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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.

Keywords: Venous ulcers, varicose veins, surgery, Trendelburg operation

Introduction

Chronic venous ulcer (CVU) is the most common ulcer affecting the lower limbs, with a prevalence of 1-2%. CVU is defined as an ulcer with duration of more than 6 weeks with evidence of chronic venous insufficiencies like varicose veins, edema, and pigmentation [1]. CVU significantly reduce quality of life due to pain, loss of function, reduced mobility, and social isolation. They are complicated with local eczema, scarring, lipodermatosclerosis, ankylosis of the ankle joint, bleeding, chronic osteomyelitis and sometimes Marjolin's ulcer. Risk factors for CVU are obesity, deep venous thrombosis, phlebitis, and venous valvular dysfunction [1, 2]. Venous ulcers are diagnosed based on clinical findings like anatomic location in Gaiter's area, morphology, and characteristic skin changes. Diagnosis is confirmed by assessing the venous system functionally and structurally using imaging. 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 Kanachur Institute of Medical Sciences, Mangalore.

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.

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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

Table 1: 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 2: 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

Proposed mechanisms include hypoxia-mediated endothelial changes, cell cycle dysfunction with inhibition of programmed cell death, changes in enzyme activity, and defects in venous tone. In secondary venous disease, both reflux and obstruction play a role in the development of ulcers. There may be congenital absence; weaknesses of valves, failure due to the sclerosis, or the destruction due to thrombosis. Old age, obesity, asthenia, calf muscle dysfunction, and prolonged dependent posture contribute to stasis with an excess load on the valves, ultimately leading to chronic venous hypertension. The severity of the chronic venous disease is based on the magnitude of venous hypertension, with 100% ulceration at pressures greater than 90 mmHg. The increased load results in varicosities, edema, inflammation and ulceration. Theories that have been proposed are; white cell trapping theory: leukocytes get trapped in microcirculation resulting in venous dilatation and pooling, leading to the release of proteolytic enzymes. Inter-epithelial pore widening, deposition of fibrin and other macromolecules in the dermis trap growth factors thus rendering them unavailable for wound repair. CVUs are managed either conservatively or by surgical approaches. Conservative management; dressings: a wide range of dressings that include hydrocolloids, hydrogels, foam, growth factor pastes are available. Their use depends on local availability and personal choices. Compression therapy: inelastic or elastic or intermittent pneumatic compression therapies are found to be effective. It reduces oedema, pain, and improves venous circulation. A pressure of 35-40 mmHg is necessary in presence of an ulcer. In the absence of an ulcer, pressure around 25 and 30 mmHg is sufficient. Inelastic compression provides no resting pressure. Stockings are more useful as it provides a graded pressure from below upwards. Multilayered elastic bandages (MLB) are more beneficial than single layered bandaging. MLB needs expertise & frequent changing, with compression therapy, medical management plays a major role, and so does limb elevation. The use of pentoxifylline and aspirin has been shown to be of added benefit. Intravenously administered iloprost can be used through vasodilatation and its effect on platelet aggregation. Daflon, a micronized purified flavonoid, and prostaglandins E1 are

beneficial with compression therapy but not individually. Antibiotics are used, but regular use is not recommended. Negative pressure wound therapy and hyperbaric oxygen therapies can be used, but proof of their benefit is lacking. Surgical management; surgery is indicated for large, chronic ulcers that do not heal by medical therapy and or compression therapy. Surgical management includes debridement, split skin grafting, and surgery for venous insufficiency. Surgery has been shown to heal ulcers faster and reduce the rate of ulcer recurrence. Conventional surgery for venous insufficiency consists of flush ligation of saphenofemoral/saphenopopliteal junction, stripping of veins and perforator ligation. For a deep venous insufficiency, surgery, is a more difficult proposition. For primary valve failure, procedures include intraluminal repair of valves or extra luminal support of the valve. For a post thrombotic destroyed valve due to secondary valve failure, either a segment of vein with normal valves is transplanted or a normal vein is transposed in the diseased segment. Sclerotherapy; 3% sodium tetradecyl sulphate, Ethanolamine oleate, polidocanol, and 20% hypertonic saline are commonly used. They induce venous endothelial damage with peri venous fibrosis at the site of reflux and varicosities, leading to obliteration of the vein. Mixing of sclerosants with air or CO₂ in 1:4 ratio to form foam increases the efficacy of sclerotherapy. Radiofrequency ablation and endovenous laser surgery involve introducing a catheter under ultrasound guidance and heating the catheter tip with energy. Heat delivered to the vein wall will cause shrinkage, and the catheter is withdrawn until the entire vein is obliterated. Radio frequency ablation and foam sclerotherapy showed better short term results.

Conclusion

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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