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شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

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التوثيق الالكتروني والميكروفيلم

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THE PROXIMALLY AND DISTALLY BASED PERONEAL ARTERY FLAP

An anatomical and clinical study

١٨٠٥

Thesis

Submitted to the Faculty of Medicine
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Dedication
To ..
My Mother and Father,
may God bless them.
My Brother , and Friends
who gives me unlimited
moral support

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INTRODUCTION

INTRODUCTION

Management of lower leg defects remains a major challenge to the plastic surgeons. [1] The anterior aspect of the tibia is covered only by a layer of skin with minimal subcutaneous tissue; consequently a cutaneous defect of the pretibial area usually involves bone and does not provide a suitable bed for skin graft. [2]

Various forms of coverage including skin grafts, local flaps, cross leg flaps, muscle flaps, free flaps, adipofascial flaps and fasciocutaneous flaps have their specific indications and inherent disadvantages.

The soft tissue coverage should maximize the functional and cosmetic results and provide the best opportunity for success and the least morbidity of the donor and receptor areas.

A split-thickness skin graft can be used to resurface superficial defects on non-weight bearing areas. However, owing to the close association of skin and bone in the leg and foot, the criteria for application of skin grafts are less frequently met with.

Local flaps in the leg have gained the reputation of being unreliable. The pioneers of plastic surgery found out that a flap of acceptable properties that easily survived elsewhere on the body, had compromised results on the lower leg. For several decades, most text books have advised against the use of local flaps below the knee. [2]

Cross leg flaps have been in common use for defects in the lower leg and foot for quite a long time. However, the results were not constantly rewarding and they usually needed one or more delays, their use necessitated a complicated manner of immobilization of both legs for at least three weeks. The elderly or severely injured can present a potential contraindication for this procedure. [3]

Ger (1968) [4] introduced the transposition of muscle flaps to cover poorly vascularized areas. Following his lead, many surgeons have proposed and clinically applied most of the muscles of the lower leg to cover the upper and middle thirds of the leg. However, they have the disadvantages of functional impediment of the donor site and the bulkiness of the transposed flaps. Moreover, coverage of the lower third of the leg using muscle flaps continues to be plagued by high failure rates. The segmental nature of blood supply of the lower leg muscles or the need to interrupt a proximally dominant vascular pedicle for the use of a reverse muscle flap may contribute to the unacceptable failure rate.

While microvascular techniques have enabled tremendous strides to be made in the field of reconstruction of the lower extremity, yet they have not gained universal application, especially in developing countries. They are very demanding in operating time, specialized equipment, special skills and intensive post-operative care. [5]

Pontén [6] in 1981 introduced the concept of fasciocutaneous flaps as an alternative type of local flaps for lower extremity reconstruction. The inclusion of deep fascia into a skin flap appears to confer an element of safety. The rich vascular plexuses associated with the deep fascia are responsible for the improved blood supply in these flaps.

Yoshimura and colleagues described the peroneal flap in 1984, and they used it for reconstruction in the lower extremities, since then there have been many reports of the peroneal flap being used as a free flap or vascular island flap. [7]

descends on the interosseous membrane, first lying between the tibialis anterior and extensor digitorum longus muscles, and then between tibialis anterior and extensor hallucis longus. It is joined on its lateral side by the deep peroneal nerve. At the ankle, it is crossed by the extensor hallucis longus tendon and then passes deep to the extensor retinaculum midway between the malleoli. It continues onto the dorsum of the foot as the dorsalis pedis artery.

Branches of the anterior tibial artery:

1. **The posterior tibial recurrent artery** arises from the anterior tibial artery in the posterior compartment of the leg. It ascends between the popliteus muscle and the back of the knee to share in the anastomosis around the knee.

2. **The anterior tibial recurrent artery** arises as soon as the anterior tibial artery reaches the anterior compartment of the leg. It ascends among the fibres of tibialis anterior and then ramifies on the front and sides of the knee joining the patellar network.

3. **Muscular branches** to the muscles of the extensor compartment of the leg.

4. **The anterior medial malleolar artery** arises about 5 cm above the ankle. It passes medialward deep to the tendons of extensor hallucis longus and tibialis anterior to the medial side of the ankle anastomosing with the malleolar branches of the posterior tibial artery.

5. **The anterior lateral malleolar artery** arises opposite the anterior medial malleolar artery, and passes lateralward, deep to the tendons of the extensor digitorum longus muscle and peroneus tertius to supply the lateral side of the ankle, anastomosing with the perforating branch of the peroneal artery and ascending twigs from the lateral tarsal artery.