

## OUTCOME OF COMBINED SURGICAL TREATMENT IN CASE OF CHRONIC VENOUS LEG ULCER- A PROSPECTIVE STUDY

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### ABSTRACT

#### BACKGROUND

Venous leg ulcers are the most serious type of chronic venous incompetence. Chronic leg ulcers (CLU) affect 0.6% - 3% of those aged over 60 years, increasing to over 5% of those aged over 80 years. CLU is a common cause of morbidity and its prevalence in the community ranges from 1.9% to 13.1%. Treatment and recurrence prevention methods remain under discussion and research. Aims and Objectives- To evaluate the effect of combined surgical treatment in outcome of venous leg ulcers.

#### MATERIALS AND METHODS

The study was descriptive. Patients hospitalised with venous leg ulcer in the Department of General Surgery were included in the study. The study group comprised of 50 patients subjected to treatment for leg ulcerations including 35 men and 15 women, aged above 30 yrs. The treatment method included superficial surgery which involved SFJ and SPJ disconnection with stripping and avulsion and split thickness skin grafting (STSG) over the prepared venous ulcer.

#### RESULTS

Amongst patients evaluated at discharge, the healing of the transplant was as follows- In case of 35 patients 90% - 100%, in 6 patients 75% - 89%, in 4 patients 50% - 74% and in 5 patients less than 50%.

#### CONCLUSION

Combined surgery is an effective method in treatment of venous leg ulcers. Earlier qualification for this type of surgery will improve patient outcome.

#### KEYWORDS

Leg Ulcers, Skin Graft.

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#### BACKGROUND

In the course of a lifetime, almost 10% of the population will develop a chronic wound with a wound-related mortality rate of 2.5%.<sup>[1]</sup> While there are few Indian studies on the epidemiology of chronic wounds, one study estimated the prevalence at 4.5 per 1000 population.<sup>[2]</sup> Venous leg ulcers are the most serious type of chronic venous incompetence.<sup>[3]</sup> Chronic leg ulcers (CLU) affect 0.6% - 3% of those aged over 60 years, increasing to over 5% of those aged over 80 years. CLU is a common cause of morbidity and its prevalence in the community ranges from 1.9% to 13.1%.<sup>[4]</sup> It is thought that the incidence of ulceration is rising as a result of aging population and increased risk factors for atherosclerotic occlusion such as smoking, obesity and diabetes.

The aetiology of leg ulcers is usually associated with disorders of chronic venous insufficiency. Theories considering the development of venous ulcerations are based on macro- and micro-circulation changes.

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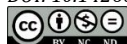
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Changes in microcirculation lead to an increase of venous pressure, which results in impaired blood outflow. This may be caused by weakening of muscular function, deep venous thrombosis, reduced venous capacity, occlusion of collecting veins and valvular insufficiency.<sup>[5]</sup>

Venous ulcers are often recurrent and open ulcers can persist from weeks to many years. Severe complications include cellulitis, osteomyelitis and malignant changes.<sup>[6]</sup>

#### Aims and Objectives

**To determine combined surgical treatment results considering Venous Ulcers, using a combined procedure:**

1. The surgical interruption of reflux in the superficial and perforating veins to reduce venous hypertension in the entire leg and/or the affected area.
2. The surgical procedure involving the ulcer- skin grafts of intermediate thickness.

#### MATERIALS AND METHODS

The study was a descriptive type of study conducted over a period of 18 months.

#### Inclusion Criteria

- All patients with primary venous leg ulcer.
- Age- above 30 years.

#### Exclusion Criteria

- Secondary and recurrent venous ulcer.
- Ulcer with arterial and malignant aetiology.

- Ulcers outside the gaiter region.
- Pregnant ladies.

The study was done on 50 patients subjected to first-time treatment of lower leg venous ulcerations. The study group comprised of 35 male and 15 female patients, aged above 30 years. All patients were subjected to a thorough medical interview and physical examination.

**Surgical Procedure**

Patients with superficial venous incompetence in the absence of deep venous incompetence on duplex imaging were offered corrective superficial venous surgery to the affected limb. Superficial surgery involved saphenofemoral or saphenopopliteal disconnections with stripping and avulsion. Incompetent perforating veins detected in the absence of deep venous insufficiency were localised pre-operatively with duplex and ligated or avulsed through small incisions.

Tangential excision of their leg ulcers followed by autografting with meshed split-thickness skin graft (STSG). This entailed mechanical debridement of necrotic tissues, lipodermatosclerotic skin and subcutaneous calcifications immediately followed by mesh skin grafting. Mesh grafting consists of harvesting an STSG (0, 3 mm thick) with a dermatome and expanding this graft with a mesher. Insufficient perforator veins are ligated superficially to the fascia. Donor grafts are obtained from the thigh. In addition, immobilising devices are used if skin grafts are applied onto mobile surfaces. The vast majority of the patients are discharged after an average period of 7 - 10 days. Compression therapy is continued after discharge. Early standard post graft follow-up consists of 3 controls, in the 3rd, 6th and 12th week in the outpatient clinic.

Clinical changes and treatment results of the ulcerations (graft healing) were analysed as percentage of graft uptake and healing as below:

Graft Incorporation Rate	Outcome
90-100%	Very Good
75-89%	Good
50-74%	Satisfactory
< 50%	Unsatisfactory

**RESULTS**

Fifty patients were subjected to combined surgical treatment consisting of surgery for reflux disease and autogenous skin grafts of intermediate thickness.

Table 1 shows the surface of the ulceration prior to treatment, most of the patients were under 10 - 20 cm<sup>2</sup> surface area.

Surface of Ulceration	No. of Pts.	Percentage (%)
< 10 cm <sup>2</sup>	10	20%
10-20 cm <sup>2</sup>	38	76%
> 20 cm <sup>2</sup>	2	4%

**Table 1. Number of Patients depending on the Surface of the Ulceration on Admission to the Hospital**

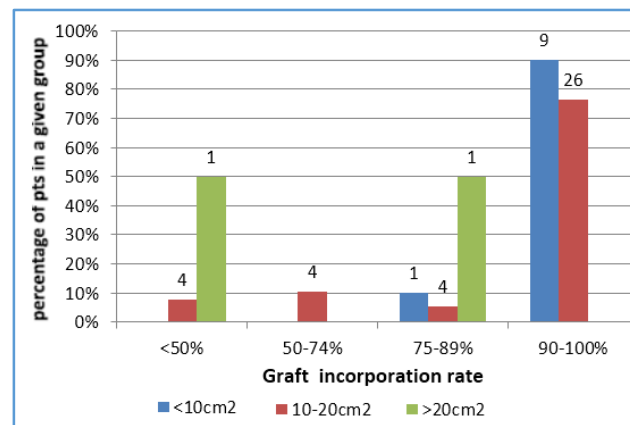
Table 2 shows graft incorporation evaluated on discharge from the hospital: 90% - 100% in 35 patients, 75% - 89% in 6 patients, 50% - 74% in 4 patients and < 50% in 5 patients.

Healed Surface	No. of Pts.	Percentage (%)
90-100%	35	70%
75-89%	6	12%
50-74%	4	8%
< 50%	5	10%

**Table 2. Patient Characteristics depending on the Healed Surface at Discharge from the Hospital**

Best results were obtained amongst patients with the area of ulceration of < 10 cm<sup>2</sup>, 90% - 100% graft incorporation was observed in 90% of cases. In patients with an ulceration surface, 10 - 20 cm<sup>2</sup>, 90% - 100% graft incorporation was observed in 74.28% of cases.

Figure 1 shows dependency between healed surface and size of ulceration before surgery. Best results were obtained amongst patients with the area of ulceration of < 10 cm<sup>2</sup>, 90% - 100% graft incorporation was observed in 90% of cases. In patients with an ulceration surface of 10 - 20 cm<sup>2</sup>, 90% - 100% graft incorporation was observed in 74.28% of cases.



**Figure 1. Dependency between Healed Surface and Size of Ulceration before Surgery**

**DISCUSSION**

Venous ulcerations constitute chronic wounds, where the healing process is long lasting and complex. The selection of the appropriate therapeutic method remains a problem faced by various medical specialists. The effectiveness of treatment is influenced by many factors, related to both aetiology and initial local condition of the ulceration as well as the patient's general condition.

Graft incorporation following our treatment methods was evaluated upon hospital discharge. Results were as follows: More than 90% graft incorporation in 70% of patients and healing of more than 50% of the surface of the ulceration in 92% of patients. Failure during the early postoperative period was mainly associated with the duration and extent of the ulceration. Similar results, more than 90% of graft healing were observed by other Authors based on several years of follow-up.<sup>[7,8]</sup>

In case of treatment and compression therapy, it is estimated that the use of the above-mentioned methods will lead to 12% to 74%, and according to other Authors 40% to 80% of ulceration healing during a period of 12 weeks.<sup>[9,10,11]</sup>

Studies comparing both methods show a greater percentage of healed ulceration surface in case of patients subjected to skin grafting as compared to those subject to

compression therapy only. These studies demonstrated the significant difference in the local healing rate, which is in favour of the first group.<sup>[12]</sup>

A significant problem affecting the effectiveness of venous ulceration treatment is their recurrence, which was observed by most authors, regardless the therapeutic method used. However, literature data showed a much less frequent recurrence rate after surgical intervention, which is evidence of its greater efficacy.<sup>[13,14,15]</sup>

Without doubt conservative treatment continues to be the mainstay of treatment for venous leg ulcers, especially in case of small ulcerations and is an important element prior to surgical intervention. However, it has many disadvantages and contraindications.<sup>[16,17]</sup>

There are also patients where compression therapy and local treatment does not lead to healing, and the process is long-lasting. These are mainly elderly patients with long lasting and extensive ulcerations. In such cases, skin grafts seem more effective.<sup>[18,19]</sup>

Surgical treatment is often regarded as the method of last resort when there are no positive effects following conservative treatment. However, the above-mentioned results and available study data indicate the legitimacy of early surgical intervention, as the method reducing the duration of treatment and risk of recurrence which will translate into lower costs and improve the patient's quality of life.

## CONCLUSION

Surgical treatment with the use of skin grafts is an effective and rapid therapeutic method, considering chronic venous leg ulcers. In order to obtain good graft healing using a combined surgical procedure is found to be effective. Early qualification for surgery allows obtaining good treatment results in short time.

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