



CODEN [USA]: IAJ PBB

ISSN: 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES

<http://doi.org/10.5281/zenodo.1974282>

Available online at: <http://www.iajps.com>

Review Article

AN OVERVIEW OF VARICOSE VEINS SURGICAL MANAGEMENT

¹Sarah Ahmed Hasan Alshalan, ¹Rawabi Mohammad Abdulhadi Alamri,

²Mona Kadhém Saleh Al Hameed

¹Taif University

²Imam Abdulrahman Bin Faisal University

Abstract:

In this review we discuss the difference between surgical methods, advantages and disadvantages of each for the improvement of treatment methods of varicose. We searched MEDLINE, Embase, Current Contents, Cochrane, PubMed, and the reference section of included articles. Eligible studies compared two or more of the available surgical treatments of varicose veins for all studies published up to 2018 in English language and human subject. It is questionable to do surgical procedure on patients who have recovered from the superficial phlebitis, due to the fact that the dilated varicose veins usually vanished without additional medical therapy. It is not indicated to carry out thrombectomy for superficial thrombosis in great saphenous veins. The patients should be enlightened prior to surgery that varicose vein surgical procedure is not curative, and early surgical treatment in uncomplicated blood vessels will certainly not stop the development of future varicosities. The contraindications for medical management of varicose veins are occlusion of the deep venous system, such as acute deep vein thrombosis (DVT), pregnancy, the surface blood vessels as collaterals for occluded deep veins, and arterial insufficiency; nonetheless, one ought to proceed with caution in carrying out surgery on patients with postthrombotic syndrome, venous refluxing combined with arterial venous fistula, or venous malformation- further imaging to assess the patency of the deep blood vessels is crucial before surgical procedure.

Corresponding author:

Sarah Ahmed Hasan Alshalan,
Taif University

QR code



Please cite this article in press Sarah Ahmed Hasan Alshalan et al., *An Overview of Varicose Veins Surgical Management.*, Indo Am. J. P. Sci, 2018; 05(12).

INTRODUCTION:

Varicose veins are expanded branches of the great saphenous vein and small saphenous vein; the occurrence of varicose blood vessels differs from 10% to 30% [1]. Varicose veins occur due to incompetence in valves of deep, superficial and/or perforating veins. This incompetence brings about reflux of blood inducing raise in venous pressure leading to dilated, extended or tortuous subcutaneous blood vessels of lower legs [1]. Threat factors of varicose blood vessels consist of family history, age, and pregnancy; a possible danger element is being on feet for a long period of time [1].

This condition is primarily taken into consideration to be a cosmetic issue and commonly mistaken to be medically unimportant and provided low concern for therapy [2]. Nevertheless, the reality is that the connected soreness, swelling, open ulceration and other morbidities enhance price of its management [2]. The debilitation adds on to the time shed from work and salaries [2].

A number of treatments are offered for healing varicose veins, including traditional therapies and surgery assistances. Conservative treatments are typically advised in asymptomatic patients or those with light to modest symptoms [2]. Surgical interventions normally come to be necessary when symptoms of varicose blood vessels significantly effect on the patient's lifestyle. Offered the deep venous system of the legs is competent and free from obstacle, a patient can securely tolerate the surgical removal or occlusion of varicose veins.

Varicose is underestimated in health care system, however, it can bring discomfort and even swelling, pain and irritation to the patient in some cases. In this review we discuss the difference between surgical methods, advantages and disadvantages of each for the improvement of treatment methods of varicose.

METHODOLOGY:

We searched MEDLINE, Embase, Current Contents, Cochrane, PubMed, and the reference section of included articles. Eligible studies compared two or more of the available surgical treatments of varicose

veins for all studies published up to 2018 in English language and human subject.

DISCUSSION:

- **Surgery or conservative management?**

Patients with straightforward varicose veins suffer signs of ache, aching, thickness, itching, aches and restless legs [2]. These signs may be accompanied by swelling of the leg. The cosmetic appearance of the varicose veins might also be an essential element for the patient. Surgery can just be justified if these signs and symptoms are markedly enhanced or abolished. A randomized trial contrasting surgical procedure and conventional treatment for severe varicose blood vessels revealed that surgical therapy created far better results than traditional procedures in regards to health-related quality of life, symptomatic relief, anatomical expanse and patient fulfillment [3]. The limitations of traditional management, counting mainly on the use of compression stockings, are further verified by the large percentage of patients (52%) in this research study that had crossed over to the surgical arm by three years.

Much of the dispute concerning the performance of surgical treatment focuses on the concern of recurrence of varicose veins after surgical therapy. Recurring varicose veins develop frequently after surgery and recurrence rates of 20 - 80% are reported at 5 - 20 years [4]. Even with the persistent varicosities, several patients stay satisfied with their operation with 77% reporting their signs and symptoms treated or far better at 10 years [5]. This same 10-year assessment of patients after varicose vein surgical procedure reported that 66% of patients stayed 'pleased' general at 10 years. The recurrence rate was 70% with 44% having a few frequent blood vessels just and 26% demonstrating varicose capillaries that were as poor or even worse than before their original operation [5]. The development of frequent varicose capillaries does not as a result instantly correspond with patient frustration with their varicose capillaries operation. The table 1 shows a few of the factors to consider that might assist the selection of therapy.

Table 1. Features of the various treatments now available for varicose veins* [4-6].

	Conventional surgery	Radiofrequency and laser ablation	Foam sclerotherapy
Anaesthesia required	General	General or extensive infiltration of local	Local or none
Postoperative pain and discomfort	Variable—many patients have minimal discomfort, but others are very bruised	Avoids a groin incision and causes less thigh bruising in many patients	No incisions or bruising, but veins may be lumpy and tender for weeks
Need for compression (bandaging or stocking)	Usually advised for up to 10 days but not essential	Usually advised for several days (like surgery), sometimes longer	Usually advised for about two weeks, but up to four weeks
Can both legs be treated at a single procedure?	Yes	Yes under general anaesthesia	No, usually not
Further procedures required for clearance of varicose veins?	No	Frequently, unless done under general anaesthesia with conventional phlebectomies (or sclerotherapy)	Yes, frequently
Long term freedom from varicose veins	A few varicose veins reappear in many patients: about a third have troublesomerecurrence at 10 years	Similar to surgery up to three years. Longer term results not known	Probably similar to surgery up to three years, but may need further treatments. Longer term results not known

*Many variations exist

• **Surgical treatment options**

Varicose vein surgical treatment is just one of one of the most frequent types of surgical procedure. Varicose veins can be operatively gotten rid of or closed off using a variety of different procedures. This will certainly not hurt the blood supply in the legs, because the blood will re-direct right into other healthy veins. Surgical treatment can be done on both shallow and deep blood vessels. In varicose vein surgery, the varicose veins are taken out to eliminate the symptoms. We define several of the procedures most commonly conducted to ensure that the people may get a general essential understanding of varicose blood vessel surgery, from both a historic and existing prospective.

The surgical options are:

1. Stripping and ligation of the great saphenous vein
2. Varicose vein ligation
3. Phlebectomy
4. Endovenous vein obliteration
5. Perforator vein surgery

Stripping and Ligation of the Great Saphenous

Vein (GSV)

Until recently, ankle-to-groin stripping of the GSV with ligation of branch tributaries was considered the "gold criterion" in varicose blood vessel surgery. Nevertheless, with a much better understanding of both anatomic relationships and connected venous physiology, this excessively extreme procedure has, for the most part, been left. It is currently identified that stripping of the GSV to the degree of the knee suffices to acquire most favorable results and avoids the problematic complication of saphenous nerve injury related to stripping in the calf [7]. The method of ligating and detaching each saphenous blood vessel tributary in the groin (a process called skeletonization) is now believed to add to venous congestion and angiogenesis, leading to SFJ neovascularization and reoccurrence, and has additionally befallen of support.

The most popular present method for stripping (even more appropriately called saphenectomy) utilizes a disposable, flexible, plastic interior stripper (i.e., Codman stripper) (Fig. 1). A small transverse cut is

made along the skin creases at the groin. The GSV is separated at the SFJ and ligated at the joint. A venotomy is then made and the stripper is passed into the GSV at the groin and threaded caudally through the incompetent blood vessel caudal to the degree of the knee, where it is brought out through a tiny skin incision and externalized. After the vein has actually been transected at the SFJ and at the knee, an acorn-shaped stripping head is connected to the stripper and the whole gadget attracted caudally. The removing head avoids the stripper from passing through the end of the blood vessel, which is rather inverted and pulled through the femur, tearing away from its branches as it continues. Both lacerations are then closed up and a compression dressing used. This procedure is generally done under general anesthetic, although advancements in tumescent anesthesia have actually enabled some clinicians to prevent making use of general anesthetic [8].

Supporters of this procedure point to the fact that full saphenectomy minimizes any type of possibility of consistent axial reflux through the sector of the blood vessel extracted. Winterborn et al showed a 60% lowered threat of reoperation at 11 years after ligation and stripping [19]. Opponents of this procedure point out the raised postoperative ache, bruising, and much longer overall rehabilitation time causing lowered total quality of life. Neovascularization, especially at the groin, has actually also been associated with conventional stripping and may increase the possibility of recurrences [10]. Regardless of this capacity for ultimate occurrence, stripping and ligation continue to be a sensible alternative in the therapy of saphenous vein illness.

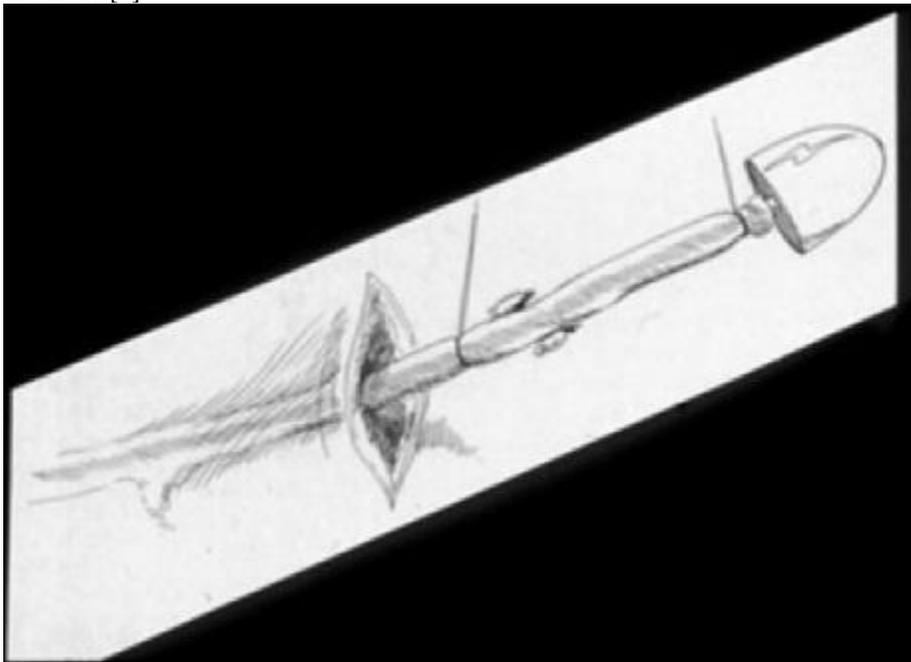


Figure 1. Codman Stripper. After exposing the GSV, a flexible plastic stripper is inserted within the vein and subsequently pulls out through a separate incision [8].

Varicose Vein Ligation Only

Popularised in the 1970s and 1980s, the principle of ligating visible varicosities making use of numerous lacerations has actually befallen of favor as both inadequate and cosmetically unacceptable. Numerous small incisions are made along the course of visible varicosities and the veins are segmentally ligated and cut. With the present understanding that venous insufficiency have to be addressed at its level of greatest reflux, it is easy to understand why basic ligation of visible varicosities is bound to neglect.

Just after dealing with the beginning of greatest reflux in the axial vein can secondary noticeable varicosities be ligated and removed. Failing to do so results in predictably very early local recurrences at the areas beside the previous incisions [12]. Sarin et al have revealed a reoccurrence rate as high as 45% after ligation alone as early as 3 months after therapy [13]. Dwerryhouse et al reported a reappearance rate of 71% after high ligation alone [11]. The majority of the clinicians that carry out venous surgical treatment have actually consequently primarily abandoned

varicose vein ligation as a separated treatment. Ligation of the SSV at the SPJ through a small skin incision is still performed in the presence of varicosities originating from the SSV. Preoperative venous ultrasound mapping of the joint is critical to do this treatment appropriately and securely. Intraoperative recognition of the sural nerve, which is located in close closeness to the vein at the joint, is necessary in avoiding injury to this nerve. Ligation of the vein at the junction addresses the underlying trouble of reflux at one of the most cephalad point (SPJ). This treatment is generally combined with a comprehensive phlebectomy to remove visible varicosities.

Phlebectomy

Original identified by Cornelius Celsus in the first century ad and refined in modern Europe, phlebectomy is today an essential part of the armamentarium of venous surgery [14]. Phlebectomy of varicose veins might be done alone or in combination with various other vein treatments. Referred to in the past as "stab avulsion

phlebectomy" and today as "microphlebectomy," this ancient procedure has actually undertaken significant refinements and a newfound renaissance over the last multiple years. The treatment involves utilizing a little blade (11 scalpel, 18-gauge needle, or tiny ophthalmologic blade) to make a cutaneous microincision. Incisions ought to generally be vertically oriented along the thigh and lower leg and ought to comply with the dermal lines at the knees and ankles to obtain optimal cosmetic results. Phlebectomy hooks (Muller, Oesch, Varady, etc.) are used to grab the blood vessel and bring it via the laceration, where it is grasped, transected, and avulsed (Fig. 2). Making use of the small blades permits cosmetically acceptable outcomes and permits resumption of typical activity within a relatively brief period of time. Microphlebectomy is appropriate after various other venous treatments (stripping and ligation or endovenous obliteration) when established visible varicose saphenous tributaries or clusters are related to unskilled perforating veins [15].



Figure 2. Microphlebectomy. Visible varicosities are preoperatively marked. A small blade is used to make a micro-incision and hooks and clamps are used to avulse the vein through the incisions.

Endovenous Vein Obliteration

In the age of minimally unpleasant surgical procedure, endovenous vein obliteration is rapidly getting appeal amongst clinicians and patients alike. It uses a very effective and economical option to conventional stripping and ligation, utilizing either distinctive kinds of thermal energy - radiofrequency (RF) and laser - to demolish the vein in situ endovascularly and reduce the highest point of reflux. A lot of regularly, it is made use of to deal with axial capillary reflux (GSV and SSV), however lots of medical professionals have expanded its usage to large venous tributaries. Both modalities depend greatly on making use of tumescent anesthesia to insinuate liquid in between the skin and the blood vessel under treatment, thereby decreasing the potential for thermal damages to the skin. Using intraoperative ultrasound is crucial in completing the treatment.

RF endovenous blood vessel obliteration entails the use of a 460-kHz, 25-W generator with a specifically designed disposable electrode catheter to supply bipolar RF energy to the vein. This completes controlled heating (85 ° C) of the vessel wall surface, causing collagen devastation and tightening, which leads to obliteration of the vein. By limiting the temperature of the electrodes in contact with the vessel wall to less than 100 ° C, boiling, vaporization, and carbonization of the tissue are avoided. One such device on the marketplace is the Closure ® catheter system (VNUS Medical Technologies, Sunnyvale, CA). It is authorized by the Food and Drug Administration (FDA) and extensively offered in the United States for the treatment of GSV reflux. It is available in two sizings - 5 and 8 Fr - to mirror the diameter of the blood vessel being treated. Early results have actually been promising, and both patients' fulfillment and quality of life are improved after this treatment even at 2 years [16]. Opponents of RF cite a greater discovering curve and the higher expense of this procedure when compared to typical stripping and ligation and with blood vessel obliteration using laser energy.

Perforator Vein Surgery

Incompetent perforating veins are typically seen in patients with chronic venous ulcerations, and understanding of their treatment is essential to any type of medical professional dealing with these patients [17]. Compression stockings (class 2 and 3) and appropriate injury care are usually sufficient to recover these bothersome injuries [18], [19]. In case these abscesses do not heal or are often reoccurring,

primary perforator insufficiency or post-thrombotic disorder can typically be established as a contributing factor. In such circumstances, numerous operative alternatives are offered. Liton's original surgical method, defined in the very early 1950s, entailed surgical ligation of subfascial perforators via three lengthy skin incisions along the medial, anterolateral, and posterolateral calf. This extreme treatment has because been mainly abandoned because of its high rate of injury complications. Subsequent authors, including Cockett and DePalma, modified the treatment making use of smaller, much more tactically positioned cuts, incorporated with excision of axial shallow vein and placement of skin grafts. Despite these alterations, wound complications were still widespread and much better options were sought.

In the hope of eliminating wound complications, Edwards developed a tool called a phlebectome, which is presented with a tiny medial skin incision simply below the knee and advanced subfascially toward the medial malleolus, disrupting the perforators thoughtlessly as it is progressed. The benefit of the method is that the incision is remote from the skin being compromised by venous ailment, which lowers local complications. Its negative aspect is the blind nature of branch interruption. With these problems in mind, subfascial endoscopic perforator surgery (SEPS) was born. During SEPS, instruments are presented into the subfascial room via two or fewer tiny, remote cuts and each perforator is identified, clipped, and shared endoscopic visualization. Since this treatment is often combined with concomitant saphenous vein ablation, the isolated value of SEPS is difficult to analyze.

Very early results of perforator vein surgery were encouraging, but reoccurrence of venous abscess years after the procedure has recently become a problem. This has been specifically true with abscess patients who provided with post-thrombotic syndrome as their underlying element [20], [21]. Initial results with using sclerotherapy under ultrasound advice are promising and this may eventually supplant SEPS as the procedure of choice for local control of perforator incompetence.

CONCLUSION:

The purpose of therapy is to soothe signs and symptoms and stop the progression of varicose veins. Asymptomatic patients can be observed and do not need therapy or prophylactic intervention. Nevertheless, cosmesis is a popular reason for treatment of asymptomatic patients, particularly for young women patients. It is questionable to do surgical procedure on patients who have recovered

from the superficial phlebitis, due to the fact that the dilated varicose veins usually vanished without additional medical therapy. It is not indicated to carry out thrombectomy for superficial thrombosis in great saphenous veins. The patients should be enlightened prior to surgery that varicose vein surgical procedure is not curative, and early surgical treatment in uncomplicated blood vessels will certainly not stop the development of future varicosities.

The contraindications for medical management of varicose veins are occlusion of the deep venous system, such as acute deep vein thrombosis (DVT), pregnancy, the surface blood vessels as collaterals for occluded deep veins, and arterial insufficiency; nonetheless, one ought to proceed with caution in carrying out surgery on patients with postthrombotic syndrome, venous refluxing combined with arterial venous fistula, or venous malformation- further imaging to assess the patency of the deep blood vessels is crucial before surgical procedure. Emerging management is typically booked for hemorrhaging varicosities or presumed DVT. Appropriate training is essential to prevent unneeded reappearance and preventable issues.

REFERENCES:

1. Evans CJ, Fowkes FG, Ruckley CV, Lee AJ. Prevalence of varicose veins and chronic venous insufficiency in men and women in the general population: Edinburgh Vein Study. *J Epidemiol Community Health*. 1999;53(3):149–153.
2. Das K., Ahmed S., Abro S., Arain M.S. Varicose veins; outcome of surgical management and recurrences. *Prof. Med. J*. 2014;21:509–513.
3. Michaels JA, Campbell WB, Brazier JE, et al. *Health Technol Assess* 2006;10:1 – 196
4. Perrin MR, Guex JJ, Ruckley CV, et al. Recurrent varices after surgery (REVAS): a consensus document. REVAS group. *Cardiovasc Surg* 2000;8:233–45
5. Campbell WB, Vijay Kumar A, Collin TW, Allington KL, Michaels JA. Outcome of varicose vein surgery at 10 years: clinical findings, symptoms and patient satisfaction. *Ann R Coll Surg Engl* 2003;85:52 – 7
6. Campbell WB, Kumar AV, Collin TW, Allington KL, Michaels JA. The outcome of varicose vein surgery at 10 years: clinical findings, symptoms and patient satisfaction. *Ann R Coll Surg Engl* 2003;85: 52-7.
7. Bergan J J. *Surgery of the Veins of the Lower Extremity*. Philadelphia: WB Saunders; 1985.
8. Proebstle T M, Paepcke U, Weisel G, Gass S, Weber L. High ligation and stripping of the long saphenous vein using tumescent technique for local anesthesia. *Dermatol Surg*. 1998;24:149–153.
9. Winterborn R J, Foy C, Earnshaw J J. Causes of varicose vein recurrence: late results of a randomized controlled trial of stripping the long saphenous vein. *J Vasc Surg*. 2004;40:634–639.
10. Jones L, Braithwaite B D, Selwyn D, Cooke S, Earnshaw J J. Neovascularization is the principal cause of varicose vein recurrence: results of a randomized trial of stripping the long saphenous vein. *Eur J Vasc Endovasc Surg*. 1996;12:442–445.
11. Dwerryhouse S, Davies B, Harradine K, Earnshaw J J. Stripping the long saphenous vein reduces the rate of reoperation for recurrent varicose veins: five-year results of a randomized trial. *J Vasc Surg*. 1999;29:589–592.
12. Glass G M. Neovascularization in recurrence of varices of the great saphenous vein in the groin: phlebography. *Angiology*. 1988;39:577–582.
13. Sarin S, Scurr J H, Coleridge Smith P D. Assessment of stripping of the long saphenous vein in the treatment of primary varicose veins. *Br J Surg*. 1992;79:889–893.
14. Olivencia J A. Ambulatory phlebectomy turned 2400 years old. *Dermatol Surg*. 2004;30:704–708.
15. Kabnick L S. Should we consider a paradigm shift for the treatment of GSV and branch varicosities? San Diego: UIP World Congress Phlebology Chapter Meeting; 2003.
16. Manfrini S, Gasbarro V, Gudmundur D, et al. Endovenous management of saphenous vein reflux. *J Vasc Surg*. 2000;32:330–342.
17. Delis K T. Perforator vein incompetence in chronic venous disease: a multivariate regression analysis model. *J Vasc Surg*. 2004;40:626–633.
18. Negus D. Prevention and treatment of venous ulcerations. *Ann R Coll Surg Engl*. 1985;67:144–148.
19. Mayberry J C, Moneta G L, Taylor L M, Porter J M. Fifteen-year results of ambulatory compression therapy for chronic venous ulcers. *Surgery*. 1991;109:575–581.
20. Burnand K, Thomas M L, O'Donnell T, Browne N L. Relation between post-phlebotic changes in the deep veins and the results of surgical treatment of venous ulcers. *Lancet*. 1976;1:936–938.
21. Johnson W C, O'Hara E T, Corey C, Widrich W C, Nabseth D C. Venous stasis ulceration: effectiveness of subfascial ligation. *Arch Surg*. 1985;120:797–800.