

## SKIN:-

The skin is an organ because it consists of different tissues that are joined to perform specific activities. It is one of the largest organs of the body in surface area and weight. Its thickness is 0.5-4.0 MM, depending on location. The skin is not just a simple, thin coat that keeps the body together and provides protection.

### Anatomy:-

Structurally, the skin consists of two principal parts. The superficial, thinner portion, which is composed of epithelial tissue, is called the epidermis. The epidermis is attached to the deeper, thicker, connective tissue part called the dermis. Deep to the dermis is the subcutaneous layer, which consists of areolar and adipose tissues. Fibers from the dermis extend into the subcutaneous layer and anchor the skin to it. The subcutaneous layer in turn, attaches to underlying tissues and organs.

### Epidermis:-

The epidermis is composed of keratinized stratified squamous epithelium and consists of four principle types of cells. They are keratinocytes, melanocytes, Langerhens cell and Merkal cell. In most regions of the body the epidermis is about 0.1 mm thick. The names of the five layer of the epidermie from the deepest to the most superficial are,

1. Stratum basale

2. Stratum spinosum

3. Stratum granulosum

4. Stratum lucidum

5. Stratum corneum

In the process of keatinization, cells newly formed in the basal layers un-

sensation

dergo a developmental process as they are pushed to the surface. As the cells relocate, they accumulate keratin. At the same time the cytoplasm, nucleus and other organelles disappear and the cells die. Eventually keratinized cells slough off and are replaced underlying cells that, in turn, become keratinised.

## **Dermis:-**

The second principle part of the skin, the dermis is composed of connective tissue containing collagen and elastic fibers. The few cells in the dermis include fibroblasts, macrophages, and adipocytes. The dermis is very thick in the palms and soles and very thin in areas such as the eyelids and scrotum. It also tends to be thicker on the posterior than the anterior aspect of the body and thickens on the lateral than the medial aspects of the limbs. Blood vessels, nerves, glands, and hair follicles are embedded in the dermis.

The superficial portion of the dermis, about one fifth of the thickness of the total layers, is named the papillary region. The deeper portion of the dermis is called the reticular region. It consists of dense, irregular connective tissue containing interlacing bundles of collagen and some coarse elastic fibres. The reticular region is attached to underlying organs, such as bone and muscle, by the subcutaneous layer, also called the hypodermis or superficial fascia. In addition to areolar connective tissue and adipose tissue, the subcutaneous layer also contains nerve endings called lamellated or paciniar corpuscles that are sensitive to pressure. Nerve endings, sensitive to cold are found in and just deep to the dermis, while those sensitive to heat are located in the intermediate and superficial dermis.

## **Physiology**

**Factors:** Skin serves several functions like,

1. Regulation of body temperature
2. protection
3. sensation

4. Excretion
5. Immunity
6. Blood reservoir
7. synthesis of Vit D.

### **Process of skin cover:-**

#### **1. Healing by first intension**

Rapid healing of the wound in all its layers, particularly rapid skin cover, is the ideal objective the first intension of the surgeon. Accurate opposition using sutures, clips, staples or adhesive tape or film is essential. Alternative methods of wound closure become mandatory in the presence of tissue tension or infection. Delayed primary suture, secondary suture and skin grafting can be used to provide skin cover.

#### **2. Healing by second intension**

- a. When the wound edges are not brought together
- b. When there is skin loss which cannot be repaired
- c. When the wound becomes infected and break open or has to be laid open.

Healing by second intension is the normal way of healing. It is much slower than healing by first intension and invariably involves the laying down of more scar tissue. The longer the wound remains raw, the greater will be the amount of scar tissue laid down and the greater will be the contraction and deformity.

### **Factors influencing Healing:-**

A debilitated patient, whether due to malnutrition or carcinomatous, is depleted of resources, and wound healing will often be considerably delayed. Other

factors affect the fibroblastic activity of repair notably uraemia, the use of cytotoxic drugs, the administration of steroids, and vit c deficiency.

Inhibition of healing is a feature of a jaundiced patient. Generalised infection, or a collection of pus somewhere may delay healing of a wound in another part. It is important under these conditions that any deep sutures in muscle planes should either be of non-absorbable material, or deep tension sutures should be employed, and the skin stitches should be left in longer than usual. When too much tissue healing is required after an extensive burn, the patient needs a high protein, high caloric diet.

**Local factors:-** Failure of wound closure is an important iatrogenic cause of wound breakdown. The commonest error is suturing in the presence of tissue tension.

### 1. Blood Supply:

A good blood supply is essential for wound healing. Wounds of the face and hands may bleed profusely but they heal well because of their excellent blood supply. Wounds below the knees, over the shin and calf and below, heal badly owing to a relatively poor blood supply.

### 2. Tension in tissues:

The presence of tension in the tissues is a major factor in loss of local blood supply and subsequent wound failure. Tension will be increased by dependency of a limb due to venous stasis. A localised haematoma is also a common cause of local tissue tension and wound breakdown.

### 3. Infection

Local infection delays wound healing in several ways. Tissue tension is increased by the inflammatory response with an increase in capillary permeability and the collection of the pus. The metabolic demands of infection may increase the

local demand for oxygen beyond the capability of the blood supply. Tissue necrosis will ensue with subsequent wound breakdown.

#### **4. Arterial insufficiency:**

Relative arterial insufficiency is often seen in the arteriosclerosis patient and is common in the diabetic, the presence of infection often tipping the balance between tissue life and death.

#### **5. Wound closure:**

The technique of wound closure is an important iatrogenic cause of wound breakdown. The commonest error is suturing in the presence of tissue tension

Factors affecting wound healing:

##### **I. General factors:**

1. Age
2. Debilitation, vit C deficiency
3. Malignant disease
4. Uraemia
5. Jaundice
6. cytotoxic drugs & steroids
7. Diabetes
8. Generalised infection

##### **II. Local factors**

1. A poor blood supply due to vascular disease or trauma is unfavourable to wound healing.
2. Tissue tension kills.
3. Local infection delays healing

4. Haematoma formation is unfavourable
5. Local X-irradiation delays healing
6. The technique of wound closure influences repair.

**Completion of healing:-**

Complete healing of a wound takes a long time. The collagen fibres of the uniting scar tissue undergo repeated disruption and reformation before final maturation. The tensile strength of the wound only approaches that of normal tissue after 6 months, but 100% completion may take as long as 2 years.

Shocks:-