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Original Research Article

Outcome of varicose vein surgery in a general surgical unit

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ABSTRACT

Background: Varicose veins are tortuous, widened veins in the subcutaneous tissues of the legs and are often easily visible. In our country, we do have not sufficient vascular surgery centers or vascular surgeons. So general surgeons have training in vascular surgery and performing operations of varicose veins. This study aimed to show the operative procedure, results of treatment in terms of symptom improvement, and complications of varicose vein surgery done by general surgeons in a rural medical college hospital in Bangladesh.
Methods: This retrospective study was conducted at the Department of General Surgery in Sheikh Hasina Medical College, Jamalpur, Bangladesh from January 2017 to December 2022. A total of 20 patients were selected as study subjects by simple random sampling. Operative procedure depended upon pre-operative duplex imaging findings, and patients were kept under 6 months follow-up. The outcome was based on the cure and recurrence rate of varicose veins. Collected data were analyzed using descriptive statistics. Analysis of data was carried out by using a statistical package for social science (SPSS) 22.0 for Windows. After analysis, the data were presented in tables and charts.
Results: It was observed that 3 (15.0%) patients experienced ulceration after surgical procedure, followed by 2 (10.0%) developed DVT, 1 (5.0%) patient had wound hematoma, and 1 (5.0%) patient showed recurrence. Concerning the outcome of varicose veins after surgical procedures, the majority (18,20.0%) of the patients showed complete cure, 1 (5.0%) patient presented with recurrence, and 1 (5.0%) patient developed complication.
Conclusions: Despite the relatively low occurrence of complications and recurrence following surgery for varicose veins, the substantial 90% cure rate it offers is noteworthy. This study underscores the feasibility of conducting varicose vein surgery by general surgeons equipped with training in vascular surgery, ensuring safety and minimizing complications.

Keywords: Varicose vein, Genera surgery, Lower limb, Deep vein thrombosis

INTRODUCTION

Varicose veins, characterized by twisted and enlarged veins in the legs, often indicate incompetent valves leading to blood reflux and resulting in venous hypertension. Despite their high prevalence, especially in Western societies where nearly a third of adults are affected, varicose veins are frequently perceived as medically inconsequential and receive low treatment priority. While it's true that many individuals with varicose veins do not experience significant harm, they can cause discomfort and potentially lead to complications such as aching, swelling, itching, and even venous ulcers or blood clots in some cases. Therefore, although they may not always warrant immediate medical

attention, healthcare providers need to evaluate each case individually and provide appropriate management based on symptoms and potential complications.[1] The exact causes and development of primary varicose veins are still not fully understood. While it's commonly observed that valvular incompetence leading to venous reflux plays a significant role and has been traditionally considered the main factor contributing to vein wall weakness and dilation, recent evidence challenges this hypothesis. There is emerging research suggesting that primary changes in the vein wall may occur before the onset of valvular incompetence.[2] Various risk factors contribute to the development of varicose veins and can be classified into hormonal, lifestyle, acquired, and inherited categories. The influence of estrogen on varicose vein risk may partially account for the higher prevalence among women. Additionally, smoking stands out as a significant modifiable risk factor not only for varicose veins but also for more severe manifestations of chronic venous disease, such as venous ulceration.[3] Varicose veins can lead to various complications, though the exact frequency remains uncertain, estimated at approximately 5% of cases. Previously viewed as harmless, superficial thrombophlebitis can now be recognized as potentially serious, with 12–25% of patients progressing to deep vein thrombosis (DVT). This can occur either through direct extension of thrombosis from the affected superficial vein, typically the long saphenous vein, or as non-contiguous thrombosis in other veins.[4-7] Effective management of varicose veins hinges on accurately identifying the source of superficial venous incompetence. Tailored treatment aimed at eliminating venous reflux should alleviate associated symptoms, avert complications, enhance cosmesis, and entail minimal morbidity, low recurrence rates, and ideally, swift recovery times. Additionally, the cost-effectiveness of available therapies warrants consideration in the decision-making process. In contemporary surgical practice, addressing varicose veins stemming from the incompetence of the saphenofemoral junction (SFJ) and long saphenous vein (LSV) typically involves a combination of procedures. This includes ligating the SFJ along with its associated LSV tributaries, stripping the LSV to the level of the knee or slightly beyond, and performing multiple phlebectomies as needed.[8,9] Since the late 1800s, open surgery has stood as the primary treatment for varicose veins, famously initiated by Friedrich von Trendelenburg's mid-thigh open ligation of the great saphenous vein in a patient with an incompetent saphenofemoral junction (SFJ). However, in light of recent advancements in minimally invasive techniques, endovenous ablation has emerged as the preferred approach. This shift is reflected in the decreasing proportion of open surgeries performed, dropping from 83% in 2006 to 44% in 2012.[10]

Objective

General objective was to evaluate the outcome of varicose vein surgery in a general surgical unit.

Specific objectives were to see the age and sex distribution of the respondents, to assess the symptoms of the study subjects and to know about different operative procedures for varicose veins.

METHODS

This retrospective study was conducted at the Department of General Surgery in Sheikh Hasina Medical College from January 2017 to December 2022. Patients who underwent surgery for varicose veins of lower limbs were considered as the study population. A total of 20 patients were selected as study subjects as per inclusion and exclusion criteria. A simple random sampling technique was adopted in this study.

Inclusion criteria

Inclusion criteria were patients who underwent surgery for varicose veins of lower limbs and patients of more than 18 years old and of both sexes.

Exclusion criteria

Exclusion criteria was patients with significant comorbidity.

The choice of operative procedure was determined by the pre-operative assessment of the patients.

All patients underwent pre-operative duplex imaging of both legs. Superficial and deep veins were examined and any incompetence whether in SFC, SPJ, or perforator incompetence was detected. The operative procedure depended upon pre-operative duplex imaging findings. Most of the patients presented with saphenofemoral incompetence with perforator incompetence. We used to apply an elastic bandage on the operated limb up to the 3rd postoperative day. During discharge, we advise the patients to wear compression stockings for 6 months. Operative details written in the operation note were collected from hospital records. Patients attended the hospital at two weeks, six weeks, and six months after surgery for follow-up. Postoperative complications and patients' symptoms were recorded at each follow-up. Duplex imaging was not done at follow-up. The outcome was based on the cure and recurrence rate of varicose veins. Collected data were analyzed using descriptive statistics. Analysis of data was carried out by using a statistical package for social science (SPSS) 22.0 for Windows. After analysis, the data were presented in tables and charts. Ethical clearance was taken from the ethical committee of Sheikh Hasina Medical College Hospital.

RESULTS

In this series, the majority (11,55.0%) of the study subjects were in the>48 years age group, followed by, the 39-48 years age group (4,20.0%) (Table 1).

Table 1: Age distribution of the respondents (n=20).

Age (years)	N	%
18-28	2	10.0
29-38	3	15.0
39-48	4	20.0
>48	11	55.0
Range	18-50	

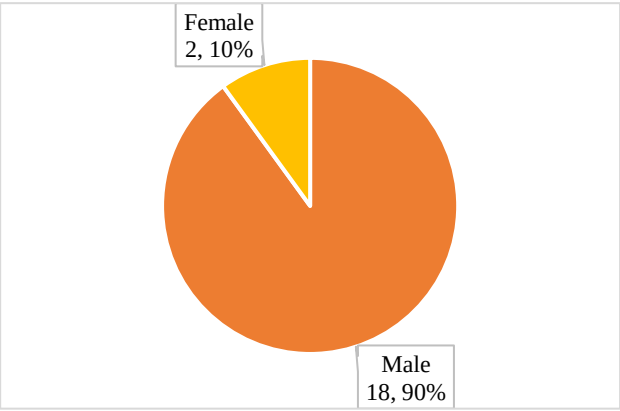

Figure 1: Sex distribution among the patients (n=20).

It was observed that the majority (18,90.0%) of the patients were male, and (10.0%) patients were female (Figure 1).

Table 2: Distribution of patients according to symptoms (n=20).

Symptoms	N	%
Dilated visible veins	8	40.0
Leg pain	3	15.0
Ulceration	2	10.0
Leg swelling	4	20.0
Lipo-dermatosclerosis	3	15.0

In this study, dilated visible veins were the most prominent symptom presenting in 8 (40.0%) patients, followed by leg swelling (4,20.0%) (Table 2).

Table 3: Number of legs according to operative procedures (n=20).

Procedures	Number of legs operated	%
***SFL with multiple avulsion and ligation**	11	55.0
◦SPL with multiple avulsion and ligation	6	30.0
SFL and SPL with multiple avulsion and ligation	4	20.0
SFL with stripping of long saphenous vein	1	5.0

*SFL: Saphenofemoral ligation, ◦SPL: Saphenopopliteal ligation

In this study, the most operated procedure was SFL with multiple avulsion and ligation (11,55.0%), followed by, SPL with multiple avulsion and ligation (6,30.0%), SFL and SPL with multiple avulsion and ligation (4,20.0%), and SFL with stripping of long saphenous vein (1,5.0%) (Table 3).

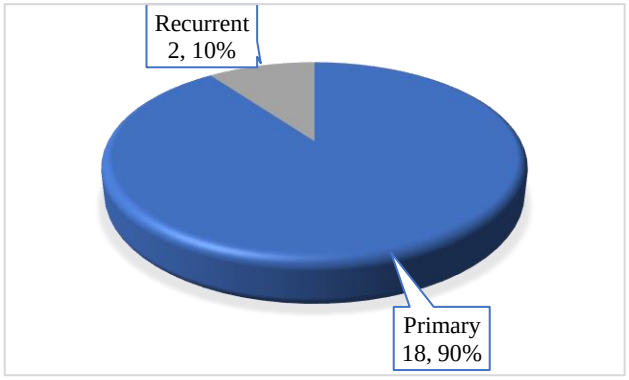

Figure 2: Distribution of patients according to frequency of varicose vein (n=20).

In the present study, the majority (18, 90.0%) of the patients presented with primary varicose veins (Figure 2).

Table 4: Distribution of patients according to complication (n=20).

Complication	N	%
Ulceration	3	15.0
DVT	2	10.0
Wound hematoma	1	5.0
Recurrence	1	5.0

*DVT: Deep vein thrombosis.

It was observed that 3 (15.0%) patients experienced ulceration after surgical procedure, followed by 2 (10.0%) developed DVT, 1 (5.0%) patient had wound hematoma, and 1 (5.0%) patient showed recurrence (Table 4).

Table 5: Distribution of patients according to outcome (n=20).

Outcome	N	%
Completely cured	18	90.0
Recurrence	1	5.0
Long term complication	1	5.0

Concerning the outcome of varicose veins after surgical procedures, the majority (18,20.0%) of the patients showed complete cure, 1 (5.0%) patient presented with recurrence, and 1 (5.0%) patient developed complication (Table 5).

DISCUSSION

Varicose veins are twisted, dilated veins most commonly located on the lower extremities. The exact

pathophysiology is debated, but it involves a genetic predisposition, incompetent valves, weakened vascular walls, and increased intravenous pressure.[11] In this series, the majority (11,55.0%) of the study subjects were in the>48 years age group, followed by, the 39-48 years age group (4,20.0%). The majority (18,90.0%) of the patients were male, and (10.0%) patients were female. However, Canonico et al portrayed a different picture in this regard. Their investigation encompassed a study group of 1319 individuals affected by varicose veins. Among them, 560 individuals (constituting 42.5% of the total) were men, while 759 individuals (57.5%) were women. Their ages spanned from 66 to 96 years, with an average age of 74.2 years.[12] In this study, dilated visible veins were the most prominent symptom presenting in 8 (40.0%) patients, followed by leg swelling (4,20.0%). According to Reatz et al, symptoms of varicose veins include a heavy, achy feeling and an itching or burning sensation; these symptoms worsen with prolonged standing.[11] Campbell WB stated that symptoms are a common indication for treating varicose veins and it is therefore important to be sure that they are due to the veins, rather than other causes.[13] Piazza observed symptoms in their study that were akin to those identified in this investigation.[14] In this study, the most operated procedure was SFL with multiple avulsion and ligation (11,55.0%), followed by, SPL with multiple avulsion and ligation (6,30.0%), SFL and SPL with multiple avulsion and ligation (4,20.0%), and SFL with stripping of the long saphenous vein (1,5.0%). According to Beale et al, current surgical practice for varicose veins secondary to SFJ and LSV incompetence is SFJ ligation, including the LSV tributaries, LSV stripping to knee level or just beyond, and multiple phlebectomies, which support relevance of the procedures of the present study.[15] These surgeries were performed in another study.[16] Regarding complication, 3 (15.0%) patients experienced ulceration after surgical procedure, followed by 2 (10.0%) developed DVT, 1 (5.0%) patient had wound hematoma, and 1 (5.0%) patient showed recurrence in the present study. Similar complications were seen in the study of Beale et al.[15] In their study, wound complications such as hematoma, cellulitis, or abscess were observed in 2.8% of limbs, while minor neurological disturbances like numbness or tingling were reported in 6.6% of cases. Major complications, including three instances of deep venous thrombosis (0.5%), one pulmonary embolus, and one occurrence of foot drop, were documented. The collective occurrence rate of major complications was 0.8%. Additionally, minor complications were noted in 17% of patients. After 6 months of follow-up surgical procedures, the majority (18,20.0%) of the patients showed complete cure, 1 (5.0%) patient presented with recurrence, and 1 (5.0%) patient developed complications in this study. In another study, after several months post-operation, symptoms improved to either 'cured' or 'much better' in 89% of patients, and this improvement persisted for 77% of individuals at the ten-year mark. However, only 30% of patients were entirely devoid of recurrent varicose veins after ten years, as assessed by both self and clinician evaluations. Among these, 44% experienced 'just a few' varicosities, while 26% reported varicose veins to be 'as severe as before, which was similar to the present study.[17] Another study showed that the recurrence of varicose veins after surgery was not uncommon, moreover, the recurrence rate increases with prolonged duration of follow-up.[18,19] Nevertheless, surgery provides a better outcome in the management modalities of varicose veins.[20]

Limitations of the study

The study was conducted in a single hospital with a small sample size. So, the results may not represent the whole community.

CONCLUSION

Despite the relatively low occurrence of complications and recurrence following surgery for varicose veins, the substantial 90% cure rate it offers is noteworthy. This study underscores the feasibility of conducting varicose vein surgery by general surgeons equipped with training in vascular surgery, ensuring safety and minimizing complications. Such findings hold significant importance, particularly in third-world countries like Bangladesh, where impoverished and rural populations lack access to advanced medical facilities. The potential for improved outcomes in the future hinges on securing adequate training, manpower support, and well-equipped medical institutions.

Recommendation

Complications associated with varicose vein surgery can be mitigated through various measures, including:

Training and experience: Surgeons with adequate training and experience are better equipped to handle surgical procedures effectively and minimize complications.

Routine use of anticoagulants: Administering anticoagulants as part of the post-operative care regimen helps prevent the formation of blood clots, reducing the risk of complications such as deep vein thrombosis.

Early mobilization of patients: Encouraging patients to mobilize early after surgery helps prevent complications such as blood clots and promotes faster recovery.

Use of elastic bandages in early postoperative period: Applying elastic bandages following surgery helps reduce swelling, alleviate discomfort, and promote healing.

Wearing graduated compression stockings: Encouraging patients to wear graduated compression stockings for six weeks postoperatively aids in maintaining proper blood flow, reducing the risk of complications like venous thromboembolism, and promoting optimal healing.

Moreover, further studies should be conducted involving a large sample size and multiple centers in this context

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