



CODEN [USA]: IAJPBB

ISSN : 2349-7750

INDO AMERICAN JOURNAL OF PHARMACEUTICAL SCIENCES

SJIF Impact Factor: 7.187

<http://doi.org/10.5281/zenodo.4438137>Available online at: <http://www.iajps.com>

Research Article

EFFECT OF AGE, GENDER AND TYPE OF VARICOSITY ON THE POST-OP PAIN SCORE AFTER 7 DAYS COMPRESSION DRESSING DONE AFTER VARICOSE VEIN SURGERY

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Article Received: October 2020**Accepted:** November 2020**Published:** December 2020**Abstract:**

Introduction: Great saphenous vein incompetence is associated with 80% of all significant lower limbs varicosities. It is the most common cause of chronic venous insufficiency. Associated symptoms range from mild conditions such as fatigue, heaviness, and itching to more serious conditions.

Objective:

1. To determine the effect of age, gender and type of varicosity on the post-op pain score after 7 days compression dressing done after varicose vein surgery.
2. To compare the post-op pain score of the compression dressing done for two days versus seven days after varicose vein surgery
3. To determine if the duration of compression dressing after varicose vein surgery has influence on pain

Study Setting: At Surgical floor, Mayo Hospital, Lahore.

Duration Of Study: Jan, 2019 to June, 2019

Study Design: Randomized Controlled Trial

Subjects & methods: Group-A wore compression dressing for 2 days after surgery and Group-B wore compression dressing for 7 days after surgery. Stratification of pain score was done against young and old age, both gender and grades of varicose veins. Post stratification t-test was applied to see the effect of these stratified variables on the outcome variable. A p-value ≤ 0.05 was considered significant.

Results: The mean age of patients in group A was 33.4 ± 9.6 years and in group B was 35.4 ± 9.9 years. Mean pain score 4.5 ± 1.2 was noted in patients in Compression dressing for 2 days) while 2.9 ± 0.8 in patients in Compression dressing for 7 days with p-value of 0.0001 which is statistically significant. By stratification of mean pain score in both groups with respect to gender, it was more significant in females ($p=0.0001$), young age, ($p=0.0001$).

Conclusion: Prescribing compression stockings for longer than 2 days after Trendelenburg's procedure leads to reduced pain and improved physical function during the first week after treatment. And outcome was better in females and young patients.

Key Words: Trendelenburg's procedure, Great saphenous vein, Compression stockings.

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Please cite this article in press Asna Safdar et al, *Effect Of Age, Gender And Type Of Varicosity On The Post-Op Pain Score After 7 Days Compression Dressing Done After Varicose Vein Surgery.*, *Indo Am. J. P. Sci*, 2020; 07(12).

INTRODUCTION:

Great saphenous vein incompetence is associated with 80% of all significant lower limbs varicosities. Patients with varicose vein usually presents with aching in the legs at the end of day after prolonged standing. Other symptoms include ankle swelling, itching, bleeding, superficial thrombophlebitis, eczema, lipodermatosclerosis and ulcerations.¹ Superficial venous insufficiency of leg is estimated to occur in 40-50 percent of all adults and manifest mostly as varicose vein.²

A common surgical procedure for treatment of primary varicose vein is sapheno-femoral ligation and stripping of the great saphenous vein(GSV) with multiple phlebectomies. Other less invasive treatment modalities, which are considered as effective as surgery, including radiofrequency or laser ablation of GSV. After GSV stripping or ablation, the prescription of compression stockings to reduce hemorrhage, hematoma, edema and pain is standard practice.³

Compression dressing is a type of dressing which may be elastic, inelastic, combination of elastic and inelastic, multilayered compression system. It can provide sustained high compression for several days. It reduces the venous wall tension, prevent reflux, control venous over distention, divert blood towards deep veins and improves the efficacy of venous wall.⁴

There is considerable variation in type and duration of compression employed. Many studies were done showing different results such as Baker et al. reported less pain at 1 week in patients having ongoing compression, compared with pain in those with only 2 days of compression 2.0 ± 1.1 versus 3.7 ± 2.1 respectively.⁵

So optimal duration of compression dressing after varicose vein surgery remains a matter of debate. In order to address this controversy, study is planned to determine the outcome of compression dressing after varicose vein surgery in terms of post operative pain. Moreover no local published literature is available.

OBJECTIVE:

1. To determine the effect of age, gender and type of varicosity on the post-op pain score after 7 days compression dressing done after varicose vein surgery.
2. To compare the post-op pain score of the compression dressing done for two days versus seven days after varicose vein surgery
3. To determine if the duration of compression dressing after varicose vein surgery has influence on pain

OPERATIONAL DEFINITIONS

The outcome was measured in terms of mean post-operative pain.

Post-operative Pain: Pain was assessed by visual analogue scale which is a scale of 0 to 10 with no pain at 0 score and worst possible pain at 10 score. The pain was assessed on one week after the procedure.

Varicose Veins: Varicose veins are defined as dilated, tortuous, subcutaneous veins usually seen in upright posture. It was assessed on clinical examination.

GRADES / CLASS OF VARICOSE VEINS:

The severity of varicose vein can be assessed by clinical grading from CEAP system in which there are six classes. Class-0 is no visible or palpable signs of venous disease, Class-1 is telangiectasis, Class-2 is varicose vein, Class-3 is varicose veins with oedema, Class-4 is varicose veins with pigmentation or lipodermatosclerosis, Class-5 is skin changes with healed ulcers and Class-6 is skin changes with active ulcer.

MATERIALS AND METHODS:

The study was conducted at Surgical floor, Mayo Hospital, Lahore

Study Design: Randomized Controlled Trial

Sample Size: Sample size of 60 patients (30 patients in each group) 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 ± 2.1 and seven days after varicose vein surgery as 2.0 ± 1.1 .⁶

Sampling Technique: Non-Probability Consecutive Sampling Technique

Inclusion criteria: All post op cases of varicose veins of age 18-50 years of either genders will be included in the study.

Exclusion criteria:

- 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 60 patients were admitted from outpatient department fulfilling the inclusion criteria after the approval of ethical committee of hospital. A written informed consent was taken. Data with respect to their demographic profile (age and sex) were recorded. All patients underwent surgery (trendelenburg operation) for varicose vein. All operations were performed by same consultant. They were randomly allocated into two groups by computer generated method. Group-A wore compression dressing for 2 days after surgery and Group-B wore compression dressing for 7 days after surgery. All patient received 1gm paracetamol I/V 8 hourly followed by tab. paracetamol 500mg P/O 8 hourly. Then the outcome of compression dressing was analyzed in form of mean post-operative pain. Mean Pain score was assessed on 1 week by a doctor who was blind about the procedure.

Data were entered in SSPS v23.0. Quantitative variables like age and post operative pain were presented as Mean \pm S.D. Qualitative variable like gender was presented as frequency and percentages. Stratification of pain score was done against age,

gender and grades of varicose veins. Comparison of two groups formed that was compression dressing for 2 days after varicose vein surgery and compression dressing for 7 days after varicose vein surgery is done by applying t-test. A p-value ≤ 0.05 was considered significant.

RESULTS:

Patients were divided in two groups i.e. Group-A (Compression dressing for 2 days) and Group-B (Compression dressing for 7 days). There were 19(63.3%) males and 11(36.7%) females in group-A, while 18(60.0%) were males and 12(40.0%) females in group-B. Age range in this study was from 18 to 50 years with mean age of 34.5 ± 8.5 years. The mean age of patients in group A was 33.4 ± 9.6 years and in group B was 35.4 ± 9.9 years. In group-A, 12(40.0%) had 18-30 years ages, while 10(33.3%) and 8(26.7%) had 31-40 years and >40 years ages respectively. In group-B, 10(33.3%) had 18-30 years ages, while 8(26.7%) and 12(40.0%) had 31-40 years and >40 years ages respectively. In group-A, 7(23.3%) had class-2 grade of varicose veins, while 8(26.7%), 9(30.0%) and 6(20.0%) had class-3, class-4 and class-5 grade of varicose veins respectively. In group-B, 13(43.3%) had class-2 grade of varicose veins, 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 4.5 ± 1.2 was noted in patients in group-A (Compression dressing for 2 days) while 2.9 ± 0.8 in patients in group-B (Compression dressing for 7 days) with p-value of 0.0003 which is statistically significant. By stratification of mean pain score in both groups with respect to gender, there was a significant difference in males ($p=0.012$) and females ($p=0.0001$) in both groups. By stratification of mean pain score in both groups with respect to age, there was a significant difference in all age groups in both groups ($p=0.0001, 0.010, 0.027$). By stratification of mean pain score in both groups with respect to grades of varicose veins, there was a significant difference in all grades of varicose veins in both groups ($p=0.007, 0.017, 0.084, 0.003$).

Table-1: Comparison of VAS pain score in both groups

Groups	N	Mean	Std. Deviation	p-value
Compression dressing for 2 days	30	4.50	1.22	0.0003
Compression dressing for 7 days	30	2.97	0.81	

Table-2: Stratification of pain score in both groups with respect to gender

Gender	Groups	N	Mean	Std. Deviation	p-value
Male	Compression dressing for 2 days	19	4.55	1.37	0.012
	Compression dressing for 7 days	18	3.25	0.87	
Female	Compression dressing for 2 days	11	4.47	1.17	0.0001
	Compression dressing for 7 days	12	2.78	0.73	

Table-3 Stratification of pain score in both groups with respect to age

Age groups	Groups	n	Mean	Std. Deviation	p-value
18-30 years	Compression dressing for 2 days	12	4.75	1.14	0.0001
	Compression dressing for 7 days	10	2.90	0.88	
31-40 years	Compression dressing for 2 days	10	4.40	1.35	0.010
	Compression dressing for 7 days	8	2.88	0.64	
>40 years	Compression dressing for 2 days	8	4.25	1.28	0.027
	Compression dressing for 7 days	12	3.08	0.90	

Table-4: pain score in both groups with respect to grades of varicose veins

Grades of varicose veins	Groups	N	Mean	Std. Deviation	p-value
Class-2	Compression dressing for 2 days	7	4.29	1.38	0.007
	Compression dressing for 7 days	13	2.92	0.64	
Class-3	Compression dressing for 2 days	8	4.50	0.93	0.017
	Compression dressing for 7 days	6	3.00	1.10	
Class-4	Compression dressing for 2 days	9	4.11	1.27	0.084
	Compression dressing for 7 days	4	2.75	0.96	
Class-5	Compression dressing for 2 days	6	5.33	1.21	0.003
	Compression dressing for 7 days	7	3.14	0.90	

DISCUSSION:

As GSV incompetence is a commonly observed medical problem all over the world, many physicians are faced by this problem. Although treatment strategies have evolved over the last decades, with the introduction of effective minimal invasive percutaneous techniques such as EVLA, postoperative care is still not standardized due to a lack of feasible studies.

Studies have shown that patients with more severe varicosities regardless of CEAP class were more likely to require a secondary procedure. The severity of the varicosities may not correlate with the degree of venous disease, but it is an indication of which

patients should undergo secondary procedures, possibly with a one-stage approach.⁶

Shafiuddin M, et al.⁷ reported that most common symptoms were pain and prominent veins and thus majority of the patients seek medical help for complication of the varicose veins. These findings correlate well with other studies done by Cambell et al, with aching pain in 57% patients. Shafiuddin M, et al noted long saphenous vein involvement in 85.7% of the cases followed by both long and short saphenous vein involvement in 14.28%. These observations are in accordance with the findings of Janugade et al.⁸

In our randomized trial it is clearly demonstrated that wearing compression dressing after trendelenburg operation for more than 2 days leads to clinically observable benefit after 1 week. We also demonstrated the efficacy of post-op dressing in old age and complicated varicose veins

Postoperative pain is significantly reduced when measured 1 week after treatment and significantly better in the group of patients wearing the stockings for 1 week. To the best of our knowledge this is the first study directly comparing the duration of wearing compression stockings after trendelenburg operation.

It is clear that the present results only apply to patients in whom GSV incompetence is treated by trendelenburg operation. It is important to recognize that this was a feasibility study and that results in terms of efficacy cannot be provided as the present study is underpowered.

For such a study, given a 95.0% efficacy rate of trendelenburg operation and detecting an absolute difference of 5.0% in efficacy, a minimal of 868 patients should have been enrolled.

From a medical point of view, compression stockings do not have to be prescribed for more than 7 days, as clinical results and morbidity rates seem to be comparable in both groups. Pain is the most important parameter when it comes to patient satisfaction.

Therefore it cannot ignore the observation that 7-day use of compression stockings leads to better results in terms of these parameters. It therefore suggests the following algorithm: the patient should wear compression stockings after TRENDELENBURG OPERATION for at least 07 days after treatment.

After careful informed consent, in which the patient is informed on the possible consequences, the patient is then free to decide whether the inconvenience of wearing the stockings outweighs the potential possible pain and reduced physical functioning. In this study, Mean pain score 4.5 ± 1.2 was noted in patients in group-A (Compression dressing for 2 days) while 2.9 ± 0.8 in patients in group-B (Compression dressing for 7 days) with p-value of 0.0003 which is statistically significant.

Conflict in literature: Wearing an elastic compression stocking has no additional benefit following elastic bandaging for 3 days in postoperative care after stripping of the great saphenous vein as assessed by

control of limb edema, pain, complications and return to work.⁹

In comparison to compression treatments following varicose vein surgery where the actual level of compression has been measured, higher levels of compression are more effective than lower levels in moderating postoperative pain and complications. Strong compression can be achieved by inelastic bandaging or by eccentric compression systems. Far fewer data are available to indicate the duration for which postoperative compression is required.¹⁰

The adhesive compression film bandage significantly improves vein regression of foam-treated superficial varicosities ($P < 0.01$). It prevents symptomatic inflammations and stainings and provides a most comfortable compression. It may be used combined with compression stockings or even as stand-alone modality. There are no limitations in daily work, sports, showers or social life.¹¹

Liu X, et al reported that combined surgical treatment operation with CT resulted in faster healing of VLU, a lower ulcer recurrence rate and lower VCSS values after intervention than CT alone.¹²

Another study suggests that for varicose ulcer in patients with primary venous insufficiency, surgery plus compression therapy provides higher healing rate and faster healing time compared to surgery only. Age, gender, ulceration size, duration of the ulcer, body mass index are not independent parameters of success or failure of compression treatment.¹³

In a randomized trial done to evaluate the effect of compression stockings after endovenous laser therapy (EVLT) for insufficiency of the great saphenous vein. Effect evaluation was focused on differences in postoperative pain within 6 weeks. Wearing of postoperative stockings for 2 weeks after an initial 24-hour period of wearing bandages results in a small but significant reduction of postoperative pain and use of analgesics. Patients not wearing stockings used more analgesics than did patients wearing stockings ($P < .05$). Patients wearing stockings reported a statistically significantly higher score of satisfaction at 2 days (4.44 vs 4.15). Wearing of postoperative stockings for 2 weeks after an initial 24-hour period of wearing bandages results in a small but significant reduction of postoperative pain and use of analgesics.¹⁴

Morphological studies on the effect of compression on the leg veins are rare and mostly performed in the

supine position. The aim of this study was to investigate the influence of compression applied with different pressures on the venous calibre in the standing position. Standing magnetic resonance imaging was used to measure the venous diameters of superficial and deep leg veins in a patient with massive varicose veins without and with different levels of compression and realistic 3D vectorial models were built. In the standing position compression stockings with a pressure of 22 mmHg were able to reduce the calibre of deep calf veins, but not of superficial varices. These were compressed only by bandages exerting pressures between 51 and 83 mmHg. Compression stockings may reduce the diameter of deep calf veins in the standing position. To empty a varicose vein after venous ablation much higher pressures are required.¹⁵

Based on the results of this systematic review, medical compression stockings probably reduce leg ulcer recurrence up to one year in elderly people, but the effect after one year is unclear. However, the evidence of initial treatment with compression stockings in patients with venous insufficiency or swollen legs is lacking.¹⁶

Baker et al. reported less pain at 1 week in patients having ongoing compression, compared with pain in those with only 2 days of compression 2.0 ± 1.1 versus 3.7 ± 2.1 respectively.⁶

There was no difference between compression and no-compression groups in sex (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%), type of vein treated (GSV 84% vs. 71%, SSV 8% vs. 17%, accessory 8% vs. 12%) and operative variables. There was a 96% follow-up rate at 1 week, 4 saphenous veins in the compression group remained open ($p=0.0395$). Three patients in the compression group and 0 patients in the no-compression group had STP. One patient in the compression group had thrombus extension up to the saphenofemoral junction. At one month both groups had the same rate of varicose vein regression and need for secondary procedures. Compression therapy does not add any further benefit to EVA and therefore consideration should be given to eliminating it, thus simplifying and improving the postoperative recovery.¹⁷

CONCLUSION:

Prescribing compression stockings for longer than 2 days after endovenous GSV ablation leads to reduced

pain and improved physical function during the first week after treatment. And outcome was better in females and young patients.

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