

Clinical study of venous ulcers occurring in patients with varicose veins & response to various modalities of treatment

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Abstract

Background: Varicose veins of the lower limbs are the most common vascular disorder affecting human beings. Although venous ulceration is a benign condition, there is considerable morbidity due to recurrent cellulitis, phlebitis and stiffness of joints. Present study was aimed to study venous ulcers occurring in patients with varicose veins & response to various modalities of treatment at a tertiary hospital.

Material and Methods: Present study was hospital based, prospective, observational study, conducted in patients with venous ulceration in the leg due to varicose veins, willing to participate & follow up.

Results: In present study 32 patients were included. All patients were male. age ranged between 28 to 70 yrs. Majority of were from 40-49 years age group (31.25%) & duration of illness was 1-5 years (53.13%). Apart from ulcer & varicose veins (100.00%), common complaints were itching (31.25%), pain (28.13%) & pedal oedema (9.38%). Four patients (12.50%) had bilateral disease Fascial defects due to perforator incompetence was clinically well palpable in all patients with below knee perforators. Perthes' test was negative in all patients and doppler (Duplex) assessment showed patent deep veins in all patients. All 32 patients (36 limbs) underwent Trendelenburg operation. Treatment modalities were Trendelenburg operation with stripping with stab avulsion (52.78%), Trendelenburg operation with stripping with subfascial ligation (36.11%), short saphenous vein ligation and stripping (5.56%) & excision of fibrous tissue and split skin grafting (5.56%). Post-operative complications in present Wound infection of the transverse groin incision was present in 2 patients.

Conclusion: In cases of venous ulcers occurring in patients with varicose veins, meticulous clinical assessment leads to successful treatment. Conservative treatment of venous ulceration should be tried before embarking on surgery which is the definitive treatment.

Keywords: Venous ulcers, varicose veins, surgery, trendel-burg operation

Introduction

The term varicose is derived from the latin word 'varix' meaning bent and refers to dilated, tortuous, and lengthened veins. Varicose veins of the lower limbs are the most common vascular disorder affecting human beings ^[1].

Although venous ulceration is a benign condition, it has social and economic implications due to loss of work. There is considerable morbidity due to recurrent cellulitis, phlebitis and stiffness of joints. Attacks of recurrent cellulitis cause considerable pain and discomfort; these are treated by bed rest, elevation of the limb, elastic support and systemic antibiotics [2]. Probably several factors play an important in producing changes in the local circulation and are responsible for the condition. Incompetence of valves in the deep venous system, communicating veins and less frequently in the superficial system produces stasis of blood and rise in the local venous pressure. This in turn produces thickening in the wall of the capillaries and stagnation of blood in the affected area. The transport of oxygen and nutrient substances required for cellular survival is thus affected and results in local cellular necrosis and ulceration [3, 4].

Present study was aimed to study venous ulcers occurring in patients with varicose veins & response to various modalities of treatment at a tertiary hospital.

Material and Methods

Present study was hospital based, prospective, observational study, conducted in department of general surgery, at Government Stanley Hospital, Chennai, India. Study duration was of 2 years (June 2007 to June 2009). Study was approved by institutional ethical committee.

Patients with venous ulceration in the leg due to varicose veins, willing to participate & follow up were considered for study. Study was explained & a written informed consent was taken for participation. A detailed history was taken regarding symptoms, duration of disease, occupation, previous treatment and the response. The site of the ulcers, dimensions, extent of healing and severity of varicosities were noted. The patients were examined in standing as well as lying down posture.

The limbs were inspected individually for dilated long saphenous, short saphenous and perforator veins. Incompetence of saphenous veins and perforators were determined by Trendelenburg and multiple tourniquet tests. Deep veins were clinically assessed by Perthes' test. Perforator incompetence was localized clinically by palpating defects in the deep fascia at relevant anatomical sites.

Abdominal and pelvic examinations were done to rule out tumours, dilated suprapubic veins and other causes of raised intra-abdominal tension. Abdomen was inspected for scars of previous surgery. Cardiovascular system and peripheral pulses were carefully assessed to exclude arterial disease. Routine investigations of blood and urine were done. Then patients went for Doppler assessment of the varicose veins and deep veins.

Patients were treated with initial hydrogen peroxide cleaning till the slough separated and then metronidazole and normal saline dressing was done on alternate days. Elastocrepe bandage was applied from the level of head of metacarpals upto the knee. The limb was kept elevated by raising the bed on blocks. They were kept under antibiotic cover till healthy granulation tissue was seen. All the patients underwent surgical treatment. The choice of surgery was determined by extent of disease. The procedures done were Trendelenburg operation, subfascial ligation of perforators, stab avulsion of perforators, complete or segmental stripping of long saphenous vein. Patients were reviewed two weeks after surgery. Data was collected and compiled using Microsoft Excel, analysed using SPSS 23.0 version. Statistical analysis was done using descriptive statistics.

Results

In present study 32 patients were included. All patients were male. age ranged between 28 to 70 yrs. Majority of were from 40-49 years age group (31.25%).

Table 1: Age Distribution

Age (in years)	No. of cases	Percentage
20-29	2	6.25%
30-39	5	15.63%
40-49	10	31.25%
50-59	9	28.13%
≥ 60	6	18.75%

In majority of patients, duration of illness was 1-5 years (53.13%) followed by 6-10 years (37.50%).

Table 2: Duration of illness

Duration of illness (in years)	No. of cases	Percentage
< 1	2	6.25%
1-5	17	53.13%
6-10	12	37.50%
>10	1	3.13%

In present study, apart from ulcer & varicose veins (100.00%), common complaints were itching (31.25%), pain (28.13%) & pedal oedema (9.38%). Four patients (12.50%) had bilateral disease.

Table 3: Clinical findings

Clinical findings	No. of cases	Percentage
Ulcer	32	100.00%
Varicose veins	32	100.00%
Itching	10	31.25%
Pain	9	28.13%
Bilateral disease	4	12.50%
Pedal oedema	3	9.38%

Fascial defects due to perforator incompetence was clinically well palpable in all patients with below knee perforators. Perthes' test was negative in all patients and doppler (Duplex) assessment showed patent deep veins in all patients. Short saphenous varicosity was found in two patients and in four patients with bilateral disease one limb had symptoms for longer duration with more extensive disease.

Table 4: Clinical assessment

Clinical assessment	Number of Limbs (N=36)	Percentage
Long saphenous vein varicosity with saphenofemoral incompetence	36	100.00%
Perforator incompetence	36	100.00%
Medial ankle perforators	30	83.33%
Calf perforator	5	13.89%
Above knee perforators	1	2.78%
Sapheno popliteal incompetence with short saphenous vein varicosity	2	5.56%

All 32 patients (36 limbs) underwent Trendelenburg operation. Treatment modalities were Trendelenburg operation with stripping with stab avulsion (52.78%), Trendelenburg operation with stripping with subfascial ligation (36.11%), short saphenous vein ligation and

stripping (5.56%) & excision of fibrous tissue and split skin grafting (5.56%).

Table 5: Treatment

Surgery	Number of Limbs (N=36)	Percentage
Trendelenburg operation with stripping with stab avulsion.	19	52.78%
Trendelenburg operation with stripping with subfascial ligation	13	36.11%
Short saphenous vein ligation and stripping	2	5.56%
Excision of fibrous tissue and split skin grafting	2	5.56%

Post-operative complications in present Wound infection of the transverse groin incision was present in 2 patients.

Table 6: Post-operative complications

Complications	Number of Limbs (N=36)	Percentage
Wound infection	2	5.56%
Delayed wound healing	1	2.78%
Recurrent ulceration	1	2.78%

Discussion

Venous ulcers occur either in connection with varicose veins or post deep vein thrombosis in which re-canalization of the deep vein has occurred but the valves are either destroyed or incompetent due to damage ^[5]. Venous stasis favoring local anoxia and oedema is the underlying cause of both types but lipolysis of the subcutaneous fat is an important accessory factor. It is important to be sure that the ulcer is not due to ischemia from atherosclerotic arterial obstruction, arteritis or from syphilis ^[6].

A varicose ulcer responds promptly to ambulatory treatment or ligation operation but post thrombotic ulcers tend to be refractory to treatment and may require bed-rest, curettage and skin grafting. Selecting appropriate treatment whether it is conservative (injection, compression or surgery) or surgery requires an accurate diagnosis ^[1].

Lipodermatosclerosis is an important clinical finding in patients with varicose veins. It indicates that there is local venous hypertension and ulceration is imminent and that early treatment should be started. Type of surgery done also depends on liposclerosis since extensive skin necrosis and sloughing will occur if skin is dissected away from deep fascia in the patient with lipodermatosclerosis ^[7].

Both surgical and non-surgical methods are used in the management of superficial varicose veins ^[1, 2]. In general, the surgical removal of incompetent veins is the more definitive treatment because the results are more satisfactory and lasting. Nonsurgical methods are generally reserved for patients who have medical contraindications to surgical treatment, deep venous insufficiency, or very minimal varicosities. These nonsurgical methods include sclerotherapy, elastic support (preferably graded), periodic elevation of the lower extremity and exercise of the leg muscles ^[2].

Almost any venous ulcer can be healed by elevation, elastic support, exercises any by massaging the surrounding area. The ulcer is cleaned with normal saline, a weak Eusol saline solution or cetrimide (Bisgaard method). The efficacy of bandaging as a method of treatment depends upon proper application ^[8]. The bandages are applied working proximally from the base of the toes with full inclusion of the heel and extending to just below the knee. Elastic stockings are also used as supporting measure but are not as effective as bandages, although young patients accept them more readily because of their better appearance.

If the ulcer fails to heal after a prolonged conservative regime, it is excised and a skin graft applied. Ligation of varicosities and incompetent communicating veins contributing to the ulcer is done at the same time. Associated conditions which affect healing are treated at the

same time; in particular, correction of anaemia and improvement of the general nutrition is done.

The aim of sclerotherapy is to inject a small volume of an effective sclerosant into the lumen in order to destroy the venous intima^[8]. If compression is not applied immediately after sclerotherapy, a large thrombus forms, which soon recanalises. This process may result in destruction of valves so that the venous pathology is actually worsened. However, if the sclerosant is injected into an empty vein and external compression is maintained until permanent fibrosis has obliterated the lumen, good results may be obtained.

Sodium tetradecyl sulfate 3% has been found to be an effective and safe sclerosing agent^[9]. Sclerosing solutions can be dangerous for patient with allergic condition. An inflammatory reaction can cause local pain and periphlebitis is sometimes quite disabling. Repeated course of massive injection therapy has been known to give rise to chronic swelling of the leg from inadvertent sclerosing damage of an otherwise normal deep venous system. Small recurrent varicosities following surgery are often treated by this method.

General indications for surgical treatment are Symptoms of aching, heaviness and cramps, complications of venous stasis such as pigmentation, dermatitis, induration, superficial ulceration and thrombosis of varicosities, Large varicosities subject to trauma, cosmetic concern, and need for prophylaxis in younger patients^[10, 11]. Contraindications to injection and operative treatment are acute infective thrombophlebitis, deep vein thrombosis, pregnancy, pelvic tumors. The results of surgical treatment may be unsatisfactory because of inaccurate preoperative assessment, incomplete operative treatment, or inadequate follow-up^[12, 13].

Studies are still going on to determine whether perforator incompetence occur *denovo* or is secondary to deep vein thrombosis. Dysfunction of perforator may be due to local effect following destruction by thrombosis and subsequent recanalization in veins of lower part of leg or may be remote secondary effect of pressure changes following destruction of the valves of deep veins higher in the leg (popliteal or femoral level).

Conclusion

In cases of venous ulcers occurring in patients with varicose veins, meticulous clinical assessment leads to successful treatment. Doppler ultrasound is a useful tool in assessing the varicose veins. Deep vein thrombosis must be ruled out in all patients undergoing surgery. Conservative treatment of venous ulceration should be tried before embarking on surgery which is the definitive treatment.

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