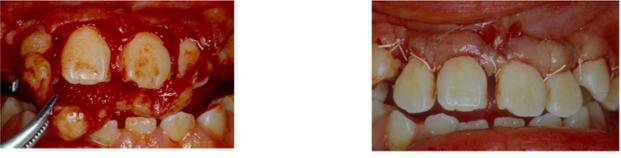
Gingival enlargement due to cyclosporine.



External bevel incision



Excision of growth

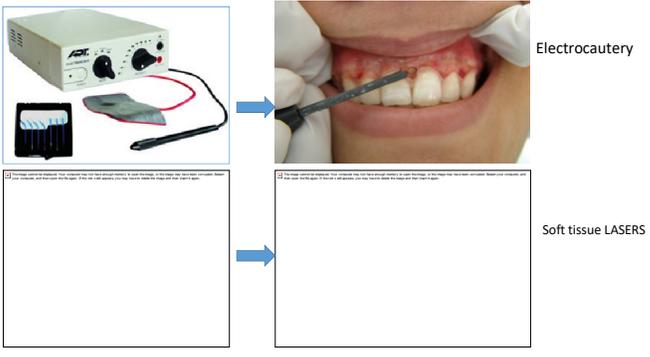


Same treatment can be performed by

- a) Scalpel
- a) Electrocautery
- a) Lasers

Lasers and electrocautery provide blood less field and simplify the procedure.

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Electrocautery

Soft tissue LASERS



IOPA: radiolucency on the mesial root

Deep periodontal pocket around 12

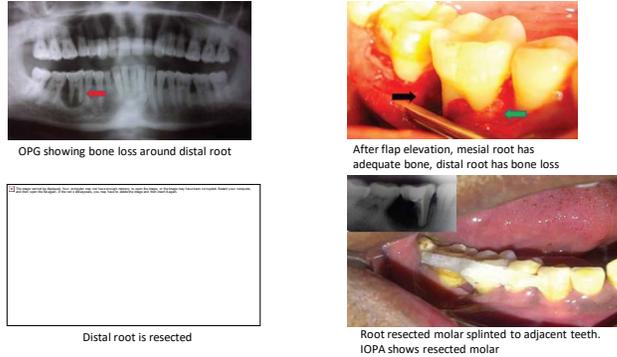
Differential Diagnosis:

- A. Root fracture
- A. Perforation of the tooth during post preparation
- A. Cemental tear

Palato-radicular groove

Maxillary lateral incisors

Elevate a flap, Radiculoplasty, Seal the groove with luting GIC

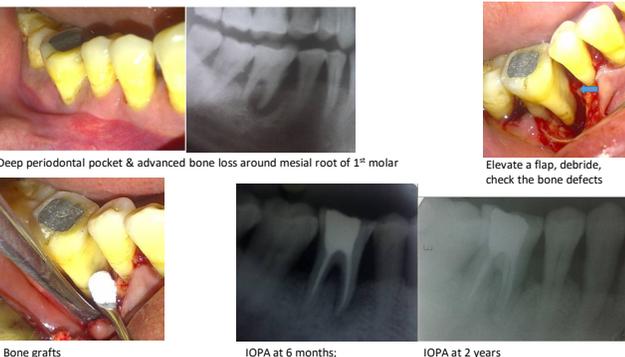


OPG showing bone loss around distal root

After flap elevation, mesial root has adequate bone, distal root has bone loss

Distal root is resected

Root resected molar splinted to adjacent teeth. IOPA shows resected molar



Deep periodontal pocket & advanced bone loss around mesial root of 1<sup>st</sup> molar

Elevate a flap, debride, check the bone defects

Bone grafts

IOPA at 6 months;

IOPA at 2 years

1<sup>st</sup> case: check the condition of root surface (exploratory surgery)

2<sup>nd</sup> case: resection of the root of the molar (resective periodontal surgery: in most cases, some bone also would be sacrificed)

3<sup>rd</sup> case: Bone grafts in the bony defect (regenerative periodontal surgery)

Periodontal Surgeries :

- a) Resective periodontal surgeries
- a) Regenerative periodontal surgeries

Over the years, science has realised that saving bone/regenerating bone is a far difficult task than sacrificing it.

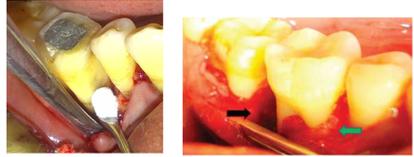
Implants as treatment option-----> RESECTIVE PERIODONTAL SURGERIES->LESS POPULAR.



A periodontal flap is defined as, "a section of the gingiva and or oral mucosa, surgically elevated from the underlying tissues to provide visibility to and accessibility to underlying bone and root surfaces."

**Purpose of flaps**

- 1) Increase accessibility to root deposits for scaling and root planing
- 1) Eliminate or reduce pocket depth by resection of the pocket wall
- 1) Expose the area to perform regenerative methods (bone graft or membrane).
- 1) Gain access for osseous resective surgery if it is necessary



Increase accessibility to root deposits for scaling and root planing

Expose the area to perform regenerative methods.

Gain access for osseous resective surgery if it is necessary

**Classification of periodontal flaps**

Periodontal flaps can be classified based on the following:

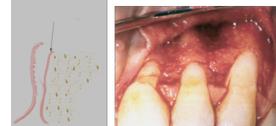
- > Bone exposure after flap reflection
- > Placement of the flap after surgery
- > Management of the papilla
- > Presence / absence of releasing incisions

**Classification of Flaps based on bone exposure after flap reflection**

**Full thickness (mucoperiosteal flap)**  
all the soft tissue, including the periosteum, is reflected to expose the underlying bone



**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



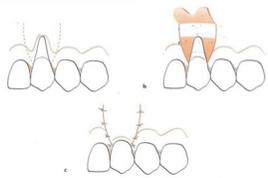
**Reference:** Newman, Takei, Klokkevold, Carranza Carranza's Clinical Periodontology. Elsevier saunders

**Classification of Flaps based on placement of flap after surgery**

Displaced flaps: after completion of the surgery, flaps are either moved coronally or apically.

Undisplaced flaps : after completion of the surgery, if flaps are placed back in the same position and sutured.

**Coronally advanced flap**




After completion of the surgery, flaps are placed back in the same position and sutured: Undisplaced flap

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**Classification of Flaps based on management of papilla**

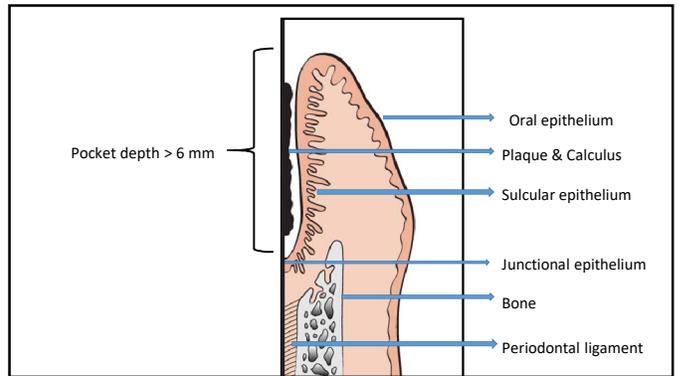
**Conventional flaps:** are used when the interdental spaces are too narrow  
Papilla's are split into two



**Papilla preservation flaps:** indicated when there are interdental spaces  
To retain the placed bone grafts



Why is regenerative surgery done ?



**Regeneration**

**Repair**

Difference between repair and regeneration  
Repair results in scar tissue formation  
Regeneration results in formation of new tissues

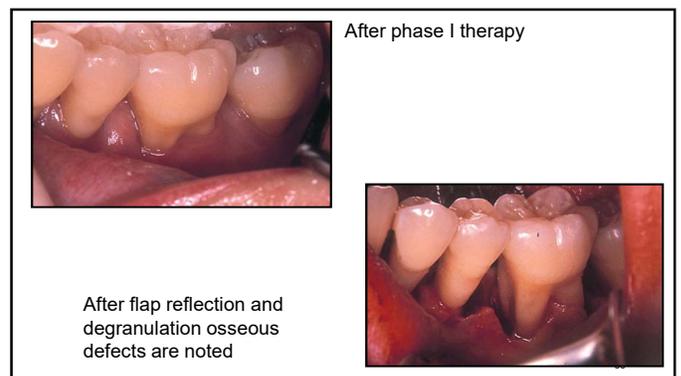
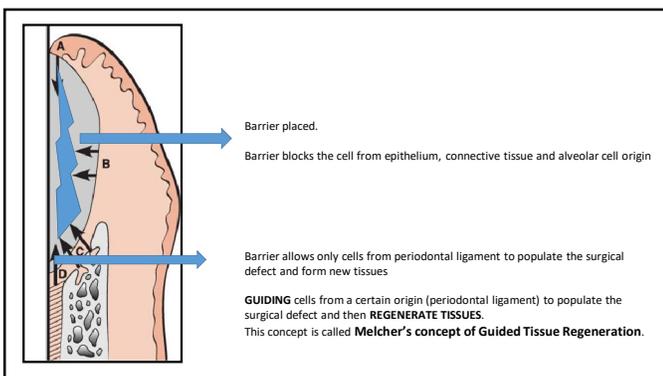
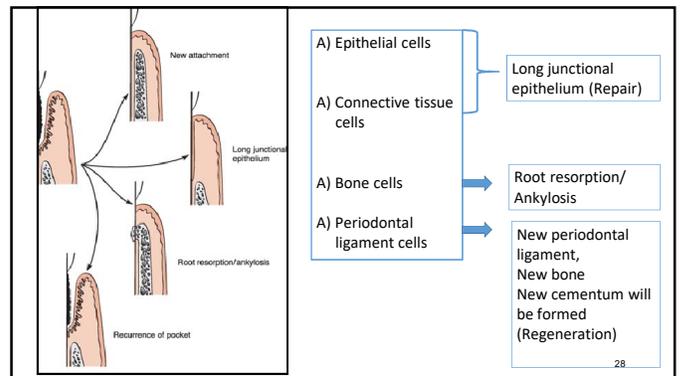
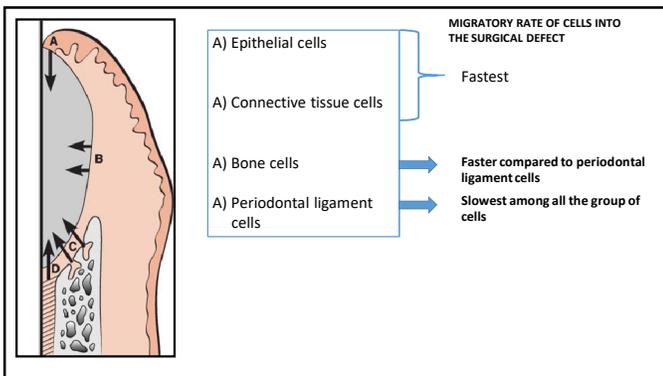
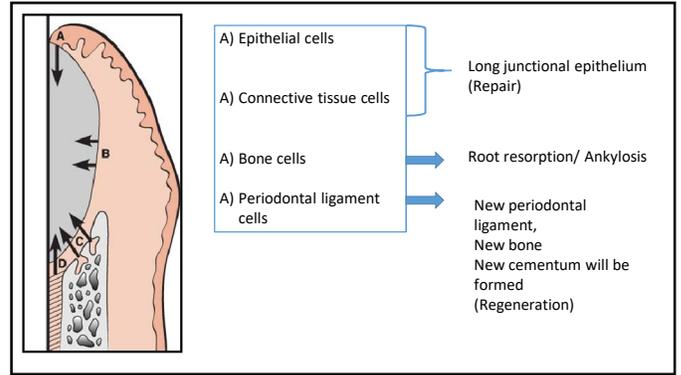
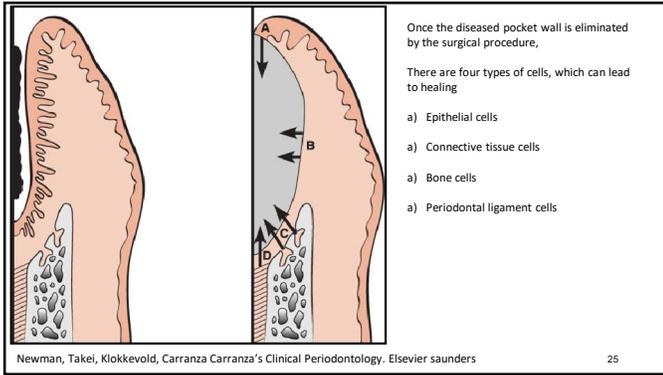
**Periodontal disease**

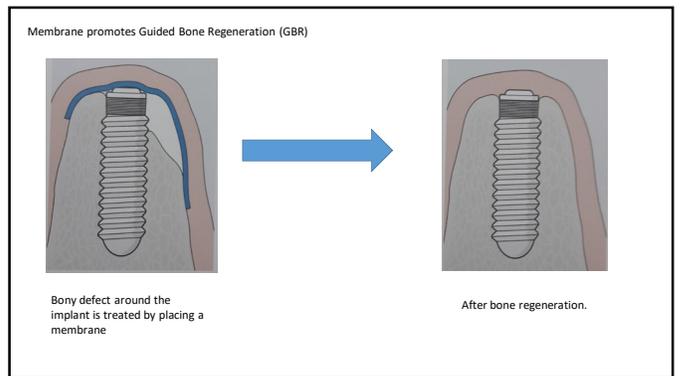
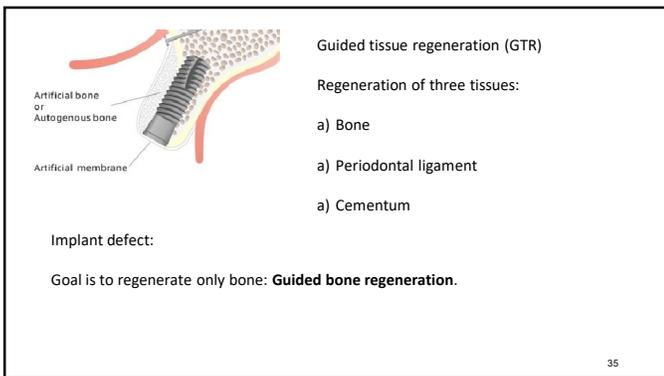
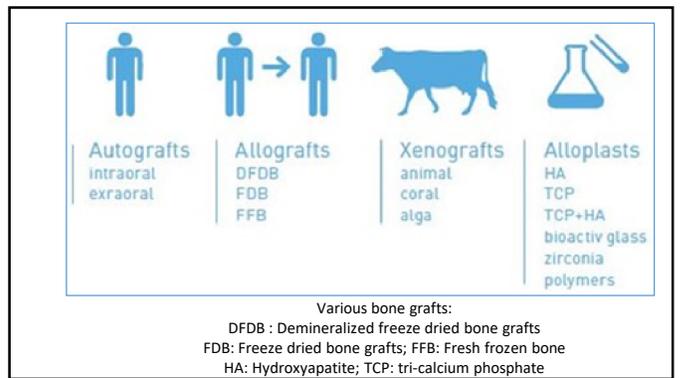
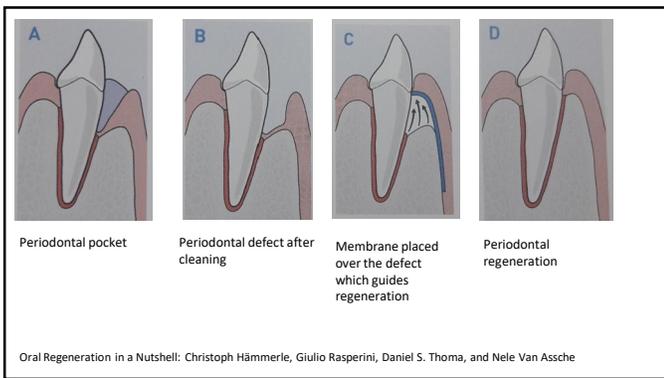
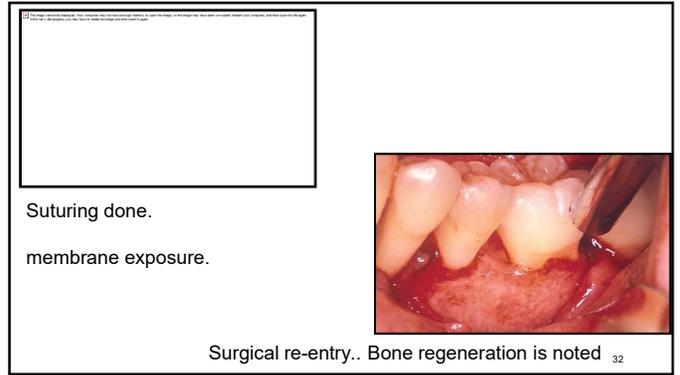
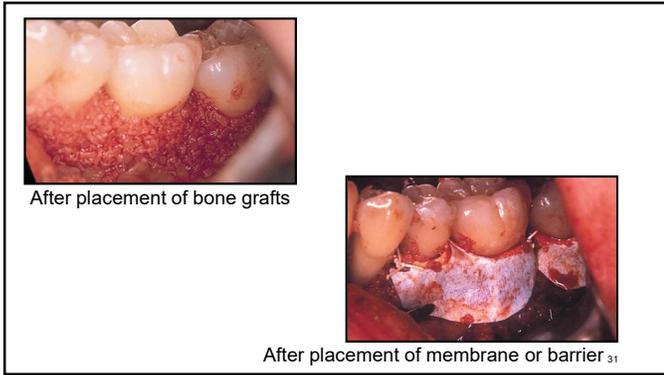
- a) Deep periodontal pocket
- a) Pocket epithelium lines the deep periodontal pocket
- a) Surgery results in removal of pocket epithelium

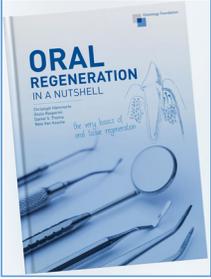
Result of surgery is  
**Formation of Long Junctional epithelium**  
**Scar tissue formation (REPAIR)**

Long junctional epithelium is susceptible to breakdown easily second time.  
So chances of recurrence of periodontal disease is higher when long junctional epithelium is formed.

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**Osteology Foundation**

<https://www.osteology.org>

The Osteology Foundation promotes research, education and collaboration between universities and industry in the field of oral and maxillofacial tissue regeneration. The objective is to make new techniques and products available to practitioners quicker and with greater goal orientation.

**PERIODONTAL PLASTIC SURGERY: MUCOGINGIVAL SURGERIES:**



Gingival recession  
No pockets  
Clinical attachment loss: 3 mm

Gingival recession  
No pockets  
Clinical attachment loss: 3 mm



Gingival margin migrates apically leading to exposure of the root surface.

Cause: Faulty tooth brushing habits

Leads to:

- Dental hypersensitivity
- Root caries
- Roots appear longer than normal: unaesthetic

Thin and Thick gingival biotypes:

Thin gingival biotypes: Conical teeth; slender roots; more chances of gingival recession

Thick gingival biotypes : Squarish teeth; broad roots; less chances of gingival recession



Recession can be treated using soft tissue grafts:

- Autogenous
- Allogenic
- Xenogenic

Soft tissue grafts can be

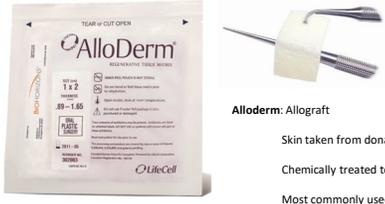
Autogenous:

- Connective tissue grafts
- Epithelial grafts
- Adjacent mucosa ( lateral pedicle grafts/flaps)



Disadvantages: Two surgical sites

Donor site;      Recipient site



**AlloDerm: Allograft**

Skin taken from donated human cadavers.

Chemically treated to remove all allergenicity

Most commonly used in

- ✓ correction of cancer surgeries
- ✓ correction and repair of burn injuries
- ✓ **Treatment of gingival recession and soft tissue augmentation**



**Xenografts:**

- Mucograft (Geistlich)
- MucoMatrixX ( Dentegris)

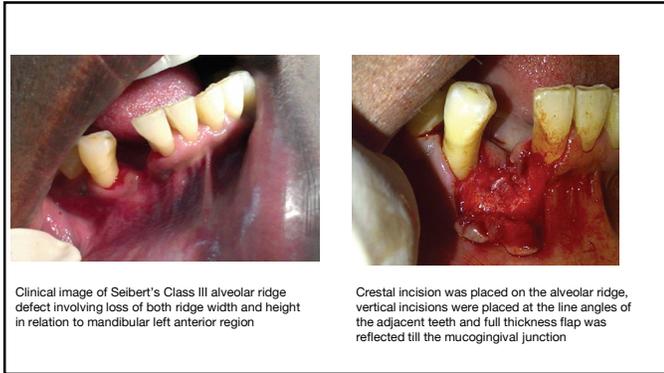
**Use of these allografts and xenografts avoids the second surgical site and its related disadvantages**



Images: Dr Vivek Gupta, Faculty of Dentistry, SEGI University

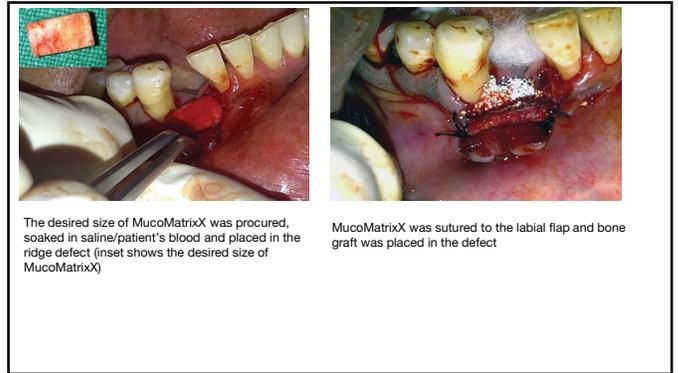


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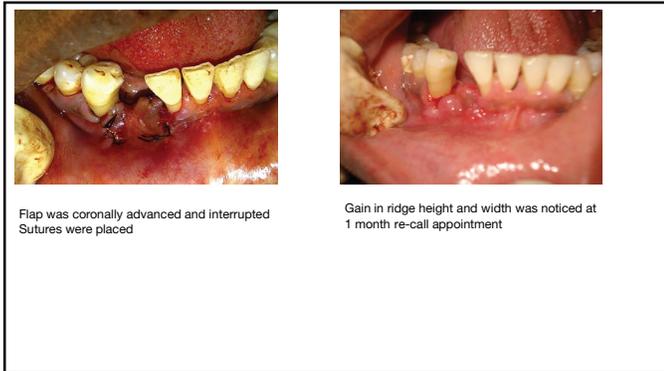
Clinical image of Seibert's Class III alveolar ridge defect involving loss of both ridge width and height in relation to mandibular left anterior region

Crestal incision was placed on the alveolar ridge, vertical incisions were placed at the line angles of the adjacent teeth and full thickness flap was reflected till the mucogingival junction



The desired size of MucoMatrixX was procured, soaked in saline/patient's blood and placed in the ridge defect (inset shows the desired size of MucoMatrixX)

MucoMatrixX was sutured to the labial flap and bone graft was placed in the defect



Flap was coronally advanced and interrupted Sutures were placed

Gain in ridge height and width was noticed at 1 month re-call appointment



Clinical image of Seibert's Class III alveolar ridge defect involving loss of both ridge width and height in relation to mandibular left anterior region

Clinical image 4 months after the surgical procedure with porcelain fused to metal crown being placed with the support of adjacent abutment teeth. Note the resolution of the alveolar ridge defects

**Summary**

Periodontal research has always tried to move away from surgery and to provide non-surgical options to periodontal disease.

Many patient's have fear and anxiety of surgery

Dentists have also become cautious with litigations becoming common

Still..there is lot of indications for surgical therapies in treatment of Periodontal disease

since periodontal disease is painless, on several occasions disease has progressed before the patient presents to the clinician.

Periodontal surgeries with various advances in regeneration [bone grafts, soft tissue grafts, growth factors ( platelet rich plasma, platelet rich fibrin)] is helping in treating advanced periodontal disease.

**Thank you very much**