MANAGEMENT OF VENOUS ULCERS OF LEG

ESSAY

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Master Degree in General Surgery

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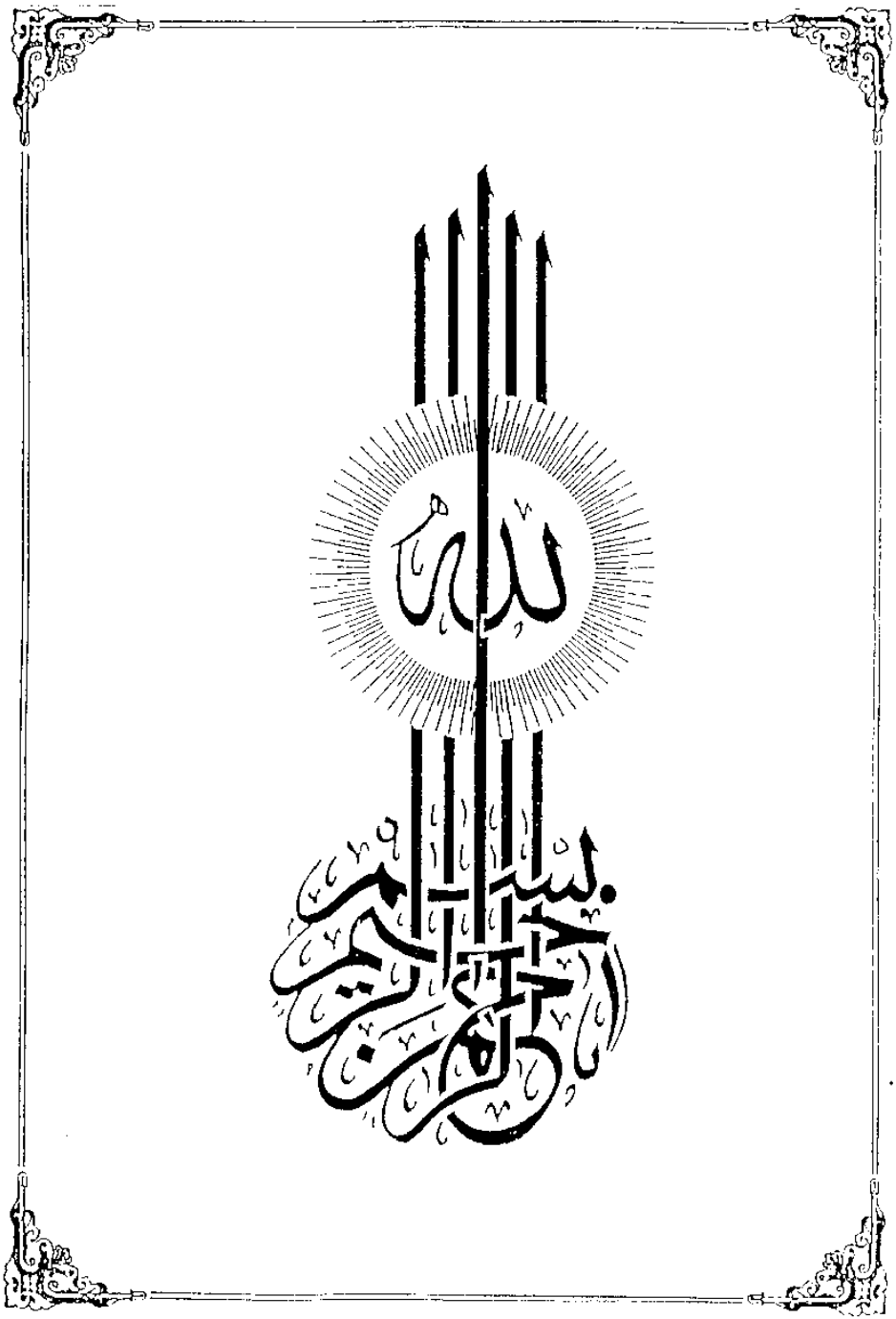

CONTENTS

CHAPTER I:

INTRODUCTION

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Introduction

Venous ulceration is common and is a significant cause of morbidity, particularly among the elderly. It may be associated with other disease process such as diabetes, Rheumatoid arthritis and peripheral vascular disease.

The commonest underlying factor of leg ulcers are venous disease which accounts for 70-80 percent of affected legs **(Leaper D, and Lucarotti M, 1992).**

Venous ulceration is due to incompetence of the deep, perforator or superficial venous systems. Patients often give a history of trauma as being the first event before an ulcer develops, but very often they damage skin which is affected by underlying venous disease and lipodermatosclerosis.

Superficial venous ulceration alone accounts for approximately 30 percent of cases of leg ulceration. This is a particularly important group to identify as these patients are curable with simple surgery **(Cranley JJ, et al., 1976)**.

Although there are several theories as to the underlying nature of the disease the exact cause of ulceration around the ankle is still unknown **(Leaper D, and Lucarotti M, 1992)**.

The mainstays of venous ulceration treatment are correction of the underlying cause if possible, correction of associated abnormalities such as anaemia or diabetes. Adequate compression of the affected limb counteract the effects of venous hypertension.

It is mandatory that the state of the peripheral circulation is assessed prior to the commencement of treatment by clinical and preferably Dopplar assessment because of the obvious risk of compression in an already ischaemic limb.

The use of antimicrobial agents such as topical antiseptics and systemic antibiotics is therefore controversial, unless there are signs of invasive infection, and the delayed healing has been attributed to two pathogenic bacteria in leg ulcers.

A) Staphylococcus aureus which produce alpha-toxin that lead to haemolytic and dermonecrotic effects.

B) Pseudomonas aeruginosa is the second organism and appears to be prevalent in necrotic wounds so it is naive to try and make a leg ulcer sterile **(Ryan TJ, 1987)**.

There is no ideal dressing but two systems are currently preferred. One is the hydrocolloid dressing and it is the most recent **(Ryan TJ, 1987)** and the other is the paste bandage.

Newer possibilities for leg ulcer healing are growth factors and keratinocytes. These include epidermal growth factor (EGF), platelet derived growth factor (PDGF) and transforming growth factor-B (TGF-B). All of these can now be made in very large amounts by recombinant DNA technology and are currently available for clinical trials **(Leper D, and Lucarotti M, 1992)**.

CHAPTER II:

SURGICAL ANATOMY OF THE VEINS OF THE LOWER LIMB

CHAPTER II
Anatomy Of Venous System Of The Lower Limb

Embryogensis of Veins of the Lower Limb (Fig.1)

In the 4th week of development, swellings of the lateral embryonic body wall indicate the limb buds. They are richly vascularized, the arteries being predominanlly axial and the veins marginal. The anterior marginal veins are termed preaxial, the posterior one postaxial. They empty independently into the posterior cardinal veins. In the adult the preaxial (tibial) portion of the marginal vein disappears, while the postaxial (fibular) portion persists distally as the lesser saphenous vein and the tibial vein, and is represented proximally by the inferior gluteal vein. The greater

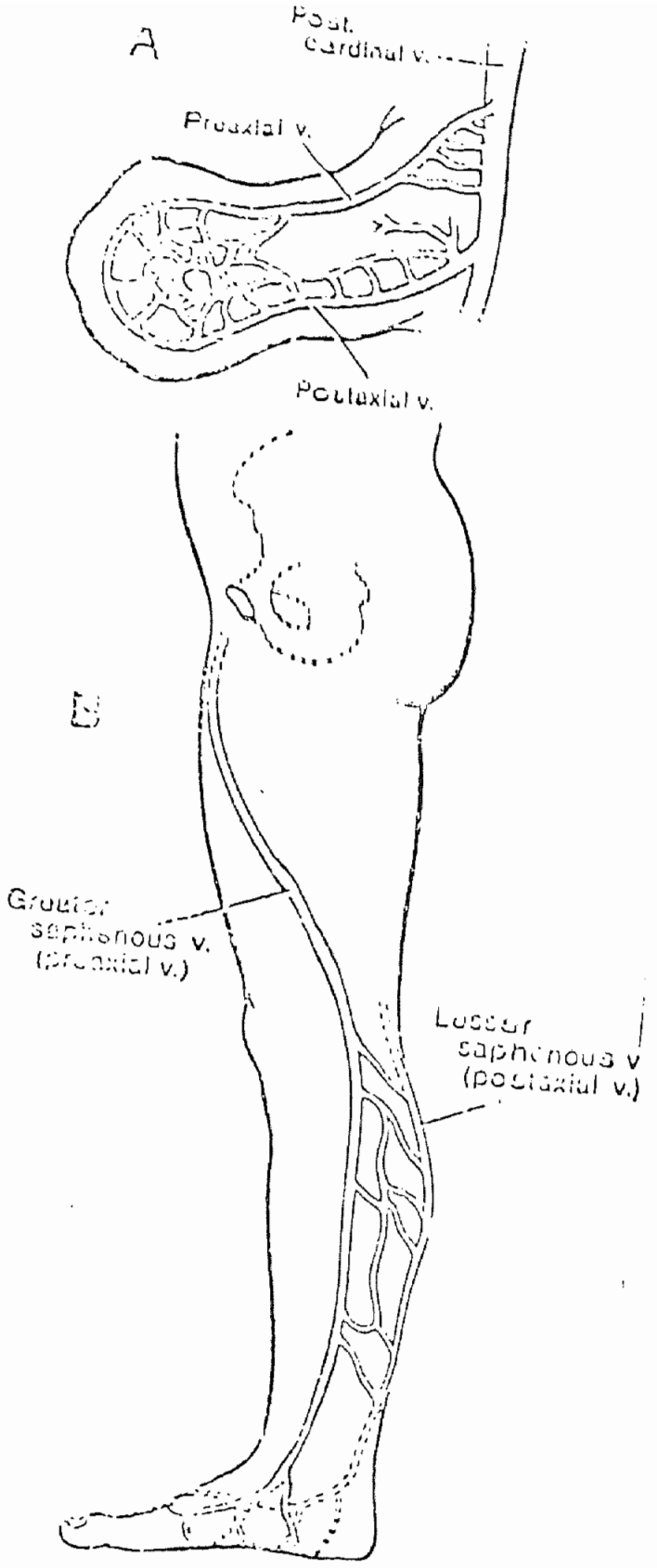


Fig. (1): Diagram of developing superficial veins of the lower extremity. a. In the fifth week the paddleshaped limb bud has a capillary network bounded by a preaxial and postaxial marginal vein. B. In the adult the greater saphenous vein is preacial and the lesser saphenous vein is postaxial (After Skandalakis et al., 1983).

saphenous vein develops secondarily from the postcardinal vein. It receives the femoral vein which develops with the femoral artery in the axis of the limb. In the development of the limb, the proximal segment elongates later than does the distal segment so that the lesser saphenous vein ends proximally at the knee. The upper segment and the buttock are drained through the greater vein **(Evans, 1912)**.

The veins of the lower limbs can be divided into three groups, superficial, deep, and perforating (Fig. 2).

The superficial veins, between the skin and the deep fascia closer to the later. The deep veins accompany the arteries. Both superficial and deep veins are provided with valves which are more numerous in the deep than in the superficial veins. Perforating veins are communicating vessels between the superficial and deep veins **(Warwich and Williams, 1973)**.

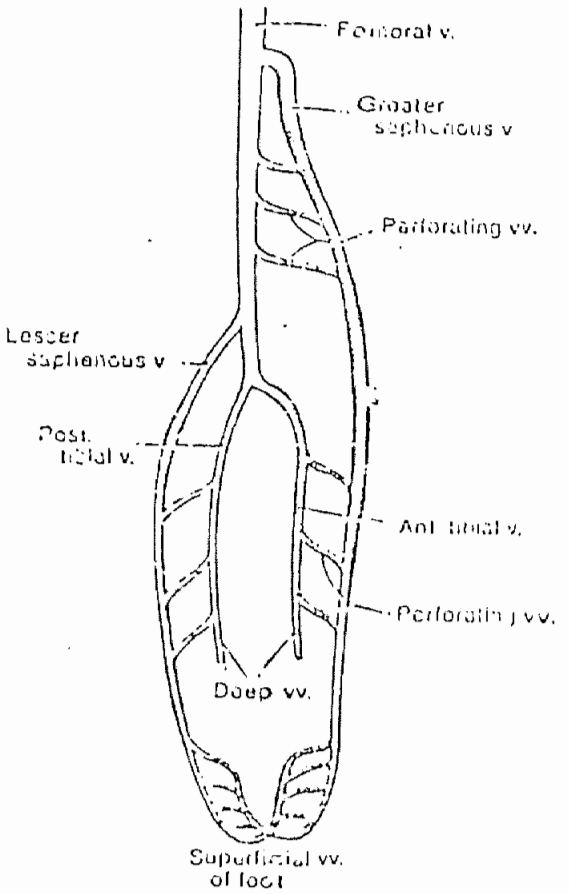
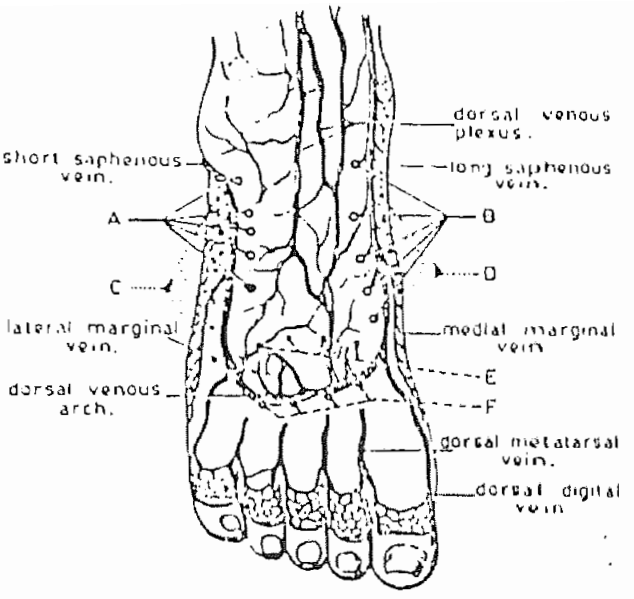


Fig. (2): Diagram of the relation of the deep and superficial veins of the lower extremity. Only the direct perforating vessels are shown. (After Skandalakis et al., 1983).

I) The Superficial Veins of the Lower Limbs

a- Superficial Veins of the Foot, Fig (3)

The dorsal digital veins receive in the clefts between the toes, communications from planter digital veins, and then join to form dorsal metatarsal veins, which unite across the proximal parts of the metatarsal bones in a dorsal venous arch. Proximal to this arch there is an irregular dorsal venous network, which receives tributaries from the deep veins and is continuous with the venous network on the front of the leg. At the sides of the foot this network communicates with a medial and a lateral marginal vein, both of which are formed mainly by the union of veins from the superficial parts of the sole of the foot **(Romanes, 1971)**. In the sole of the foot the superficial veins form a plantar cutaneous arch, which extends across the roots of the toes and open at the sides of the foot into the medial and lateral marginal veins. Proximal to this arch there is a plantar cutaneous venous network, which is especially dense in the fat beneath the heel. This network communicates with the plantar cutaneous venous arch and with the deep veins, but is chiefly drained into the medial and lateral marginal vein **(Noreldeen, 1982)**.



A- Lateral short communicating veins.
B- Medial short communicating veins.
C- Lateral sapheno-planter communicating veins.
D- Medial sapheno-planter communicating veins.
E- Proximal interosseous communicating veins.
F- Distal interosseous communicating veins.

The Subcutaneous Dorsal Venous Network and Dorsal Communicating Veins.

Fig. (3): The subcutaneous dorsal venous network and dorsal communicating veins (After Noreldeen, 1982).