



A CASE SERIES ON RECURRENT VARICOSE VEINS TREATED WITH ENDOVENOUS THERMAL ABLATION TECHNIQUES

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ABSTRACT Chronic venous insufficiency due to varicose veins forms one of the major etiology for lower limb ulceration. Traditional surgical treatment of varicose vein with high ligation and stripping has high rates of recurrence. Recurrent varicose veins cause frequent ulceration and morbidity to the patient. In a patient with recurrent varicosities, detailed Duplex examination is a must to recognize the site of reflux and for planning the management. The various reasons include persistent reflux, new sites of reflux and neovascularization. Once diagnosed, it can be treated by either Redo open surgery or Endovenous techniques. Redo open surgery through the scarred tissues has its own complications of neurovascular injury. In these patients endovenous techniques are very useful. Both Radiofrequency ablation and Endovenous Laser Ablation produce good results. In this case series we discuss about the clinical presentation and management of 3 patients with recurrent varicose veins. All the patients were treated successfully with endovenous techniques. We conclude that endovenous technique should be the preferred treatment option as they yield good results with fewer postoperative complications and early recovery from the hospital.

KEYWORDS :

INTRODUCTION:

Chronic venous insufficiency due to Varicose veins(VV) forms one of the major reasons for lower limb ulceration. The standard Trendelenburg procedure is the most commonly performed procedure. But has a recurrence rate of 40% at 5 years^[1]. Recurrent varicose veins are prone to cause frequent ulcerations and reduce the QOL (Quality of life) of the patient. There are various causes for recurrent varicosities which include inadequate initial operation, failure to appreciate other sites of incompetence during the initial procedure, new onset of reflux in the accessory saphenous veins and neovascularization. Surgery for recurrent varicose veins is potentially hazardous because the scar tissue distorts the normal architecture. As a result, there is a higher risk of iatrogenic injury to neighboring structures during dissection^[2]. In these patients endovenous interventions come in very handy because of their minimal invasiveness. Herein we discuss the case series of 3 patients who were diagnosed with recurrent varicose veins and treated successfully with endovenous techniques at our hospital.

Case description:

Case 1

36 yrs old male had frequent episodes of bleeding from the varicosities in both the legs for past 1 year. He underwent Trendelenburg procedure for his right leg 6 months back. 4 months post-surgery he again had 2 episodes of bleeding varices from the right leg and 1 episode in the left leg. On examination, his BMI was 29. Clinically in the Right Lower Limb Great saphenous vein (GSV) was dilated upto mid-thigh and multiple dilated veins in the leg. A 5x4 cm ulcer was present over the dorsum of right foot(Fig.1). Duplex evaluation showed remnant GSV draining into mid-thigh perforator and above ankle perforator incompetence. Left Sapheno Femoral Junction (SFJ) was also found to be incompetent. MR Venogram showed Deep veins to be normal. The patient was subjected to Endovenous Laser Ablation of remnant GSV in the right leg and GSV in the left leg. Foam Sclerotherapy was given to the ankle perforator. Postoperatively the wound healed well(Fig.2). Patient was discharged on Post op day(POD)3.



Fig. 1



Fig. 2

Case 2

60 years old male with complaints of chronic non healing ulcer in the right leg over both medial and lateral malleolus region for the past 1 year. Patient had undergone Trendelenburg Procedure and SPJ Ligation for right leg 6 years back and Perforator ligation 6 months back. No prior history of Deep vein thrombosis (DVT). On examination his BMI was 28. In the Right Lower Limb GSV was dilated till mid-thigh level. Ulcer of size 7 X 5 cm was seen in the Medial malleolus and a 8 X 5 cm around the Lateral malleolus region(Fig.3). The Duplex evaluation of Right lower limb showed remnant GSV till mid-thigh level draining into mid-thigh perforator. Posterior Accessory Saphenous Vein was present and was seen to be refluxing (Fig.4).

It was draining Directly Into the femoral vein. Short Saphenous Vein Was Found to Be Dilated till Mid Leg Level after which It was atretic. Perforator Incompetence was noted at below knee and above ankle level. MR Venogram showed patent deep veins. The patient was planned for Right Lower Limb Radiofrequency Ablation(RFA) of the remnant GSV and the posterior accessory vein and Foam sclerotherapy. The persistent GSV was cannulated and RF Catheter was parked near Mid-Thigh perforator level. Posterior accessory vein was also cannulated, and RF Ablation was carried out for both the veins. Foam Sclerotherapy was given for the incompetent perforators. Patient was discharged on POD 2. Postoperatively multiple sittings of 4 Layer Dressing were done. Both wounds healed well(Fig.5).



Fig.3



Fig.4



Fig.5

Case 3:

42 years old male with complaints of dilated veins in bilateral Lower Limbs for 6 months associated with aching pain and swelling in both legs on prolonged standing. The patient also complained of ulceration over Left Medial malleolus for the past 6 months(Fig.6). Patient had undergone Left Trendelenburg procedure 1 year back. His BMI was 30. Duplex evaluation showed atretic GSV and a persistent Anterior Accessory Vein which was draining directly into the femoral vein and was refluxing(Fig.7). Right Lower Limb showed Saphenofemoral Junction to be Incompetent. MR Venogram was done which showed patent Deep Venous system. Patient was planned for Bilateral Lower limb Radiofrequency ablation and Foam sclerotherapy. The Anterior accessory vein was cannulated, and RF Ablation was carried out for the left leg. Post op period was uneventful. The patient was discharged on POD2.

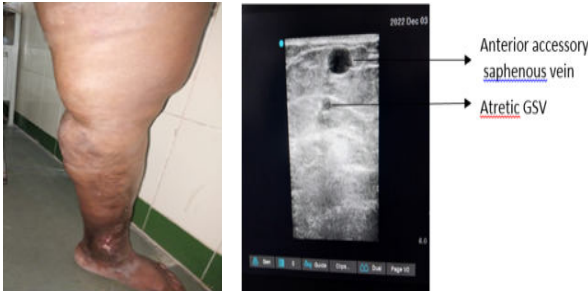


Fig.6

Fig.7

DISCUSSION:

Recurrent varicose vein causes morbidity and reduced QOL in patients. Recurrent VVs after surgery (REVAS)^[3] have been defined as newly appearing clinically obvious VVs after surgical ligation of SF Junction and stripping.

This term has been replaced by PREVAIT (presence of varicosities after interventional treatment) to consider also recurrent VVs after endovenous interventions. The various etiologies for recurrent varicose veins are given in Table 1.

Table 1

The main causes of recurrent varicose veins :[4]
Tactical error – Persistence of reflux because of an inappropriate intervention:
Inadequate pre-operative DUS, not identifying the various sources of reflux
Inadequate choice of cannulation site
Technical error - Persistence of reflux because of inadequate intervention:
For endovenous procedures:
Failure to cannulate target saphenous trunk
Poor ultrasound visualisation of the target segment, the SFJ, or SPJ
Insufficient delivery of energy/glue/sclerosant to target segment
For open surgical procedures:
Incomplete stripping
Other surgical failure
Neovascularisation- Presence of multiple new small tortuous refluxing veins in anatomical proximity to a previous intervention:
Reflux from a previously ligated or ablated SFJ, SPJ, PV, or tributary
New veins visible on DUS in connection with varicose veins
Recanalisation- Partial or complete reopening of an initially ablated saphenous segment with recurrence of reflux
Disease progression- Development of venous reflux as a result of the natural history and progression of disease, with reflux occurring at new sites

The various proposed underlying risk factors for recurrence are old age, female gender, prolonged standing, increased BMI, and previous recurrent disease. Deep vein insufficiency from the Iliac veins can also

lead to the development of recurrence. A retrospective study reported that 27% of the patients who developed SFJ recurrence had pre-operative deep venous incompetence proximal to the SFJ.^[5] Concomitant incompetence of the Accessory saphenous veins, or its particular anatomy at the SFJ, may affect the recurrence rate.^[6,7,8,9,10] Venous obstruction or direct compression, secondary to DVT or pelvic pathology, respectively, also may contribute to Varicose vein recurrence.

Once recurrent varicose veins have been diagnosed, they can be treated by either Open or Endovenous techniques. In the past, recurrent VVs were mainly treated by redo open surgery. Open exploration of the groin or popliteal fossa through scar tissue was associated with a higher complication rate, as well as increased lymphatic leakage and wound infections; therefore, it should be avoided whenever possible.^[11,12] A less invasive approach, such as Endovenous thermal ablation or non-thermal ablation of an incompetent saphenous trunk, Ultrasound guided foam sclerotherapy, or multiple phlebectomies, has been advocated to replace invasive redo surgery. To determine the most suitable technique, detailed DUS mapping is mandatory.

Several studies have described the use of the Endovenous thermal ablation technique as a safe and effective option for the treatment of recurrent VVs, in the presence of a recurrent or residual incompetent saphenous trunk.^[13,14] A small RCT compared redo surgery with RFA and found that the latter was superior, with lower pain scores, bruising, and procedure times.^[15] In two retrospective studies, in which Endovenous Laser Ablation (EVLA) of the GSV and the SSV was compared with open redo surgery, the re-recurrence and complication rates were lower in the EVLA groups. In particular, sural nerve neuralgia was less common after EVLA than after SSV redo surgery (9% vs. 20%).^[16]

Herein we discuss 3 patients with recurrent varicose veins who were treated with endovenous techniques. The case distribution with respect to the etiology is shown in Fig.8.

Etiology



- Persistent GSV 1
- Persistent GSV with Refluxing posterior accessory vein 1
- Refluxing anterior accessory vein 1

Obesity is one of the known risk factors for developing varicose veins. The average BMI of all these patients was 29. Probable etiology being high intra abdominal pressure causing compression of the pelvic veins and leading to reflux.

There were no intraoperative or postoperative complications. The average hospital stay for all these patients was 3 days. All of them underwent Endovenous thermal ablation techniques. 1 patient underwent Laser ablation and the other 2 patients underwent Radiofrequency ablation. The choice of endovascular technique used was largely based on the financial status of the patient. Both the thermal ablative techniques yielded similar good results.

CONCLUSION :

For patients with recurrent varicose veins. Endovenous thermal techniques have proved to produce good results with fewer postoperative complications and early recovery. Hence wherever possible, Endovenous technique should be the preferred treatment option for recurrent varicose veins. However, a detailed Duplex assessment should be made during the primary surgery and all the refluxing veins should be treated. Treated, during the primary surgery avoid recurrent varicosities.

REFERENCES:

1. Ravi, R., Rodriguez-Lopez, J. A., Traylor, E. A., Barrett, D. A., Ramaiah, V., & Diethrich, E. B. (2006). Endovenous ablation of incompetent saphenous veins: a large single-center experience. *Journal of Endovascular Therapy*, 13(2), 244-248.
2. Egan, B., Donnelly, M., Bresnihan, M., Tierney, S., & Feeley, M. (2006). Neovascularization: an "innocent bystander" in recurrent varicose veins. *Journal of vascular surgery*, 44(6), 1279-1284.
3. Perrin, M. R., Labropoulos, N., & Leon Jr, L. R. (2006). Presentation of the patient with

- recurrent varices after surgery (REVAS). *Journal of vascular surgery*, 43(2), 327-334.
4. Malskat, W. S., Engels, L. K., Hollestein, L. M., Nijsten, T., & van den Bos, R. R. (2019). Commonly used endovenous laser ablation (EVLA) parameters do not influence efficacy: results of a systematic review and meta-analysis. *European Journal of Vascular and Endovascular Surgery*, 58(2), 230-242.
 5. Gianesini, S., Occhionorelli, S., Menegatti, E., Malagoni, A. M., Tessari, M., & Zamboni, P. (2018). Femoral vein valve incompetence as a risk factor for junctional recurrence. *Phlebology*, 33(3), 206-212.
 6. Rass, K., Frings, N., Glowacki, P., Gräber, S., Tilgen, W., & Vogt, T. (2015). Same site recurrence is more frequent after endovenous laser ablation compared with high ligation and stripping of the great saphenous vein: 5 year results of a randomized clinical trial (RELACS Study). *European Journal of Vascular and Endovascular Surgery*, 50(5), 648-656.
 7. De Maeseneer, M. G. R., Biemans, A. A., & Pichot, O. (2012). New concepts on recurrence of varicose veins according to the different treatment techniques. Presented at the *Congrès national de la Société Française de Phlébologie in Paris*.
 8. Winokur, R. S., Khilmani, N. M., & Min, R. J. (2016). Recurrence patterns after endovenous laser treatment of saphenous vein reflux. *Phlebology*, 31(7), 496-500.
 9. O'Donnell, T. F., Balk, E. M., Dermody, M., Tangney, E., & Iafrazi, M. D. (2016). Recurrence of varicose veins after endovenous ablation of the great saphenous vein in randomized trials. *Journal of Vascular Surgery: Venous and Lymphatic Disorders*, 4(1), 97-105.
 10. Baccellieri, D., Ardita, V., Carta, N., Melissano, G., & Chiesa, R. (2020). Anterior accessory saphenous vein confluence anatomy at the sapheno-femoral junction as risk factor for varicose veins recurrence after great saphenous vein radiofrequency thermal ablation. *Int Angiol*, 39(105), e11.
 11. De Maeseneer, M. (2011). Surgery for recurrent varicose veins: toward a less-invasive approach?. *Perspectives in vascular surgery and endovascular therapy*, 23(4), 244-249.
 12. Flamand, M. K., & Bækgaard, N. (2011). Room for improvement in reoperation for varicosities of the small saphenous vein. *Dan Med Bull*, 58, A4239.
 13. Van Groenendael, L., Flinkenflögel, L., Van der Vliet, J. A., Roovers, E. A., van Sterkenburg, S. M. M., & Reijnen, M. M. P. J. (2010). Conventional surgery and endovenous laser ablation of recurrent varicose veins of the small saphenous vein: a retrospective clinical comparison and assessment of patient satisfaction. *Phlebology*, 25(3), 151-157.
 14. Theivacumar, N. S., & Gough, M. J. (2011). Endovenous laser ablation (EVLA) to treat recurrent varicose veins. *European Journal of Vascular and Endovascular Surgery*, 41(5), 691-696.
 15. Hinchliffe, R. J., Ubhi, J., Beech, A., Ellison, J., & Braithwaite, B. D. (2006). A prospective randomised controlled trial of VNUS closure versus surgery for the treatment of recurrent long saphenous varicose veins. *European journal of vascular and endovascular surgery*, 31(2), 212-218.
 16. van Groenendael, L., van der Vliet, J. A., Flinkenflögel, L., Roovers, E. A., van Sterkenburg, S. M., & Reijnen, M. M. (2009). Treatment of recurrent varicose veins of the great saphenous vein by conventional surgery and endovenous laser ablation. *Journal of vascular surgery*, 50(5), 1106-1113.