بسم الله الرحمن الرحيم

شبكة المعلومـــــات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

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CLINICAL EVALUATION OF FREE ANTEROLATERAL THIGH FLAP IN THE RECONSTRUCTION OF MAJOR SOFT TISSUE DEFECTS IN THE LEG AND FOOT

THESIS

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LIST OF ABBREVIATION

A-V loop:	Arteriovenous loop.
AIDS:	Acquired immuno defficiency syndrome.
ALTF:	Anterolateral thigh flap.
C.V.P.:	Central venous pressure.
E.T.E anastomosis:	End to end anastomosis.
E.T.S. anastomosis:	End to side anastomosis.
Hb:	Haemoglobin.
HCT:	Haematocrite.
I.C.U.:	Intensive care unit.
I.U:	International unit.
LCFA:	Lateral circumflex femoral artery.
LCFV:	Lateral circumflex femoral vein.
PSVR:	Peak systolic velocity ratio.
PTT:	Partial thromboplastin time.

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Review Of Literature

REVIEW OF LITERATURE

Extensive soft tissue defects of the lower part of the leg and foot present a difficult problem to the plastic surgeon. Reconstruction of these defects is a challenging task as they are usually associated with exposed important structures such as vessel, nerve, tendon, joint cavity or bone. Also complex defect with bony involvement (bone fracture or gap) may be present. A finding making coverage of these defects with well vascularized free-tissue transfer is mandatory (Serafin et al., 1977, Noever et al., 1986).

There are certain unique anatomical characteristics of the lower extremity which may alter the reconstructive techniques. The anterior aspect of the tibia is covered by a layer of thin skin with minimal subcutaneous tissue. Consequently a cutaneous defect of pretibial area usually involves bone and does not provide a suitable bed for skin grafting. These complex open tibial fractures with concomitant soft-tissue loss are associated with high rate of complications and treatment failure by using the old traditional management regimens (Brown and Urban 1969).

The presence of specific pattern of vascular anastomosis around the knee makes the use of undelayed direct retrograde flaps in this area possible. However, the absence of such anastomosis below the knee endangers the vascularization of local flaps in this area, other additional factors that can make the reconstruction of full-thickness defects with or without bone involvement in the lower leg most

difficult are the relatively poor blood supply and the scanty available soft tissue in this region (Lin et al., 1994).

Furthermore, arteriosclerotic and diabetic angiopathic changes in elderly and diabetics can complicate the lower extremity reconstructive procedures in these patients. As a result of the dependent position of the legs, they require a longer period of protection and support for the healing process. This period is considerably longer than that required in other parts of the body. Adjunctive measures such as leg elevation and wraparound dressing or elastic stocking usually promote venous and lymphatic return.

Another unique anatomical characteristic feature is the irreplaceable weight bearing skin of the sole of the foot, which calls for special consideration in choosing tissue for repair. The capacity of sole skin to withstand pressure and shearing strains is related to its unique structure which is characterized by a layer of connective and fatty tissue stabilized by multidirectional fibrous septa that act as shock absorbing system (Noever et al., 1986).

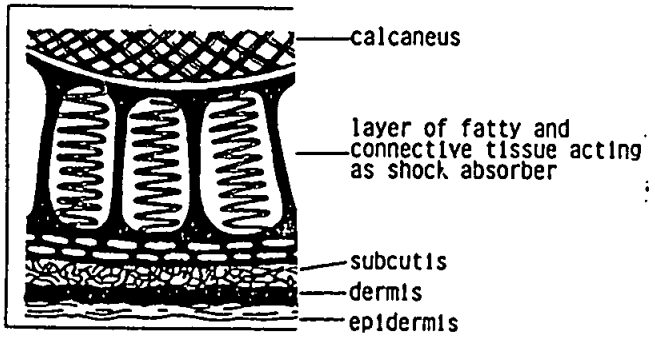

Fig. (1): Sketch of heel skin structure (Noever et al., 1986).

Giraldo et al., (1996), stated that the foot function is a static support for the weight of the body in the standing position and a dynamic springboard during walking and running. Soft-tissue reconstruction in the foot must consider the distinctly different needs of the non-weight bearing and weight-bearing surfaces. Weinzweig and Davies (1998) stated that the heel, overlying weight-bearing calcaneus has unique anatomic distinguishing characteristics. It transmits 80 percent of the weight of the foot, the distal sole and transmetatarsal heads transmit 20 percent of the weight. Reconstruction of severe soft tissue defects of the foot with bony exposure in the non-weight bearing zones, requires versatile and robust flaps. These flaps must be able to provide adequate bulk and coverage, with restoration of function and achievement of a satisfactory appearance.

Colen et al., (1998) stated that soft-tissue defects over joint surfaces of the lower-extremity or the dorsum of the foot require thin and pliable tissue to facilitate tendon gliding beneath while not interfering with the extremity function. The tissue should also be durable enough to protect bony prominences and withstand with joint motion.

Defects of the soft tissue in the sole of the foot require reconstructive procedure which guarantee stable skin with adequate sensation. There is a great controversy about the use of neurosensory flap for foot reconstruction. If the cutaneous sensibility is necessary to prevent break down and foot ulceration,

the amount of sensation necessary to prevent ulceration has not been determined. It is not clear and not well established that recovery of cutaneous sensation contributes to successful coverage (Noever et al., 1986).

Etiology of lower-extremity soft-tissue defects:

1- Trauma: It is the commonest and the most frequent cause of soft tissue defects of the lower-extremity. It occurs either direct or indirect as a result of an automobile or motorcycle accident. This trauma may produce damage or destruction to skin only (burn-avulsion-crush), may involve the skin and underlying soft tissue (deep burn-crush-laceration) or may involve soft tissue and bone with or without a break in the skin (deep burn-fracture-severe crush). A considerable cooperation must be present between the orthopedic and plastic surgeon especially in cases with trauma to the anterior surface of the tibia which is often associated with both soft tissue defect and bone fracture (complex type) (Cannon et al., 1977).

Gustilo and Anderson (1976) had classified the lower-extremity fractures into three types as follows:

Type I: Open fracture with a wound less than 1cm long.

Type II: Open fracture without extensive soft-tissue damage.

Type III: Had been further subclassified by (Gustilo et al., 1984) into three groups to account more realistically for the variable prognosis and rate of infections that have been reported in the literature.

Type IIIa: Adequate soft tissue coverage of the fracture despite extensive soft tissue lacerations or high-energy trauma irrespective of the size of the wound.

Type IIIb: Extensive injury to the soft tissue with stripping of the periosteum and bone exposure. This is usually associated with massive contamination.

Type IIIc: Open fracture associated with arterial injury requiring repair. They found also that type III is the most important and critical one as it is liable to the following great complications:

1- Wound contamination which may lead to osteomyelitis.

2- Fracture instability.

3- Compromised vascularity.

Swartz and Mears (1985) stated that defects of the lower extremity have been classified into the following groups:

1- Those requiring soft tissue reconstruction only.

2- Soft tissue and bone defects less than 8 cm.

3- Massive soft-tissue and bone defects greater than 8cm.

4- Bone defect only.

Each of these four categories is subdivided into :

A- Clean wound.

B- Infected wound.

Clean wounds are those which may be covered with flaps after minimal debridement. Infected wounds are heavily contaminated