Use of split thickness skin graft in treatment of chronic leg ulcer

Thesis
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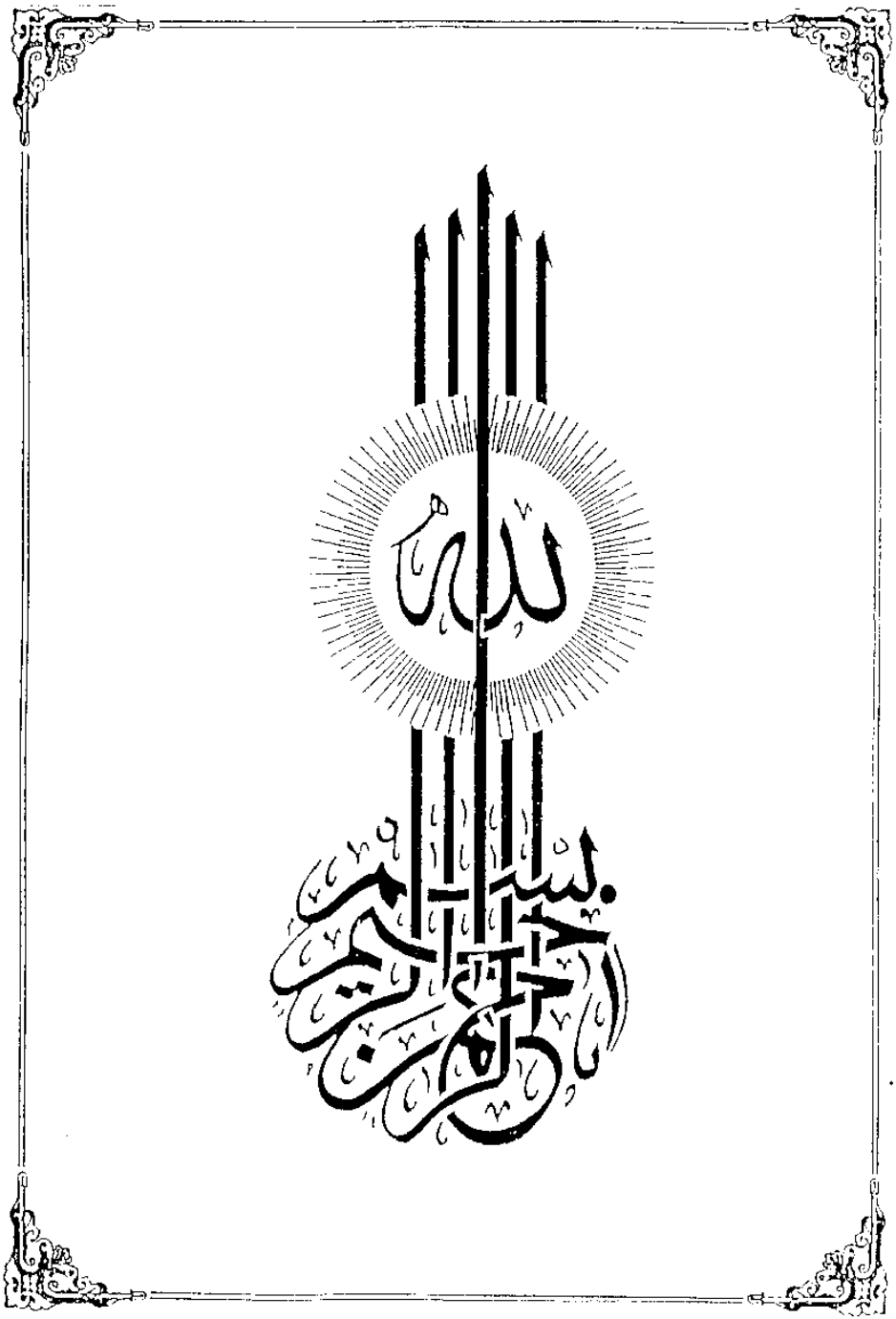

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Introduction :-

The management of ulceration of the leg is a common problem for any surgeon

The economic impact and the emotional destruction that accompany these clinical situation can be devastating and may require major changes in the individual's life.
(Gregory, 1992)

The term ulcer indicates that there is a defect in an epithelial surface.

Cutaneous ulcerations are often associated with infection and make a chronic problem.

It is appropriate in most instances to consider an ulcer of the leg to be a manifestation of an underlying patho-physiological process.

And so, treatment begins with the correct diagnosis. (Margolis 1995).

The Causes of skin breakdown may include a variety of possibilities such as:-

- Ischemia occur in peripheral vascular insufficiency.
- Areterial hypertesion.
- Elevated venous pressure.
- Repetitive trauma as occur in preipheral nerve inadequacy.

Therefore, a precise diagnosis of the underlying pathological condition is imperative to the treatment of leg ulcer.

* Aim of the work *

- The aim of the work is evaluation of the effect and success of split thickness skin graft as a management of chronic leg ulcers. With complete labratory investigations, and vascular assesement of all patients.

- Ulcers which we will deal with are :

  1. Traumatic ulcer.
  2. Ischaemic ulcer.
  3. Venous ulcer.

ANATOMY AND EMBRYOLOGY

The skin may be regarded as an elastic membrane covering the body. It is not, however, merely a membrane but, is an important organ of the body, the proper functioning of which is necessary to health. It is only important in this connection to indicate its many biophysical and biochemical functions, its function as a secretory, excretory, and heat regulating organ, as a protection for the deeper structures; for the appreciation of such cutaneous sensation as heat, cold, pressure and pain; and its action in synthesis of vitamin D and in the production of antibodies.

(Davis and Davis, 1967)

*** Structures :**

The skin is composed of two layers, the epidermis and the dermis or corium. At all the body orifices, the mucous membrane and the skin are continuous and merge into each other. The appendages of the skin are the hair, the nails, the sebaceous glands and the sweat glands. In addition, these complicated structures are supplied with:

1. Two horizontal and parallel plexuses of blood vesseles
2. Two corresponding sets of lymphatic vesseles.
3. Two similarly distributed supplies of nerve tissue consisting of medullated and non-medullated nerve fibers.

The nerve mechanism also includes sensory and vasomotor nerves.

(Davis and Davis, 1967)

In considering the structure of skin it is well to remember the developmental origin of its two constituent parts :

1. The epidermis, originate from the ectoderm of the fertilized ovum, and acting as superficial coat which covers the dermis like a varnish and devoid of blood vesseles .
2. The Dermis, originates from mesoderm and contain blood vessels, lymphatics and nerves

*** The epidermis :**

The five layers of which the epidermis is composed may be looked upon as five stages in the development of the epidermal cell; coming as the columnar cell of the basal layer which by division forms the cells of prickle cell layer

*** Layers of epidermis**

.1. **<u>The basal layer</u>** : (Stratum germinativum)

It forms the lowest layer of the rete, and consists of a single row of columnar cells arranged vertically to the "basment membrane" and with a centrally placed nucleus. The cells of this layer are modified to form all the other cells of the epidermis. Also, the appendages are products of this layer.

(Davis and Davis, 1967)

.2. **<u>The prickle cell layer</u>** : (Rete, stratum malpigi)

This layer lies upon the basal layer and it follows the up and down wavy lines on the papillary portion of the corium (rete). It is a very important layer and involved mostly in all pathological condition of the skin.The cells of prickle cell layer have a central nucleus and usually five to eight rows stained with basal dyes,have radiating spines or prickles (hence the name prickle cells.)

(Ebling, 1968)

.3. **Granular layer** : (Stratum granulosum)

It is seen only in stained section, lies on top of the prickle- cell layer of which it may be considered the uppermost portion. It consists of about three rows of flattened granular cells.

(Davis and Davis, 1967)

.4. **Stratum lucidum** :

It is the next layer above the granular layer, and consists of a thin clear strip of glistening, translucant, flattened cells without nuclei or granules, and may be looked upon as the lower portion of the corneum.

.5. **Stratum corneum** : (horny layer)

This layer is thickest on the palm and sole and thinnest on eye lid and prepuce. It consists of several rows of flattened cornified horn cells containing fatty or waxy material without nucleus.

As we have seen, the epidermis is a cellular structure without blood vessels or nerves and it lies upon the dermis and have its nutrition from it by diffusion.

(Junguero and Carneiro, 1983)

*** The Dermis** : (corium)

- The corium is chiefly composed of fibrous tissue which is dense in its upper portion (pars papillaris) while in the lower portion, it is a looser mesh (pars reticularis)

- It consists of white fibres, elastic fibres and non striped muscle and contains blood vesseles, nerves, hair, sweat and sebaceous glands and nerve corpuscles. (mainly in pars retcularis)

- The three normal connective tissue cells are :

(1) **The fibroblast**;

The key cell which forms the fibrous tissue and matrix, derangement of these cells are believed to result in the collagen disease.

(2) **Histocytes;**

Macrophages which is part of reticuloendothelial system.

(3) **Mastocytes;**
Specialized cells which contain histamine and heparin

(Davise and Davise, 1967)

* **Blood supply of the skin** :

There are two horizontal and parallel systems of plexues which supply the skin. In the pars papillaris there is a superficial plexues of blood vesseles from which, capillary loops extends into and supply the papillae, the upper portion of the sweat glands, the hair follicles, sebaceous glands and the muscle of the skin glands and muscle of skin (i.e. erector pili) which are attached to hair follicles. Each arterial plexus supply an area of skin and each venous plexus associated with drains the same area.

(Davise and Davise, 1967)

* MICROCIRCULATION OF THE SKIN *

The microcirculation of the skin consists of the terminal microscopic network of blood vesseles varying in size from capillaries (4-10 micrometer external diameter) to arterioles (50-100 micrometer external diameter). Exchange of nutrients and gases and the removal of metabolic waste occur at the capillary level. All of the microcirculation contains smooth muscles except the capillaries that in response to extrinsic and internsic factors regulates blood flow.