

## Effect of age, gender and type of varicosity on the post-operative pain score after seven-day compression dressing after varicose vein surgery

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### Abstract

Great saphenous vein insufficiency is linked to 80% of all remarkable lower limb varicosities. A total of 30 patients were enrolled from OPD fulfilling the inclusion criteria after the approval of the hospital's ethical committee. Patients had compression dressing for seven days after surgery. The patients were divided into two groups—Group-A (Compression dressing for two days) and Group-B (Compression dressing for seven days). Stratification of pain score was done against age, gender, and grades of varicose veins, and after dividing into groups t- test was put into use. A p-value  $\leq 0.05$  was contemplated to be remarkable.

Thirty patients with primary varicose vein were enrolled in this study. The mean age of patients was  $35.4 \pm 9.9$  years. Mean pain score in these patients was  $2.9 \pm 0.8$  years.

Pain score after seven days of compression dressing after the surgery for varicose veins depend upon the gender, age, and grades of the varicosity of the veins. It is lesser in the females, younger age groups, and in those who had initially lesser severity of the varicose veins.

**Keywords:** Trendelenburg's procedure, Great saphenous vein, Compression stockings.

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### Introduction

Great saphenous vein incompetency is linked to 80% of all significant lower limbs varicosities. Patients with varicose vein usually present with pain in the legs at the end of the day due to long hours of standing. Other symptoms include swollen ankle, itching, bleeding, superficial thrombophlebitis, eczema, lipodermatosclerosis, and ulcerations. Superficial venous incompetence of the leg is believed to affect 40-50 percent of the whole adult population and manifest mostly in the form of varicose vein.

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Primary varicose veins are treated surgically after the failure of medical management. Among the invasive surgical procedures done, more effective is the sapheno-femoral ligation and stripping of great saphenous vein (GSV) with multiple phlebectomies. Non-invasive effective management strategies include radiofrequency or laser ablation of the varicose veins. After any invasive or non-invasive procedure to treat varicosity of the lower limb veins, all patients are advised to wear compression stockings to reduce the chances of bleeding and formation of haematoma. These stockings also help in decreasing inflammation, oedema, and pain after the procedure.

Compression dressing can be elastic, free of elasticity, or both in a multi-layered compression system, sustaining high pressure compression for days after surgery, leading to the reduction of tension in the veins, thus preventing reflux of the blood and over-distention, keeping the blood in the deep venous system. All these factors result in improving the oedema, inflammation, and pain.

Which kind of compression stocking to be used in which type of varicose vein and in which age group is still debatable, but studies have been done on the best duration of compression employed. Studies have shown that if compression is applied for more than a week, the pain is more effectively reduced. Baker et al reported a significant decrease in the pain in patients who wore compression stockings for almost one week in comparison to patients who used them for two days after the surgery ( $2.0 \pm 1.1$ ) versus  $3.7 \pm 2.1$  respectively, ( $p < 0.001$ ).<sup>1</sup>

Many other studies have shown that compression of veins in the post-operative period for seven days is better than two days in terms of pain and many other parameters.<sup>2,3</sup> Further studying the compression duration of seven days after surgery, this study was designed to assess the effect of age, gender, and type of varicosity on the pain score as these factors play an important role in pain intensity.<sup>4,5</sup> No local published data is available in this regard. This study will help us to determine whether the efficacy of seven-day compression is the same for all age groups and for both genders and for all type of varicose veins.

**Objective:** To determine the effect of age, gender and type of varicosity on the post-op pain score after seven-day

compression dressing after varicose vein surgery.

## Patients and methods

This descriptive case series study was carried out at the Surgical floor, Mayo Hospital, Lahore. Sample size of 30 patients is estimated by 95% of confidence level with 80% power of test and taking an expected mean VAS score for two days after varicose vein surgery as  $3.7 \pm 2.1$  and seven days after varicose vein surgery as  $2.0 \pm 1.1$ .<sup>6</sup>

The result was measured in terms of mean post-operative pain which was measured by visual analogue scale which is: the pain was evaluated one week after the procedure.

Varicose veins are defined as dilated, tortuous, subcutaneous veins usually seen in upright posture.<sup>2</sup> It was assessed on clinical examination. The severity of varicose vein can be assessed by clinical grading from CEAP system which has six classes:

Class-0—no visible or palpable signs of venous disease,

Class-1—telangiectasis,

Class-2—varicose vein,

Class-3—varicose veins with oedema,

Class-4—varicose veins with pigmentation or lipodermatosclerosis,

Class-5—skin changes with healed ulcers, and

Class-6—skin changes with active ulcer.

All post-op cases who underwent Trendelenberg procedure for varicose veins between the age of 18 and 50 years of either gender were included in the study and were asked to wear compression dressing for seven days and come for follow-up. Following patients were excluded:

- Previous varicose vein surgery of GSV
- Bleeding disorders diagnosed on previous medical record
- Active ulceration diagnosed on clinical examination
- No other limb pain condition such as sciatica diagnosed on history

A total of 30 patients were enrolled from the OPD fulfilling the inclusion criteria after the approval of the ethical committee of the hospital. A written informed consent was taken from all the participants.

Data with respect to their demographic profile (age and gender) was recorded. All patients who were included in the study underwent trendelenburg operation for varicose veins. All surgeries were performed by the same consultant surgeon. The patients were asked to wear compression dressing for seven days after surgery. All the patients

received 1gm paracetamol I/V 8-hourly followed by tablet paracetamol 500 mg P/O 8-hourly for five days. The patients were followed after seven days to determine the outcome of compression dressing in terms of post-operative pain. Post-op pain was accessed using the visual analogue scale of 0 to 10 with no pain at score 0 and worse possible pain at 10. Scoring was carried out after a week by a doctor who was not aware of the procedure.

Data was entered in SSPS v23.0. Quantitative variables like age and post-operative pain were presented as Mean $\pm$ SD. Qualitative variable like gender was presented as frequency and percentages. Stratification of pain score was done against age, gender and grades of varicose veins. Data was stratified for age, gender and type of varicosity and after stratifying t-test was put into application.  $P \leq 0.05$  was considered remarkable.

## Results

A total of 30 patients, 18(60%) males and 12(40%) females, with primary varicose vein were enrolled in this study. The age range was from 18 to 50 years (mean age  $35.4 \pm 9.9$  years).

Of the total 30 patients, 10 (33.3%) were between 18 and 30 years of age, with 8 (26.7%) and 12 (40%) being 31-40 years and >40 years ages, respectively.

The types of varicose veins were, class-2 grade 13 (43.3%) patients, while 6 (20.0%), 4 (13.3%), and 7 (23.3%) had class-3, class-4, and class-5 grade of varicose veins, respectively.

Mean pain score was  $2.97 \pm 0.81$  after wearing compression dressing for seven days. Stratification of mean pain score in both groups with respect to gender, revealed a significant difference in males ( $p=0.012$ ) and females ( $p=0.0001$ ) as shown in Table 1. Stratification of mean pain score in both groups with respect to age, there was a significant difference in all the three age groups ( $p=0.0001$ , 0.010, 0.027) as shown in Table 2.

By stratification of mean pain score in both groups with

**Table-1:** Stratification of pain score in both groups with respect to gender.

VAS pain score	Gender	n	Mean $\pm$ SD	p-value
	Male	18	3.25 $\pm$ 0.87	0.012
	Female	12	2.78 $\pm$ 0.73	0.0001

SD: Standard Deviation.

**Table-2:** Stratification of pain score in both groups with respect to age.

VAS pain score	Age groups	n	Mean $\pm$ SD	p-value
	18-30 years	10	2.90 $\pm$ 0.88	0.0001
	31-40 years	8	2.88 $\pm$ 0.64	0.010
	>40 years	12	3.08 $\pm$ 0.90	0.027.

SD: Standard Deviation.

**Table-3:** Stratification of pain score in both groups with respect to grades of varicose veins.

	Grades of varicose veins	n	Mean±SD	p-value
0.0003	Class-2	13	2.92±0.64	0.007
	Class-3	6	3.00±1.10	0.017
	Class-4	4	2.75±0.96	0.084
	Class-5	7	3.14±0.90	0.003

SD: Standard Deviation.

respect to grades of varicose veins, there was a significant difference in all grades of varicose veins in both groups ( $p=0.007, 0.017, 0.084, 0.003$ ) as shown in Table 3.

## Discussion

Although the treatment of GSV incompetency has revolutionised over the past decades, with the advent of potent minimal invasive percutaneous techniques as EVLA, postoperative care is yet not systematised due to the absence of feasible studies.

Shafiuddin M, et al reported that most frequent symptoms were pain and bulging veins causing the patients to seek medical help for these complications.<sup>6</sup> Shafiuddin M et al,<sup>6</sup> noted long saphenous vein involvement in 85.7% of the cases followed by both long and short saphenous vein involvement in 14.28%. These findings are in congruence with the findings of Janugade et al.<sup>7</sup>

In our study, it is intelligibly illustrated that the use of compression dressing after Trendelenburg Operation for beyond two days leads to clinically evident benefit after one week. We also demonstrated the efficacy of post-op dressing in old age and complicated varicose veins.

Pain after the surgery is remarkably decreased when checked one week following treatment and markedly improved in the group of patients who used the stockings for one week. In our apprehension it is the first study in which direct comparison of the time period of wearing compression stockings after Trendelenburg Operation was made.

It's discernible that the present outcomes can be only implemented on patients in whom GSV incompetency is managed by Trendelenburg Operation. It's important to acknowledge that this was a feasibility study and its outcomes in the form of efficacy cannot be provided as the present study is not strong enough.

In order to conduct a study with 95.0% efficacy rate of Trendelenburg Operation and encountering an absolute difference of 5.0% in efficacy, at least 868 patients should have been registered.

From a medical point of view, patients should not be advised to wear compression stockings beyond seven days,

as clinical outcome and morbidity rates are in correspondence in both groups. Pain is the most significant parameter when we talk about patient gratitude.

It is important to note that the use of compression stockings for a week resulted in improved outcomes in terms of pain. It, therefore, suggests the ensuing algorithm: the patient should wear compression stockings after Trendelenburg Operation for a period of seven days after surgery.

In this study, Mean pain score  $4.5\pm 1.2$  was noted in patients in group-A (Compression dressing for two days) while  $2.9\pm 0.8$  in patients in group-B (Compression dressing for seven days)  $p < 0.0003$  which is remarkable.

Conflict in literature: The study by Dahm et al.<sup>8</sup> concludes that the use of elastic compression stocking gives no extra advantage. The use of elastic dressing for three days postoperative, after stripping of the great saphenous vein, has been gauged by control of limb oedema, pain, other issues, and back to work.<sup>8</sup>

Compression treatment in juxtaposition after varicose vein surgery is beneficial. in which the definite level of compression has been measured, Higher levels of compression are more beneficial as compared to lower levels in moderating pain and lowering the risk of complications. Sturdy compression is attainable by the use of inelastic dressing or by eccentric compression systems. Scant record is available to suggest the time period during which compression is needed postoperatively.

The use of sticking compression film bandage appreciably enhances vein regression of foam-treated superficial varicosities ( $p < 0.01$ ). It intercepts symptomatic inflammations and stainings and provides the most comfortable compression. It can be used along with compression stockings or as an isolated modality. There is no restriction in daily work, sports, showers, or social life.

Liu X, et al<sup>9</sup> reported that combined surgical treatment operation with compression therapy resulted in faster healing of venous leg ulcers, a decreased ulcer recurrence rate and lower VCSS values after intervention than compression therapy alone.

Another study<sup>10</sup> suggests that for varicose ulcer in patients having primary venous incompetence, surgery along with compression therapy gives increased healing rate and less healing time in comparison to surgery only. Age, gender, ulcer size, duration of the ulcer, body mass index are not independent parameters of success or failure of compression treatment.

In a randomised study<sup>11</sup> done to estimate the result of the

use of compression stockings after endovenous laser therapy (EVLT) for incompetency of the great saphenous vein, outcome judgement was based on differences in postoperative pain during six weeks. Use of stockings for two weeks postoperatively after wearing bandages during the first 24 hours of surgery results in a minimum but marked decrease in postoperative pain and use of painkillers. Patients who do not use stockings took comparatively increased amount of painkillers than did patients using stockings ( $p < 0.05$ ). Patients who wore stockings reported a statistically significant increased score of satisfaction at two days (4.44 vs 4.15). Use of stockings in post-operative duration for two weeks after the first 24-hour period of wearing bandages results in a small but significant reduction of postoperative pain and use of analgesics.

Baker et al,<sup>1</sup> reported decreased pain at one week in patients with on-going compression, as compared to pain in those who had only two days of compression— $2.0 \pm 1.1$  versus  $3.7 \pm 2.1$ , respectively.<sup>1</sup> There was no difference between compression and no-compression groups in gender (68.8% vs 67.3% female), age (59 vs 56), CEAP class (C2-C3, 88% vs 92%; C4-C5, 12% vs 8%), extent and size of varicose veins (Classes I-II: < 6 mm diameter, 57% vs 66%; Classes III-IV: > 6 mm diameter, 43% vs 34%), kind of vein that underwent treatment (GSV 84% vs 71%, SSV 8% vs 17%, accessory 8% vs 12%), and operative variables. Compression therapy does not provide any additional advantage to EVA and, therefore, contemplation should be done in order to eliminate it, which will simplify and improve the postoperative recovery.

## Conclusion

Pain score after seven-day compression dressing after the surgery for varicose veins depends upon the gender, age, and grades of the varicosity of the veins. It is lesser in females, the younger age groups, and in those who had initially lesser severity of the varicose veins.

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