Healing Of Oral Wounds

Dept. Of Oral Pathology &
Microbiology

Purpose Statement

- At the end of the lecture the student should be
- Describe the healing of Extraction wounds
- Describe the healing of Fractures
- Describe the healing of Reimplantation of teeth.

Contents

- Healing of oral wounds
- Healing of extraction wounds
- Healing of fracture wounds

Healing of Oral Wounds
Extraction Wounds

Second week wound-

- New delicate capillaries penetrated to the center of the clot
- The wall of socket appears frayed due to degeneration of PDL

- Trabeculae of osteoid can be seen
- Considerable epithelial proliferation over the surface of wound or completed if small socket is present
- Margin of alveolar socket shows prominent osteoclastic resorption

Healing of oral wounds extraction wounds

Third week wound-

- Clot is replaced almost completely by organised mature granulation tissue
- Young trabeculae of osteoid tissue is forming around the entire periphery
- Crest of alveolar bone rounded off by osteoclasts
- Surface of wound becomes completely epithelized.

Healing of oral wounds extraction wounds

Fourth week wound-

- Wound is in final stage of healing, there is continuous deposition and remodelling resorption of the bone filling the alveolar socket roentgenographic evidence of bone becomes prominent after 6^{th} to 8^{th} week

Healing of oral wounds extraction wounds

Complications of Extraction Wound Healing-

1. **Dry socket-**

- Most common complication
- It is focal osteomyelitis in which the blood clot disintegrates or is lost , with production of a foul odor and severe pain but no suppuration
- Etiology – difficult or traumatic extractions, in which there is dislodgement of clot and subsequent infection of exposed bone

Healing of oral wounds extraction wounds

- C/F – common in lower PM and molar sockets
  - Extremely painful
  -The exposed bone is necrotic there may be sequestration of fragments
  -Foul odor

- T/T – Irrigation of wound by isotonic saline
  -Packing the socket with obtundent material like ZnOE paste on iodoform gauze

Healing of oral wounds extraction wounds

2. **Fibrous healing of extraction wound**

- Uncommon complication
- Followed by difficult, complicated extraction
- Loss of both the lingual and labial or buccal plates of bones with loss of periosteum
- C/F – asymptomatic

- R/F – well circumscribed radiolucent area in the site of a previous extraction wound
- H/F – dense bundles of collagen fibers with only occasional fibrocytes and few blood vessels
- T/T – excision of the lesion

Healing of oral wounds
Fracture

Immediate effects of fracture-

- Haversian vessels of the bone, along with vessels of periosteum and marrow cavity are torn at fracture site
- Loss of local blood supply
- Osteocytes die due to Loss of local blood supply
- There is death of bone, and bone marrow adjacent to the fracture line

Healing of oral wounds
Fracture

1. **Procallus formation-**

- Hematoma formation
- Inflammatory changes
- Granulation tissue formation
- Callus formation-

callus is the structure which unites the fractured ends of bone, and it is composed of fibrous tissue, cartilage and bone

Healing of oral wounds

Fracture

- External callus- new tissue which forms around the outside of the two fragments of bone
- Internal callus- new tissue arising from marrow cavity.

Periosteum is an important structure in callus formation, hence its preservation is essential. Inner layer of periosteum shows osteogenic activity and forms a collar of callus around or over the surface of the fracture

Healing of oral wounds

2. **Osseous callus formation**
3. **Remodelling**

As there is over abundance of new bone to strengthen the healing site

New bone frequently joined with fragment of dead bone which should be resorbed and replaced by mature bone

Healing of Oral Wounds

Complications of fracture healing-

1. **Nonunion**- Callus fails to meet and fuse or when endosteal formation of bone is inadequate
   Common in elderly ,where there is lack of osteogenic potential of cells

Healing of Oral Wounds

2. **Fibrous union-** (pseudoarthrosis)
- Due to lack of immobilization
- Fractured fragments joint by fibrous tissue
- There is failure of ossification

3. **Lack of calcification-**

Healing of oral wounds

Replantation of teeth

- Insertion of a vital or nonvital tooth into the same alveolar socket from which it was removed or otherwise lost
- Great use after traumatic injuries resulting in avulsion or other accidental loss of teeth, or to replace the tooth involved in dentigerous cyst after removal of cyst

Healing of oral wounds

- Incompletely formed roots and open apex - Replantation without RCT is done
  The pulp tissue undergoes necrosis or shows revascularization and re-innervation, with vital pulp response

- Mature teeth with complete root formation- Replantation with RCT
- If RCT is not done then there will be either pulp necrosis or gradual obliteration of pulp chamber or root canal by bone like material

Healing of oral wounds

- Preservation of PDL is an important factor.
- Partially formed teeth have the ability to complete root formation and establish a normal PDL space.
- There will be varying degree of resorption of cementum and dentin followed by subsequent replacement by bone resulting in ankylosis.

Healing of oral wounds

Factors influencing the success of Replantation-

- Extraoral period of the tooth to be replanted should not exceed more than 60 minutes, otherwise the success rate reduces
- The tooth should be kept in moist environment

- No stripping or tearing of PDL fibers or of cementum
- Splinting appliances includes StSt wires, acrylic splints, orthodontic wires with ligatures and even surgical cements with gauze

Healing of oral wounds

Transplantation of Teeth

- Replacement of tooth damaged beyond repair by caries by another tooth
- Common tooth to be replaced- mandibular 1st molar by developing mandibular 3rd molar

Healing of oral wounds

Criteria of satisfactory Transplantation-

- Has become organically integrated with its new environment
- Is free of discernible periapical or lateral lesions,
- Is capable of effective masticatory function
- Shares adequately in the maintenance of physiologic maxillomandibular and muscular relations

- Display clinically and roengenographically compatible status of gingiva, PDL and bone (lamina dura and supporting bone) root length and over-all stability with indefinite maintenance
- Esthetically acceptable
- No generalized pulpal necrosis occur after Transplantation

Healing of oral wounds

- Pulp becomes revascularised and there is continued growth of root dentin
- Pdl ligament is functional viable, highly cellular reattaching the tooth in bony socket with gingival attachment and epithelial attachment resembling the normal tooth
- There is normal color and lusture of tooth

Healing of oral wounds

Tooth banks are set preserving the tooth by various techniques-

1. Regular freezing
2. Freeze-drying or lyophilization
3. Vitrification
4. Chemical coagulation by Merthiolate

Summary

- Healing of oral wounds is affected by a number of factors.
- Periosteum plays an important function in callous formation.

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Thank You