

Review Article

Modified Trendelenburg Procedure for Varicose Vein

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Varicose veins of lower limbs is very common in clinical practice with its associated complications like venous ulcer, edema and pigmentation. Sapheno-femoral in competence and perforator incompetence are the principal cause of varicose veins. Trendelenburg operation of sapheno-femoral ligation and perforator ligation is standard procedure for its treatment. But for a beginner surgeon the procedure has some potential risks like injury to saphenous vein, injury to femoral vein and tributaries during dissection and ligation producing complications like bleeding, haematoma and long operative time. We have modified this Trendelenburg operation by a simple technique of cannulating the saphenous vein from mid thigh end to easily identify the T-junction and tributaries. This Modified Trendelenburg Operation reduces the intra-operative complications and decreases the operation time.

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Key words : Trendelenburg operation, Beginners, Infant feeding tube.

Varicose vein is a Chronic Venous Disorder (CVD) characterised by dilated, tortuous, and elongated veins of the lower limbs and located in the subcutaneous plane, 3 mm or more in size, measured in the erect posture and with demonstrable reflux^{1,2}. Varicose veins may be of three types based on the basic etiology – primary, secondary, and congenital type³. *Primary varicose veins* result from valvular reflux in superficial venous system commonly in the Sapheno-Femoral Junction (SFJ) / Sapheno-Popliteal Junctions (SPJ).

Open surgery is even now the “gold standard” in the care of a patient with varicose veins. However, its role is being increasingly threatened with advent of the endovenous treatment. With the advent of endovenous interventions, the indications for open surgery is restricted to those patients with sapheno-femoral junction incompetence and saphenous vein with marked local blowouts and saphena varix^{4,5}.

Sapheno-femoral T junction ligation with ligation of tributaries is known as Trendelenburg operation. Although Trendelenburg operation is a safe procedure, but for beginners it is frequently associated with increase in operative time, injury to great saphenous vein, injury to femoral vein, injury to tributaries of great saphenous vein at close to its termination and sometimes injury to femoral artery. Modified Trendelenburg procedure is a safe procedure to avoid these difficulties.

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Editor's Comment :

- During Trendelenburg operation for varicose veins sometimes it becomes difficult to identify distal end of GSV.
- It's May lead to various complications.
- These difficulties can be overcome by palpating the cannula introduced in GSV in Modified Trendelenburg procedure.

Procedure :

History taking clinical examination and necessary investigations like Duplex Scan are done to confirm the presence of varicose veins, sapheno-femoral junction incompetence and perforator incompetence. In standing position superficial tortuous veins with the blowout perforators are mapped using skin marker. On the day of operation Patient is placed in Trendelenburg position. Limb is elevated to empty the blood vessels. Under anaesthesia thorough painting from toe to mid abdomen done and followed by draping. A transverse incision is given at level of thigh perforator where great saphenous vein is easily approachable. Great saphenous vein venesection is done and a 6 FG feeding tube is introduced into great saphenous vein until it reaches the sapheno-femoral junction which is confirmed by palpation. Then incision is given at 3.5cm below and lateral to pubic tubercle and saphenous vein is identified by palpating through the feeding tube very easily at groin level. Tributaries to great saphenous vein like superficial pudendal vein, superficial epigastric vein, superficial circumflex iliac vein, medial and lateral superficial femoral vein are dissected, ligated and divided. After identifying the T-junction, the feeding tube is withdrawn downwards, so as to make the terminal 2 cms of Great saphenous vein free of feeding tube. Great saphenous vein is now dissected, ligated and divided at T-junction. The feeding tube is then removed.

Other perforator incompetence sites below knee are dissected ligated and excised. Local blowout at various level are dissected and avulsed. Postoperative sterile dressing is done and compression bandage given. All stitches were removed on 14th postoperative day (Figs 1-4).

DISCUSSION

Varicose veins and leg ulcers have plagued humanity ever since man assumed erect posture. It used to be commented that the patients with varicose veins were relegated to the end of the operation list and delegated to the junior most member of the team. Rational principles for surgical treatment of great saphenous vein varicosity were introduced by Friedrich Trendelenburg in 1890⁶. He conceived the idea of ligating the saphenous vein as part of treatment for varicose veins. Unfortunately he did not perform the flush tie; instead he ligated the vein at a mid-thigh level. Flush ligation was first performed by Perthes, a student of Trendelenburg. Moore, an Australian surgeon in 1896, also is reported to have performed flush tie⁷. Even today, high ligation is gold standard procedure in the treatment of varicose veins⁸. In the era of endovenous procedures open surgery is reserved for largely distended truncal varices with marked local blowouts and saphena varix. The drawbacks of open surgery are longer hospital stay and more severe postoperative pain in comparison to endovenous procedures. The pre-operative measures include Duplex Ultrasound scan to locate reflux at sapheno-femoral junction, trunk of great saphenous vein, perforators and also deep veins. In standing position mapping of sapheno-femoral junction, great saphenous vein, local varices and blowouts done. Great saphenous vein venesection at mid-thigh and feeding tube insertion into great saphenous vein until it reaches at sapheno-femoral junction helps in easy identification of saphenous vein, its tributaries and T-junction during operation. The great saphenous vein now a days is preserved to facilitate venous drainage into deep veins and for future venous graft purpose. The drainage function of superficial veins is maintained by a reverse flow⁹. The potential complications



Fig 1 — Mapping of Varicosities using skin marker



Fig 2 — Insertion of feeding tube through venesection at the level of mid thigh perforator

occurring during groin exploration are laceration or division of femoral vein which can lead to profuse bleeding and accidental arterial injury may lead to loss of limb or very serious morbidities. Anatomical knowledge and awareness of possibilities of vascular injury though preventive, sometimes it happens with in experienced hands. Groin exploration and identification of sapheno-femoral T junction is often a time consuming event for beginners. This Modified Trendelenburg Operation is considered as a solution for all these preventable complications which also



Fig 3 — Picture taken on 8th day.



Fig 4 — Picture taken on 8th day .

decreases the operation time by easy identification of veins. Routine checking of arterial circulation during surgery and in postoperative period is very important also¹⁰.

CONCLUSION

Varicose veins are very common problem in clinical practice. In past many clinicians consider it as a minor problem not deserving serious attention. However it is now realized that Varicose veins and its complications can impose a significant social as well as financial burden and needs early interventions. In the era of endovenous procedures like Endovenous Laser Ablation (EVLA), Radiofrequency Ablation (RFA), Ultrasound guided Foam Sclerotherapy (USFS) open surgery has a significant contribution towards treatment of Varicose Veins and performed routinely in various centers for reflux varicosities. The difficulties during Trendelenburg Operation and the potential complications are restricting its popularities among surgeons. Modified Trendelenburg operation can be considered as a very safe and time saving procedure for budding surgeons to learn and understand the procedure.

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