

A Comparative Study on Rate of Healing of Venous Ulcers with or without Superficial Venous Surgery

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ABSTRACT

Introduction: Chronic venous ulceration leads to a high morbidity and financial burden to the individuals. Certain studies pointed out that superficial venous surgery should not be attempted when the venous ulcer is active.

Aim: To determine the ability of superficial venous surgery to heal active venous ulcers in lower limbs.

Material and Methods: Prospective study of 100 patients with active venous ulcers in lower limb with isolated superficial venous system incompetence were subdivided into a surgical group (a¹,b¹) and conservative group (a² b²) based on the maximum diameter 0.1-2 and 2.1 to 5 cms respectively. Patients in the surgical arm, underwent trendelenburg operation with multiple perforator surgery under local anaesthesia.

Results: The ulcers in subgroup (a¹) healed within one week, whereas those in (a² took 3 weeks for healing. The control group finding was 3 weeks and 5 weeks for (b¹) and (b²). Ulcers around the medial malleolus healed more rapidly than the ulcers around the lateral malleolus and dorsum.

Conclusion: Superficial venous surgery in case of isolate venous reflux is able to promote ulcer healing faster than the conservative method with less complication rates. The healing rate was correlative with the ulcer size.

Key words: Ulcer, Varicose Veins, Veins, Venous Insufficiency.

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INTRODUCTION

Venous ulcers are chronic painless ones, typically situated on the medial side of the lower one third of the leg just above medial malleolus (gaiter area) with sloping edges, unhealthy granulation tissue in the floor and scanty discharge.¹ It is superficial to the deep fascia, and has an indurated base. Surrounding skin is edematous, hyperpigmented and show evidence of dermatitis which is a sequelae of chronic venous insufficiency(CVI). Venous ulcers are shallow, but deep ulcers with punched out edges suggest arterial disease. Exposure of bone or tendon is a grave prognostic sign. History of previous deep vein thrombosis(DVT), thrombophilia, varicose veins are risk factors for ulceration. It arises due to increased hydrostatic pressure in the vein due to incompetency of the superficial veins or the perforators.² Chronic venous ulceration (CVU) is due to defective exchange of oxygen and metabolites following oedema, which is more prone for infection. Eighty percent of the CVU are medially placed whereas twenty percent of the ulcers are laterally placed and may be associated with reflux in the short saphenous system.³ Less than 5% is circumferential.

Venous ulcers above the gaiter area are rare, so a possibility of trauma, vasculitis or malignancy should be entertained, whereas atherosclerosis, neuropathy may be the cause for foot ulcers.⁴⁻⁶ Women are more affected than men with a presentation around 40-60 years. Certain studies pointed out that superficial venous surgery should not be attempted when the venous ulcer is active. We tried to assess whether superficial venous surgery in the presence of active venous ulceration will be beneficial in ulcer healing.

AIM

To determine the ability of superficial venous surgery to heal active venous ulcers in lower limbs with isolated superficial venous incompetence.

MATERIAL AND METHODS

Prospective study of patients with venous insufficiency and ulceration presenting to general surgery department at a tertiary care hospital in north Malabar from 2006 to 2015. A random selection of 100 patients into each group (cases and

controls 50 each) with solitary venous ulcers in lower limb of size not exceeding 5cm where chosen.

Inclusion criteria

Patients with active venous ulcers in lower limb with isolated superficial venous system incompetence diagnosed clinically and by venous Doppler were included.

Exclusion criteria

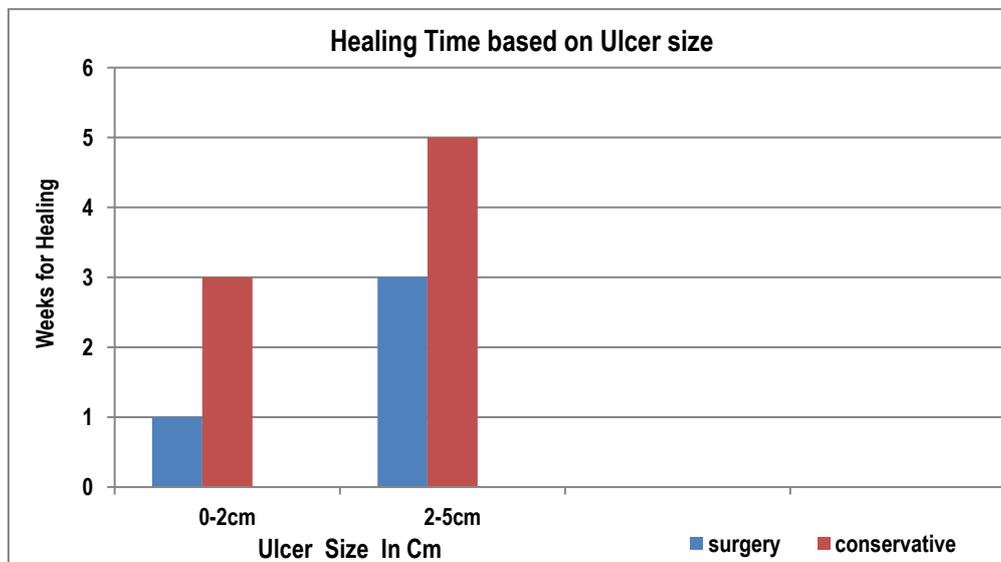
Patients with peripheral vascular diseases, malignant ulcers, secondary varicosities, deep venous thrombosis, multiple ulcers, asculitis, neuropathy and post sclerotherapy were excluded.

The ulcers were predominantly around the medial malleolus

and was subdivided into a surgical group (a¹,b¹) and conservative group (a² b²) based on the maximum diameter 0.1-2cm and 2.1 to 5cm. The subgroups (a¹ and a²) were 40 and subgroup (b¹ and b²) were 10. Both groups after clinical and sonological evaluation are admitted in the wards for one week. The ulcers were reassessed in the 2nd, 4th, 6th postop days respectively and also after 2,4, and 6 weeks in both arms. The ulcers were cleaned with saline and dressings were given with sterile gamgy pads. No topical applications were used. Compression hosiery was advised and foot end of the bed was elevated. The ulcer size was measured using the impression size on a gamgy pad.

Table 1: Comparison between the surgical arm and conservative arm

100 venous ulcers			
Surgical treatment(50 cases)		Conservative (50)	
0-2 cm	2.1-5cm	0-2 cm	2.1-5cm
40 cases	10 cases	40	10
Heals by	Heals by	Heals by	Heals
1 week	3 weeks	3 weeks	5 weeks



RESULTS

Patients in the surgical arm (A), underwent trendelenburg operation with multiple perforator surgery under local anaesthesia. The ulcers in subgroup (a) of size 0.1 -2 cm after surgery healed within one week, whereas those in subgroup (b) 2.1-5 cm took on an average 3 weeks for healing. The control group finding was 3 weeks and 5 weeks for 0.1-2 cm and 2-5 cms the sized ulcers Table 1. After surgery ulcers around the medial malleolus healed more rapidly than the ulcers around the lateral malleolus and dorsum. The wound infection rate was 25 and prolonged hospital stay for more than one week was for 5 cases in the surgical arm (10%). There were no recurrences within the follow up period of 1 year. Applying MANN-WHITNEY U test for sub group (a) ulcers less than 2 cms size, the mean healing time was 1.68 weeks in the surgical group, whereas for those managed conservatively, the mean healing time was 3.9 weeks. The subgroup (b) ulcers the mean healing time in surgical group was 3.4 weeks whereas for the conservative group was 6.3 weeks.

DISCUSSION

Carl Arnold Ruge is credited with having first defined varicose vein as “any elongated and tortuous vein irrespective of the size.” Various classifications were proposed by people like Widmer, Sytchev, Porter.⁷⁻⁹ More recent and comprehensive CEAP classification was devised by the American venous forum meeting in 1994 and is based on four elements like clinical presentation, etiology, anatomical areas affected, pathophysiology found.¹⁰ It is generally accepted that CVI and CVU are due to sustained ambulatory venous hypertension.¹¹ However the individual susceptibility to venous hypertension appears to be quite variable. Browse and Bernand suggested that the fibrin cuffs they had observed on histological sections around dermal capillaries affected by CVI were acting as barriers to oxygen diffusion and leading to local tissue ischemia.¹² These cuffs develop because of disturbed starlings forces that lead to deposition of protein and because of reduced fibrinolytic activity observed in both endothelium and vein wall of patients with CVI. Fibrin cuff contain laminin, fibronectin, tenascin, and type

IV collagen. Coleridge - Smith proposed that the leucocytes were blocking the capillaries of the skin and causing skin damage by interrupting nutritive flow as well as by becoming activated and releasing harmful moieties.¹³ In patients with CVI, the creation of acute venous hypertension in the leg by motionless dependency leads to neutrophil activation as shown by the release of neutrophil elastase and lactoferrin as well as changes in the expression of the neutrophil activation marker CD11b. Endothelial cell activation and injury as shown by the release of soluble adhesion molecules involved in leucocyte binding and Von willebrand factor. All these factors lead to chronic venous ulcers or ulcers that fail to heal, which can be seen as a model of the failing wound. These ulcers during olden times were managed conservatively by bandaging, limb elevation and excises.¹⁴ Recently trend has shifted to surgeries in superficial venous system with active ulcers.¹⁵ Adam D et al studied a group of 49 (24 men, 25 women, between 27-90 years). Fourteen limbs had varicose veins (CEAP 2-4) and 39 had active CVU, (CEAP 6). Ulcer healing occurred in 30 out of 39 limbs in 12 months with a median healing time of 61 days (77%). They concluded that there is a definite role for superficial venous surgery in the management of patients with complicated disease. A systematic review by Howard et al suggested that superficial venous surgery is associated with similar rates of ulcer healing to compression alone, but with less recurrence.¹⁶ The effects of post-operative compression and DVI on the efficacy of surgery are still unclear. The ESCHAR trial establishes a 1A recommendation that ligation and stripping of the GSV is associated with the prevention of ulcer recurrence. At present, there is no compelling level 1 evidence to provide a grade A recommendation that the treatment of ICPVs alone affects venous ulcer healing or recurrence.¹⁷ Rolandas et al treated 130 patients where he achieved a healing rate of 95.8% for ulcers <3cm, 79% and 37.7% for ulcers 3-6 and > 6 cm respectively. Healing was complete in 135 ulcers (94.4%) at the end of one year^[18]. Clinical practice guidelines of the Society for Vascular Surgery and the American Venous Forum recommend compression therapy as the primary treatment to aid healing of venous ulceration.¹⁸

In our study, the ulcers of size 0.1-2 cm after surgery healed within one week, whereas those of 2.1-5 cm took on an average 3 weeks for healing. Those ulcers managed by conservative treatment the mean healing time was 3.4 and 6.3 weeks respectively in their corresponding sizes. It definitely leads to earlier healing of the active ulcers.

CONCLUSIONS

Superficial venous surgery in case of isolate venous reflux is able to promote ulcer healing faster than the conservative method with less complication rates. The healing rate was correlative with the ulcer size.

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