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Results of Long Saphenous Vein Stripping

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ABSTRACT

Objective: To audit retrospectively all long saphenous vein stripping performed or supervised intra-operatively by a single surgeon over a seven-year period.

Patients: One hundred and twenty-four patients (156 limbs) operated primarily in standard surgeon-supervised operations, were audited.

Methods: All patients were questioned via telephone interviews, and those with symptoms or recurrent varicosities were recalled for clinical review and investigations by the surgeon.

Results: Eighty-seven cases presented with lower limb pain, 36 with eczema and 27 with ulcer. Eighty-one percent of operations were performed for symptomatic varicose veins and 19% were done for cosmesis. There were 153 limbs with varicosities, 121 of these had documented long saphenous vein reflux preoperatively. One hundred and sixteen limbs resolved post-operatively, five did not resolve, and four recurred. Incompetent perforators and short saphenous veins were the commonest causes of non-resolution and recurrence. Complications, including five cases of saphenous nerve paraesthesias, were temporary and met with full resolution eventually.

Conclusion: A 96% success rate is possible after high tie, stripping of the long saphenous vein with multiple avulsions of varicosities. Recurrence is 3% over the period of follow-up.

Keywords: varicose veins, varicosities, long saphenous vein, short saphenous vein, venous reflux, vein stripping

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INTRODUCTION

Varicose veins are a commonly encountered problem in daily surgical practice. It has been shown that stripping of the long saphenous vein reduces the rate of subsequent recurrence[1-3]. This has been borne out in several prospective studies[4]. High ligation of the sapheno-femoral junction, stripping of the thigh segment of the long saphenous vein and avulsion of varicosities is the standard procedure to date. Studies have shown, too, that there are differences in results depending on the surgeon's experience[5], and few studies have tried to minimise this variable.

This study seeks to determine, retrospectively, the recurrence rate for patients who underwent stripping of the long saphenous vein for varicosities. Each operation was performed or supervised intra-operatively by a single surgeon, to minimise inter-operator variability.

PATIENTS AND METHODS

Two hundred and fifty-three patients underwent surgery for varicose veins, performed or supervised by a single consultant vascular surgeon, from January 1993 to December 1999. Of these, only the records of 222 were available for review. The rest were no longer located in the hospital medical records office. Thirty patients were excluded from the study as they had previous varicose vein operations by other surgeons. Sixty-six patients were lost to follow-up and two died soon after the operation from unrelated causes. Thus, 156 lower limbs of 124 patients were finally included in our cohort.

The patients had a mean age of 48.7 years (Std Deviation +/- 12.3 years) and 64 % of them were female. Pre-operative assessment was performed by Duplex scans or bedside Doppler by the consultant surgeon. A total of 121 limbs were thus diagnosed pre-operatively with long saphenous reflux as the cause of varicosities. These were selected for subgroup analysis of recurrence of varicosities.

Every one of the standardised operations was performed or supervised intra-operatively by the single surgeon-in-charge. The refluxing veins were marked on the affected leg pre-operatively and general anaesthesia was administered to all. Patients were placed in the Trendelenburg position. Care was taken in the dissection, identification, isolation and subsequent ligation of every tributary at the sapheno-femoral

Table 1. Unresolved varicosities.

S/N	Refluxing veins on post-op Duplex U/S	Non-operative therapy	Operative therapy	Final outcome
Patient 1	(R leg) *SSV, PV, ICP* (L leg) *SFV, ICP*	Pt refused	Pt refused	Refused treatment. Small below-knee varicosities.
Patient 2	(R leg) *PV, ICP* (L leg) *SFV, PV, ICP*	GPS and IS	Pt refused	Improved. Refused subfascial ligation
Patient 3	Below-knee *LSV, SFV, PV*	GPS	Stripping of below-knee LSV	Varicosities resolved

Below-knee LSV - long saphenous vein
SFV - superficial femoral vein
SSV - short saphenous vein
PV - popliteal vein
ICP - incompetent perforators

GPS - Graduated pressure stockings
IS - Injection sclerotherapy

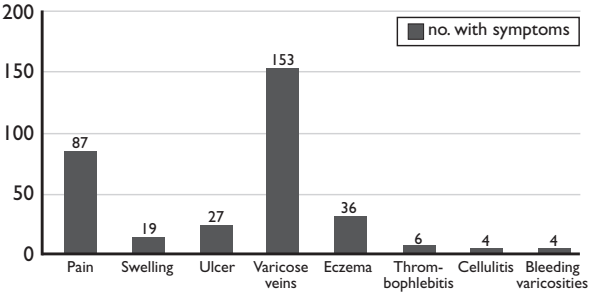
junction, including a high saphenous ligation of the long saphenous vein. Particular attention was paid to this step of the operation as recurrence can occur if any tributaries are missed. Stripping was carried out with the introduction of the Codman@ disposable vein stripper through a separate incision below the knee. Stab avulsions of the varicosities in the leg were carried out with miniature mosquito arteries. The entire leg was then bandaged for 24 hours and ambulation commenced in less than 24 hours post-operatively. Prophylaxis for possible deep venous thrombosis was therefore unnecessary. Tubigrip stockings were worn for two weeks post-operatively.

All patients in our cohort were undergoing varicose vein surgery for the first time. They were all reviewed one month post-operatively, to document resolution of the presenting problems. Subsequent follow-up was carried out by personal telephone interviews with the patients from July 2000 to October 2000. Standardised questions were put forth to the patients. All were asked for the presence or absence of aching pain, swelling in the legs, ulcers, or varicosities. Those with symptoms were recalled for review by the authors. Patients with symptoms attributable to varicose veins underwent a duplex scan to identify the incompetent vessel. The median time to interview was four years (one to seven years).

RESULTS

The majority (153 of 156 limbs) of our patients presented with varicosities. Of these, 29 (19%) were asymptomatic varicose veins and the operations were performed for cosmesis. The remaining 81% had operations done for symptomatic varicose veins. These included 87 legs presenting with pain and 19 who had swelling. There were 27 lower limb ulcers at the time of presentation and 36 legs with eczema (Fig. 1). Forty-one patients had more than one symptom at presentation. Few patients presented with thrombophlebitis, cellulitis or bleeding.

Fig. 1 Presenting Symptoms.



Note: Forty-one patients had more than one presenting symptom.

Varicosities were the commonest presenting symptom. Of these 153 limbs, 121 had pre-operative Duplex scans at the Vascular Laboratory or Doppler scans personally performed by the vascular surgeon, which documented long saphenous vein reflux as the cause of varicosities. Such documented proof was unavailable for the remaining 32 limbs. These 121 limbs were selected for subgroup analysis of recurrence after long saphenous vein stripping for varicosities.

There were five limbs (three patients) with unresolved varicosities at six months post-operatively. Patients 1 and 2 had pre-operative Duplex scans and Patient 3 had pre-operative Doppler. All were subsequently investigated with post-operative Duplex scans (Table I). The remaining 116 limbs were free of varicosities at clinic review of up to six months. However, four of these 116 limbs (three patients) later presented with recurrent varicosities over a variable period of 12 - 15 months after the initial operation. These, too, were investigated with duplex ultrasound scanning (Table II).

Table II. Recurrent varicosities.

S/No	Time of Onset	Refluxing veins on Duplex U/S	Non-operative Treatment	Operative Treatment	Final Outcome
Patient 1	12 months	*SFV*	Nil	Nil	Small varicosities. Not keen for follow-up
Patient 2	14 months	*SSV, ICP*	GPS and IS only	Nil	Not keen on stripping
Patient 3	(R) 15 months	Pt refused Duplex U/S	GPS	Nil	Improved. Small below-knee varicosities.
	(L) 15 months		GPS		

SFV - superficial femoral vein
SSV - short saphenous vein
ICP - incompetent perforators

IS - Injection sclerotherapy
GPS - Graduated pressure stockings
U/S - Ultrasound

Fig. 2 Absence of Varicosities Post-up (Kapler-Meier).

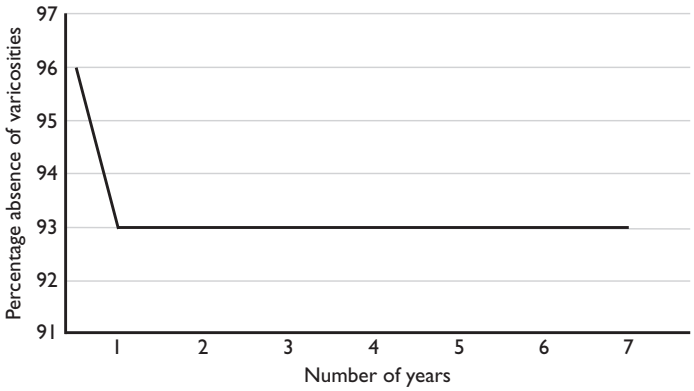


Table III. Complications.

Complications	No. of cases	% age of all limbs operated
1. Wound Infections	09	5.8%
2. Bruising	10	6.4%
3. Stitch sinus	08	5.1%
4. Paraesthesia	05	3.2%

Thus, a patient presenting with varicosities will have a 96% chance of being free of varicosities after stripping of the long saphenous vein and multiple stab avulsions (116/121). Over time, there is a 3% chance of recurrent varicose veins in those who have had a successful operation (4/116). The overall success of long saphenous vein stripping performed or supervised intra-operatively by a vascular surgeon would be 93% (112/121) as shown in Fig. 2.

Post-operative complications in our series consisted of nine wound infections, 10 cases of bruising, eight stitch sinuses, and five paraesthesia. All complications subsequently resolved with treatment. This included drainage and antibiotics for wound infections, exploration and removal of stitch sinuses. There were no permanent post-operative sequelae. As seen in Table III, the complication rate was between 3-7%.

DISCUSSION

The aim of this study was to review the results of a single-surgeon supervised varicose vein operation, namely, the high saphenous ligation, long saphenous vein stripping with multiple stab avulsions, in an Asian population. This has become the standard of care in our institution and the results of this study strongly suggest a high level of patient satisfaction with the procedure.

The overwhelming majority of operations were performed for symptomatic disease while only 19% had the operation purely for cosmesis. Of the symptomatic patients, it appears that operations done for pain or swelling due to varicose veins and those with thrombophlebitis, cellulitis or bleeding were beneficial as there were no recurrent symptoms.

Majority of our Asian patients seem to seek treatment only when varicosities are present (153/156 limbs). This allowed us to focus our subgroup analysis of outcome on those with documented pre-operative long saphenous reflux (121 limbs). We did not seek to investigate the outcome of long saphenous vein stripping on ulcer healing, eczema etc. This, we felt, would be more thoroughly handled in a prospective study with classified CEAP findings and detailed pre-operative Duplex scans documenting refluxing veins in both the superficial and deep venous systems.

In our study, the commonest cause of unresolved or recurrent varicosities seemed to be incompetent perforators, present in five of nine legs with post-operative duplex ultrasound (Table I and II). Presence of an incompetent short saphenous vein was detected in two of the nine cases. All patients analysed had either Duplex or Doppler scans preoperatively. Surgery based on bedside Doppler has been found to

be reasonably accurate with additional duplex scans if there is reflux in the popliteal fossa[6-8].

Many of our patients with recurrent varicose veins refused further surgery. Instead they opted for less invasive treatment modalities like graduated pressure stockings or injection sclerotherapy (six of nine limbs). Some even requested no further treatment (three of nine limbs). Injection sclerotherapy for small residual varicosities or recurrent varicosities show encouraging results in our patients with all three limbs showing resolution of varicosities. Only one patient underwent stripping of residual below knee long saphenous vein after pre-operative marking with Duplex ultrasound.

Complications, although, making up 20% (37 of 156 limbs) of operated cases, were relatively minor and had full resolution subsequently. This included the five cases of saphenous nerve paraesthesias.

CONCLUSION

Closely supervised stripping of the long saphenous vein, together with high ligation and multiple avulsions, is associated with good results. There is 96% chance of resolution of varicosities and symptoms. The recurrence rate is 3%, due mainly to incompetent perforators and less often incompetent short saphenous veins. Complications, including saphenous nerve paraesthesia, were relatively minor and ultimately resolved fully. The results serve as a reference with which to advise patients on treatment.

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