Wound

[DEPTH OF BIOLOGY]

A break in the integrity of the skin; an injury to the body which causes a disruption of the normal continuity of the body structures.

[DEPTH OF BIOLOGY]

A break in the skin or other body tissues caused by injury or surgical incision (cut).

Healing

Heal - to repair

[DEPTH OF BIOLOGY]

WOUND HEALING

[DEPTH OF BIOLOGY]

Wound healing is a complex, but well-coordinated process, which attempts to restore normal structure and function of the injured tissue/organ.

[DEPTH OF BIOLOGY]

[DEPTH OF BIOLOGY]

TYPES OF WOUND HEALING

[DEPTH OF BIOLOGY]

HEALING BY PRIMARY INTENTION

HEALING BY SECONDARY INTENTION

[DEPTH OF BIOLOGY]

DEPTH OF BIOLOGY

HEALING BY PRIMARY INTENSIONS

[DEPTH OF BIOLOGY]

1. Initial Hemorrhage
2. Acute inflammatory response
3. Epithelial change
4. Granulation tissue formation
5. Organisation

[DEPTH OF BIOLOGY]

Healing by Primary Union or First Intention

[DEPTH OF BIOLOGY]

Wounds with opposed edges, which are clean, uninfected and do not involve tissue loss (for example, surgical incisions or neat wounds

[DEPTH OF BIOLOGY]

1. Initial Hemorrhage

The incised wound is filled with blood, which then clots the wound

[DEPTH OF BIOLOGY]

2. Acute inflammatory response:

Occurs within 24 hours of the injury and is characterized by the appearance of neutrophils at the margins of the clot.

[DEPTH OF BIOLOGY]

3. Epithelial change

Within 24 hours of the injury, mitosis begins to appear in the base of the injured epithelium. [DEPTH OF BIOLOGY]

Wound is covered by epithelium within 24-48 hrs.

4. Granulation tissue formation:

By the 3rd day, granulation tissue begins to form within wound and fills the entire wound cavity by the 5th day.

[DEPTH OF BIOLOGY]

5. Organisation

There occurs marked fibroblastic proliferation by the 2nd week leads to continuous collagen deposition.

By the 4 weeks, the scar tissue is replaced by adult type 1 collagen, which is responsible for the wound strength. This is followed by a complete resolution of inflammation and the wound is completely covered by intact epithelium by the 8-10 weeks.

[DEPTH OF BIOLOGY]

HEALING BY SECONDARY INTENSIONS

[DEPTH OF BIOLOGY]

1. Hemorrhage
2. Inflammatory response
3. Granulation Tissue
4. Epithelial Changes
5. Wound Contraction
6. Infections

Healing by Secondary Intention

Wounds, which are wide open due to extensive loss of cells and tissues, heal by secon intention. Examples of injuries, which heal by secondary intention are large gaping wounds. The healing is slow and results in a prominent scar compared to primary intention

[DEPTH OF BIOLOGY]

1. Hemorrhage

Wound space is filled with blood and fibrin clot, which dries up and temporarily fills the wound space.

[DEPTH OF BIOLOGY]

2.Inflammatory response:

The inflammatory response is much ***more intense*** in gaping wounds than the other as the defect is large and there is more necrotic tissue debris in such wounds.

[DEPTH OF BIOLOGY]

3. Granulation tissue:

- The amount of granulation tissue formed in healing by second intention is much more as compared to healing by primary union. [DEPTH OF BIOLOGY]
  - Granulation is formed by ***proliferation of fibroblasts*** and ***neovascularization*** .
    - The newly formed granulation tissue ------ fragile, granular and deep red . [DEPTH OF BIOLOGY]
    - On maturation, scar became pale and white due to ***increase in collagen*** and ***decrease in vascularity***

4.Epithelial changes:

- 1.Granulation tissue from base starts filling the wound space.
- 2.Proliferating epithelial cells cover the surface fully.

[DEPTH OF BIOLOGY]

5. Wound contraction:

This is the main differentiating feature between healing by primary intention and secondary intention. [DEPTH OF BIOLOGY]

In large gaping wounds, which heal by secondary intention there is marked wound contraction due to the action of myofibroblasts.

6. Infections

Open wounds are more prone to get infected

[DEPTH OF BIOLOGY]

This delays the process of healing due to

[DEPTH OF BIOLOGY]

release of bacterial toxins that provoke necrosis, suppuration and inflammation.

Healing by tertiary intentions

[DEPTH OF BIOLOGY]

Is delayed primary wound healing after 4–6 days. This occurs when the process of secondary intention is interrupted and the wound is mechanically closed.

[DEPTH OF BIOLOGY]

- This usually occurs after granulation tissue has formed.