

Incidence of Deep Venous Thrombosis after Varicose Vein Surgery - A Prospective Study

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Abstract: **Background:** Varicose vein surgery is generally considered to have little risk of postoperative deep vein thrombosis. This prospective study was done to see the incidence of Deep Venous Thrombosis (DVT) in patients undergoing varicose vein surgery. **Methods:** The study was conducted on 50 patients which constituted the study group (Group A). Twenty five patients (Age and Sex matched) operated for other surgical causes and having same duration of hospital stay as operated cases of varicose veins formed the control group (Group B). Color Doppler was done in all the patients preoperatively and at two weeks postoperatively to rule out deep veins thrombosis in both the groups. **Results:** Postoperative color Doppler findings confirmed Deep Vein Thrombosis in one (2%) patient (in Group A) who had preoperative thrombophlebitis. Apart from this patient there was no incidence of DVT in any of the patients in both the groups. This patient was treated by conventional management of deep vein thrombosis by anticoagulants. **Conclusion:** Patients undergoing varicose vein procedures for uncomplicated varicose veins have almost same incidence of Deep Vein Thrombosis (DVT) as in age and sex matched controls undergoing other surgical procedures. However, patients having massive varicose veins, preoperative superficial thrombophlebitis and preoperative increased thrombogenic potential, are at higher risk of post-operative deep vein thrombosis and need prophylaxis against DVT.

Keywords: Color Doppler, Deep Venous thrombosis.

1. Introduction

Varicose veins are defined as dilated, usually tortuous, subcutaneous veins $\geq 3\text{mm}$ in diameter measured in the upright position with demonstrable reflux.[1] Chronic venous disease affects 27% of adults with a substantial effect on physical health aspects of quality of life.[2] Primary varicose vein disease is a widely prevalent condition affecting 30-70 years old people.[3]

Despite the large number of operations done annually for varicose veins, the risk of postoperative DVT is largely unknown. Many studies have investigated the incidence of DVT after varicose vein surgery with different surgical modalities, including traditional open surgery, radiofrequency ablation, endovenous laser ablation and sclerotherapy, and reported rates have ranged widely from 0.15% to 5.3%.[4] Hence the present study was planned to evaluate the incidence of DVT after varicose vein surgery by means of Duplex ultrasonography.

2. Methods

This study was conducted in the department of surgery, Pt B.D. Sharma Post Graduate Institute of Medical Sciences (PGIMS), Rohtak over a period of one year from Feb, 2017 to April, 2018. Informed consent was taken from all the patients who participated in the study. Detailed history about signs and symptoms with risk factors were recorded from all the patients. Clinical tests like Trendelenberg test; Tourniquet test; Perthes Test (Modified); Fegans method; Pratts test and Schwartzs test were done.

The clinical severity of the disease was recorded as per clinical grading of CEAP classification as recommended by society for vascular surgery. Color Doppler was done in all patients to check the patency of deep veins and to see for areas of superficial incompetence and they were marked.

Surgical management: All the patients were operated by open surgery. High ligation of saphenofemoral junction with ligation of all the tributaries with stripping of thigh portion of long saphenous vein was done. Superficial phlebectomy was done for prominent superficial veins in the leg. All the perforators marked by color Doppler were ligated subfascially by giving subfascial incision at the marked sites. After the procedure light pressure was applied over the stripping tract and crepe bandage was applied over the limb. All the patients were asked to do active ankle movements in the post-operative period and were mobilized on first post-operative day.

Color Doppler at follow up: A detailed history was taken from all the patients regarding symptoms suggestive of deep vein thrombosis like pain, swelling of legs at two weeks and calf tenderness. Color Doppler was done in all the patients of Group A and Group B at two weeks using a high frequency linear array transducer of 7.5-11 MHz to obtain good quality images. The patients were examined in lying down position starting from deep veins of thigh (femoral vein) and proceeding downwards to the popliteal and tibial veins. Patency of veins was confirmed by probe compression to rule out DVT.

Statistical analysis: The data collected was tabulated and

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analyzed statistically. Statistical analysis was performed using the Chi square (χ^2) test. The p-value of less than 0.05 ($p < 0.05$) was considered as significant.

3. Result

In the study group majority of patients (88%) were between 21-60 years of age. The mean age was 40.02 years. There was predominance of male patients with a male to female ratio of 2.8:1. Right side was involved in 25 patients (50%) while left side was involved in 24 (48%) patients and right to left ratio was 1.04:1. Most common presenting complaint was dilated veins (100%) followed by pain and skin changes (20%). Ulceration was seen in 4 (8%) patients. Thirty three (66%) patients (33 out of 50) had C2 severity according to CEAP scoring.

Preoperative Color Doppler showed SFJ incompetence in 48 (96%). Saphenopopliteal junction incompetence was seen in 5 (10%) patients. Perforator incompetence was seen in all the cases. Deep venous reflux was not seen in any patient of our study group. Most of the patients in both the groups were having hospital stay of two days with a statistically insignificant difference ($p > 0.05$). Pain over stripped thigh portion was the most common complaint in post-operative period and was present in 49 patients (98%) of study group which disappeared at two weeks. Ecchymosis and discoloration in stripped area of thigh was seen in 17 (34%) cases. Paraesthesia in the operated leg was observed in 2 (4%) patients. Calf tenderness was present in one patient (2%) at postoperative followup.

Postoperative color Doppler findings confirmed Deep Vein Thrombosis in one (2%) patient who had calf tenderness post operatively.

Table 1: Postoperative Color Doppler Findings In Both The Groups

Groups	DVT	Percentage
Group A (n=50)	1	2%
Group B (n=25)	0	0%

There was one patient (2%) in the study group with color Doppler findings suggestive of deep vein thrombosis at two weeks of follow up. This patient had history of thrombophlebitis in superficial veins in the preoperative period which was resolved on conservative management. Two weeks after surgery patient had an evidence of thrombosis in deep veins on Color Doppler. This patient was treated by conventional management of deep vein thrombosis.

4. Discussion

In present study deep vein thrombosis was present in one patient (2%) after conventional surgery of varicose veins. A 50 years male presented in venous disease clinic with pain and dilated veins in left lower limb and diagnosed as a case of left leg varicose veins with superficial thrombophlebitis but there was no evidence of deep vein thrombosis on color Doppler. This patient was managed conservatively in

preoperative period for thrombophlebitis. After relief of thrombophlebitis he was operated for varicose veins and advised follow up in outpatient department in postoperative period. After two weeks of surgery, patient presented with calf tenderness and on color Doppler a thrombus was seen in deep veins of left leg in calf region. Hence it is evident that this patient was having higher thrombogenic potential preoperatively. Except for this patient there was no evidence of postoperative DVT in any patient who underwent surgery for varicose veins. The possible reason for lower incidence of DVT in present study might be that all the patients were advised to do active ankle movements in the postoperative period and were mobilized on first post-operative day.

Many studies have investigated the incidence of DVT after varicose vein surgery with different surgical modalities, including traditional open surgery, radiofrequency ablation, endovenous laser ablation and sclerotherapy, and reported rates have ranged widely from 0.15% to 5.3%. [4] Haggmuller reported a series of 3300 varicose vein operations with an incidence of DVT of 0.15%. [5] Critchley et al suggested that the risk was slightly higher at 0.5%. [6] These studies diagnosed DVT on clinical grounds even though ultrasonographic assessment was readily available and more reliable. [7] Puttaswamy et al used duplex imaging to analyse the incidence of DVT after varicose vein surgery in a small study; they reported an overall incidence of 5 percent despite use of thromboprophylaxis. [8] In a follow up study of 180 legs after short saphenous surgery, Gillet et al reported an incidence of DVT in 3 percent cases. [9] Out of the total 170 patients with varicose veins, Joseph et al found 10 (5.9%) patients of DVT in postoperative follow up. [10]

5. Conclusion

In the present study there was deep vein thrombosis postoperatively in only one patient (2%) who was operated for varicose veins. This patient had history of superficial thrombophlebitis in preoperative period. Patients undergoing varicose vein procedures for uncomplicated varicose veins have almost same incidence of Deep Vein Thrombosis (DVT) as in age and sex matched controls undergoing other surgical procedures. However, patients having massive varicose veins, preoperative superficial thrombophlebitis and preoperative increased thrombogenic potential, are at higher risk of post-operative deep vein thrombosis.

Routinely patients should be advised early mobility and thromboprophylaxis is not required in patients undergoing surgery for varicose veins. However, further work is required to identify the vulnerable groups of patients, who may benefit most from preoperative thromboprophylaxis.

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