This Scholarly Work is Dedicated to:

Surgeon Rear Admiral NG Atulugama VSV, USP

MBBS, MD

Director General of Health Services (SLN)

Consultant Radiologist

(September 25, 1950- June 23,2012)

Surgeon Rear Admiral NG Atulugama Memorial Oration

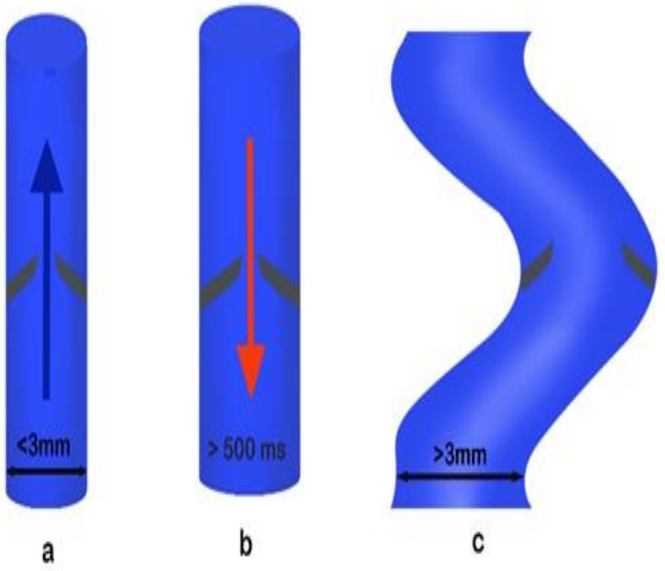
Endo-Venous Laser Therapy and Foam Sclerotherapy Based Institutional Varicose Vein Programme in a Military Hospital; A Paradigm Shift

Surgeon Captain
Keerthi Rajapaksha USP
MBBS, MRCS, MD, FMAS,FCSSL

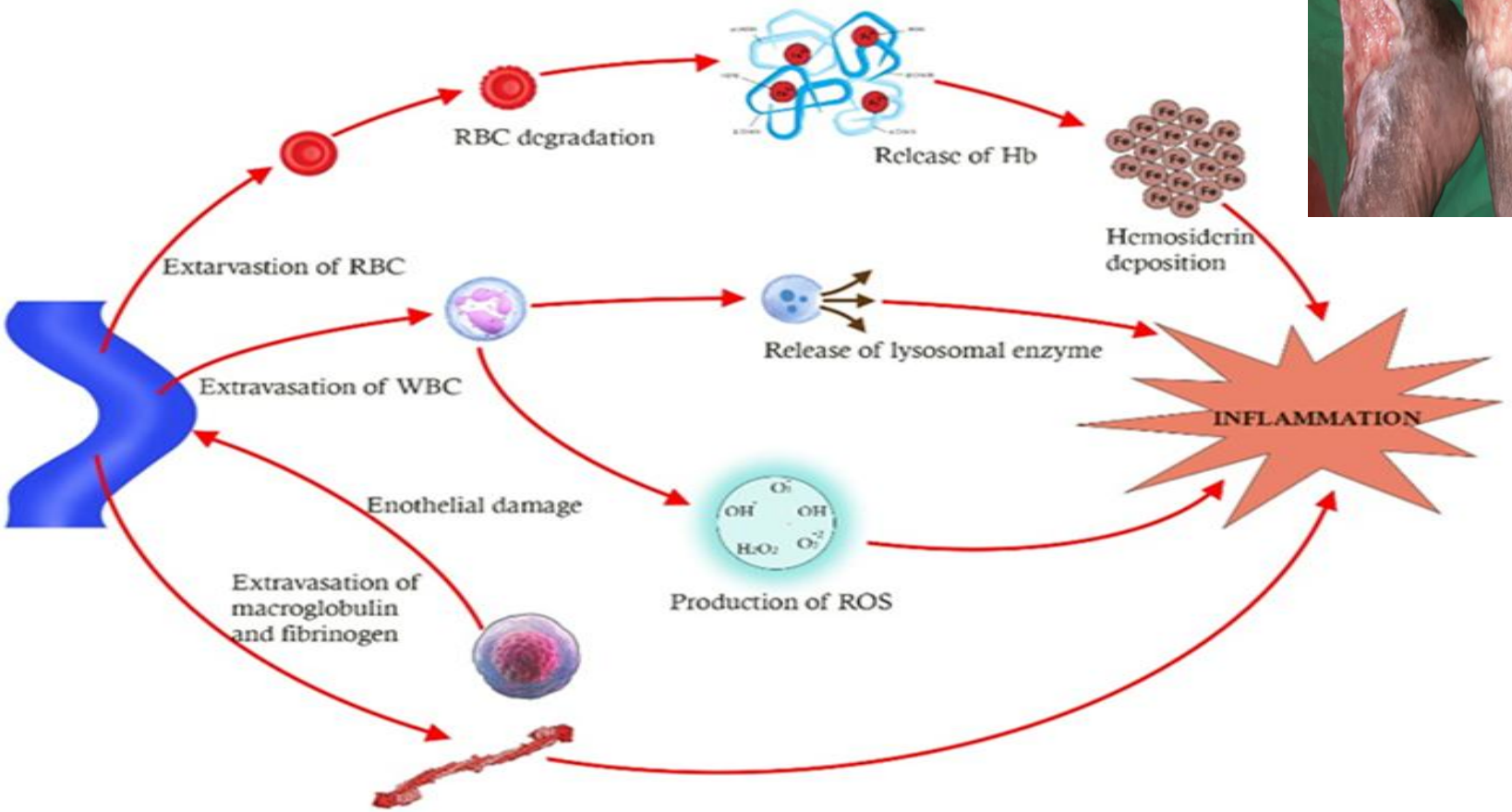
Overview

- Pathogenesis
- History of Varicose vein treatment
- Disease Specific Treatment Programmes
- Institutional Varicose Vein Programme
- Return to Work After Varicose Vein Surgery Among Military Persons
- Venous Leg Ulcers
- Future Perspectives

Transition from quadripedal stance to bipedal stance→ Varicose Veins



Cascade of reactions secondary to varicose vein leads to venous leg ulcers



Russian Military Medical Academy Reports

HYGIENIC DIAGNOSTICS OF RISK FACTORS FOR VARICOSE DISEASE IN MILITARY SERVICE

P. E Alekseev, D. A Belousov

Author information

History

Abstract

Varicose veins of the lower extremities is one of the most common pathologies of the cardiovascular system, affecting 30% of the adult population. Military personnel are at risk, because during the performance of military duties they are for a long time in a standing position or in a sitting position, which are factors in the development of varicose veins. One of the measures of primary prevention can be physical therapy and wearing preventive compression hosiery. In athletes with signs of chronic venous insufficiency, sports compression hosiery has proven itself in reducing the symptoms of chronic venous insufficiency, especially in combination with physiotherapy. The issue of primary prevention of varicose veins among military personnel has not been widely studied, therefore, there is a need for field studies of effective preventive measures.

The American Journal of Surgery

Volume 63, Issue 1, January 1944, Pages 28-33

THE MANAGEMENT OF VARICOSE VEINS IN ARMY PERSONNEL*

MAJOR A. S. WHITE, M.C., CAPTAIN J. J. HABERER, M.C.
AND
MAJOR SAM GENDEL, M.C.
FORT ORD, CALIFORNIA

TREATMENT of varicose veins in the Army presents problems not encountered in civil practice. The first problem is the more difficult differential diagnosis. Pain, aching, and tiredness in the legs following marching is most common among soldiers whether varicose veins are present or not. It is natural for soldiers, especially during the preliminary phases of training, to magnify these symptoms in order to avoid the more arduous work. In addition, a certain by no means small group of psychoneurotic patients combine these symptoms and small varicosities that are present with their many psychoneurotic complaints to produce a confusing clinical picture which will not respond to varicose vein therapy. Second, there is need for a treatment which will be rapid as well as effective. Cure must be permanent if possible. Palliative measures which involve repeated hospitalization or numerous outpatient visits interfere with military training and must be avoided. Patients must be returned to duty able to do full duty.

An effective plan of diagnosis and treatment must provide (1) criteria for selection of cases which require treatment, (2) simple diagnostic maneuvers which can be carried out with the minimum of equipment, and (3) an adequate surgical technic which will allow return to full duty within a short period.

Operations on soldiers, who are to be reclassified for other conditions, are useless. There are four principal groups of patients that must be excluded in the selection of cases. These are: (1) the psychoneurotic, (2) those with associated orthopedic conditions, (3) those with associated peripheral vascular disease, and (4) those, who for want of a better term, are classified as myalgic asthenia.

Patients with Psychoneurosis. The psychoneurotic patient is a daily problem in a varicose vein clinic. His veins may be mild or severe but his symptoms are manifold. Complaints referable to the legs are many and bitter. But symptoms are by no means confined to the legs. They can and do complain of everything, but most often present headache and dizziness, transient pains of the back, shoulders and neck, palpitation and breathlessness. These patients must definitely not be treated for their varicosities. They should be reclassified to limited duty or discharged from the service for their psychoneurosis. In a busy clinic it is not always easy to segregate these patients. In addition to careful questioning about complaints other than the legs, it is useful to ask two questions: first, how much schooling has the patient had, and second, has the patient ever had a nervous breakdown. Less than fifth grade schooling or positive answers to the second question should prompt a neuropsychiatric

Br Med J. 1942 Oct 17; 2(4267): 453–454.
doi: 10.1136/bmj.2.4267.453

TREATMENT OF VARICOSE VEINS IN SOLDIERS

BY
ERIC L. FARQUHARSON, M.D., F.R.C.S.Ed.
Major, R.A.M.C.

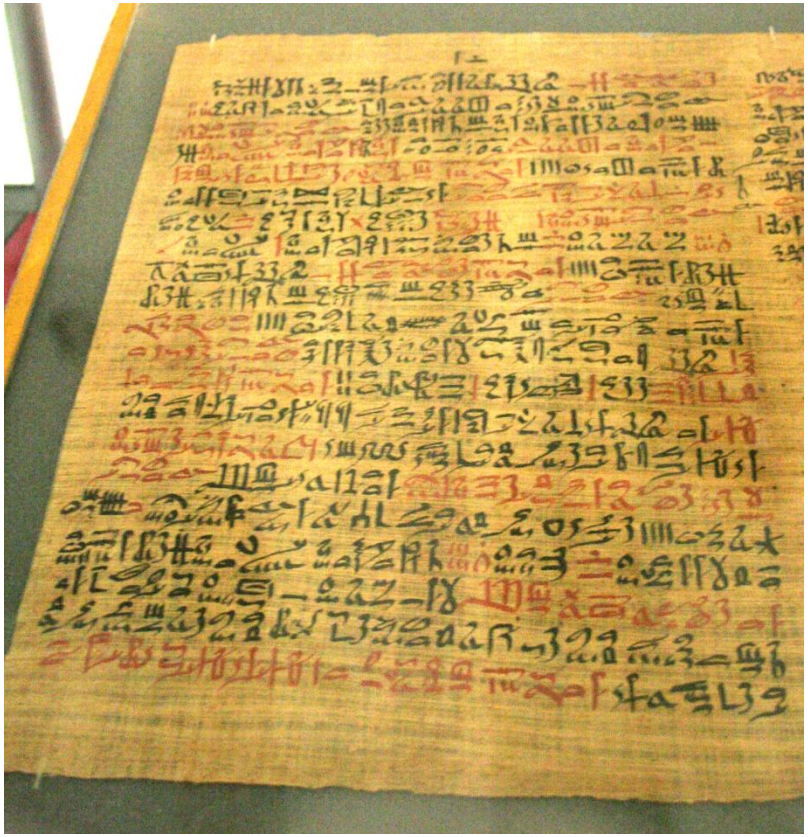
The treatment of varicose veins by injections alone presents many difficulties when it is applied to military patients. In the first place, it is common for the affected veins to show the condition of *ectasia* rather than true varicosity, and veins of this type do not respond at all well to injection methods. Secondly, regular or systematic treatment is often quite impossible, owing to the continual movement of troops, re-postings, etc. A large proportion of soldiers reporting sick with varicose veins have had a few haphazard injections at irregular intervals; these may have had no effect whatsoever, or the benefit conferred was only temporary—a fact that has not escaped the soldier's notice and encourages him to distrust or to refuse further injection treatment.

Any form of operative treatment recommended must be considered in the light of its effect on the man's efficiency as a soldier, and precedence must be given to the method which is most likely to make him fit for full duty within the shortest possible time. Extensive radical excisions (Payne, 1941) have no place in the treatment of military patients. Apart from the long period of convalescence required, the scars which remain often form a basis for continued complaints.

The Trendelenburg operation, when it is not combined with injection, is frequently most disappointing. There may be little or no diminution in the size of the varices, or, alternatively, any improvement noted may be only temporary, as the affected veins dilate again, owing to the opening up of collateral anastomoses with the deeper channels. When combined with injection, the Trendelenburg operation has many advocates, and a 90% cure has been claimed (Oldham, 1941) for this method of treatment. Many workers, however, including the writer, have not been so successful in the results obtained, in that the thrombosis is apt to be incomplete and patchy in distribution. Furthermore, a formal Trendelenburg operation is not to be undertaken lightly, and there is no question that military patients must be admitted to hospital.

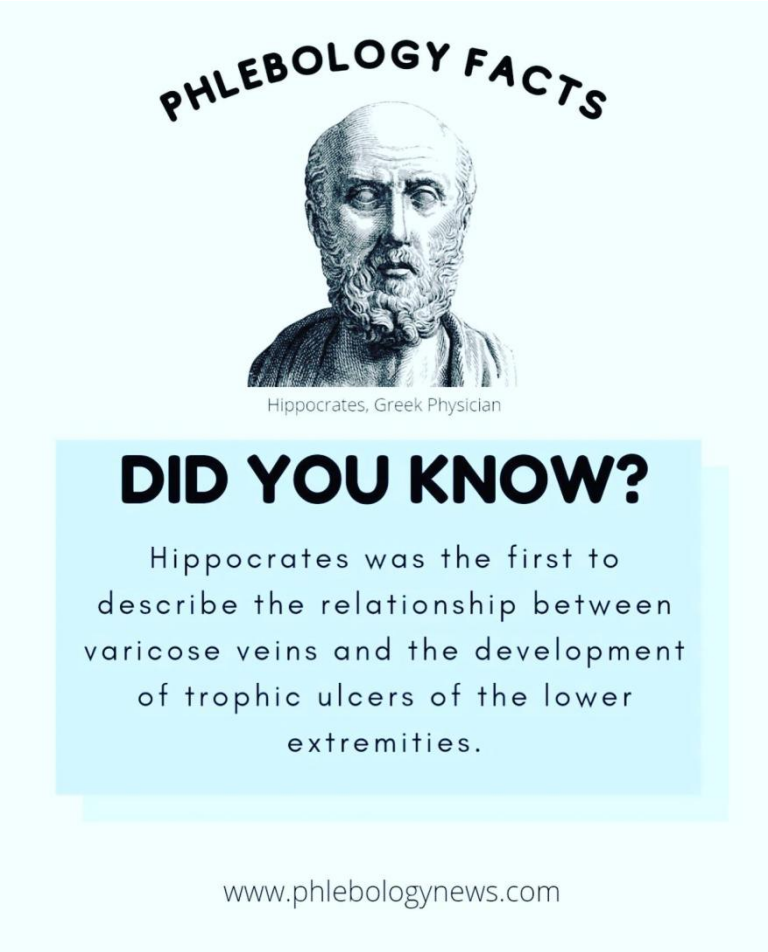
Historical perspective

Ebers papyrus- 1500BC



A fake leg to Amyons, 4th century

Historical perspective



Historical perspective

Paulus Ægineta (600)


ΠΑΥΛΟΥ ΑΙΓΙΝΗΤΟΥ

PAVLI AEGINETAE

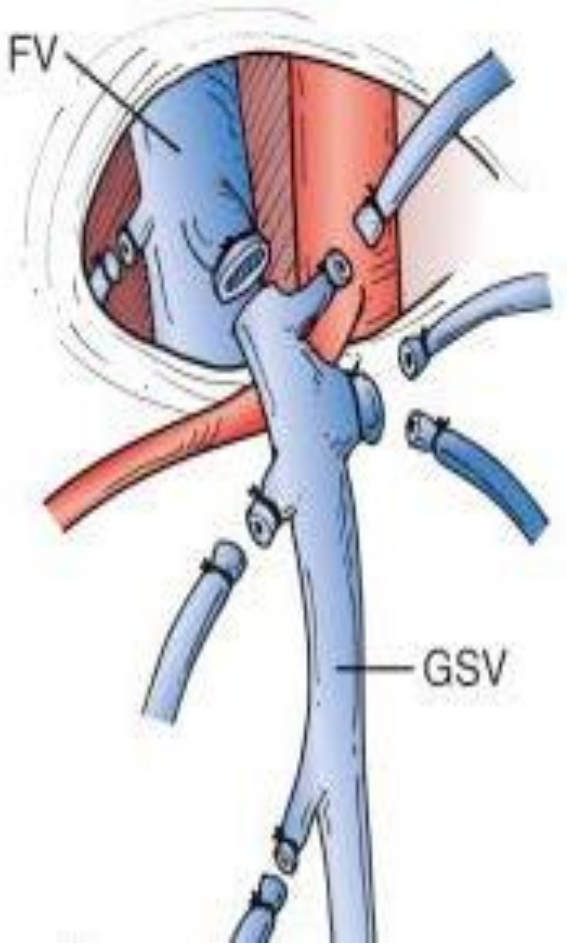
Ne quis alius impune, aut Venetiis, aut vsquam locorum hos Pauli Aegi-
netæ libros imprimat, & Clementis VII. Pont. Max.
& Senatus Veneti decreto cautum est.

Historical perspective

Leonardo da Vinci (1485)

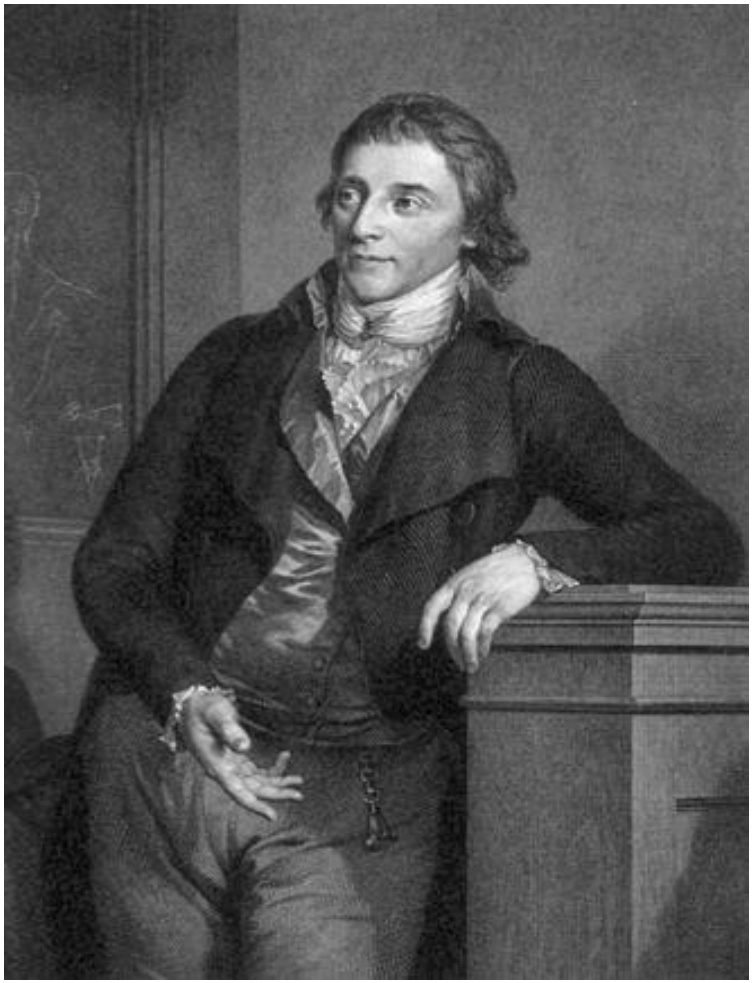
Historical perspective

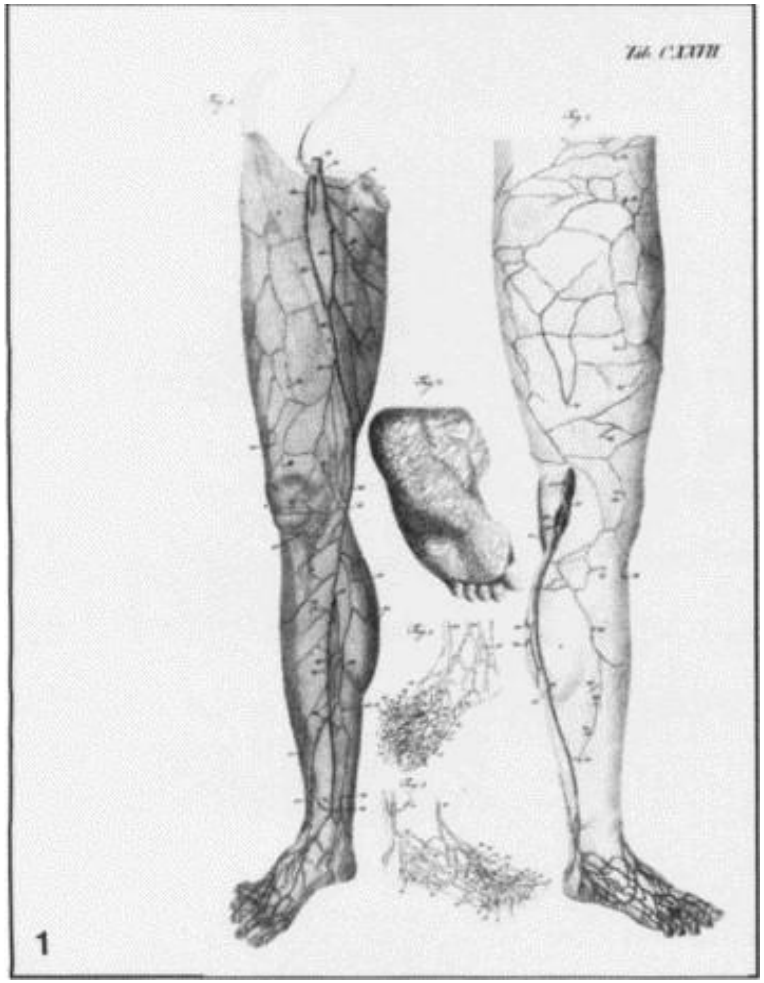
Ambroise Paré (1510–1590)



Historical perspective

Von Loder (1753-1832)



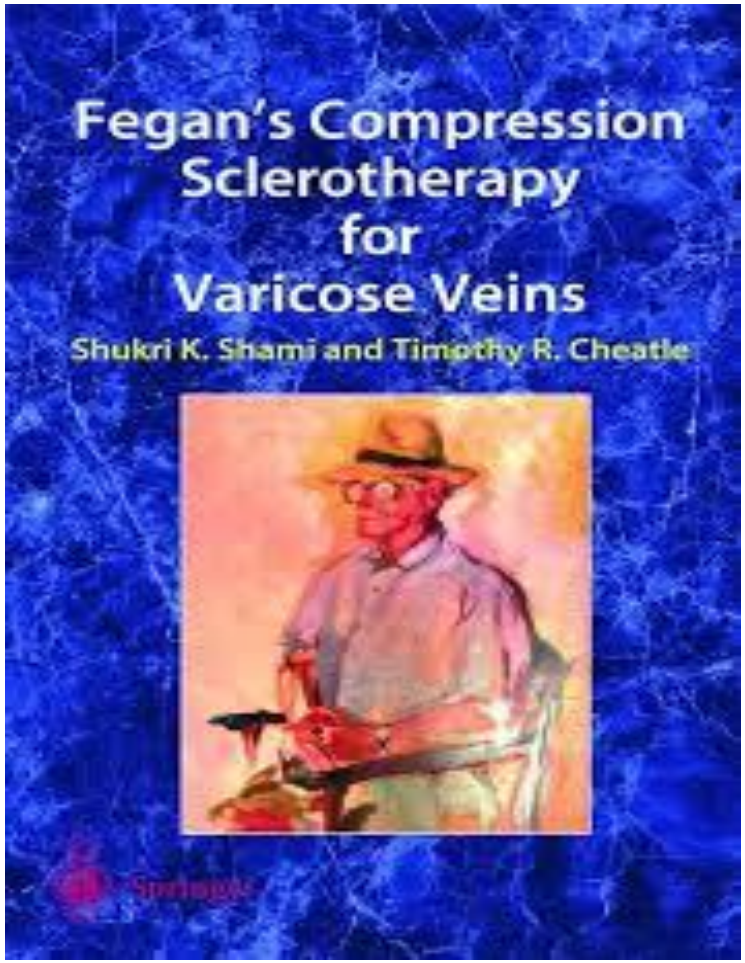


Historical perspective

- **Otto Wilhelm Madelung** (1846-1926)-Complete extirpation of the GSV through an incision
- **Greg Clemens Perthese** (1869-1927)-Invaginating stripping Technique
- **Charles Mayo** (1905)-Stripper device with a ring
- **Babcock** (1907)-Stripping device with olive
- **Robert Ritchie Linton** (1929)- Sub facial ligation of perforating veins

Historical perspective

George Fegan (1963)



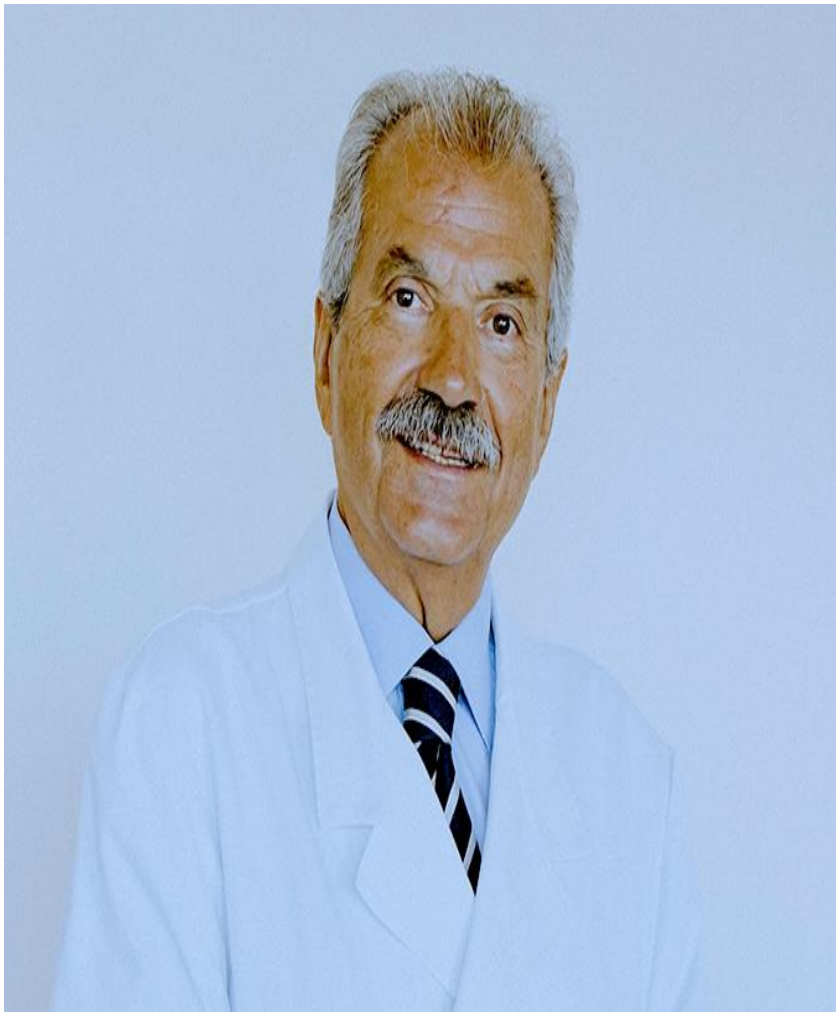
Historical perspective

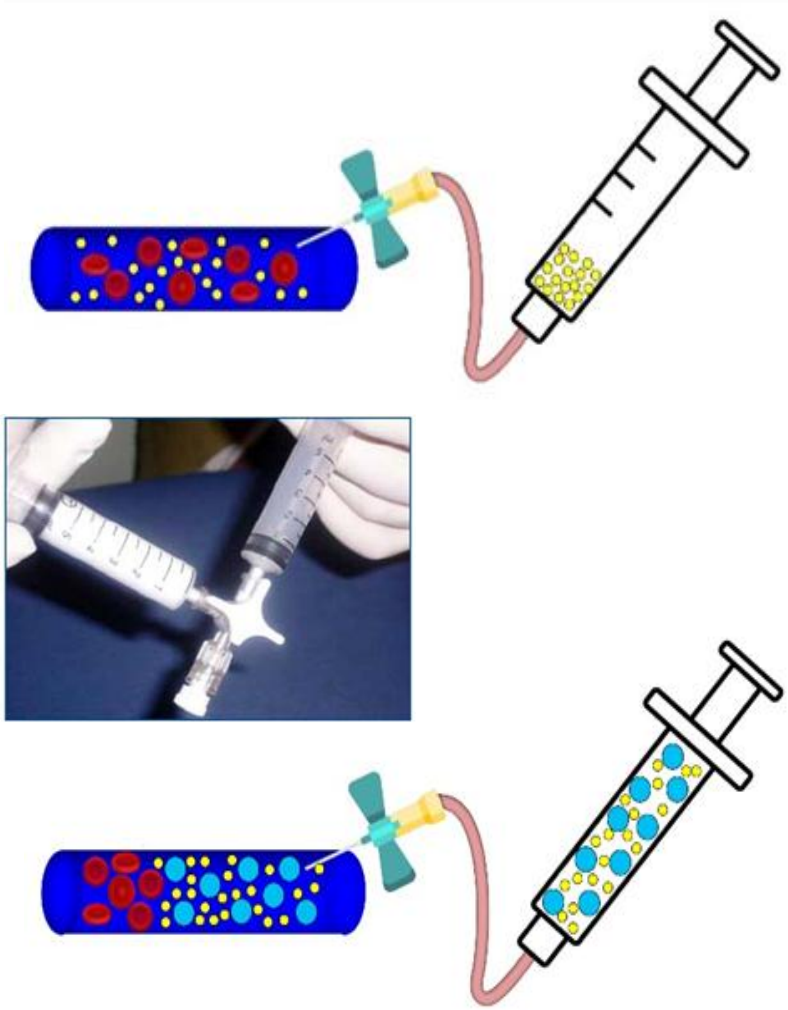
Robert Muller (1967)- Rediscovery of phlebectomy

Shigeo Satomura(1960)- duplex imaging of heart and vessels

Historical perspective

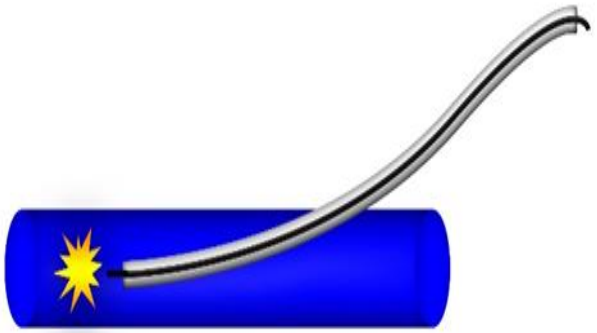
Tessari (2000)- Foam Sclerotherapy

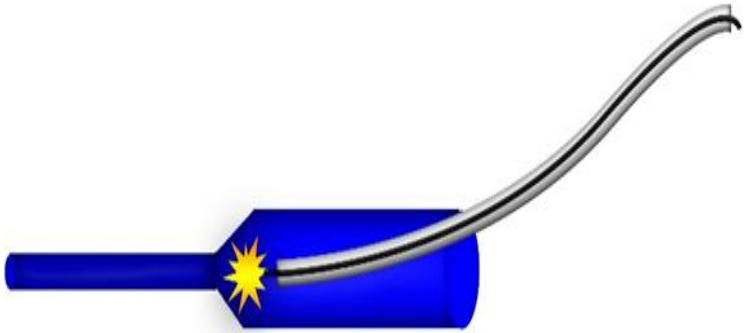




Historical perspective

Navarro, Min, Bone (2001)- Use of diode laser to treat varicose veins





Institutional Level Disease Specific Treatment Programmes

International Journal of Abdominal Wall and Hernia Surgery

Impact of institutional hernia programme on guideline conformity of surgical approach and mode of anesthesia for inguinal hernia repair and analysis of the outcomes

Keerthi Rajapaksha[1,2], LJCM Silva[1], Anuruddha Herath[1], MJD Anandappa[1], TMIG Bandara[1]

Abstract:

AIM: The objective of this study is to elucidate the guideline conformity of surgical approach and mode of anesthesia for inguinal hernia (IH) treatment together with analysis of the outcomes on the implementation of "guideline-based treatment for IH" as a part of institutional hernia programme (IHP) in a single surgical unit.

METHODS: This is a retrospective analysis of health records of the male patients who underwent surgery for IH at a single surgical center, during the period May 1, 2015–May 1, 2016, where the surgeons adhered to "guideline-based treatment for IH." Health records of the patients who underwent surgery for IH from May 1, 2014, to April 30, 2015, too were collected for comparison. Data related to demographics, surgical approach, mode of anesthesia, and surgical complication were analyzed.

RESULTS: Sixty-two male patients with a mean age of 33.5 (range: 22–54) years and 99 male patients with a mean age of 32.84 (range: 22–70) years have undergone IH repair before the IHP and during the IHP, respectively. The overall use of local anesthesia (LA) for unilateral IH had increased from 3.5% ($n = 2$) to 83.12% ($n = 65$) ($P \leq 0.0001$) during IHP. The laparoscopic approach was used in 83.34% of patients with bilateral IH during IHP ($P = 0.0007$). All ($n = 3$) the recurrences following open repair were attempted to treat laparoscopically during the IHP. Laparoscopic approach was not utilized to treat IH before the IHP. Overall recurrence rate increased to 4.04 ($n = 4$) during IHP from 0% ($P = 0.299$). Overall complication rate increased from 3.22% ($n = 2$) to 8.08% ($n = 8$) during IHP ($P = 0.319$).

CONCLUSION: Surgical approach and mode of anesthesia for IH treatment showed high conformity with the guidelines during the IHP. The increased recurrence and complication rates were statistically insignificant.

Analysis of guideline conformity, surgical techniques, devices, consumables, and outcomes of the first 100 cases of laparoscopic inguinal hernia repair in adults during institutional hernia programme in a single surgical center

Keerthi Rajapaksha[1,2]

Abstract:

OBJECTIVE: The aim of this study is to elucidate the guideline conformity and to analyze the surgical techniques, outcomes, and the use of devices and consumables for the first 100 cases of laparoscopic inguinal hernia (IH) repair performed during an institutional hernia programme (IHP) in a single surgical center.

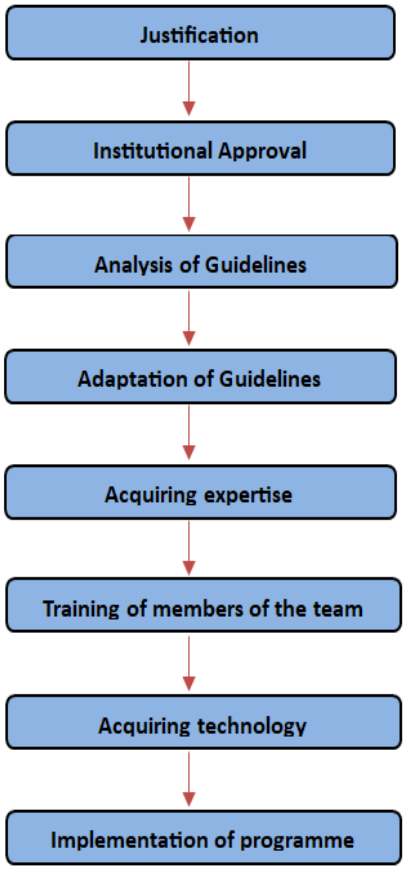
METHODS: This is a retrospective review of the first consecutive 100 cases of laparoscopic IH repair performed during IHP. Patient's demographic, operation techniques, the use of devices and consumables, and outcomes are reviewed.

RESULTS: A total of 185 IHs were laparoscopically repaired in 100 male patients with a mean age of 37.86 (range: 24–68) years from May 2015 to April 2019. Common indications for laparoscopic IH repair are bilateral IH ($n = 85$) and recurrences after the previous open repair ($n = 11$). A total extraperitoneal repair (TEP) was performed in 96 patients, and transabdominal preperitoneal repair was performed in four patients. The mean operation time was 35.97 (range: 10–90 min). Electrosurgical energy, surgical suction, and laparoscopic scissors were used in seven, four, and six patients, respectively. All the surgeries performed with low-cost standard polypropylene meshes. Surgical takers used in seven patients to anchor the mesh ($n = 6$) and close the peritoneal defect ($n = 1$). Conversion to open procedure was required in a single patient. The single hematoma was the only complication encountered. Seven patients developed unilateral recurrences after TEP repair for bilateral IH during the mean follow-up period of 2 years and 3 months. All the patients were discharged within 23 h of the surgery.

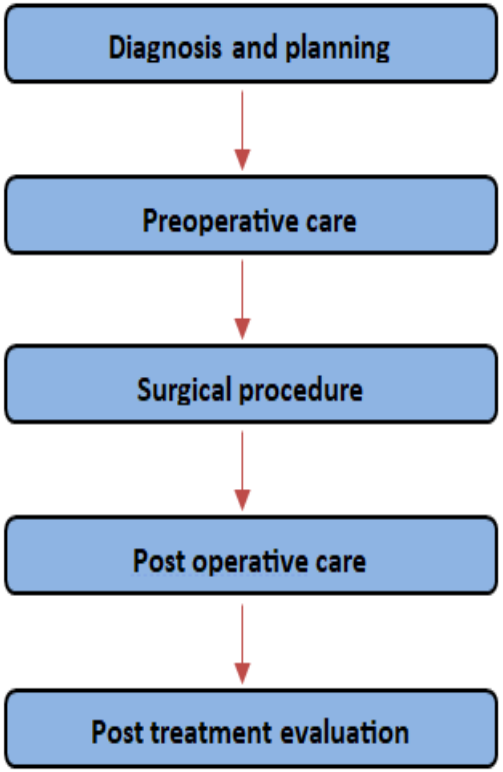
CONCLUSIONS: This study shows a higher level of guideline conformity of the laparoscopic IH repair with acceptable level of recurrence while using a minimum number of costly devices and consumables.

Institutional Level Disease Specific Treatment Programmes (DSTP)

Steps of establishing a DSTP



Steps involving care of patients in a DSTP



Locally made vein hook Improved the aesthetic outcomes of stab avulsions

VASCULAR INVESTIGATION AND THERAPY

Opinion

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DOI: 10.4103/2589-9686.379845

Step-by-step approach to setup a guideline-based varicose vein program in a publicly funded hospital in a developing country: A personal experience

Keerthi Rajapaksha[1,2]

Abstract:

Offering guideline-based treatment in the era of endovenous thermal ablation of varicose veins (VVs) and image-guided sclerotherapy is a challenge in developing countries due to the financial constraints and lack of expertise. Training in ultrasonography, hand-eye coordination, and technique of endothermal ablation are required in addition to cost reduction measures to offer endovenous thermal ablation of VV in publicly funded hospitals in developing countries. The present article describes step-by-step approach of a general surgeon to acquire skills in duplex ultrasonography, hand-eye coordination, and technique of endovenous thermal ablation therapy to treat patients with VV based on guidelines and to establish institutional VV program in Sri Lanka.

Keywords:

Indian Journal of Vascular & Endovascular Surgery

Original Article

Drill from Military to Operating Theater and Safe Reuse of Single-Use Items to Combat the Cost of Optical Fibers and Consumables in Endovenous Laser Ablation of Varicose Veins

Keerthi Rajapaksha[1,2]

[1]Department of General Surgery, Navy General Hospital, Colombo, [2]Department of Surgery, Faculty of Medicine, General Sir John Kotelawala Defence University, Ratmalana, Sri Lanka

Abstract

Introduction: Can the tandem arrangement of operating theater setup to perform a surgical drill similar to military, together with safe reuse of single-use items combat the cost of consumables of endovenous laser ablation (EVLA)? **Methods:** Operation pathway of EVLA consisted of cleaning and draping of patient (step 1), access to the affected vein and infiltration of tumescent local anesthesia (step 2), endovenous ablation (step 3), ultrasound-guided microfoam sclerotherapy (step 4), and chemical sterilization of consumables (step 5). Dedicated theater lists for EVLA were arranged to treat several patients per session in a prearranged operating theater. When the step 5 is completed on the first patient, the step 1 on the next patient was performed using sterilized optical fiber (OF) as a cycle while minimizing patient changeover time. Number of patients treated with each session of OF and time taken for step 1 to step 4 was recorded and analyzed. **Results:** A total of 140 patients treated using eight OFs during December 2019 to December 2022. Average number of patients treated with a single OF and during a single session of fiber is 17.5 (9–23) and 4.2 (3–7), respectively. Average time taken for step 1 was 7.83 min, step 2 was 7.95 min, step 3 was 1.57 min, and step 4 was 6.36 min. All the procedures were performed using four chemically re-sterilized guidewires and introducer sheaths. **Conclusion:** Tandem arrangement of operating theater to perform EVLA procedure similar to military drill can optimize the utilization of OFs and consumables.

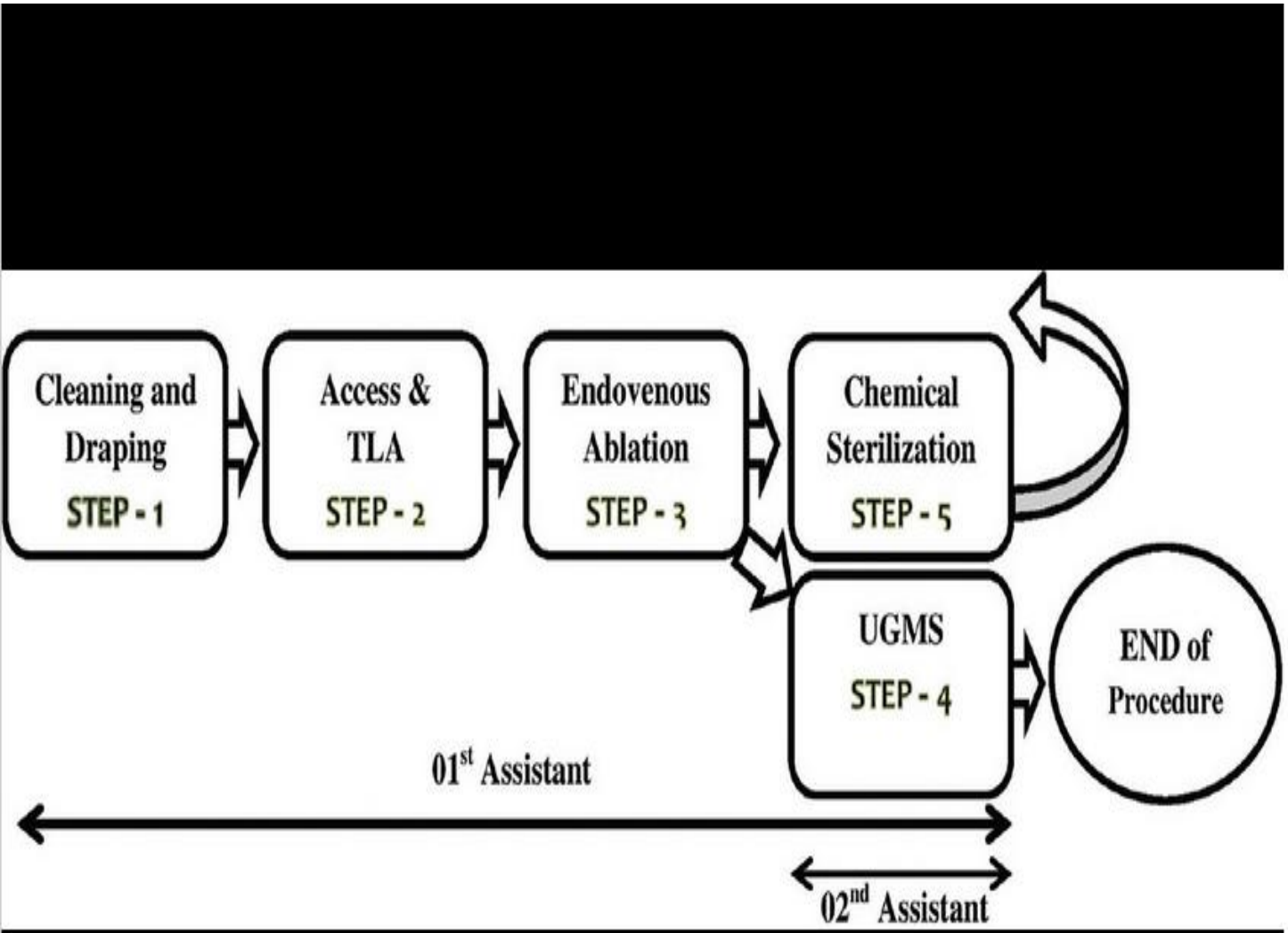

Figure 1

operating pathway showing the steps of EVLA and UGMS. UGMS: Ultrasound-guided microfoam sclerotherapy, EVLA: Endovenous laser ablation

Source

Drill from Military to Operating Theater and Safe Reuse of Single-Use Items to Combat the Cost of Optical Fibers and Consumables in Endovenous Laser Ablation of Varicose Veins

Indian Journal of Vascular and Endovascular Surgery10(2):113-117, Apr-Jun 2023.

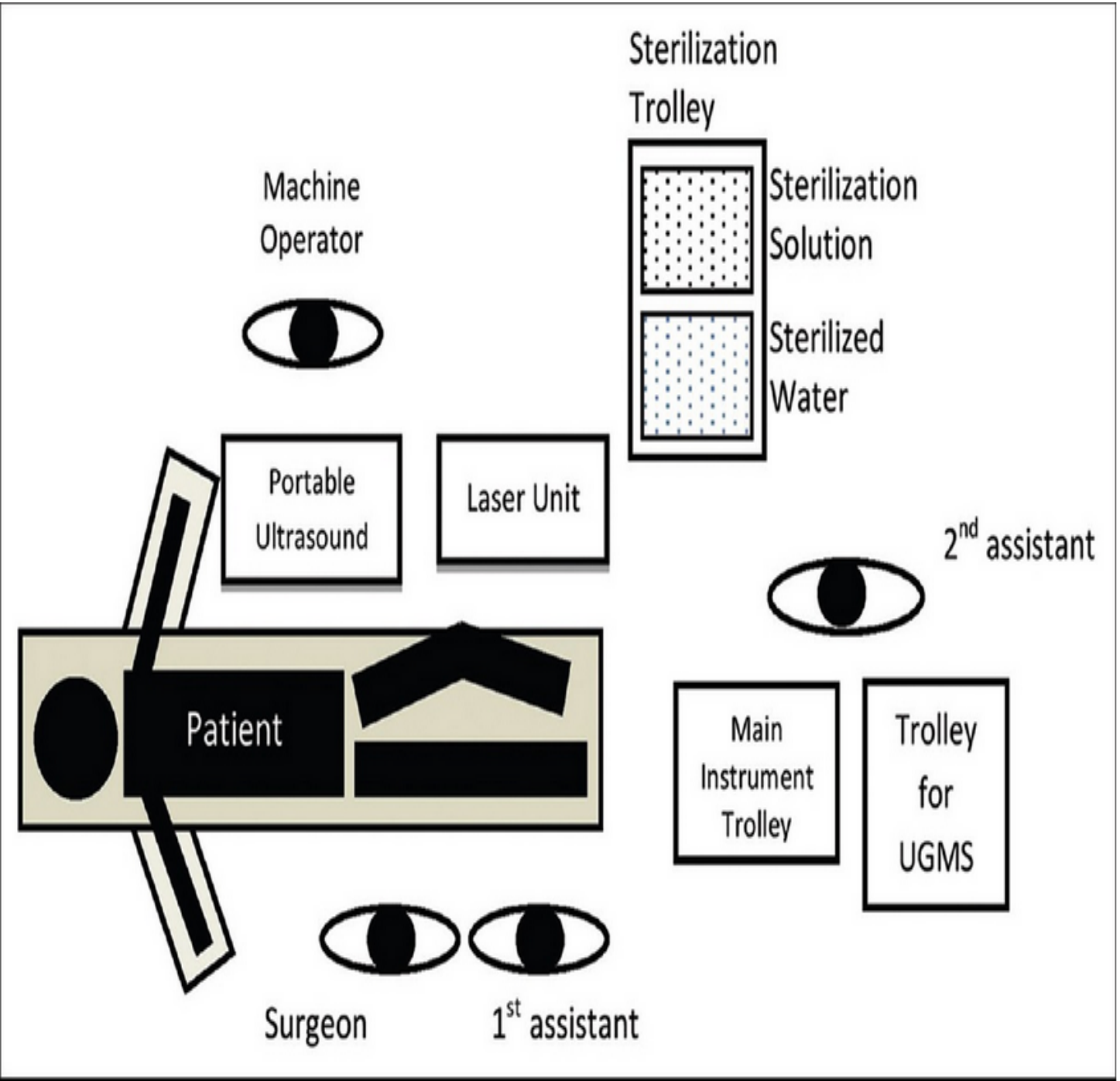

Figure 2

Schematic diagram showing tandem arrangement of instruments and surgical team for EVLA and UGMS. UGMS: Ultrasound-guided microfoam sclerotherapy, EVLA: Endovenous laser ablation

Source

Drill from Military to Operating Theater and Safe Reuse of Single-Use Items to Combat the Cost of Optical Fibers and Consumables in Endovenous Laser Ablation of Varicose Veins

Indian Journal of Vascular and Endovascular Surgery10(2):113-117, Apr-Jun 2023.

Figure 3

Image of the operating theater during EVLA and UGMS. UGMS: Ultrasound-guided microfoam sclerotherapy, EVLA: Endovenous laser ablation, S: Surgeon, A1: First assistant, A2: Second assistant, LT: Main trolley for laser therapy instruments, P: Patient, U: Portable ultrasoound, O: Machine operator, L: Laser unit, CT: Trolley for chemical sterilization, M_T: Trolley for UGMS

Source

Drill from Military to Operating Theater and Safe Reuse of Single-Use Items to Combat the Cost of Optical Fibers and Consumables in Endovenous Laser Ablation of Varicose Veins

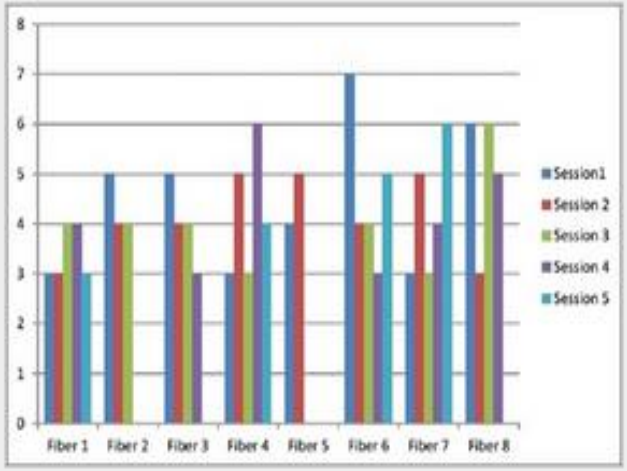

Figure 5: OF utilization data showing number of patients treated during each session of OFs. OF: Optical fiber

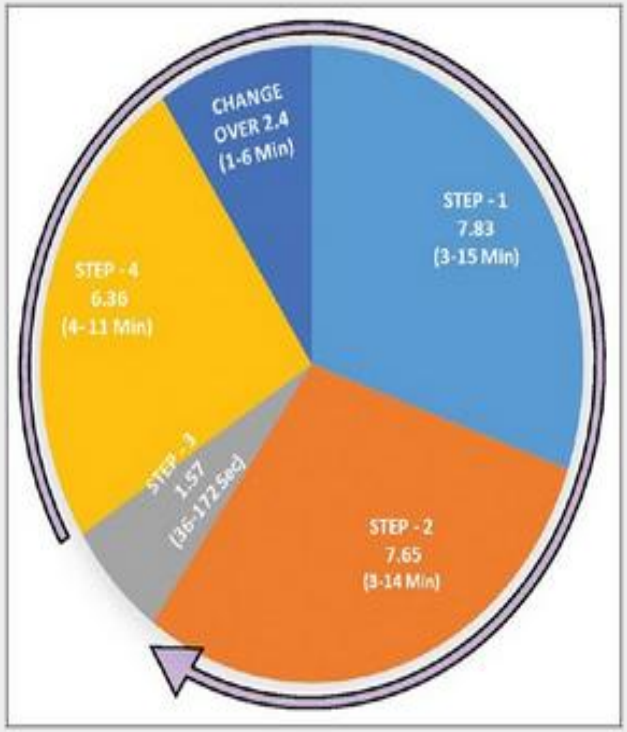

Figure 6: procedure cycle showing time taken for each step of EVLA, patient change over. CS time of OF is shown in curved arrow. OF: Optical fiber, EVLA: Endovenous laser ablation, CS: Chemical sterilization

Reuse of single-use items is an ubiquitous practice

Review > Natl Med J India. 2012 May-Jun;25(3):151-5.

Reuse of single-use devices: looking back, looking forward

M Hussain [1], K P Balsara, S Nagral

Affiliations + expand

PMID: 22963293

Abstract

The reuse of medical devices marked as 'single use' by manufacturers has been going on for several decades. The process has been rationalized and legislated in the West as well as in Japan. However, the practice continues in an unregulated manner in India due to a paucity of guidance from the Food and Drug Administration in India. We trace the evolution of reuse policies, look at the prevalent practices in the Indian and international contexts, analyse the available Indian literature and address the ethical and economic implications of reuse. We also suggest some guidelines which may be adopted to formulate policies.

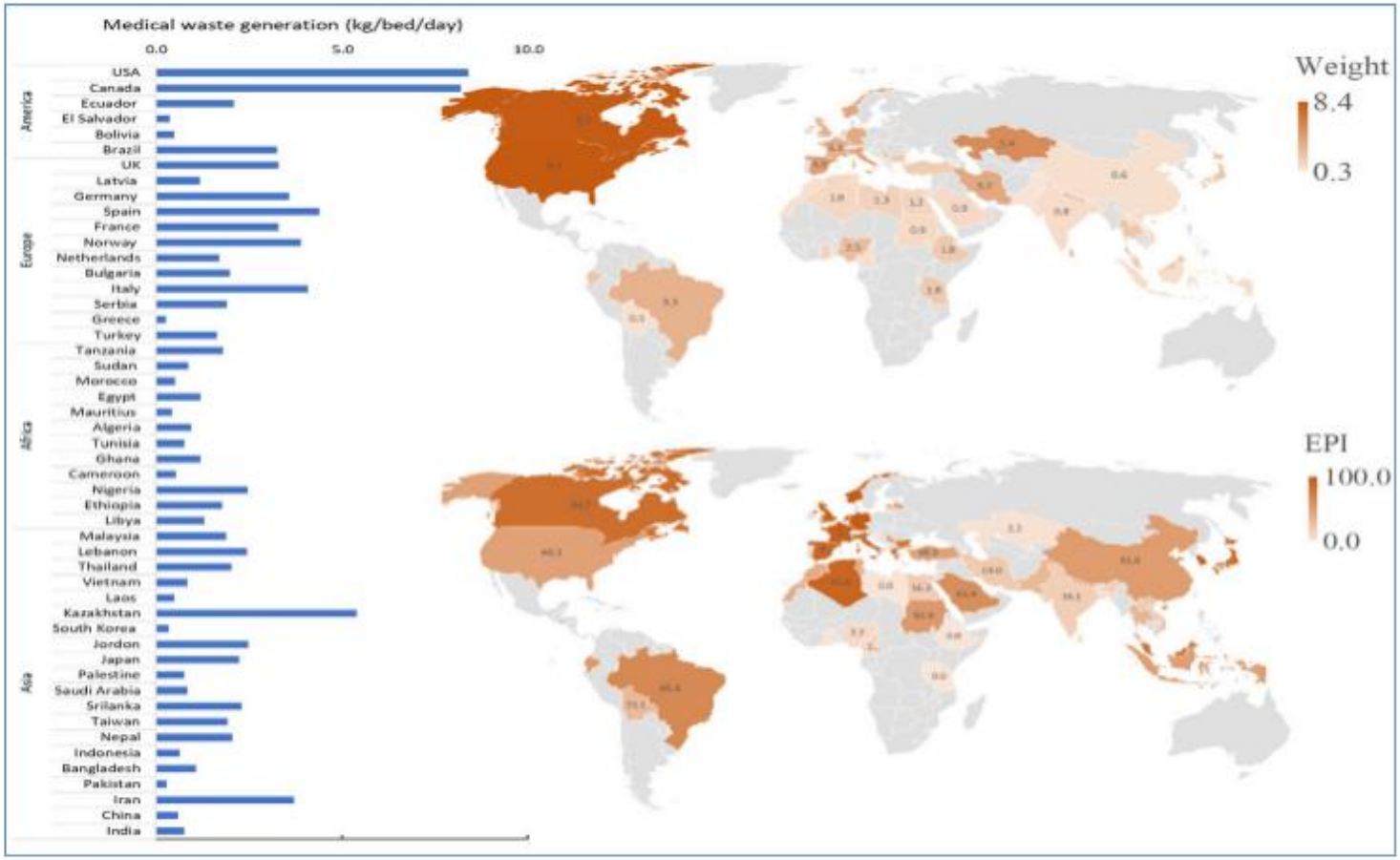

Figure 3. Amount of medical waste generated in different countries and their environmental performance index (EPI) of controlled solid waste management.

Indian Heart Journal
Volume 69, Issue 3, May–June 2017, Pages 357-363

Consensus Document

Guidance on reuse of cardio-vascular catheters and devices in India: A consensus document

Aditya Kapoor [a], Amit Vora [b], Gita Nataraj [c], Sundeep Mishra [d], Prafulla Kerkar [e], C.N. Manjunath [f]

https://doi.org/10.1016/j.ihj.2017.04.003

Abstract

Reuse of medical device is accepted worldwide. Benefits of reuse include not only cost saving but a favorable impact on environment. However, certain requirements should be

Outcome analysis of Institutional Varicose Vein Programme

	Before IVVP (n)	During IVVP (n)	P value
EVLA of GSV+UGMS	0	111	<0.0001
HLS of GSV+SA	183	0	<0.0001
HLS of SSV+SA	47	5	<0.0001
HLS of GSV and SSV+SA	8	0	0.0219
SA	15	0	0.0016
UGMS	23	81	<0.0001
NGS	25	0	<0.0001
Other surgical procedure	4	0	0.1585
Local anaesthesia	29	192	<0.0001
Spinal anaesthesia	246	5	<0.0001
Failure to perform intended procedure	0	4	0.0233
Prophylactic Antibiotics	232	9	<0.0001
Overnight stay	238	5	<0.0001
Day surgery	67	192	<0.0001
Surgical site infections	8	2	0.2081
Overall complications	9	6	0.9514

VASCULAR
INVESTIGATION AND THERAPY

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10.4103/VIT.VIT_24_24

Return to work after varicose vein surgery in the social class VI (armed forces) in Sri Lanka: A retrospective study

Keerthi Rajapaksha[1,2]

Abstract:

AIM: The aim of the study was to assess the time taken to return to work and duty rate (DR) after surgery for varicose vein (VV) using a cohort from social class VI from the military navy.

METHODS: This retrospective study analyzed the durations of complete absence (CA) from work, work with restricted duty profile (RDP), and time taken to return to DR after surgery for VV after two different modalities of treatment in two different treatment era: high ligation and stripping (HLS) with stab avulsions (SA) and endovenous laser ablation (EVLA) with ultrasound-guided microfoam sclerotherapy (UGMS) before and during institutional VV program, respectively. Type of surgery, duration of CA, RDP, time taken to return to DR, and trade of the patients were collected and analyzed.

RESULTS: An analysis of 137 patients who underwent HLS with SA from May 2015 to November 2019 and 61 patients who underwent EVLA with UGMS from December 2019 to August 2022 was performed. The mean age of the patients who underwent HLS with SA and EVLA with UGMS was 32.73 years and 33.06 years, respectively ($P = 0.736$). The most common trade among the patients was seamen in both groups. Complication rates were similar in both groups ($P = 0.281$). The mean duration of CA was 9.58 (3–28) days after HLS with SA and 5.95 (0–19) days after EVLA with UGMS ($P < 0.0001$). The mean duration of RDP was 15.74 (0–189) and 16.98 (0–107) after HLS with SA and EVLA with UGMS, respectively ($P = 0.726$). The time taken to return to DR was 25.4 (7–196) days and 23.22 (0–112) days after HLS with SA and EVLA with UGMS, respectively ($P = 0.542$).

CONCLUSIONS: Widespread use of EVLA with UGMS can be recommended to treat symptomatic VV in social class VI to minimize CA from work.

Character	HLS with SA (*n*=137)	EVLA with UGMS (*n*=61)	*P*
Age (years)			
Mean	32.73	33.07	0.736
SD	6.85	5.48	
Range	20–50	20–42	
Male: female	135:2	60:1	0.924
Complications	4	1	0.281
Duration of complete absence (days)			
Mean	9.57	5.95	<0.0001
SD	4.27	2.27	
Range	1–28	0–19	
Duration of restricted duty profile (days)			
Mean	15.73	16.98	0.726
SD	22.2	24.93	
Range	0–189	0–60	
Time taken to return to duty rate or presurgery restricted duty profile unrelated to VV (days)			
Mean	25.40	23.22	0.542
SD	22.32	25.19	
Range	7–196	0–112	

HLS: High ligation and stripping, SA: Stab avulsion, EVLA: Endovenous laser ablation, UGMS: Ultrasound-guided microfoam sclerotherapy, SD: Standard deviation, VV: Varicose vein

Table 3

Overall values of demographic, procedural, and return to work characteristics of patients who underwent procedures for symptomatic varicose veins caused by saphenofemoral incompetence

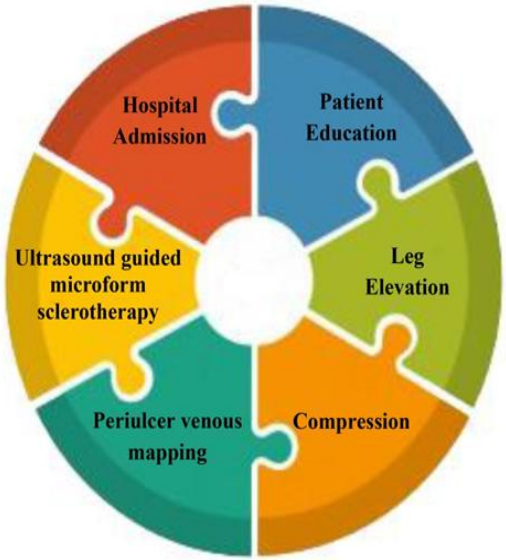
Source

Return to work after varicose vein surgery in the social class VI (armed forces) in Sri Lanka: A retrospective study

Vascular Investigation and Therapy8(4):146-149, Oct-Dec 2025.

Links in the Management of Recalcitrant Venous leg ulcers

(Accepted Article for VIT)



Institutional Varicose Vein Programme; a Paradigm Shift

- Use of minimally invasive techniques.
- Wide use of local anaesthesia.
- Minimal antibiotic usage.
- Minimum hospital stay.
- Early return to work.
- Research and development.
- Enhance human interactions .

Future perspectives

- Micronized Purified Flavonoid Fraction (MPFF).
- Epidemiological studies.
- Measures of primary prevention.

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THE END

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