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# Nursing and Health Care

Short Commentary

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## Wound Healing

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### Wound

In simple terms wound is break in the continuity of tissue caused by any trauma or injury. There are many types of wounds like; puncture wound, abrasions, lacerated etc.

### Healing

Healings is the response of body to the trauma or injury for restoring the damage caused. This healing involves two main processes

**Regeneration:** In this process the total formation or regeneration of parenchymal cells occurs which results in restoration of the tissue.

**Repair:** In this process the scar is usually formed.

### Phases of Wound Healing

#### Inflammatory Phase

It can be broken down into further

**Clot formation:** This begins with the contraction of blood vessels, the permeability of the vessels get increased by which the exudates rich in proteins enter the site of the wound there by forming a platelet plug. All the clotting mechanisms get activated. All these events stabilize hemostasis and the process of wound decontamination gets started by which coagulum gets formed.

**Early inflammation:** In this process there is production of special bodies called polymorphonuclear neutrophils (PMNs), these increase in count at about 24 to 48 hours of injury and they help in stabilizing the clot. PMNs help in wound decontamination by phagocytosis.

**Late inflammation:** This step is characterized by the presence of macrophages; these decontaminate the wound by phagocytosis and digestion of tissue debris.

#### Proliferative phase

In this phase fibroblasts migrate in the wound and release collagen type III, this process of angiogenesis continues for about 3 weeks and wound strengthens in this phase.

This phase is characterized by the formation of granulation tissue and endothelial cells.

**Granulation tissue:** It is a fragile structure which is composed of an extracellular matrix of fibrin, fibronectin, glycosaminoglycan's, proliferating endothelial cells, new capillaries, and fibroblasts mixed

with inflammatory macrophages and lymphocytes. Epithelial cells are more active during this phase and are responsible for initial wound closure.

**Endothelial cells:** There occurs the formation of new blood vessels at the site where injury has occurred; these blood vessels are leaky which gives edematous appearance to new granulation tissue.

#### Maturation phase

It is the final phase which starts from 3rd week and continues to 12 months approximately. The tensile strength increases up to 80% of normal tissue. The conversion of granulation tissue to fibrous connective tissue. Maturation of the epithelial layer is followed by formation of the epithelial seal.

#### Hard tissue healing

The inflammatory and proliferative phases are similar to those for soft tissue. The maturation phase differs markedly from that for soft tissues because of the tissue involved. A major difference lies in role of Osteoclast that is basic organizational unit to clear necrotic bone .

### Conclusion

Understanding of wound healing is as important as knowing the pathogenesis of disease, because satisfactory wound healing is the ultimate goal of treatment. If we are able to understand the mechanism of periapical wound healing, we can design treatment approaches that maximize favorable conditions for wound healing to occur.

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