

## Experience with Subfascial Ligation for Varicose Veins in Tanzania: A Brief Communication

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### ABSTRACT

From January 1987 through December 1989, ten patients with varicose veins complicated by postphlebotic ulcers were treated at Muhimbili Medical Center, Tanzania, by subfascial ligation of perforating veins. The technique employed was a posterior subfascial approach which avoids making the skin incision through the ulcer itself. The follow up periods ranged from one to three years and there was no recurrence of the ulcer in any of the patients in the study. The major indication for performing the procedure was the presence of a varicose stasis ulcer.

Before surgery, all patients had a complete peripheral vascular examination to exclude deep venous thrombosis. Healing of varicose ulcers and elimination of stasis eczema had to be achieved four weeks before surgery.

The authors maintain that patients who present with varicose veins of the lower leg and a postphlebotic stasis ulceration invariably have incompetence of the valves in the perforating veins and should be treated by subfascial ligation of the perforating veins.

**Key words:** *Varicose veins, Postphlebotic ulceration*

The condition of varicose veins is the penalty that man pays for having assumed the upright posture. Other aetiological factors are weakness of the venous wall and/or valves, thrombosis of the deeper veins, stasis associated with childbirth, prolonged rest, and trauma. Associated with uncontrolled venous stasis are oedema, induration, cellulitis and fibrosis. Phlebitis and recurrent attacks of eczema are late symptoms and may lead to ulceration.

Linton in 1938 described the role of incompetent perforating veins in producing postphlebotic stasis ulceration<sup>7)</sup>. Incompetent perforators cause the "pump mechanism" of the contracting calf muscles to propel blood from the deep venous system in a reverse direction. This produces increased venous pressure in the superficial veins which result into oedema, dermatitis and ulceration. Dodd and Cockett in 1956 reported that at least half of all venous varicose ulcers are associated with post-thrombotic incompetent perforating veins<sup>1,3)</sup>.

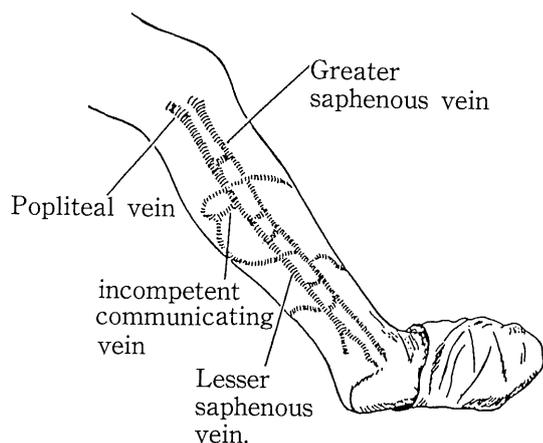
This study was conducted in order to evaluate the effectiveness of subfascial ligation of perforating veins in controlling varicose ulceration, (a condition rare in Tanzania), as reported and described by Linton and Cockett in 1953 and 1955, respectively<sup>2,8)</sup>.

### PATIENTS AND METHODS

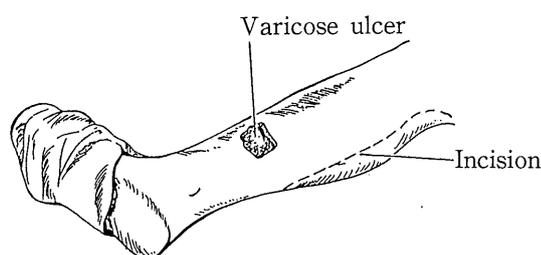
From January 1987 through December 1989, ten

patients with varicose veins complicated with postphlebotic ulcers were treated at Muhimbili Medical Center by subfascial ligation of perforating veins. Eight patients were males and two were females. Their age ranged from 25 to 38 years. Before surgery, all patients had a complete peripheral vascular examination. Deep venous obstruction was excluded by performing a Perthe's clinical test and a venography. Incompetence or obstruction of the deep venous system was a contraindication to the procedure (Fig. 1). Healing of varicose ulcers and elimination of stasis eczema had to be achieved four weeks before surgery. This was made possible by local treatment of the ulcer, compression dressing and elevation of the affected leg when at rest.

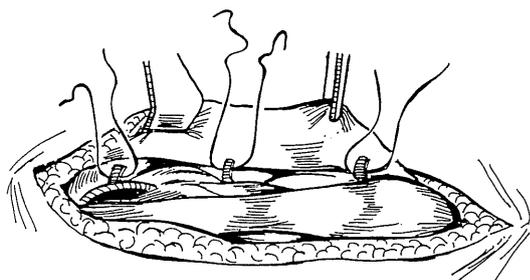
The technique was through a posterior subfascial approach which avoids making the skin incision through the ulcer itself (Fig. 2). The varicose ulcer was excised and prepared for skin grafting. The incision was carefully deepened all the way through the skin, subcutaneous tissue, and fascia while avoiding creating a flap between the fascia and the subcutaneous tissue, which would promote necrosis of the skin flap. The fascial flaps were elevated, and the anterior perforating branches from the greater saphenous vein were ligated and divided (Figs. 3 & 4). All incompetent perforating veins visualised during operation were ligated. The less-



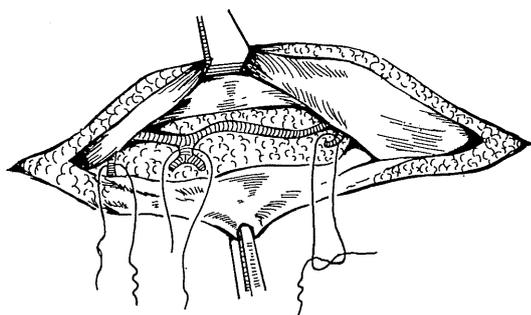
**Fig. 1.** Diagrammatic over-view of the venous systems which may be involved in the formation of varicose veins



**Fig. 2.** Incision for subfascial ligation of perforating veins



**Fig. 3.** Ligation of anterior perforating veins



**Fig. 4.** Ligation of posterior perforating veins

er saphenous vein was ligated as it enters the popliteal vein in the popliteal fossa. The incision was closed with interrupted absorbable suture to the fascia and with interrupted silk skin sutures. A split-thickness skin graft was applied directly on the excised varicose ulcer.

## RESULTS

The follow-up periods ranged from one to three years. Two patients had mild postoperative wound sepsis which could be controlled. However in these two patients, skin grafting of the ulcers had to be repeated at a later stage. Within the follow-up periods there was no ulcer recurrence in the patients so treated.

## DISCUSSION

The study population of ten patients over a period of three years at a referral hospital indicates that the condition is rare in Tanzania. However, it is interesting to note that the disease affected mostly a younger age group as compared to other reports<sup>2,4,9</sup>.

Subfascial ligation of perforating veins was found to be particularly effective in controlling varicose veins of the lower limb and also in preventing recurrence of the varicose ulcer. Similar results have been reported by other workers<sup>2,5,7,9</sup>.

The inferior extremity has three systems of veins, namely, superficial, communicating, and deep<sup>3</sup>. All of these have valves which prevent venous reflux. The patency of the veins and competence of the valves assure efficient return of blood in the proper direction. When the valves become incompetent, and the veins dilate, the flow reverses its course; this retrograde flow produces the pathological changes associated with increased pressure, stasis and hypoxia which include phlebitis, eczema and ulceration<sup>2,3,8,9</sup>.

It is well documented that the natural history of a venous ulcer is a cycle of healing and recurrence unless cure of the underlying defect in the musculo-venous pump is effected<sup>2,6,8</sup>. The procedure described in this study has been effective in interrupting the cycle and permanently preventing venous stasis, oedema, phlebitis, eczema and ulceration. No patient reported to us with a recurrence in more than three years of follow-up. Our indication for performing the procedure was postphlebotic ulceration of lower limb associated with incompetent perforators and absence of venous obstruction.

The authors maintain therefore that patients who present with varicose veins of the lower limb and a postphlebotic stasis ulceration invariably have incompetence of the valves in the perforating veins. In the absence of deep venous obstruction they should be treated by subfascial ligation of perforating veins. It is also recommended that surgery be done earlier rather than later since these young healthy males need to be mobile and go back to

work as soon as possible.

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