

Talent plus knowledge plus EFFORT
account for success.

Gertrude Samuels

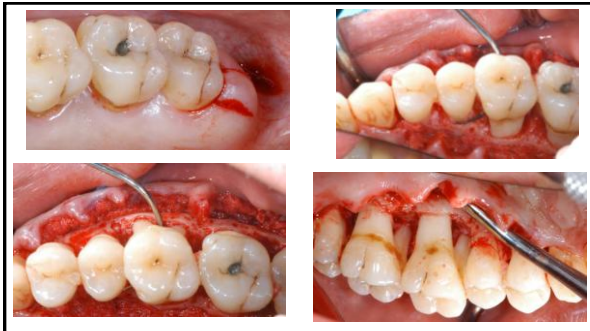
Introduction



Introduction

Using treatments such as scaling & root planing, maintenance therapy, and antimicrobial therapy, our goal is to control the pathogenic microflora to prevent further periodontal destruction.

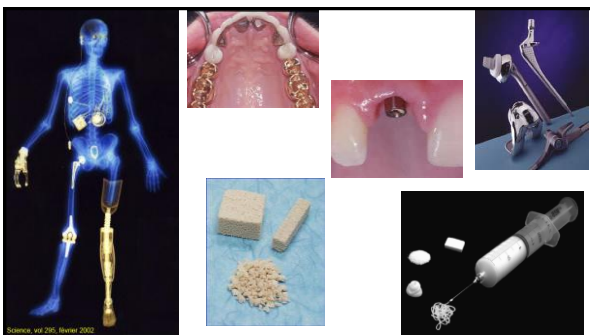
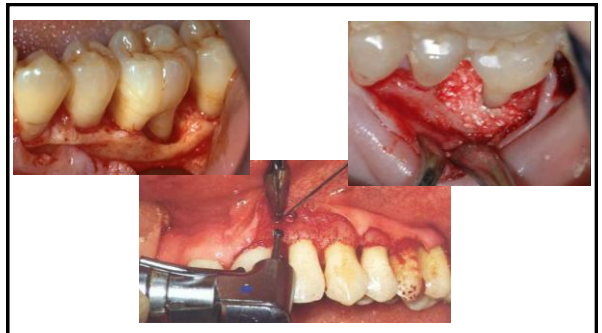
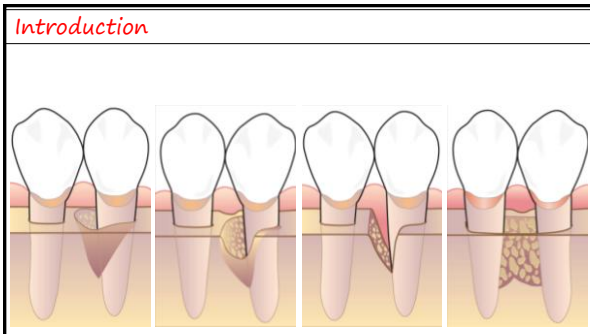
Richard T. Kao



Introduction

Despite successful disease management, however, anatomic changes resulting from past disease activity often occur and must be corrected. Left untreated, these defects can provide a potential harbor for the re-establishment of pathogenic microflora.

Richard T. Kao



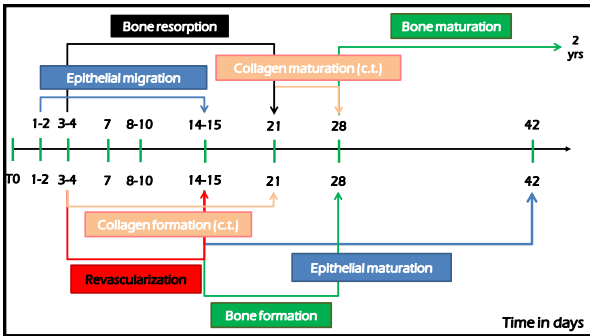
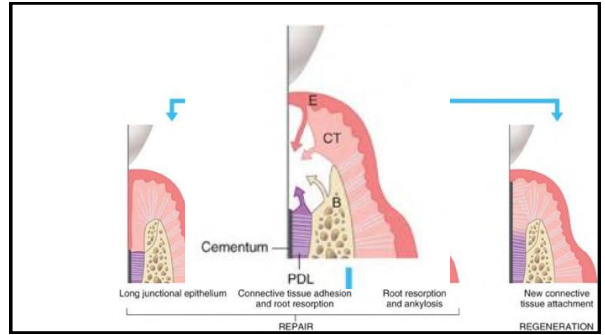
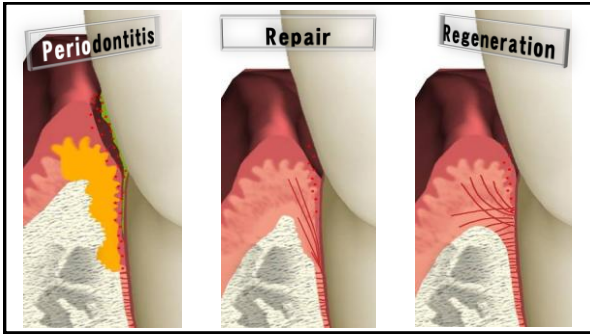
Definitions

Regeneration:

Reproduction or reconstruction of a lost or injured part. Periodontal regeneration implies formation of new cementum with inserting collagen fibers & bone.

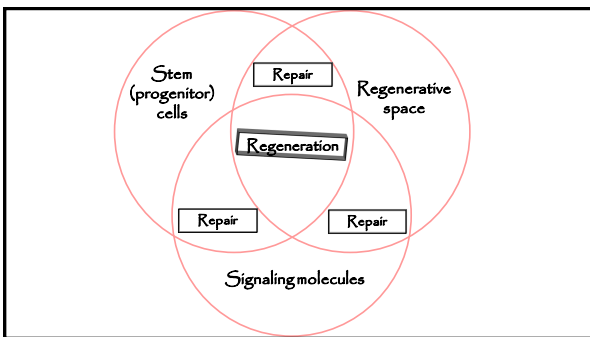
Repair:

Healing that does not completely restore the architecture or function of the lost or injured part. Periodontal repair may include formation of a long junctional epithelium, connective tissue attachment, or ankylosis.



Introduction

- Root conditioning procedures
- Bone grafts and bone substitutes
- Guided tissue regeneration
- Biologic & biomimicry mediators

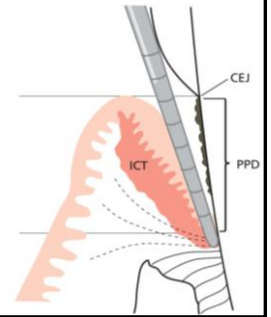


Assessment of Periodontal wound healing

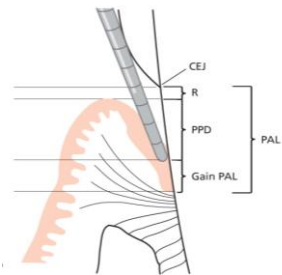
Assessment of periodontal wound healing

- Probing depth
- Clinical attachment level
- Bone fill
- Histologic analysis

... Probing Depth



... Clinical Attachment level

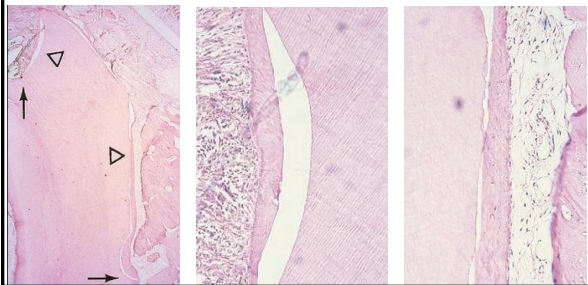


... Bone Fill

- Surgical reentry
- Bone probing (bone sounding)
+ LA
- Reproducible Parallel Technique
Radiographs



... Histologic Analysis



Bone Grafting Materials

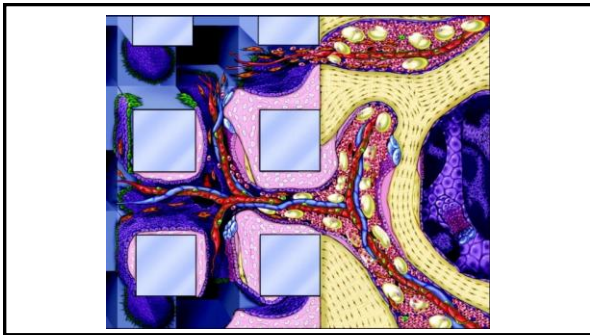
Definitions...

- Autogenous graft
- Allogeneous graft
- Xenogeneuous graft
- Alloplastic materials



Definitions...

- Osteogenic
- Osteoinductive
- Osteoconductive

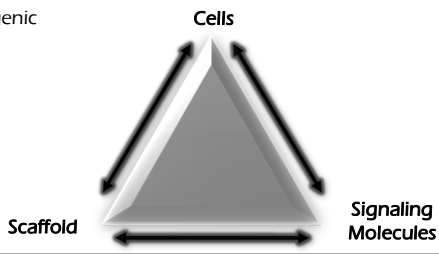


Bone Grafting Materials...

Autogenous Bone Grafts

Autogenous Bone Grafts

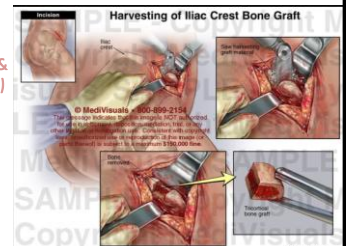
Osteogenic



Autogenous Bone Grafts

Extra oral
Iliac crest
 (Most osteogenic & regenerative potential)

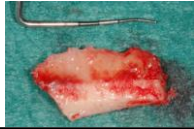
Secondary site
 Morbidity
 Limited reservoir



Autogenous Bone Grafts

Intra oral

- Edentulous ridges
- Maxillary tuberosity
- Mandibular ramus
- Tori & exostoses
- Anterior mandible



Cortical / Cancellous

Autogenous Bone Grafts

Bone fill of 3-4 mm

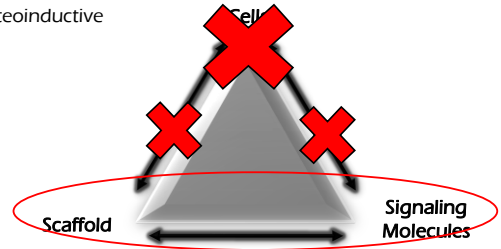
Iliac crest grafts have ability to regenerate periodontium horizontally or with "zero wall" defects

Bone Grafting Materials...

Allogeneous Bone Grafts

Allogeneous Bone Grafts

Osteoinductive



Allogeneous Bone Grafts

DFDBA
FDDBA

Disease transmission



Allogeneous Bone Grafts

DFDBA > FDDBA

Osteoinduction depends on:

- Extent of demineralization
- Age of bone donor
- Cell proliferation & ALP activity of host cells

Bone gain maintained > 3 years

Allogeneous Bone Grafts

Bone fill of 3-4 mm

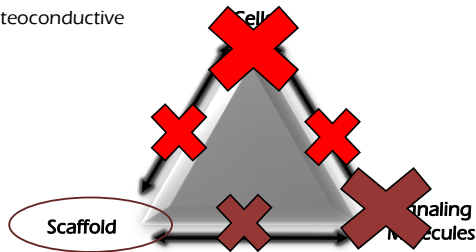
Have the ability to regenerate periodontium horizontally or with "zero wall" defects

Bone Grafting Materials...

Xenogenous Bone Grafts

Xenogenous Bone Grafts

Osteoconductive



Xenogenous Bone Grafts

Anorganic bovine bone

No effect in horizontal & "zero wall" defects

Availability



Bone Grafting Materials...

Alloplastic Materials

Alloplastic Materials

Ceramics

Hydroxyapatite (HA)

Tri-calcium phosphate (TCP)

Biocompatible composite polymers

Bioactive glass ceramics

Alloplastic Materials... Ceramics

Hydroxyapatite

- Physical & chemical properties (rate of resorption)
- Density (compressive strength)
- Porosity (vascular ingrowth)
- Size of particles (large are nonresorbable)



Dense HA doesn't induce new bone formation (fibrous encapsulation + long junctional epithelium)

Rate of resorption is dependent on porosity & particle size

Alloplastic Materials... Ceramics

β TCP

- porosity
- Size of particles



β TCP doesn't induce new bone formation (fibrous encapsulation + long junctional epithelium)

Rate of resorption is dependent on porosity & particle size

Alloplastic Materials... Biocompatible Composite Polymer

Calcium hydroxide coating of a polymer

No new attachment (histology)

Similar results to autogenous bone (clinically)



Alloplastic Materials... Calcium Carbonates

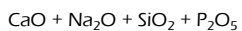
Processed natural coral skeletons

Osteoconductive

Resorbable



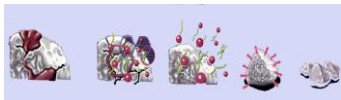
Alloplastic Materials... Bioactive Glass Ceramics



Ionic dissolution of ceramic particles

Silica gel layer

Calcium phosphate layer converted to hydroxycarbonate layer



Thank You...