

**A DISSERTATION ON
“A COMPARATIVE STUDY OF SUBFASCIAL
ENDOSCOPIC PERFORATOR SURGERY [SEPS]
VERSUS OPEN PERFORATOR LIGATION [OSPL]
IN THE TREATMENT OF GREAT SAPHENOUS
VARICOSE VEINS”**

*Dissertation submitted to
In partial fulfilment of the regulations
for the award of the degree of*

**M.S. DEGREE BRANCH -1
GENERAL SURGERY
of
THE TAMILNADU
Dr.M.G.R. MEDICAL UNIVERSITY**



**ESIC MEDICAL COLLEGE & PG IMSR
K.K.NAGAR, CHENNAI – 78.**

APRIL 2020

DECLARATION BY THE CANDIDATE

I solemnly declare that this dissertation entitled “**A COMPARATIVE STUDY OF SUBFASCIAL ENDOSCOPIC PERFORATOR SURGERY [SEPS] VERSUS OPEN PERFORATOR LIGATION [OSPL] IN THE TREATMENT OF GREAT SAPHENOUS VARICOSE VEINS** ” is a bonafide and genuine research work carried out by me under the guidance of **Dr.MUTHURAJ**, Department of general surgery, ESIC – Medical college & PGIMSR, K.K.Nagar, Chennai -78.

This dissertation is being submitted to Tamilnadu Dr.M.G.R. Medical University, Chennai, towards partial fulfilment of requirements of the degree of MS GENERAL SURGERY Examination to be held in april 2020

SIGNATURE OF THE CANDIDATE

Dr.M.AMUDHAN
M.S.Post Graduate
Dept of General Surgery
ESIC Medical College & PGIMSR

Date:

Place: K.K.Nagar, Chennai - 78.

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I hereby declare that Tamilnadu Dr.M.G.R Medical university Chennai, shall have the rights to preserve, use and disseminate this dissertation/thesis in print/ electronic format for academic/research purpose.

SIGNATURE OF THE CANDIDATE

Dr.M.AMUDHAN

M.S.Post Graduate

Dept of General Surgery

ESIC Medical College & PGIMSR

Date:

Place: K.K.Nagar, Chennai-78

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CERTIFICATE OF GUIDE

This is to certify that this dissertation entitled “**A COMPARATIVE STUDY OF SUBFASCIAL ENDOSCOPIC PERFORATOR SURGERY [SEPS] VERSUS OPEN PERFORATOR LIGATION [OSPL] IN THE TREATMENT OF GREAT SAPHENOUS VARICOSE VEINS**” submitted by **Dr.M.Amudhan** appearing for M.S. degree branch 1 general surgery examination in april 2020 is a bonafide research work done by him under my direct guidance and supervision in partial fulfilment of the regulations of the Tamilnadu Dr.M.G.R. Medical university, Chennai. I forward this to the Tamilnadu Dr.M.G.R. Medical University, Chennai, Tamilnadu, India.

Dr.MUTHURAJ
Associate Professor & Guide
Dept of General Surgery
ESIC Medical College & PGIMSR

Date:

Place: K.K.Nagar, Chennai - 78.

CERTIFICATE OF THE CO-GUIDE

This is to certify that this dissertation entitled “**A COMPARATIVE STUDY OF SUBFASCIAL ENDOSCOPIC PERFORATOR SURGERY [SEPS] VERSUS OPEN PERFORATOR LIGATION [OSPL] IN THE TREATMENT OF GREAT SAPHENOUS VARICOSE VEINS**” submitted by **Dr.M.Amudhan** appearing for M.S. degree branch 1 general surgery examination in April 2020 is a bonafide research work done by him under my co - guidance in partial fulfilment of the regulations of the Tamilnadu Dr.M.G.R.Medical University.

Dr.BHANUMATI GIRIDHARAN
Associate Professor
Dept of General Surgery
ESIC Medical College & PGIMSR

Date:

Place: K.K. Nagar, Chennai – 78.

CERTIFICATE BY THE HOD

This is to certify that this dissertation entitled “**A COMPARATIVE STUDY OF SUBFASCIAL ENDOSCOPIC PERFORATOR SURGERY [SEPS] VERSUS OPEN PERFORATOR LIGATION [OSPL] IN THE TREATMENT OF GREAT SAPHENOUS VARICOSE VEINS**” submitted by **Dr.M.Amudhan** appearing for M.S. degree branch 1 general surgery examination in April 2020 is a bonafide research work done by him in partial fulfilment of the regulations of the Tamilnadu Dr.M.G.R. Medical university, Chennai. I forward this to the Tamilnadu Dr. M.G.R. Medical University, Chennai, Tamilnadu, India.

DEAN

Dr.P.N.SHANMUGASUNDARAM,

M.S.,

Professor & HOD

Dept. General Surgery

ESIC Medical College & PGIMSR

Date:

Place: K.K. Nagar, Chennai – 78.

**ENDORSEMENT BY THE DEAN/ THE HEAD OF THE
INSTITUTION**

This is to certify that this dissertation entitled “**A COMPARATIVE STUDY OF SUBFASCIAL ENDOSCOPIC PERFORATOR SURGERY [SEPS] VERSUS OPEN PERFORATOR LIGATION [OSPL] IN THE TREATMENT OF GREAT SAPHENOUS VARICOSE VEINS**” submitted by **Dr.M.Amudhan** appearing for M.S. degree branch 1 general surgery examination in April 2020 is a bonafide research work done by him in partial fulfilment of the regulations of the Tamilnadu Dr.M.G.R. Medical university, Chennai. I forward this to the Tamilnadu Dr. M.G.R. Medical University, Chennai, Tamilnadu, India.

DEAN

Dr.SOWMYA SAMPATH, M.D.,
ESIC Medical College & PGIMSR

Date:

Place: K.K. Nagar, Chennai – 78.

ACKNOWLEDGEMENT

With all praise to Almighty God, I thank him for all the blessings he has bestowed upon me. I avail this opportunity to express my profound earnest gratitude to **Dr.Muthuraj**, Associate Professor, my beloved teacher, guide, mentor, for his affectionate guidance and enthusiastic support, keen interest in my academic progress and critical supervision which has given this dissertation its present shape. His overly enthusiasm and integral view on research and mission for providing only high quality work not less has made a deep impression on me.

I would also like to thank my co- guide **Dr.Bhanumati Giridharan**, who had been instrumental in the completion of this study and for giving me moral support throughout the work and my course

I would like to convey my gratitude to our beloved **Dr.Shanmugasundaram, M.S.**, Professor and HOD, Department of General Surgery, for his blessings and moral support in all my professional duties I carry out.

I would like to convey my gratitude to our beloved Dean **Dr.Sowmya Sampath, M.D.**, for providing me unflinching encouragement and support.

I would like to convey my gratitude to our beloved Dean **Dr.Udaykumbhar** for providing me unflinching encouragement and support.

Generosity goes two ways and gratefulness sometimes costs a little more than Thank You. My whole hearted thanks to my teachers **Dr.Viswanathan, Dr.Murugesan, Dr.Madhusudhanan, Dr.Prabhakar, Dr.Poornima, Dr.Pankaj Surana, Dr.Byomkesh Patro, Dr.Vijayalakshmi, Dr.Balasubramaniam, Dr.Vasanth, Dr.Lohit Sai**, who all helped me tread

this difficult path holding my hands in time of need and in various ways have enriched me with their knowledge and rich experience.

Many thanks in particular to the Chairman and members of The Institutional Ethical Committee for approving our study and for their valuable suggestions.

I thank the statistician **Dr.Aruna Patel, M.Sc., Ph.D.** for her guidance regarding the sample size and data analysis

I would also like to thank my co-pgs and my juniors who had been of constant support throughout my course.

What good is a potter without his clay and what good is a research without the active participation of the patients. My heartfelt thanks to goes to each and every patients who participated in the study.

CERTIFICATE OF APPROVAL

To

Dr.Amudhan.M
Post Graduate in General Surgery,
ESIC Medical College & PGIMSR,
KK Nagar, Chennai-78.

Dear Dr.Amudhan.M


The Institutional Ethics Committee of ESIC Medical College & PGIMSR reviewed and discussed your application for approval of the proposal entitled "**A comparative study of Subfascial Endoscopic Perforator surgery[SEPS] versus Open subfascial perforator ligation(OSPL) in the treatment of great saphenous varicose veins**", No. 01/2018.

The following members of the Ethics Committee were present in the meeting held on 21.03.2018 conducted at ESIC Medical College & PGIMSR, KK Nagar, Chennai-78.

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|-------|--|
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| 2. | Prof. V. Rajalakshmi, Registrar, ESIC Medical College & PGIMSR, Member Secretary |
| 3. | Prof. Usha Kothandaraman, Medical Superintendent, ESIC Medical College & PGIMSR, EC Member |
| 4. | Prof. S. Seethalakshmi, Vice Principal, ESIC Medical College & PGIMSR, EC Member |
| 5. | Prof. Sowmya Sampath, Prof. & HOD, Department of Paediatrics, ESIC Medical College & PGIMSR, EC Member |
| 6. | Dr. Aruna Patil Bholenath, Assistant Professor of Statistics, Department of Community Medicine, ESIC Medical College & PGIMSR, EC Member |
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| 15. | Shri. K M Venugopal, Advocate, EC Member |

The proposal is approved to be conducted in its presented form.

The Institutional Ethics Committee expects to be informed about the progress of the study and significant adverse effects occurring in the course of the study, any changes in the protocol and patients information / informed consent and asks to be provided a copy of the final report.


[DR. A.V. SRINIVASAN]
CHAIRPERSON
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INTRODUCTION

VARICOSE VEINS

Definition

Varicose vein is defined as dilated, tortuous , superficial vein more than 3 mm in diameter which is measured in the upright position with demonstrable reflux.

Epidemiology

The prevalence rate of varicose veins is 25–30 per cent in women and 15 percent in men.

Factors affecting prevalence of varicose veins

Gender: Majority of studies report higher prevalence in women than men.

Age: prevalence of varicose veins increasing with age

Body mass and height: Increasing body mass index and height associated with a higher prevalence of varicose veins.

Pregnancy: appears to increase the risk of getting varicose veins.

Occupation and lifestyle factors: There is evidence regarding increased prevalence of varicose veins in smokers, who suffer constipation and occupations involving prolonged standing like bus conductors etc.

CLASSIFICATION

The CEAP [clinical – etiology – anatomy – pathophysiology] classification

Clinical classification

- C0 - No signs of venous disease
- C1 - Telangectasia or reticular veins
- C2 - Varicose veins
- C3 - Oedema present in lower limb
- C4a - Presence of Pigmentation or eczema
- C4 - Lipodermatosclerosis or atrophie blanche
- C5 - Healed venous ulcer
- C6 - Active venous ulcer

Each clinical class is again characterized by a subscript depending upon the patient is symptomatic (S) or asymptomatic (A)

Etiological Classification

- Ec - congenital
- Ep - primary
- Es - secondary
- En - no venous cause identified

Anatomical Classification

- As : superficial veins
- Ap : perforator veins
- Ad : deep veins
- An : no venous location identified

Pathological Classification

- Pr : reflux
- Po : obstruction
- Pr,o : reflux and obstruction
- Pn : no venous pathophysiology identifiable

Symptoms of varicose vein

The most common symptom is being aching or heaviness in the lower limbs especially increases in the evening after prolonged standing, and is relieved by Elevation or compression hosiery. Other symptoms include ankle swelling and itching.

Signs of varicose veins

The presence of tortuous dilated subcutaneous veins which are confined to the greater saphenous system and lesser saphenous systems in approximately 60 and 20 per cent of cases, respectively. The distribution of varicosities may indicate which superficial system is defective for example

medial thigh and calf varicosities indicates great saphenous vein incompetence and posterolateral and calf varicosities are suggestive of short saphenous incompetence, anterolateral thigh and calf varicosities may suggest incompetence of the proximal anterolateral long saphenous tributary Percussion over the varices may elicit an impulse tap by the fingers placed over the dilated trunk.

Other signs include

- Telangectasia - a confluence of dilated intradermal venules <1 mm in dm. Also called as spider veins, thread veins and hyphen webs. Reticular veins are dilated , sub dermal veins of 1–3 mm in dm.
- In saphena varix there is a large varicosity may be present in groin region. Appears when standing and disappearing on lying down position. Gentle palpation. Over the varix during coughing may elicit a thrill.
- Atrophie blanche is localized white atrophic skin which is frequently surrounded by dilated capillaries and hyperpigmentation and usually seen around the ankle.
- Corona phlebectasia are small intradermal veins usually on the medial or lateral aspects of the ankle or foot. Also called as malleolar flare or ankle flares Pigmentation is usually a brownish discolouration due to

haemosiderin deposition of the skin, mostly affecting the area around the ankle and may be associated with superficial thrombophlebitis and ulceration.

- Eczema it is an erythematous dermatitis which may leads to blistering, weeping or scaling of the skin, it should be differentiated with contact dermatitis.
- Dependent pitting oedema it is due to increase in volume of fluid in skin and subcutaneous tissue which increases throughout the day, and is relieved by elevation of the limb and compression bandaging.
- Lipodermatosclerosis is a localised chronic inflammation and fibrosis of the skin and subcutaneous tissues of the leg.
- Ulceration is a breach in the continuity of the epithelium of the skin most commonly affecting the area around the ankle.

CLINICAL EXAMINATION

1. Brodie- Trendelenburg test

This test is performed to determine the *incompetency of the sapheno - femoral valve* and other communicating systems. It test can be performed in two ways. In both the methods, the patient is first placed in the recumbent Position , legs are raised to empty the veins. The sapheno-femoral junction is compressed with the thumb of the clinician or a tourniquet is applied just

below the sapheno-femoral junction and the patient is asked to stand up quickly. In first method, the pressure is released. If the varices fills very quickly by a column of blood from above, it indicates incompetency of the SFJ. It is called positive Trendelenburg test. In second test the pressure is not released and pressure is maintained for about 1 minute. Gradual filling of the veins during the period indicates *incompetency of the communicating veins*.

2. Tourniquet test

It is a variant of Trendelenburg test. Multiple tournique tied around the thigh or leg at different levels after the superficial veins made empty by raising the leg in recumbent position and then patient asked to stand up. If the veins above the tourniquet fills and those below it remain collapsed, it indicates presence of incompetent communicating vein above the tourniquet .Similarly if the veins below the tourniquet fill rapidly whereas veins above the tourniquet remain empty, the incompetent communicating vein must be below the tourniquet.

3. Perthes test

The lower extremity is wrapped with elastic bandage. The patient is instructed to move around and exercise. Crampy pain will be present if there is deep vein thrombosis.

4. Schwartz Test

If a tap is made on the long saphenous varicose vein in the lower part of the affected leg an impulse can be felt at saphenous opening. With the other hand.

5. Morrissey's Cough Impulse Test.

The patient is asked to cough forcibly. An expansile impulse is felt at the saphenous opening if the SFJ incompetence is present.

6. Fegan's test

The affected limb is elevated to empty the varicose veins. on palpation gaps or Pits in the deep fascia which indicates perforator incompetence.

TREATMENT OPTIONS AVAILABLE

Compression Hosiery

Compression hosiery can be knee length or thigh length It is classified according to the pressure exerted, and the British classification class 1 stockings exert pressure of 14–17 mmHg, class 2 exert 18–24 mmHg and class 3 exert 25 -35 mmHg. The incorrect application of compression hosiery can have serious Consequences (pressure necrosis, tourniquet effects) Thus assessment and prescription and application of compression hosiery should be limited to those with the appropriate skills and training.

Ultrasound-guided foam sclerotherapy

Ultrasound-guided foam sclerotherapy involves the injection of sodium tetradecyl sulphate detergent directly into the superficial veins. It destroys the lipid membranes of endothelial cells leads them to shed, followed by thrombosis then fibrosis and obliteration of superficial veins Initially the patient should stand and the sites of venous cannulation are marked using ultrasound. Then patient is on supine position the major venous trunks and superficial varicosities to be treated are all cannulated using ultrasound guidance. The most widely used method is Tessari, which utilizes two syringes connected using a three-way tap. A 1:3 or 1:4 ratio mixture of sclerosant and air is drawn into one syringe and is then oscillated vigorously between the two syringes about 10 or 20 times.

The leg is then elevated to empty the veins of blood and then injection of foam First with superficial varicosities and ends with injection Of the great saphenous vein or short aphenous system. Only 1 or 2 mL of foam should be injected at a maximum volume of foam which should be injected at a single session should not exceed 10–12 mL of foam injected.

Compression bandaging or hosiery is then applied and left *in situ* for 7–10 days. Sclerotherapy improves symptoms related to varicose veins but recurrence rates and the need for reintervention is relatively high.

Endovenous laser ablation (EVLA)

It was first described in 2001, and it involves the insertion of a Laser fibre into the lumen of an incompetent truncal vein, and thermal ablation of the vein. The procedure begins with ultrasound-guided marking of the Truncal vein to be treated. The patient is then positioned in the Reverse Trendelenburg position. The vein is then cannulated Percutaneously under ultrasound guidance, a wire is then passed through the Needle into the superficial vein. The laser fibre is introduced into the catheter The tumescent anaesthesia during EVLA provides analgesia and compresses the vein, increasing the contact area between the vein wall and laser fibre.

Radiofrequency ablation

Radiofrequency ablation is a minimally invasive therapy uses a bipolar catheter It will generate thermal energy to ablate the vein. The vein to be treated is [cannulated with a 7 FG] sheath using. Ultrasound guidance and the catheter is introduced through the Sheath and the catheter tip positioned not within 2 cm of the incompetent junction. Then catheter generates heat of 85–120°C to ablate the vein.

SURGERIES

Sapheno Femoral Junction Ligation and GSV Stripping

Oblique groin incision is made 3.75 cm below and lateral to pubic tubercle. The long saphenous vein is identified and dissected up to the SFJ. Usually six tributaries is present .superficial inferior epigastric vein and superficial Circumflex iliac vein . the deep and superficial external pudental veins and usually more distally the anterolateral and posteriomedial veins, which should be ligated and divided. A flush SFJ ligation is then performed and the LSV retrogradely.

Perforator Ligation

It is done in patients with perforator incompetence. Skin incision made over the bulged perforators, then ligate the perforator subcutaneously.

SEPS

Instead of putting multiple skin incision two ports created near knee and then by using endoclip multiple perforators can be clipped by using endoclip.

AIM AND OBJECTIVE

To evaluate the feasibility and safety of Subfacial Endoscopic Perforator Surgery in the management of Great Saphenous Varicose Veins and to compare it with Open Subfacial Perforator Ligation in terms of

- Operating time.
- Number of perforators ligated.
- Pain in post operative period.
- Length of hospital stay.
- Return to work.
- Number of residual perforators.
- Cosmesis.

MATERIAL AND METHODS

METHODOLOGY

After consulting with the statistician the sample size was set as 50 patients in the study as per the following calculation.

SAMPLE SIZE CALCULATION

| | |
|---|-----|
| Standard deviation in Group I | 0.4 |
| Standard deviation in Group II | 0.5 |
| Mean difference in pain reduction (VAS score) | 0.6 |
| Effect size | 1.3 |
| Alpha error (%) | 5 |
| Power (1 – beta) % | 90 |
| 1 or 2 sided | 2 |
| Required sample size per Group | 12 |

SAMPLE SIZE

The required sample size is 12 patients per group by using formula. But after consideration the lost to follow up and to power the study, sample size will be 25 patients per group to test the mean difference between two groups for pain reduction (VAS score). The nMaster (2.0) software was used to calculate the sample size.

INCLUSION CRITERIA

- All consenting patients presenting with Great saphenous varicose veins and perforator incompetence.
- Age group between 18 and 65 years

EXCLUSION CRITERIA

- Pregnancy
- Morbid obesity
- Uncontrolled medical conditions
- History of previous varicose vein surgeries over the same leg
- Patient unfit for anaesthesia

In this Randomized controlled study which was conducted at ESIC MEDICAL COLLEGE & PGIMSR, K.K. NAGAR, CHENNAI -78 for 1 and half years ,total 50 patients diagnosed as Great saphenous varicose veins with perforator incompetence were included in the study. After taking informed consent patients were assigned to open subfascial perforator ligation or subfascial endoscopic perforator ligation in a 1: 1 ratio by alternate allocation method even numbered patients were treated by open subfascial perforator ligation and odd numbered patients were treated by subfascial endoscopic perforator surgery. All patients were given standard care which consists of intravenous fluids and antibiotics.

INFORMED CONSENT

Informed consent for the patients who are attending surgical OPD or casualty In ESIC MEDICAL COLLEGE &PGIMSR hospital and whom we are inviting to participate in the research titled "**A comparative study of Subfascial Endoscopic Perforator surgery[SEPS] versus Open subfascial Perforator ligation(OSPL) in the treatment of great saphenous varicose veins**" will be done by. Dr.AMUDHAN, M.S. (General surgery) Post Graduate who is the principal investigator of this research under the guidance of **Dr.MUTHURAJ**, Associate Professor, Dept. of General Surgery, ESIC Medical College & PGIMSR, K.K.NAGAR, Chennai – 78.

CONFIDENTIALITY

All information you provide will be kept confidential. Your name will not be used in any way.

Whom to Contact: **Dr.M.Amudhan**, Post Graduate, ESIC Medical College & PGIMSR, K.K.NAGAR, Chennai – 78.

If you have any questions, you can ask them now or later. If you wish to ask questions later, you may contact: **Dr. Amudhan.M**, Post Graduate, ESIC Medical College & PGIMSR, K.K.NAGAR, Chennai – 78.

This proposal has been reviewed and approved by the Institute Ethical Committee, which is a committee whose task is to make sure that research participants are protected from any harm.

If you have any questions regarding any part of the study, feel free to ask.

CERTIFICATE OF CONSENT

I have read the information in the consent form (or it has been read to me). I was free to ask any questions and they have been answered. I understand what is being requested of me as a participant in this study. I have been given satisfactory answers to my questions. I certify that I am more than 18 years of age. I freely consent to participate in the study called “A comparative study of Subfascial Endoscopic Perforator surgery [SEPS] versus Open Subfascial Perforator Ligation(OSPL) in the treatment of Great Saphenous Varicose veins” at ESIC Medical College & PGIMSR, K.K.NAGAR, Chennai – 78.

- I have read and understood this consent form and the information provided to me.
- I have been explained about the nature of the study.
- My rights and responsibilities have been explained by the investigator
- I agree to cooperate with the investigator.
- Currently I am not participating in any research study.
- I hereby give permission to the investigators to release the information obtained from me as a result of participation in the study to the regulatory authorities, government agency, ethical committee. I understand that they may inspect my original records.

- My records will be kept confidential
- I have decided to participate in the study.
- As I was not able to read, the consent form has been read out to me by the investigator and all my questions have been answered and I give my consent with my free will.

Name of Participant

Sign of Participant

Name of Investigator (Signed)

Date:

ஒப்புதல் படிவம்

மருத்துவர் அமுதன் தனது முதுநிலை அறுவை சிகிச்சை பட்டபடிப்பு முழுமெபறுவதற்காக வேரிக்கோஸ் நரம்பிர்க்கு மேற்கொள்ளும் ஆய்வின் பற்றி எனக்கு என் தாய் மொழியில் விளக்கப்பட்டது.

இந்த ஆய்வின் அனத்து அம்சங்களும் விளக்கப்பட்டது இதில் நான் முழு விருப்பத்துடன் கலந்து கொள்கிறேன் எனினும் எந்த நேரத்திலும் எந்த காரணமும் இன்றி இந்த ஆய்விலிருந்து விலகி கொள்ள எனக்கு முழு உரிமை உள்ளது இதனால் எனது நலனில் எந்த பாதிப்பும் ஏற்படாது என்று உறுதி அளிக்கபடுகிறது. இந்த ஆய்வின் அறிக்கையில் என்னுடைய தனிப்பட்ட விவரங்கள் அனத்தும் ரகசியமாய் பாதுகாக்கபடும் என்று உறுதி அளிக்கபடுகிறது. மேற்கூறிய உறுதி மொழிகள் பின்பற்றபடும் பட்சத்தில் நான் இந்த ஆய்விற்கு ஒப்புதைல தந்து பங்கேற்கிறேன்.

இப்படிக்கு,
(கையாப்பம்)

INSTRUMENTATION

Endovision camera, single chip camera, Halogen light source, co2 insufflator

- 10 mm 30 degree telescope
- 5 mm 0 degree telescope
- 10 mm trocar 1
- 5mm trocar 1
- Scissors

SEPS PROCEDURE

- SEPS will be done by two port method, Knee will be flexed to 90 degree and hip joint will be flexed and abducted.
- 10mm port will be put over the medial aspect of the calf, posterior to the medial border of Tibia 5 to 7 cm distal to Tibial tuberosity under direct vision by incising the fascia.
- Subfascial space will be created by inflation of CO2 a t25 to 30 mmHg and direct dissection with the tip of telescope.
- 2nd 10mm trocar will be placed postero-medially and slightly inferior to the first port. The Subfascial space will be explored.

- And all the perforators will be clipped using endoclip application. By rotating the ports the whole of the leg will be explored and all the Perforators will be clipped.



Fig.1: Positioning of Patient



Fig.2: Painting & draping



Fig.3: Trocar incision in SEPS technique

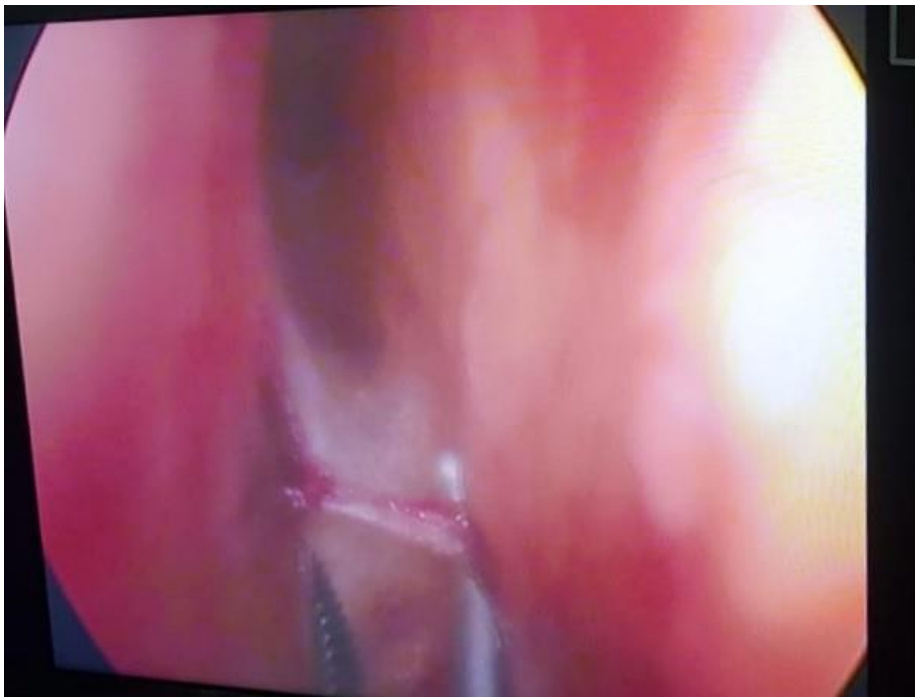


Fig.4: Perforators visualised in saphenous space

OSPL PROCEDURE

- Skin and fascial incision will be given at the level of marked incompetent perforator.
- The subfascial plane will be created and perforator will be identified.
- The perforator will be transfixed using 2-0 vicryl.
- Fascia and skin will be closed.
- Sterile dressing, Elasto Crepe Bandage application and limb elevation will be given.

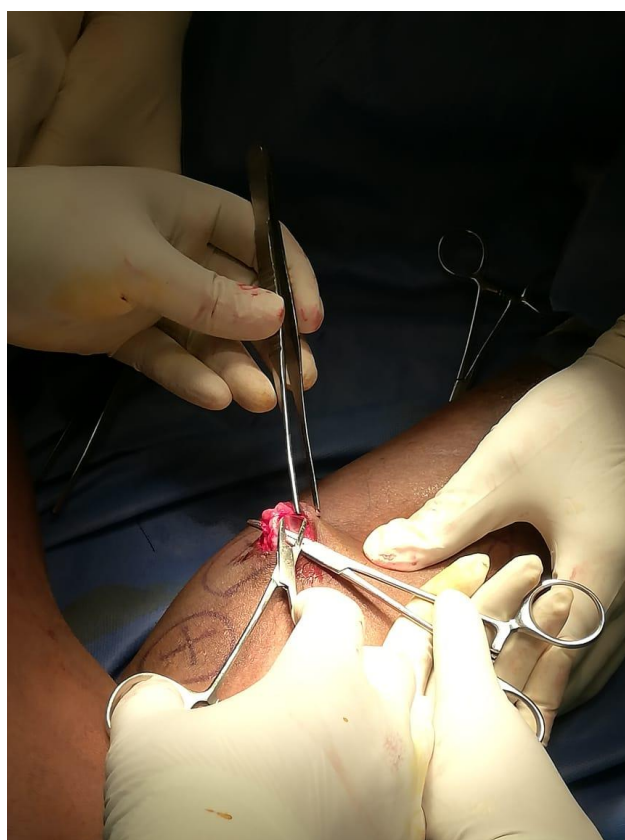


Fig.5: Perforator ligation by OSPL



Fig.6: Below Knee perforator



Fig.7: Ligation of perforator by using vicryl.

STUDY VARIABLES

For each and every patient the following variables were recorded in the preformed protocol

INTRA OPERATIVE VARIABLES

1. Operative Time

The amount of time taken for insertion of first trocar to the closure of the port site in SEPS technique and amount of time taken for incision to closure of wound in OSPL technique. Time is calculated in minutes.

2. Numbers of Perforators Clipped/Ligated.

The number of perforators clipped in SEPS technique and ligated in OSPL technique will be calculated

POST OPERATIVE VARIABLES

3. Post Operative Pain at Day 1

By using visual analogue scale post operative pain is calculated at post op day 1.

4. Post Operative Pain at Day 3

By using visual analogue scale post operative pain at day 3 is calculated.

5. Day of Discharge

The calendar day on the patient get discharged is noted.

6. Post Operative Pain at Day 7

Post operative pain at day 7 is assessed by using visual analogue scale

7. Day of Return to work

The calendar day at which the patient return to his work is noted.

7. Scar size

Scar size is measured at 3rd month post operatively

8. Post Op Venous Doppler

Venous Doppler of operated lower limb to look for missed perforator is looked for at the end of 3 months.



Fig.8: Scar examined at 3rd month post operatively

STUDY PROFORMA

Name:

Age:

Sex:

Procedure done

| | |
|------|------|
| SEPS | OSPL |
|------|------|

INTRA OPERATIVE VARIABLES

1. OPERATIVE TIME

| | | |
|----------------|---------------|---------------|
| < 50 MINUTES | 50-60 MINUTES | >60 MINUTES |
|----------------|---------------|---------------|

2. NUMBER OF PERFORATORSS CLIPPED /LIGATED
POST OPERATIVE VARIABLES

3. POST OPEARATIVE PAIN AT DAY 1

4. POST OPERATIVE PAIN AT DAY 3

5. POST OPERATIVE PAIN AT DAY 7

6. DAY OF DISCHARGE

| | | | |
|---------------------|---------------------|---------------------|---------------------|
| 3 RD POD | 4 TH POD | 5 TH POD | 6 TH POD |
|---------------------|---------------------|---------------------|---------------------|

7. DAY OF RETURN TO WORK

8. SCAR SIZE AT THE END OF 3 MONTHS

| | | |
|---------|--------|---------|
| <2 CM | 2-3 CM | >3 CM |
|---------|--------|---------|

9. POST OP VENOUS DOPPLER

Patients signature

Witness signature

REVIEW OF LITERATURE

M.G.Vashist, Vijay Malik, and NitinSinghal The study was done to compare the efficacy of subfascial endoscopic perforator surgery (SEPS) and open subfascial ligation of perforators in varicose veins 'Subfascial endoscopic perforator vein surgery is a safe and effective method for Treating incompetent perforating veins'. The number of perforators Ligated in SEPS was more as compared to the open subfascial ligation group. Possibly some perforators may be missed on ligation, which is the cause of future recurrence in varicose veins in the OSPL group. Early relief of symptoms like ulcer healing time is Better in the SEPS group. Hence SEPS "should be added to varicose vein surgery for the management of Incompetent perforators to minimize long term recurrence and better wound healing"

Comparative study of outcomes and complications of OSPL VERSUS SEPS for treatment of chronic venous insufficiency S Shivakumar, Gopi Tupkar, N Ravishankar and Divakar Total number of perforators ligated in SEPS group were more compared to open group "Mean duration of stay in hospital in open group is 7.3 +/- 0.6 days and 5.2 +/- 0.9 Days in SEPS group which is statistically significant" with p value <0.0001.

Similarly study conducted by E.G.J.M. Pierik, et al conducted randomized trail On Endoscopic versus open subfascial division of incompetent perforators "Where **patients in the OSPL group needed longer**

hospital stays (mean-7 days; Range- 3 to 39 days)” than patients in the SEPS group (mean, 4 days; range, 2 to 6 days; p = 0.001).

Subfascial Endoscopic Perforator Surgery New Life for an Old Procedure Mark J. Kulbaski, MD,¹ Felmont F. Eaves, III, MD,² John C. Ofenloch, MD,¹ and Alan B. Lumsden, SEPS is a safe, minimally invasive procedure which should become an important Part of the surgical armamentarium in treating patients with varicose veins The place of (SEPS) in advanced chronic venous insufficiency treatment

WiesławPesta, 1 Waldemar Kurpiewski, 1 Marek Kowalczyk, 1 Rafał Szynekarczuk, 1 Magdalena Łuba, 1 Anna Żurada, 2and Radosław Grabysa³ “SEPS is an effective and safe method of treatment of advanced, Chronic venous disease of lower extremities”. “The use of laparoscopic optics and subfascial CO₂ insufflation Enables very good identification of perforators” “Acquired experience allows intraoperative complications to be Minimised Subfascial Endoscopic Perforator Surgery : Retrospective Analysis of the First50 Patients.

Carlos E Costa Almeida* *Centro Hospitalar e Universitário de Coimbra – Hospital Geral (Covões), Portugal****Corresponding author:** CE Costa Almeida, Centro Hospitalar e Universitário de Coimbra – Hospital Coimbra, Portugal.

Conclusion: “SEPS has a better ulcer healing rate than other perforator ablation techniques” .

Subfascial Endoscopic Perforator Surgery: A safe and novel minimal invasive procedure in treating varicose veins for below knee perforator incompetence by Manash Ranjan Sahoo, Leesa Misra, Sumeet Deshpande, Sambit Kumar Mohanty, Santosh Kumar Mohanty Department of General Surgery, Sriram Chandra Bhanj Medical College, Cuttack, Odisha, India.

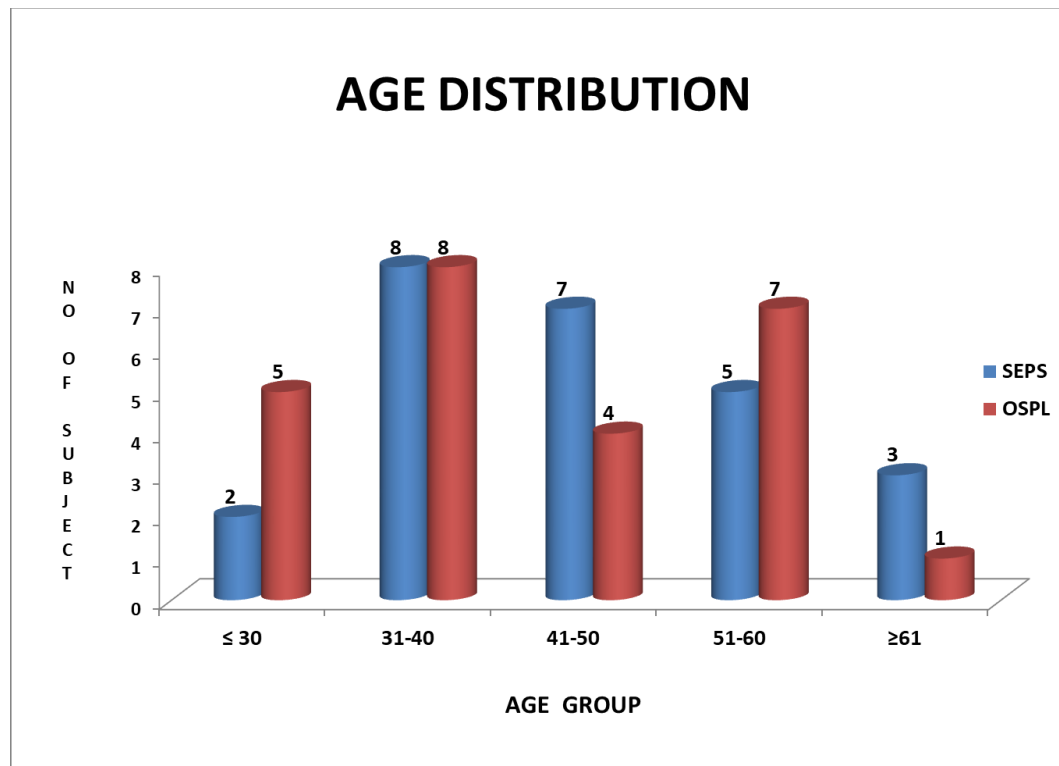
Conclusion: SEPS is a safe, cost effective and novel minimal invasive procedure .

SUBFASCIAL ENDOSCOPIC PRFORATOR SURGERY IN VENOUS INSUFFICIENCY by Ravikumar .S, SS Institute of Medical Sciences and Research Centre, Devangere Karnataka.

Conclusion: SEPS may be utilised optimally in conservatively failure cases for treating chronic venous insufficiency.

OBSERVATION AND RESULTS

STATISTICAL ANALYSIS

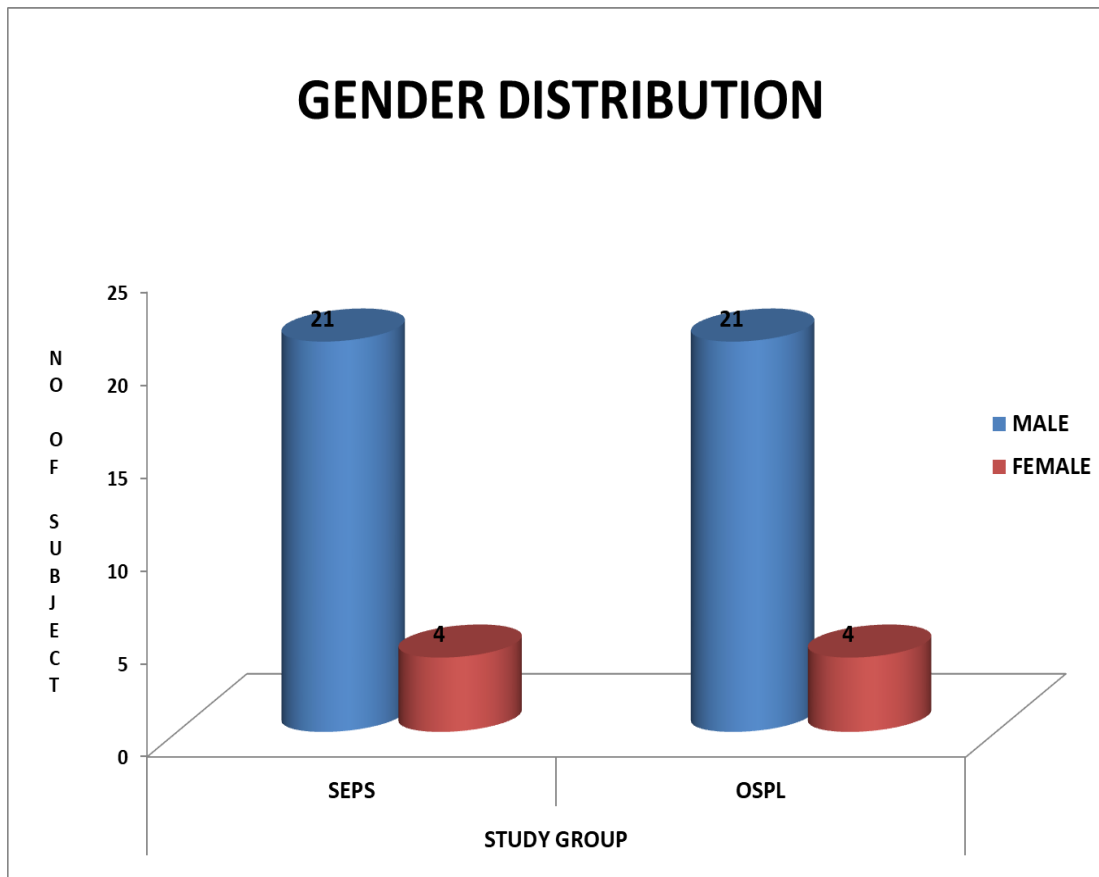


Age distribution of the study sample

| Age Group | STUDY GROUP | | | |
|--------------------|------------------------|------------|--------------|------------|
| | SEPS | | OSPL | |
| | N | % | N | % |
| ≤ 30 | 2 | 8.00 | 5 | 20.00 |
| 31-40 | 8 | 32.00 | 8 | 32.00 |
| 41-50 | 7 | 28.00 | 4 | 16.00 |
| 51-60 | 5 | 20.00 | 7 | 28.00 |
| ≥61 | 3 | 12.00 | 1 | 4.00 |
| TOTAL | 25 | 100 | 25 | 100 |
| Mean | 45.08 | | 42.36 | |
| Sd | 11.32 | | 10.62 | |
| t-value | 0.88 | | | |
| Df | 48 | | | |
| p-value | 0.39 | | | |
| Significant | Not Significant | | | |

In the present study mean age in subfascial endoscopic perforator surgery was 45.08 and open subfascial perforator surgery was 42.36.

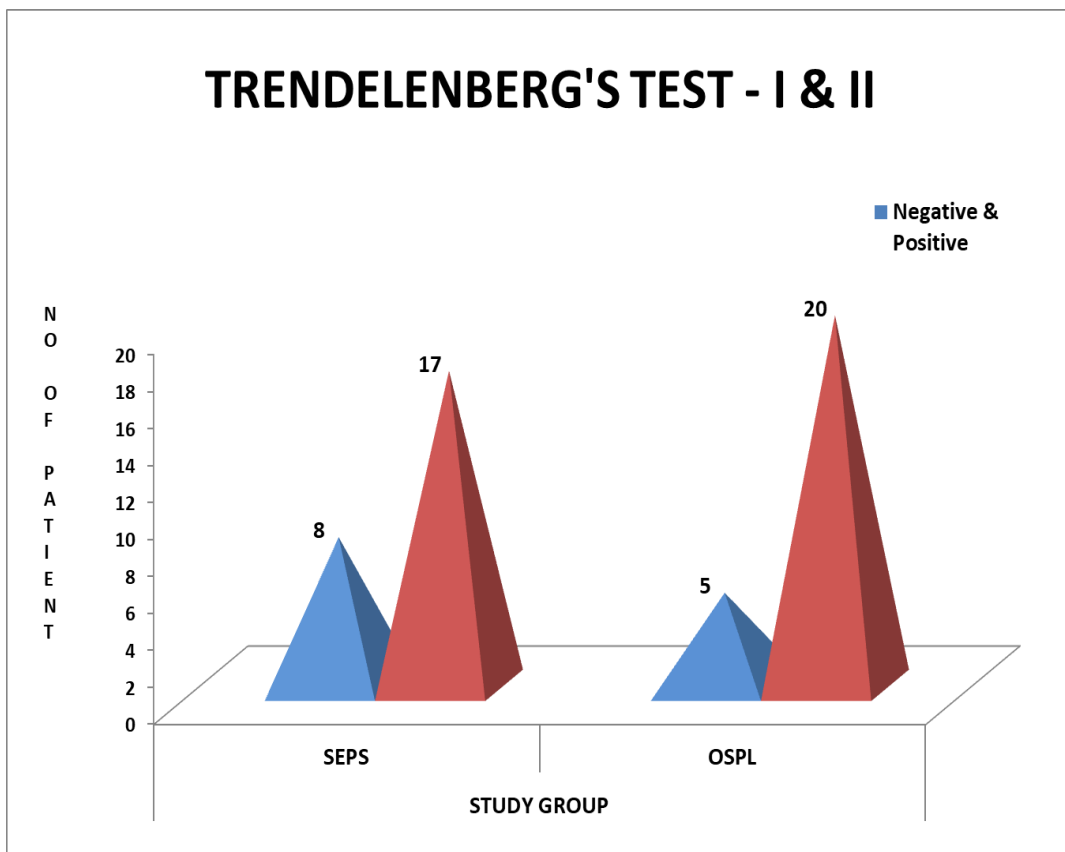
By conventional criteria the association between the surgical treatment groups (i.e. SEPS and OSPL) and the age is considered to be not statistically significant since p-value is 0.39



Gender distribution of the study sample

| | STUDY GROUP | | | |
|----------------------|--------------------|------------|-------------|------------|
| Major illness | SEPS | | OSPL | |
| | N | % | N | % |
| MALE | 21 | 84.00 | 21 | 84.00 |
| FEMALE | 4 | 16.00 | 4 | 16.00 |
| TOTAL | 25 | 100 | 25 | 100 |
| Chi-square | 0.01 | | | |
| p-value | 1.00 | | | |
| Significant | Not Significant | | | |
| | | | | |

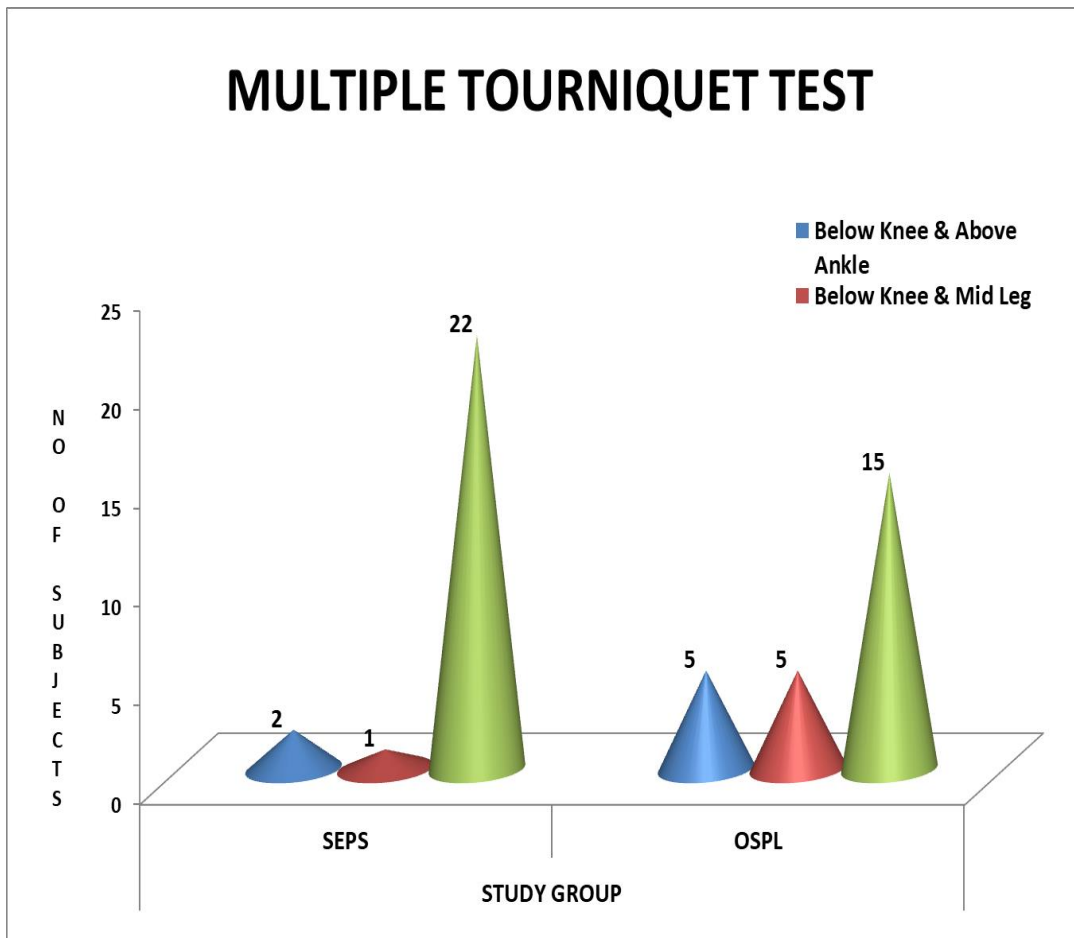
By conventional criteria, the association between the surgical treatment groups and gender is considered to be not statistically significant since age and gender are not statistically significant, it means that there is no difference between the groups. In other words the groups contains subjects with the same basic demographic characteristics.



TRENDELENBERG'S TEST - I & II

| | STUDY GROUP | | | |
|---------------------|-----------------|------------|-----------|------------|
| | SEPS | | OSPL | |
| | N | % | N | % |
| Negative & Positive | 8 | 32.00 | 5 | 20.00 |
| Positive & Positive | 17 | 68.00 | 20 | 80.00 |
| TOTAL | 25 | 100 | 25 | 100 |
| Chi-square | 0.94 | | | |
| P-Value | 0.33 | | | |
| Significant | Not Significant | | | |

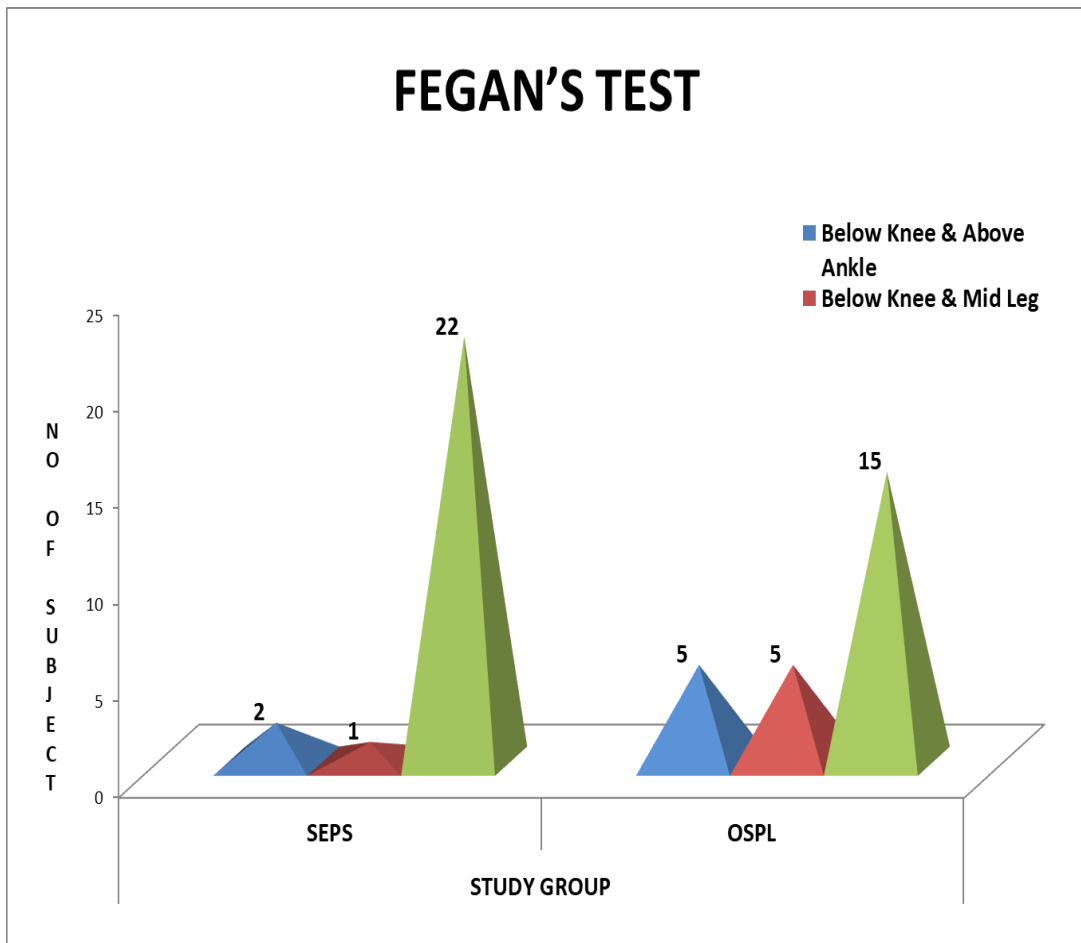
By conventional criteria the association between the surgical treatment groups and the pre operative diagnosis of sapheno femoral incompetence and perforator incompetence diagnosed clinically by performing trendelengerg test 1 and 2 is considered to be not statistically significant since p-value is > 0.05 .



MULTIPLE TOURNIQUET TEST

| | STUDY GROUP | | | |
|--------------------------|--------------------|------------|-------------|------------|
| | SEPS | | OSPL | |
| | N | % | N | % |
| Below Knee & Above Ankle | 2 | 8.00 | 5 | 20.00 |
| Below Knee & Mid Leg | 1 | 4.00 | 5 | 20.00 |
| Above Knee & Mid Leg | 22 | 88.00 | 15 | 60.00 |
| TOTAL | 25 | 100 | 25 | 100 |
| Chi-square | 5.28 | | | |
| P-Value | 0.07 | | | |
| Significant | Not Significant | | | |

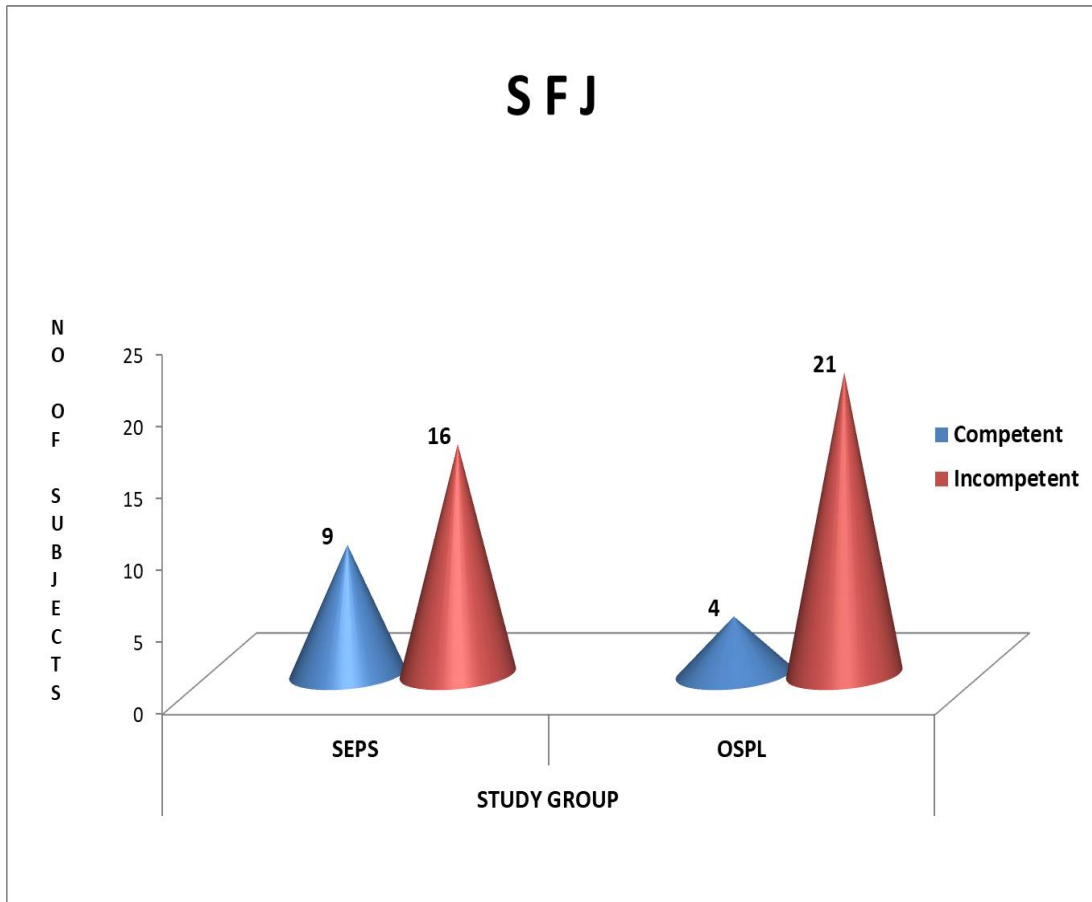
By conventional criteria the association between the surgical treatment groups and the pre operative diagnosis of Site of perforator incompetence diagnosed clinically by performing Multiple tornique test is considered to be not statistically significant since p-value is > 0.05 .



FEGAN'S TEST

| | STUDY GROUP | | | |
|--------------------------|--------------------|------------|-------------|------------|
| | SEPS | | OSPL | |
| | N | % | N | % |
| Below Knee & Above Ankle | 2 | 8.00 | 6 | 24.00 |
| Below Knee & Mid Leg | 1 | 4.00 | 4 | 16.00 |
| Mid Leg & Above Ankle | 22 | 88.00 | 15 | 60.00 |
| TOTAL | 25 | 100 | 25 | 100 |
| Chi-square | 5.12 | | | |
| P-Value | 0.08 | | | |
| Significant | Not Significant | | | |

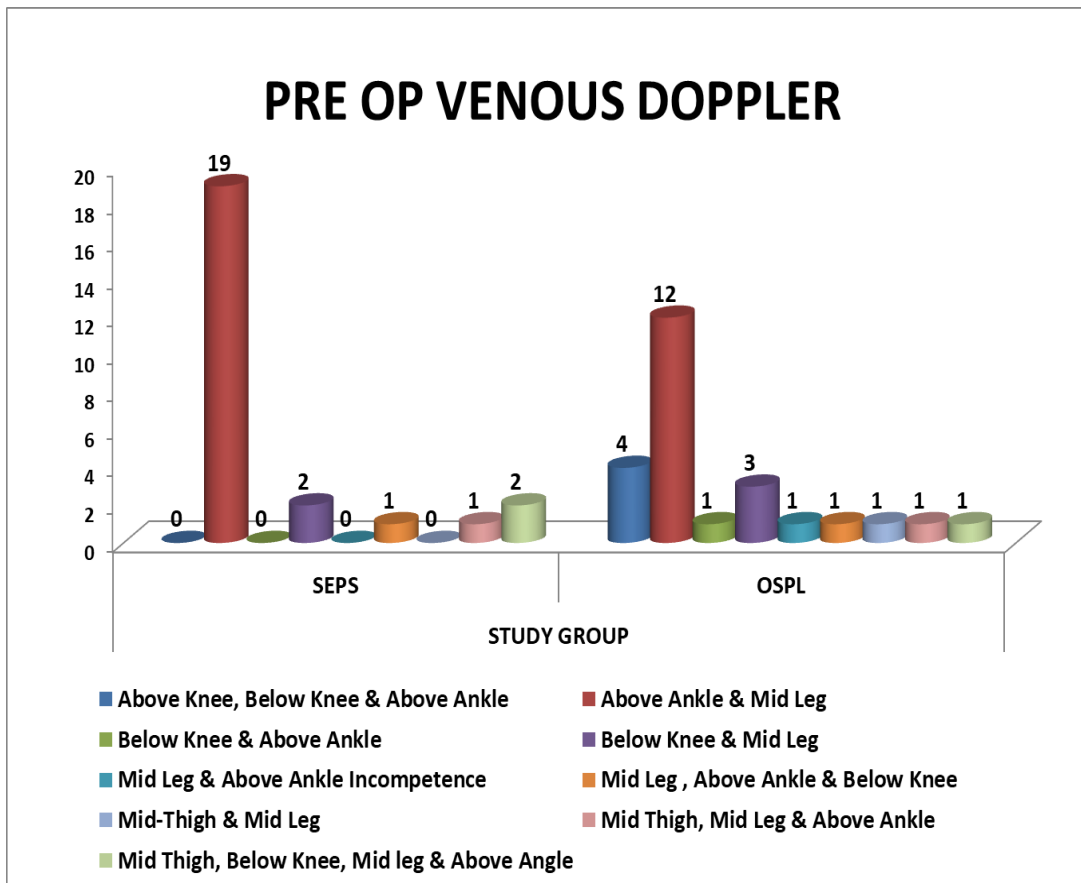
By conventional criteria the association between the surgical treatment groups and the pre operative diagnosis of Site of perforator incompetence diagnosed clinically by performing Fegans test is considered to be not statistically significant since p-value is > 0.05



SAPHENO FEMORAL INCOMPETENCE

| | STUDY GROUP | | | |
|--------------------|--------------------|------------|-------------|------------|
| | SEPS | | OSPL | |
| | N | % | N | % |
| Competent | 9 | 36 | 4 | 16 |
| Incompetent | 16 | 64 | 21 | 84 |
| TOTAL | 25 | 100 | 25 | 100 |
| Chi-square | 2.60 | | | |
| P-Value | 0.11 | | | |
| Significant | Not Significant | | | |

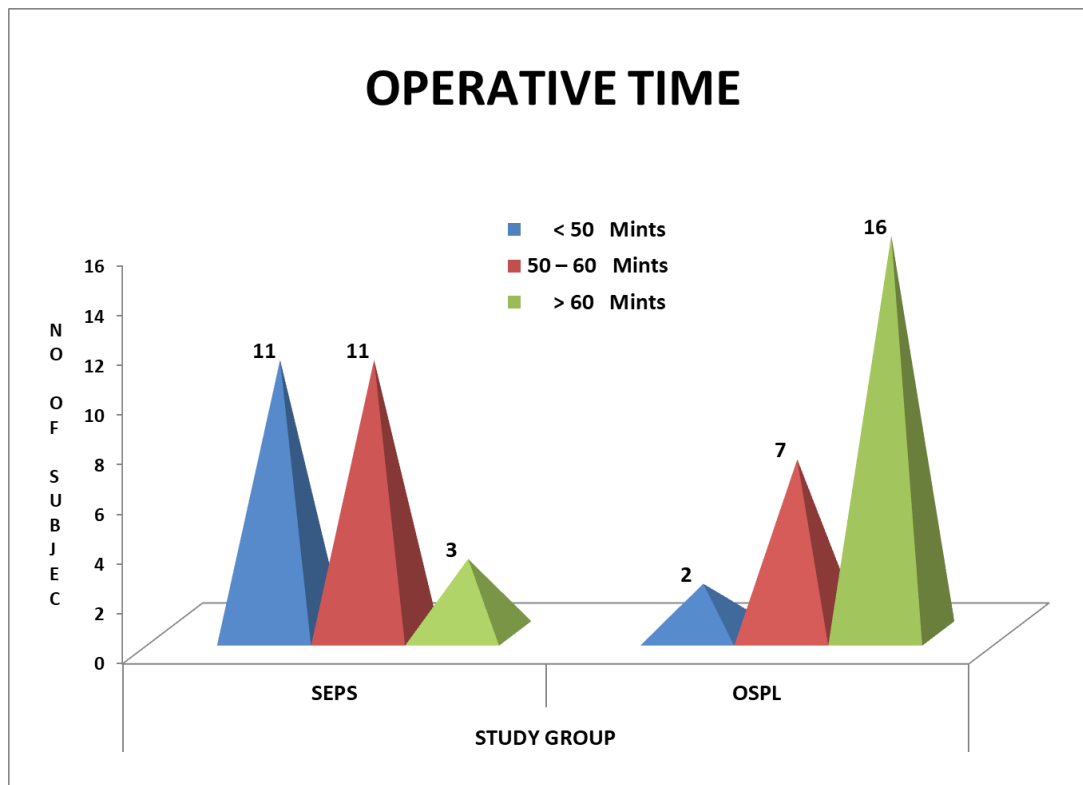
By conventional criteria the association between the surgical treatment groups and the pre operative diagnosis of Sapheno femoral incompetence is considered to be not statistically significant since p-value is > 0.05 .



PRE OP VENOUS DOPPLER

| | STUDY GROUP | | | |
|--|--------------------|------------|-------------|------------|
| | SEPS | | OSPL | |
| | N | % | N | % |
| Above Knee, Below Knee & Above Ankle | 0 | 0 | 4 | 16.00 |
| Above Ankle & Mid Leg | 19 | 76.00 | 12 | 48.00 |
| Below Knee & Above Ankle | 0 | 0 | 1 | 4.00 |
| Below Knee & Mid Leg | 2 | 8.00 | 3 | 12.00 |
| Mid Leg & Above Ankle Incompetence | 0 | 0 | 1 | 4.00 |
| Mid Leg , Above Ankle & Below Knee | 1 | 4.00 | 1 | 4.00 |
| Mid-Thigh & Mid Leg | 0 | 0 | 1 | 4.00 |
| Mid Thigh, Mid Leg & Above Ankle | 1 | 4.00 | 1 | 4.00 |
| Mid Thigh, Below Knee, Mid leg & Above Angle | 2 | 8.00 | 1 | 4.00 |
| TOTAL | 25 | 100 | 25 | 100 |
| Chi-square | 9.11 | | | |
| P-Value | 0.33 | | | |
| Significant | Not Significant | | | |

By conventional criteria the association between the surgical treatment groups and the pre operative diagnosis of perforators by pre op Doppler is considered to be not statistically significant since p-value is > 0.05 .



| Operative Time | STUDY GROUP | | | |
|--------------------|-------------|------------|-----------|------------|
| | SEPS | | OSPL | |
| | N | % | N | % |
| < 50 Mints | 11 | 44.00 | 2 | 8.00 |
| 50 – 60 Mints | 11 | 44.00 | 7 | 28.00 |
| > 60 Mints | 3 | 12.00 | 16 | 64.00 |
| TOTAL | 25 | 100 | 25 | 100 |
| Chi-square | 16.01 | | | |
| P-Value | 0.001 | | | |
| Significant | Significant | | | |

STATISTICAL SIGNIFICANCE

By conventional criteria the association between the surgical treatment groups and the time taken for completing the procedure i.e perforator ligation is considered to be statistically significant since p-value is < 0.05

This indicates that there is a true difference among groups and the difference is significant .In simple terms the operative time in OSPL group is predominantly more when compared to SEPS .

It is statistically significant with a p value of 0.001 according to chi-square test.

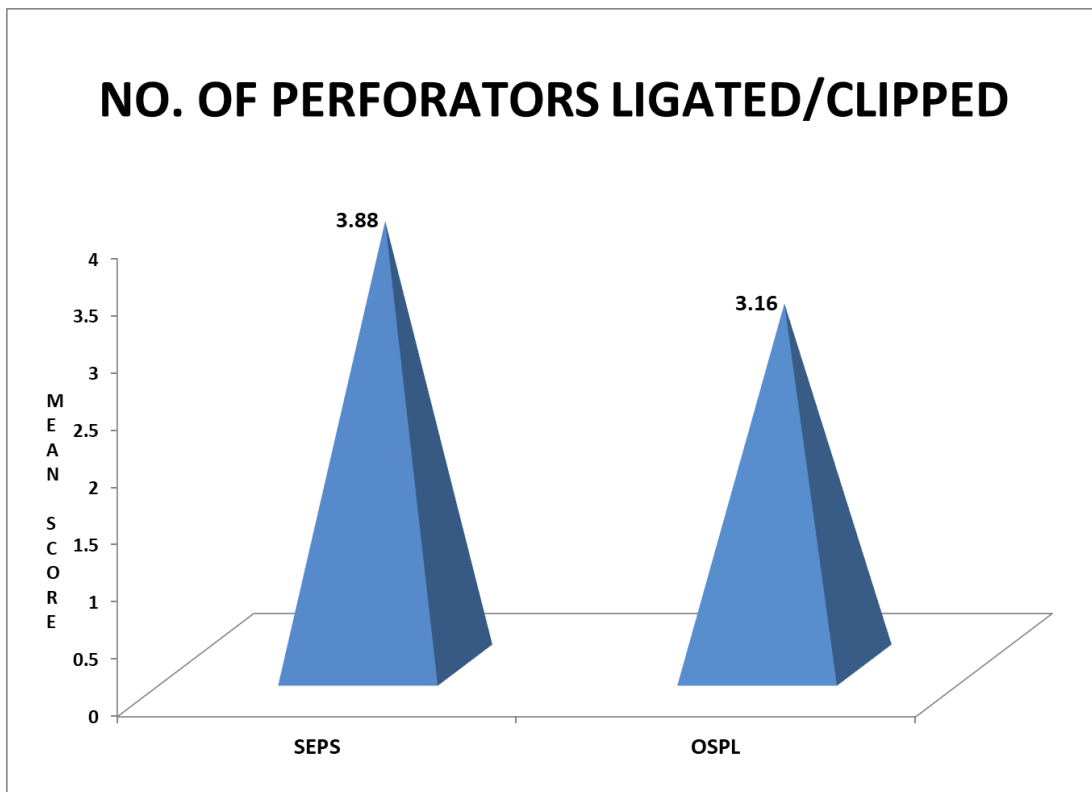
This difference is true and significant and has not occurred by chance.

CLINICAL SIGNIFICANCE

The operative time in OSPL technique is meaningfully more as compared to SEPS while performing perforator ligation.

Out of 25 cases performed by OSPL technique it required more than 60 minutes in 16 cases.

Whereas in SEPS technique more than 60 minutes required only in 3 cases.



NO. OF PERFORATORS LIGATED/CLIPPED

| | SEPS | OSPL |
|--------------------|-------------|-------------|
| Mean | 3.88 | 3.16 |
| Sd | 0.97 | 0.75 |
| t-value | 2.94 | |
| Df | 48 | |
| P-value | 0.01 | |
| Significant | Significant | |

STATISTICAL SIGNIFICANCE

By conventional criteria the association between the surgical treatment groups and the number of perforators ligated is considered to be statistically significant since p-value is < 0.05 .

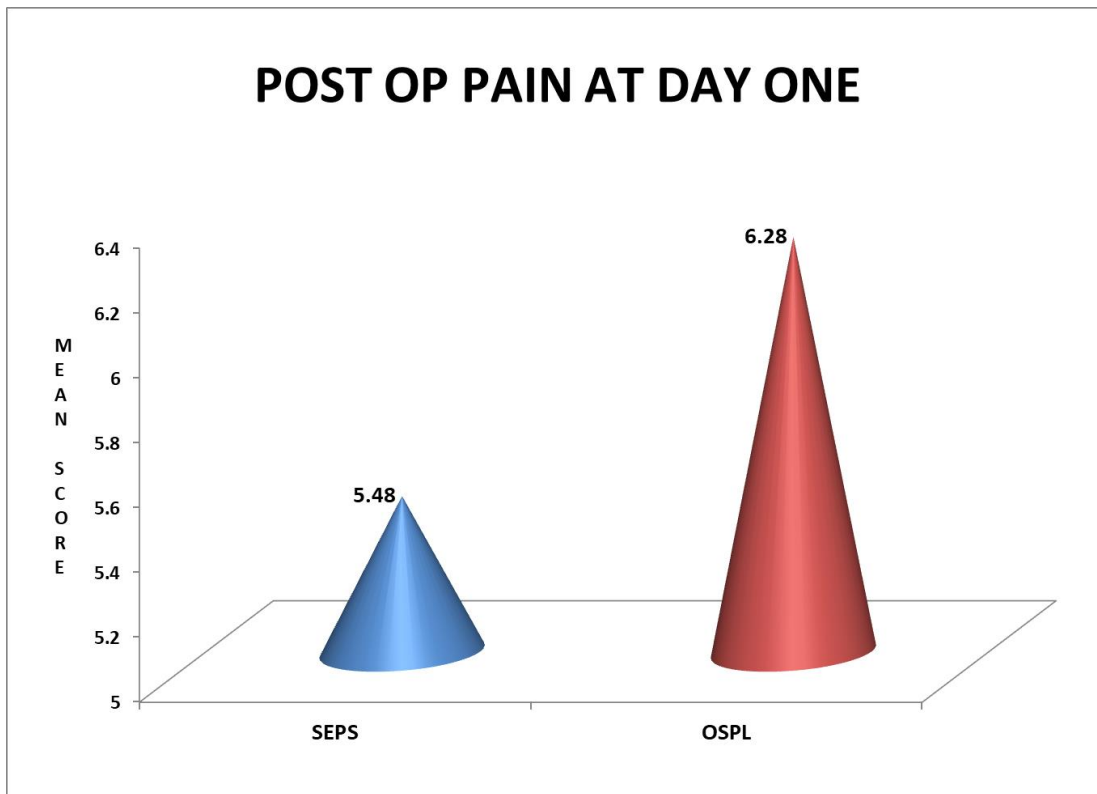
This indicates that there is a true difference among groups and the difference is significant. In simple terms the number of perforators ligated in OSPL group is low in number as compared to SEPS.

It is statistically significant with a p value of 0.01 according to chi-square test.

This difference is true and significant and has not occurred by chance.

CLINICAL SIGNIFICANCE

Number of perforators ligated in SEPS group is significantly higher as compared to OSPL group i.e the mean in SEPS group is 3.88 whereas in OSPL group is 3.16.



POST OP PAIN AT DAY 1

| | SEPS | OSPL |
|--------------------|-------------|-------------|
| Mean | 5.48 | 6.28 |
| Sd | 0.59 | 0.68 |
| t-value | 4.46 | |
| Df | 48 | |
| P-value | 0.001 | |
| Significant | Significant | |

STATISTICAL SIGNIFICANCE

By conventional criteria the association between the surgical treatment groups and the post operative pain at day 1 is considered to be statistically significant since p-value is < 0.05 .

In otherwords post operative pain is low at day 1 in SEPS group as compared to OSPL group.

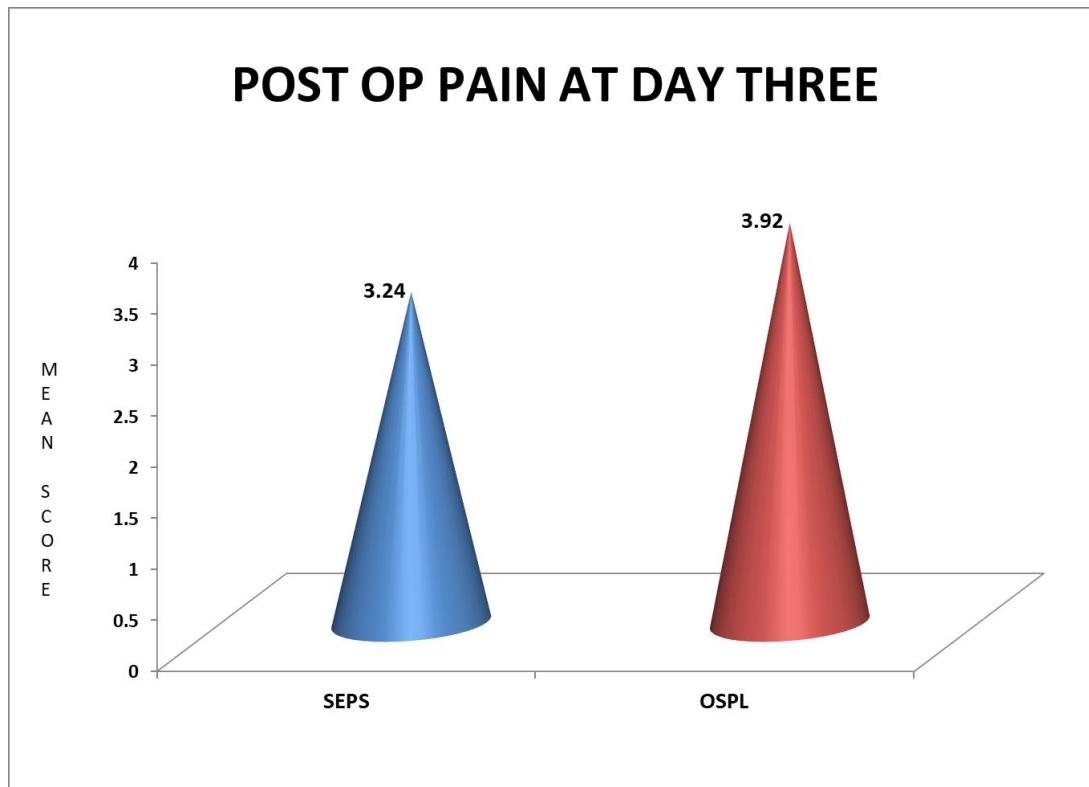
It is statistically significant with a p value of 0.001 according to chi-square test.

This difference is true and significant and has not occurred by chance.

CLINICAL SIGNIFICANCE

Postoperative pain which was assessed in patients who undergone perforator ligation by SEPS technique by visual analogue scale at the post op day 1 was significantly low.

In OSPL group post operative pain assessed by visual analogue scale was high.



POST OP PAIN AT DAY 3

| | SEPS | OSPL |
|--------------------|-------------|-------------|
| Mean | 3.24 | 3.92 |
| Sd | 0.66 | 0.57 |
| t-value | 3.88 | |
| Df | 48 | |
| P-value | 0.001 | |
| Significant | Significant | |

STATISTICAL SIGNIFICANCE

By conventional criteria the association between the surgical treatment groups and the post operative pain at day 3 is considered to be statistically significant since p-value is < 0.05 .

This indicates that there is a true difference among groups and the difference is significant.

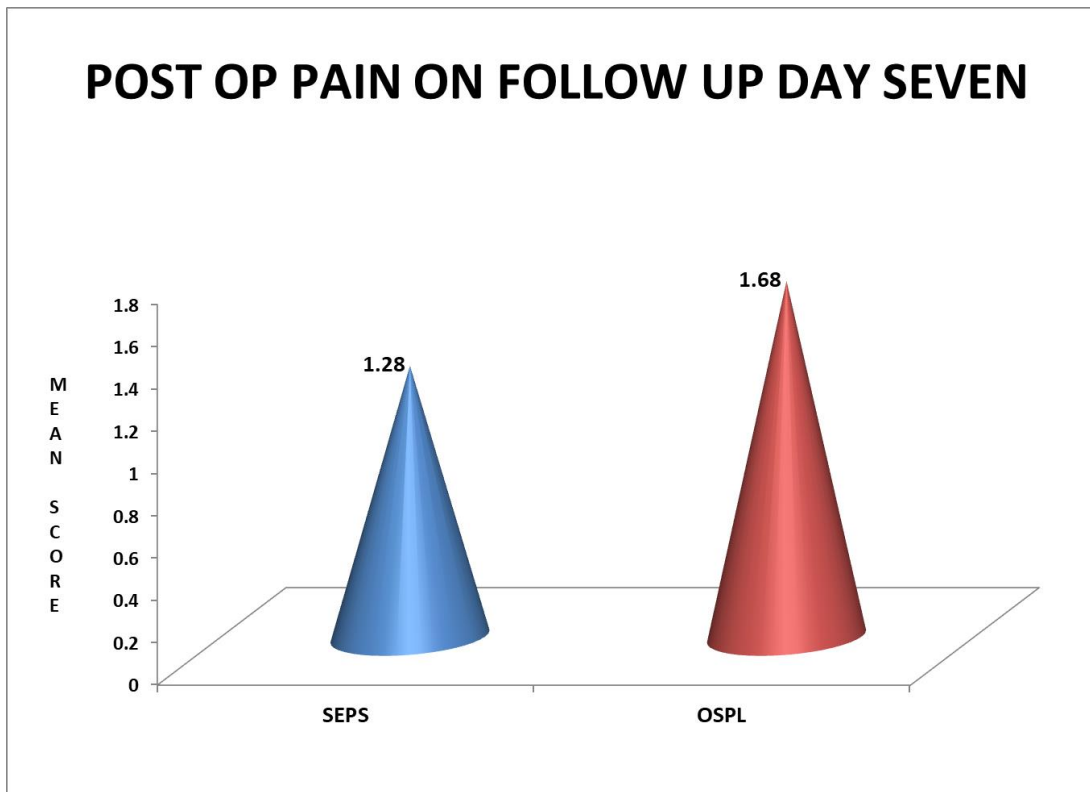
It is statistically significant with a p value of 0.001 according to chi-square test.

This difference is true and significant and has not occurred by chance.

CLINICAL SIGNIFICANCE

Postoperative pain was assessed by visual analogue scale who undergone perforator ligation by SEPS at the post op day 3 was significantly low.

In OSPL group post operative pain assessed by visual analogue scale was high.



POST OP PAIN ON FOLLOW UP DAY 7

| | SEPS | OSPL |
|--------------------|-------------|------|
| Mean | 1.28 | 1.68 |
| Sd | 0.46 | 0.56 |
| t-value | 2.77 | |
| Df | 48 | |
| P-value | 0.01 | |
| Significant | Significant | |

STATISTICAL SIGNIFICANCE

By conventional criteria the association between the surgical treatment groups and the post operative pain at day 7 is considered to be statistically significant since p-value is < 0.05 .

It is statistically significant with a p value of 0.01 according to chi-square test.

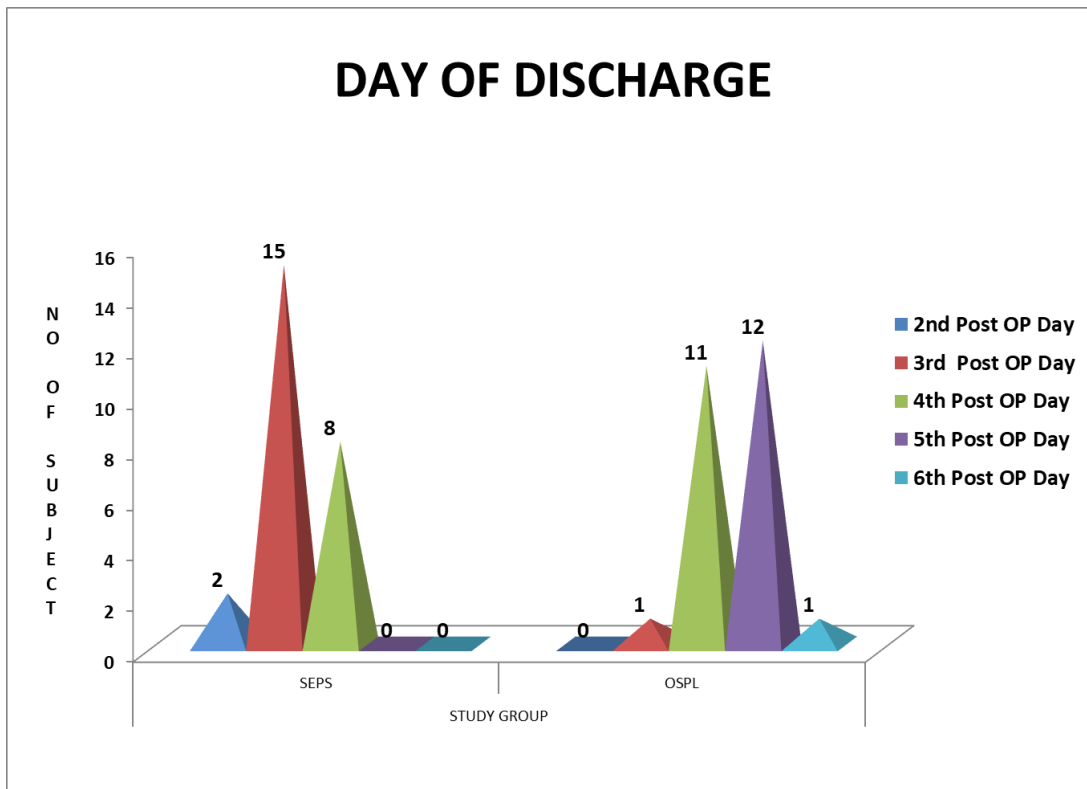
This difference is true and significant and has not occurred by chance.

CLINICAL SIGNIFICANCE

After discharging the patient at the 7th post operative day i.e on follow up day again pain was assessed by visual analogue.

Scale is low in SEPS group as compared to OSPL group.

In OSPL group post operative pain assessed by visual analogue scale was high.



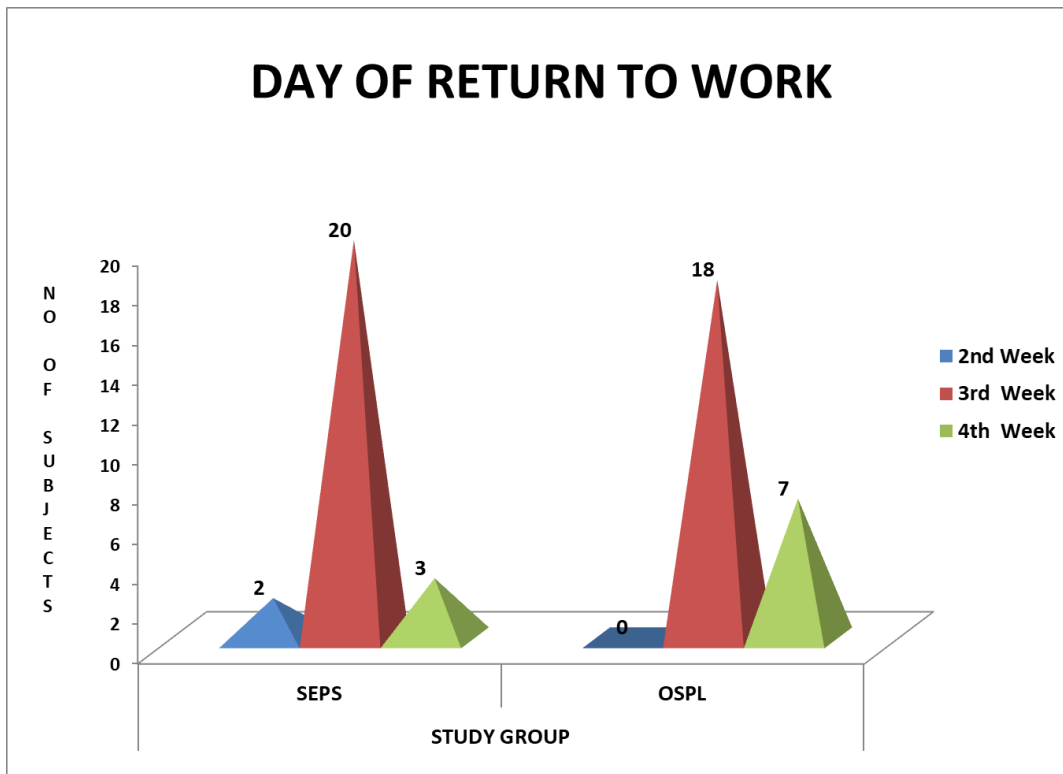
DAY OF DISCHARGE

| POST OP DAY | STUDY GROUP | | | |
|-----------------------------|--------------------|------------|-------------|------------|
| | SEPS | | OSPL | |
| | N | % | N | % |
| 2 nd Post OP Day | 2 | 8.00 | 0 | 0 |
| 3 rd Post OP Day | 15 | 60.00 | 1 | 4.00 |
| 4 th Post OP Day | 8 | 32.00 | 11 | 44.00 |
| 5 th Post OP Day | 0 | 0 | 12 | 48.00 |
| 6 th Post OP Day | 0 | 0 | 1 | 4.00 |
| TOTAL | 25 | 100 | 25 | 100 |
| Chi-square | 27.72 | | | |
| P-Value | 0.001 | | | |
| Significant | Significant | | | |

By conventional criteria the association between the surgical treatment groups and the day of discharge is considered to be statistically significant since p-value is < 0.05 .

It is statistically significant with a p value of 0.001 according to chi-square test.

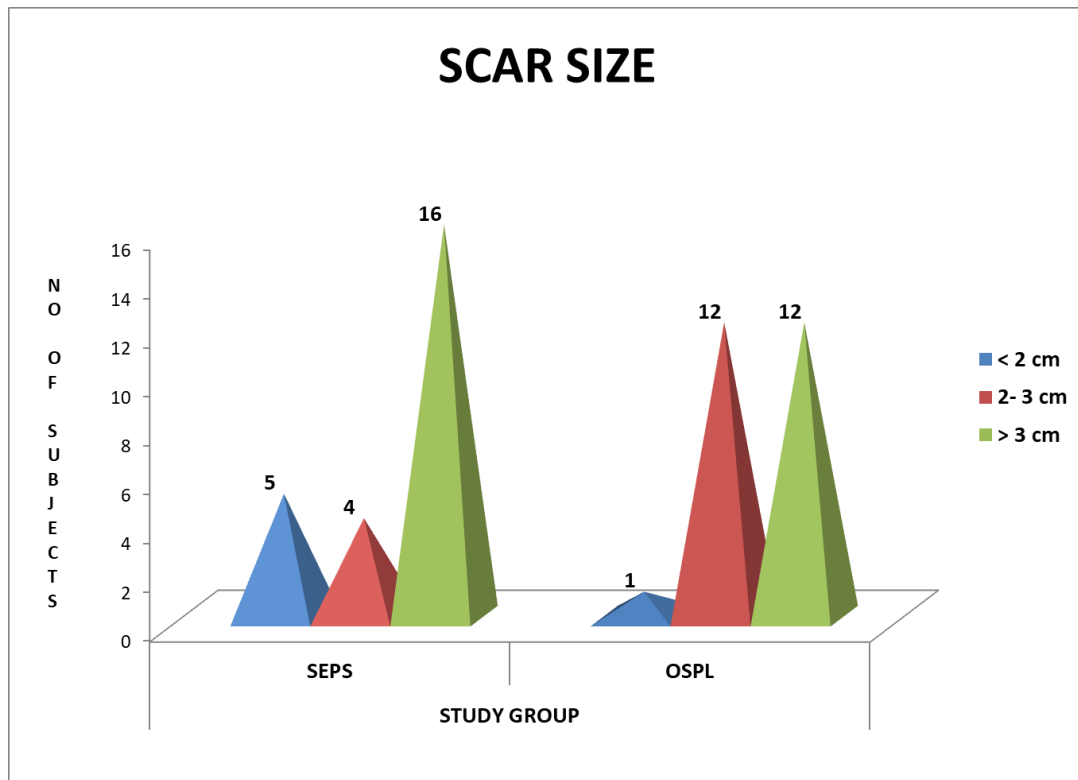
This difference is true and significant and has not occurred by chance.



DAY OF RETURN TO WORK

| Day of Return to Work | STUDY GROUP | | | |
|-----------------------|-----------------|------------|-----------|------------|
| | SEPS | | OSPL | |
| | N | % | N | % |
| 2 nd Week | 2 | 8.00 | 0 | 0 |
| 3 rd Week | 20 | 80.00 | 18 | 72.00 |
| 4 th Week | 3 | 12.00 | 7 | 28.00 |
| TOTAL | 25 | 100 | 25 | 100 |
| Chi-square | 3.71 | | | |
| P-Value | 0.16 | | | |
| Significant | Not Significant | | | |

By conventional criteria the association between the surgical treatment groups and the day of return to work is considered to be not statistically significant since p-value is > 0.05 .



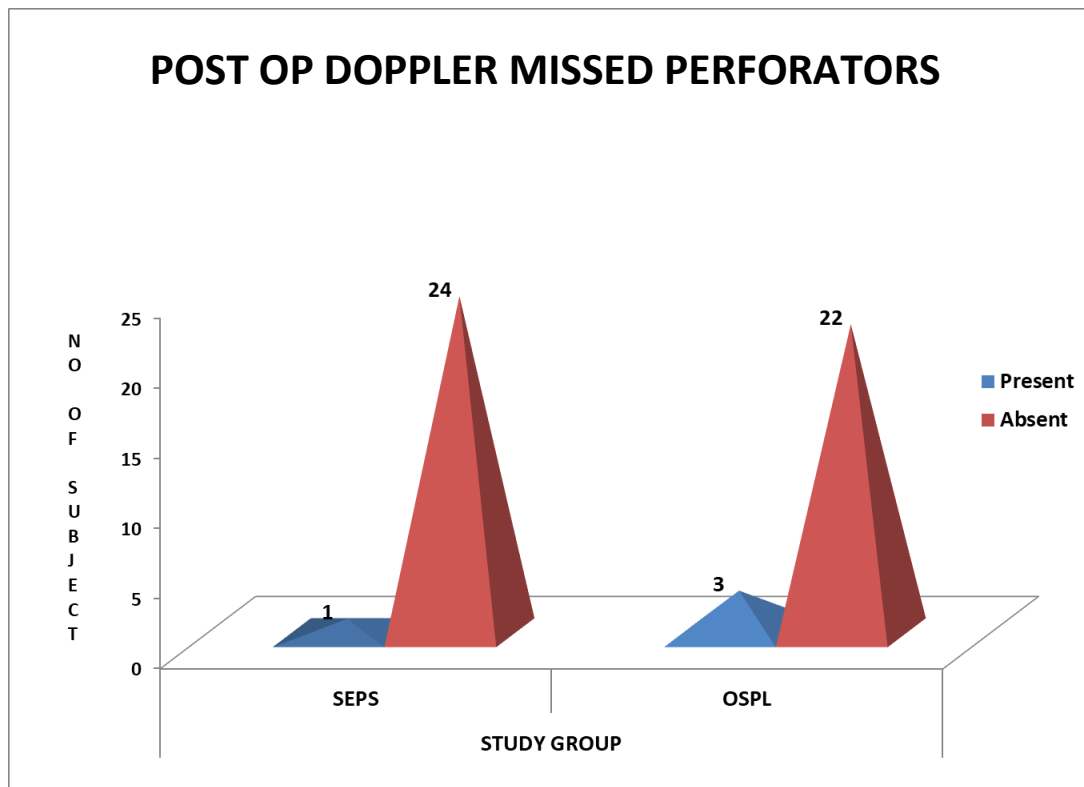
SCAR SIZE

| SCAR SIZE (Cm) | STUDY GROUP | | | |
|--------------------|-------------|------------|-----------|------------|
| | SEPS | | OSPL | |
| | N | % | N | % |
| < 2 cm | 5 | 20.00 | 1 | 4.00 |
| 2- 3 cm | 4 | 16.00 | 12 | 48.00 |
| > 3 cm | 16 | 64.00 | 12 | 48.00 |
| TOTAL | 25 | 100 | 25 | 100 |
| Chi-square | 7.24 | | | |
| P-Value | 0.03 | | | |
| Significant | Significant | | | |

By conventional criteria the association between the surgical treatment groups and the day of discharge is considered to be statistically significant since p-value is < 0.05 .

It is statistically significant with a p value of 0.03 according to chi-square test.

This difference is true and significant and has not occurred by chance.



POST OP DOPPLER MISSED PERFORATORS

| | STUDY GROUP | | | |
|--------------------|--------------------|------------|-------------|------------|
| | SEPS | | OSPL | |
| | N | % | N | % |
| Present | 1 | 4.00 | 3 | 12.00 |
| Absent | 24 | 96.00 | 22 | 88.00 |
| TOTAL | 25 | 100 | 25 | 100 |
| Chi-square | 0.09 | | | |
| P-Value | 0.30 | | | |
| Significant | Not Significant | | | |

By conventional criteria the association between the surgical treatment groups and the day of return to work is considered to be not statistically significant since p-value is 0.30.

DISCUSSION

This study has been done to assess the feasibility and safety of Subfacial Endoscopic Perforator Surgery in the management of Great Saphenous Varicose Veins and to compare it with Open Subfacial Perforator Ligation over a period of 18 months by enrolling a total of 50 patients , and allocating 25 patients each group for intervention on alternate allocation method and the paramaters [operative time, number of perforators ligated/clipped, post op pain at day 1, post op pain at day 3, post op pain at day 7, day of discharge, day of return to work, scar size, post op venous Doppler] being observed and put on record in the preformed protocol and analysed , indicated that SEPS was associated with lesser intra operative time and the number of perforators clipped was significantly higher as compared to OSPL

Significant difference were found in terms of post operative pain at day 1 and day 3 and day 7 that is patients underwent SEPS were found to have lesser post operative pain as compared to OSPL group. There is also significant difference were found in day of discharge and scar size.

There is no significant difference in day of return to work and missed perforators assessed by venous Doppler at the end of 3 months.

Age and Gender

In the study group less than 30 years who underwent SEPS were 2 in number [8 percentage], whereas in OSPL it was 5 in number [20 percentage].

Age group between 31- 40 who underwent SEPS were 8 in number [32 percentage] in OSPL it was also 8 in number .age group between 41 – 50 years who underwent SEPS were 7 in number[28 percentage] in OSPL it was 4 in number[16 percentage].age group 51-60 years who underwent SEPS were 5 in number [20 percentage]. In OSPL it was 7 in number [28 percentage]. Age group more than 61 years who underwent SEPS were 3 in number[12 percentage] in OSPL it was 1[4 percentage].

Among the patients who underwent SEPS 84 percentage were males and 16 percentage were females, whereas who underwent OSPL 84 percentage were males and 16 percentage were females.

Since age and gender are not statistically significant ,it means that there is no difference between the groups. Also in simple terms the groups contain subjects with the same demographic characteristics.

With this data it conveys that SEPS is comparable with OSPL.

Intra operative time

On analyzing the data ,the time taken to complete the SEPS procedure less than 50 minutes in 11 patients[44 percentage], for another 11 patients procedure got completed in less than 60 minutes[44 percentage] , only for 3 patients operative time exceeds 60 minutes[12 percentage] whereas in OSPL group for 16 patients the operative time was more than 60 minutes[64 percentage] and for another 7 patients the operative time was between 50 – 60 minutes [28 percentage], only 3 for 3 patients the operative time was less than 50 minutes[12 percentage].

Since p value is <0.05 the difference between the groups were statistically significant.

In simple words OSPL technique requires more time than SEPS for perforator ligation

WiesławPesta, 1 Waldemar Kurpiewski ,1 Marek Kowalczyk ,1 Rafał Szynekarczuk, 1 Magdalena Łuba, 1 Anna Żurada, 2and Radosław Grabysa³ reported that intra operative time is less in seps due to proper visualisation of perforators after co2 insufflation.

Number of perforators ligated /clipped

On analyzing the study it is found to be that in SEPS group the average number of perforators clipped was 3.88 .In 5 patients 5 and more perforators were clipped by using endoclip [20 percentage] , in 13 patients 4 perforators were clipped [52 percentage] and in 7 patients 3 and less perforators were endoclipped [28 percentage].

Whereas in OSPL group for 12 patients 3 perforators were ligated Subcutaneously [48 percentage] and for 5 patients only 2 perforators were ligated [20 percentage] ,only for 8 patients 4 perforators were ligated.

Since the p value is <0.05 the difference between the groups for number of perforator ligation is statistically significant.

A Comparative study done by S Shivakumar, Gopi Tupkar, N Ravishankar and Divakar reported that the Total number of perforators ligated in SEPS group were more compared to open group.

Similarly a study conducted by M.G. Vashist, Vijay Malik, and Nitin Singhal reported that the number of perforator ligated in SEPS was more as compared to the open subfascial ligation group.

Possibly some perforators may be missed on Doppler localization and ligation, which may be a cause of future recurrence in varicose veins in the open ligation group.

POST OPERATIVE PAIN AT DAY 1

Pain assessed by visual analogue score depicts that in SEPS group 10 patients were experienced score 6[56 percentage] and 14 patients were experienced vas score 5[20percentage] and 1 patient was experienced vas 7[4 percentage] In OSPL group 10 patients were experienced pain of vas score 7[40 percentage],3 patients were experienced vas 5[12 percentage] and 12 patients were experienced vas score 6[48percentage] since the p value is < 0.05 the pain difference between both the groups is statistically significant.

In simple words the patients who underwent SEPS experienced less pain as compared to the OSPL group..

POST OPERATIVE PAIN AT DAY 3

Pain assessed by vas shows that in SEPS group 13 patients were experienced vas 3 [52 percentage], 9 patients were experienced vas 4[36 percentage] and 3 patients were experienced vas 2[12 percentage] whereas in OSPL group 20 patients were experienced vas 4[80 percentage] and 2 patients were experienced vas 2[8 percentage] and 2 patients were experienced vas 3[8 percentage] and 1 patient experienced vas 2[4 percentage].

Since the p value is < 0.05 the pain difference between both the groups is statistically significant.

In simple words the patients who underwent SEPS experienced less pain as compared to the OSPL group at post op day 3.

POST OP PAIN AT DAY 7

Pain assessed by vas shows that in SEPS group 18 patients were experienced vas 1 [72 percentage], 7 patients were experienced vas 2[28 percentage] whereas in OSPL group 15 patients were experienced vas 2[60 percentage] and 1 patient was experienced vas 3[4 percentage] and patients were experienced vas 1[36 percentage].

Since the p value is < 0.05 the pain difference between both the groups is statistically significant.

In simple words the patients who underwent SEPS experienced less pain as compared to the OSPL group at post op day 7.

DAY OF DISCHARGE

All the patients were discharged post operatively once they became symptomatically free .on analysis the data indicates that patients underwent OSPL group 10 patients were discharged at 4th post op day [40 percentage],12 patients were discharged at 5th post op day [48 percentage],2 patients were discharged at 3rd post op day[8 percentage] and 1 patient got discharged at 6th post op day4[percentage].

Whereas in SEPS group 14 patients got discharged at post op day 3[56 percentage], and 8 patients got discharged at 4th post op day[32 percentage] and 3 patients got discharged at 2nd post op day[12 percentage].

This data is statistically significant since p value is less than 0.05 In simple words patients underwent SEPS got discharged earlier than OSPL group.

Similarly study conducted by E.G.J.M. Pierik, et al. conducted randomized trail. On Endoscopic versus open subfascial division of incompetent perforators “Where **patients in the OSPL group needed longer hospital stays** (mean-7 days; Range- 3 to 39 days) ” than patients in the SEPS group (mean, 4 days; range, 2 to 6 days; p = 0.001).

Similarly a study conducted by Mark J. Kulbaski, MD,¹ Felmont F. Eaves, III, MD,² John C. Ofenloch, MD,¹ and Alan B Lumsden, reported that SEPS is a safe, minimally invasive procedure which should become an important Part of the surgical armamentarium in treating patients with varicose veins SEPS group patients got discharged earlier as compared to OSPL group.

DAY OF RETURN TO WORK

Post operatively patient returns to work calculated depicts that 21 patients [84 percentage] underwent SEPS return to their work on 3rd week. And 2 patients return to their work on 2nd week [8 percentage],and another 2 patients return to their work on 4th week [8 percentage].

Whereas in OSPL group 18 patients went to their duty on 3rd week [72 percentage], and another 7 patients went to their work on 4th week [28 percentage].

Since the p value is .0.05 it is statistically not significant.

Therefore the two procedures SEPS and OSPL doesn't differ with respect to patients return to work post op.

SCAR SIZE

In 10 patients who underwent OSPL the scar size at 3 months is $>3\text{cm}$ [40 percentage], remaining 15 patients scar size is less than 3cm [60 percentage].

Whereas patients underwent SEPS only 2 cases the scar size is $>3\text{cm}$ at 3 months [8 percentage], remaining 23 patients [92 percentage] scar size is $< 3\text{cm}$.

Since the p value is < 0.05 the difference between the groups regarding scar size at three months is statistically significant.

POST OP VENOUS DOPPLER AT 3RD MONTH

At the end of 3 months in both the groups post op Doppler was done to find out the missed perforators .it is found to be that 3 cases who undergone OSPL were found to have missed perforators [12 percentage].

And similarly 1 patient underwent SEPS was found to have missed perforator [4 percentage].

Since p value is <0.05 it is statistically not significant.

SUMMARY

In this Randomized controlled study **“A COMPARATIVE STUDY OF SUBFASCIAL ENDOSCOPIC PERFORATOR SURGERY [SEPS] VERSUS OPEN PERFORATOR LIGATION [OSPL] IN THE TREATMENT OF GREAT SAPHENOUS VARICOSE** which was conducted at ESIC MEDICAL COLLEGE & PGIMSR, K.K.NAGAR, CHENNAI - 78 for 1 and half years ,total 50 patients diagnosed as Great saphenous varicose veins with perforator incompetence were included in the study. After taking informed consent patients were assigned to open subfascial perforator ligation or subfascial endoscopic perforator ligation in a 1: 1 ratio by alternate allocation method even numbered patients were treated by open subfascial perforator ligation and odd numbered patients were treated by subfascial endoscopic perforator surgery.

All patients were given standard care which consists of intravenous fluids and antibiotics . In the present study mean age in subfascial endoscopic perforator surgery was 45.08 and open subfascial perforator surgery was 42.36.

By conventional criteria the association between the surgical treatment groups (i.e.SEPS and OSPL) and the age is considered to be not statistically significant since p-value is 0.39 They were observed for

- Operating time.
- Number of perforators ligated.
- Pain in post operative period.
- Length of hospital stay.
- Return to work.
- Number of residual perforators.
- Cosmesis.

And put on record in a preformed protocol and analysed.

The findings were that OSPL technique requires more time than SEPS for perforator ligation ,the number of perforators clipped in SEPS was more as compared to OSPL ,Post op pain was low in SEPS as compared to OSPL,day of discharge in SEPS group was low as compared to OSPL, but there is no significant difference in day of return to work and missed perforators numbers as assessed by post op venous Doppler. SEPS is cosmetically better as compared to OSPL.

CONCLUSION

Present study concludes that SEPS is feasible and cost effective technique.

It is comparable with OSPL in terms of pre operative diagnosis, intra operative time, number of perforators clipped/ligated, post operative pain, day of discharge, day of return to work ,scar size and post op missed perforators.

The operative time in SEPS technique is significantly low as compared to OSPL.

The number of perforators clipped in SEPS is significantly higher as compared to number of perforators ligated in OSPL.

Post operative pain at day 1 ,day 3,day 7 is significantly lower in SEPS as compared to OSPL.

Day of return to work and number of missed perforators assessed post operatively by Doppler study shows that there is no significant difference.

SEPS has cosmetic benefits over OSPL, both statistically and clinically.

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