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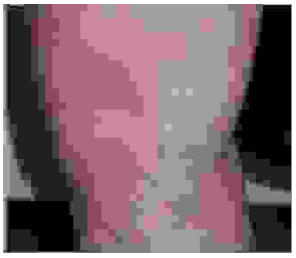
VARICOSE VEIN SURGERY;
A DAY CASE PROCEDURE



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ABSTRACT... phool@mul.paknet.com.pk **Objectives:** To evaluate the epidemiological aspects and feasibility of varicose veins surgery as a day case procedure in all patients of primary varicose veins and to identify the risk factors for hospital admission. **Design:** Interventional with prospective observational study. **Place & Duration:** This study was conducted from Nov 1999 to Oct 2003 at the department of Surgery B V Hospital Bahawalpur. **Patients& Methods:** Fifteen patients, 1 female and 15 male of varicose veins attending the surgical outdoor fulfilling the inclusion criteria and requiring varicose veins surgery underwent their procedure performed as a day case. A standard technique of sapheno femoral ligation with stripping of the long saphenous vein to just below knee and multiple stab avulsions of varicosities after subfascial ligation of the perforators was performed. All cases were reviewed postoperatively for eight weeks. **Results:** All fifteen patients underwent varicose vein surgery, of whom 33% had bilateral varicosities and all had primary varicose veins. The common presentation of all patients (80%) was heaviness, leg fatigue and dull pain in the calves during walking. Six (40%) patients had hyper-pigmentation with leg edema. 33.3% varicose ulcers and 13.4% bleeding varicosities with dermatosclerosis or / and eczematoid dermatitis while the remaining 13.4% patients had asymptomatic varicosities. Three patients (20%) developed postoperative complications. Ten 66.67% patients were discharged on the day of surgery while remaining 5 patients (33.34%) required admission due to minor anaesthetic complications and patient's preference, among whom two (13.4%) required admission for more than 24 hours. The need for over night admission was associated with the age of the patients, bilateral varicose vein surgery and the use of spinal anaesthesia. **Conclusion:** Although varicose vein surgery is safe, acceptable and cost effective as a day case or ambulatory surgical procedure, if attempted in all patients, overnight admission will be required in a significant proportion. Preoperative selection of the patients is mandatory to achieve optimal results.

Key Words: Varicose veins. Ambulatory surgery. Sapheno-femoral ligation. Stripping. Day case procedure.

Complications. Cost effective.

INTRODUCTION

Through the historic progressive events by Herophilus and Erasistrates at Alexandria in391 A.D in Hippocrates times, the management of varicose veins went on modified till mid 19th century when Brodie recommended the surgical management for the first time.

Despite the innovations of James Nicoll in 1909, a Scottish surgeon and Ralph Waters in 1912, an American anaesthetist, the concept of day case surgery was slow to gain acceptance till 1940s when the disadvantages of prolonged bed rest after surgery were revealed. Hospital based Day Surgery Units (DSUs) began to appear during 1960s in America followed by UK in 1970s. Day surgery began to take on a momentum after 1992 when the Royal College of Surgeons England focused attention at the benefits of care day surgery and set standards and guidelines.[2] The aim of day surgery selection is to avoid predictable complications and morbidity while achieving its maximum benefits. Day case surgery may reduce inpatient bed requirement, costs and waiting lists for elective surgery with minimum disruption to patient's life and varicose surgery may be an ideal operation to test the functioning of a day surgery services.[2-4]

The hallmark of venous stasis disease is presence of dilated, tortuous, elongated vessels with incompetent valves, which may manifest as telangiectatic blemishes to overt varicose ulcerations.[2-7] The first step in the evaluation of a patient with primary varicose veins is a careful history and clinical examination including tourniquet tests.[2-4, 8-9] When physical examination remains inconclusive, Doppler USG, Duplex color scanning and phlebography is required for an accurate diagnosis.[10-12] The principle of the varicose vein surgery still remains the interruption of all insufficient communications between deep and superficial venous system and removal of the varicosities as mentioned by Muller for ambulatory surgery.[13-14]

A number of alternative techniques such as endoscopic surgical procedures, cryosurgery, laser surgery, laser surgery and incompetent valve replacement have been applied in outpatient departments.[15] The procedure can be carried out under any anaesthesia but the tumescent anesthesia technique is an important adjunct to the ambulatory phlebectomy[19-17]. Deprivation of blood supply with a pneumatic or other tourniquets during surgery is beneficial for ambulatory treatment of varicose veins.[18-19]

Complications of varicose vein surgery are comparatively rare, with excellent cosmetic results thus making it an ideal procedure for a day case surgery. These include cutaneous nerve injuries, haematomas, infections, lymphatic fistula, injuries to the femoral vein or artery and compartment syndrome.[20-22] Adoptation of treatment policies for varicose veins varies center to center due to different factors including patient's preference.[23-25] In view of major medical and socio-economic impact of varicose veins treatment, there is an eminence need of a well targeted and cost effective health policy[26], which was the main purpose of this study, conducted at Bahawal Victoria Hospital Bahawalpur for a period of three years.

PATIENTS & METHODS

This study was conducted at BVH Bahawalpur from November 1999 to October 2003. All patients attending the surgical outdoor of unit II with complaint of varicose veins were initially assessed thoroughly by history and physical examination including tourniquet tests and only 15 cases of primary varicose veins were included for this trial. The following cases of varicose veins not fulfilling the inclusion criteria were excluded from the study:

- Patients with previous history of deep vein thrombosis, legs trauma or operations, abdominal / pelvic malignancies.

- Recurrent cases of varicose veins after surgery or sclerotherapy.
- All pregnant ladies and women on contraceptive medicines presenting with varicose veins.
- Patients having concomitant diseases like diabetes, cardiovascular, renal and hepatic origin.
- Varicose ulcers of long duration with malignant changes.

Patients of primary varicose veins with complications like dermatosclerosis, venous ulcers and infective bleeding wounds or patients on hosiery treatments devoid of the exclusion criteria were also selected for the study after preliminary treatment with antibiotics and antiseptic dressings on outdoor basis. In addition to the base line investigations, Doppler sonography or Duplex color scanning in two patients was carried out to see the status of deep veins, superficial veins and their perforators. Histopathological status of ulcers or more than one year duration was carried out before including them into study. The appointment date and the explanation about surgical procedure with pre-medication were given in the outdoor before the coming operative list. Only 3 patients of remote rural areas were called for admission in the ward a night before surgery.

All selected patients underwent surgery as a day case procedure under general or spinal anaesthesia. A standard technique of saphenofemoral ligation with stripping of the long saphenous vein up to just below the knee and multiple stab avulsions of varicosities after ligation of perforators was performed. All limbs were dressed with cotton in crepe bandages. The patients were discharged on the same evening after dividing them into two follow up groups to review postoperative course and complications.

I. Patients of varicose veins with venous ulcers in whom some dressings or STSG of the ulcers was also carried out along with varicose vein surgery. These patients were followed up fortnightly for two months.

II. Patients without venous ulcerations were followed monthly for two months after the first fortnightly visit.

The analysis of the results of day case varicose vein surgery was carried out on mean and percentage basis.

RESULTS

A total of 26 patients of varicose veins out of 6530 surgical patients (relative frequency of 0.31%) attended the surgical outdoor of unit II BVH for a period of three years among whom 15 (0.23%) selected cases of primary varicose veins underwent surgery as a day case procedure.

Table-1 Age and Sex Distribution

Age Group	Male	Female	Total	%age
≤30 years	3	0	3	20.00 %
31-40 Years	1	0	1	06.67 %
41-50 Years	7	1	8	53.34 %
51-60 Years	2	0	2	13.33 %
≥60 Years	1	0	1	06.67 %
Total	14	1	15	100.0 %

12 patients were referred from various general and medical practitioners and the remaining 3 rejected from military and paramilitary recruiting agencies were advised surgery before their selection. The age varied from 24 to 62 years with a mean age of 45.2 years. Most of the patients were in the 5th decade of life (53.34%) and majority were males (93.34%) with male to female ratio of 14:1 (table-I). Majority (80%) of the patients were laborers and field workers belonging to poor socioeconomic class of rural areas.

The duration of the varicose veins in patients undergoing surgery ranged from 3 years to 45 years with a mean duration of 23.27 years. Though the presenting complaints of the patients were multiple but the common presentation (80%) was leg fatigue and heaviness with dull pain in calves during walking followed by venous ulceration (33.34%) and hyperpigmentation of legs with edema (13.40%) as shown in Table II.

Table II. Clinical Presentation of patients of Primary Varicose Veins

Clinical Feature	patients (n)	Percentage
Heaviness +leg fatigue	12	80%
Dull pain in calves	10	66.67%
Venous Ulcer ± eczema	05	33.34%
Dermatosclero ± edema	02	13.40%
Asymptomatic	02	13.40%

Dermatosclero = Lipodermatosclerosis Eczema = Eczematoid dermatitis

Table III. Saphenous Systems and Competency Status of Saphenofemoral Junction.

No	System status	(n)	Percentage
1	Long SS with incompetent SFJ	03	20.00%
2	Long SS with competent SFJ	01	06.67%
3	Long & Short SS With incompetent SFJ	10	66.67%
4	Short SS only	0	0%
5		01	06.67%

SS = Saphenous system SFJ = Saphenofemoral Junction

Family history of varicose veins was present in 5 cases (33.34%) and in majority (66.67%) of the patients both long and short saphenous venous systems with incompetent saphenofemoral junction were involved. In 4 cases (26.67%) both legs were involved by varicosities. The incidence of venous system involved, the status of competency of saphenofemoral junction and the bilateral involvement of legs is shown in Table - III.

Although 13 patients (86.67%) showed preference for admission in the ward before surgery bur only 3 cases (20%) belonging to remote rural areas were admitted in the hospital a night before surgery.

The procedure was performed under general anaesthesia in nine (60%)cases and under spinal anaesthesia in the rest of the 40% patients. None of the patient got local anaesthesia.

Table IV. Risk Factors for Postoperative Hospital Stay Of The Patients

Hospital stay	(n)	%age	Reasons
Discharged on operative day	10	66.67%	Uneventful recovery
Stay ≤ 24 hours	03	20.00%	Minor anesthetic & patient preference
Stay 24 hours	02	13.33%	Spinal headache & old age

(n) = No of patients

There was no perioperative mortality. Ten (66.67%) patients were discharged on the day of surgery while the rest 33.34% required ward admission due to anaesthetic and other reasons among whom two (13.3%) patients remained admitted for more than 36 hours (Table IV). The need for overnight admission was associated with the age of the patients, patient preference and the use of spinal anaesthesia.

Three (20%) patients developed minor postoperative complications noticed on first follow up in both the group (Table V). In Group II the venous ulcers showed good response to the surgery and all ulcers healed within 8 weeks of follow up. None of the patient needed hospitalization during follow up due to any complication of the surgery as a day case.

After a mean follow up of 8 weeks 93.34% patients were satisfied by the treatment and only one patient who developed wound infection showed un-satisfaction about the treatment strategy.

Table - V. Complications of Varicose Vein Surgery

Complication	F/U Group			Percentage
	I	II	(n)	
Haematoma / bruises	0	1	1	6.67%
Wound infection	0	1	1	6.67%
Saphenous nerve injury	1	0	1	6.67%
Total	1	2	3	20.0%

(n) = Number of patients

DISCUSSION

The concept of varicose vein surgery as a treatment modality is not new. Since the times of Hippocrates, the management of varicose veins by surgery had started to progress as mentioned by Herophilus and Erasistrates at the school of Alexandria. Unfortunately their work lost in the fire of the Alexandria Library in 391 A.D. By the progressive innovations of Galien in 200 A.D to Unna in 1854, Brodie in mid 19th century the varicose surgery started to be performed as a day case procedure.[1-2]

In this study only 0.30% of all the patients reporting to the surgical outpatient department had varicose veins and only 0.23% patients were having primary varicosities. This prevalence is much less than reported in the literature by Franks PJ et al[29] (10-15% in males and 20-25% in females) and Ouvry PA et al[20] (18% in men & 32% in women). This low incidence of varicose veins in our population is due to low incidence of deep vein thrombosis and other vascular diseases as a whole in our race which are more common in Europe and America as compared to Asia and Africa.[30] This low incidence also supports the observations of lsaacs MN That a considerable number of patients presents with lower limb symptomatology with relatively invisible veins.[31] This statement favors the fact that majority of our patients first presented to the general practitioners and were laborers and field workers belonging to poor socioeconomic class, which is not in consistent to the Western studies where varicose veins are commonly seen in sedentary, overweight with tight clothing people of good socioeconomic class beside the racial factors[29-32] This finding is exactly in agreed to the Asian study at Japan so favoring the geographical factors involved in the varicose veins.[33]

The familial factor for the prevalence of varicose vein was also seen in our study and 33.34% of the patients gave the positive family history which is in accordance to the findings of Cornu Thenard A et al.[34] Most of the patients in the present study were in their 5th decade of life suggesting that the incidence increases with age in consensus to most of the studies, but more than 93% patients were males against the female predominance seen in West and America.[29-30] Although in 66.67% of the cases both short and long saphenous systems with incompetent saphenofemoral junction were involved but both legs were involved only in 26.67% of the cases which is in consistent to 26% bilateral cases of Mofidi R et al.[25]

It is worth mentioning to note that the bilateral involvement was seen predominantly in the patients having positive family history suggesting the genetic predisposition of vein wall collagen defect in causation of primary varicosities. [35-36]

Though the common presentation of patients was with heaviness and dull pain in the legs but on third of our patients in the study presented with varicose leg ulceration making 0.07% of all the patients reporting the surgical out patient department which is comparable to the prevalence reported by Baker et al (0.06%)[5] and Burton (0.12%)[6] This prevalence is higher than the 0.001% prevalence reported by I.A Choudhary et al at Rawalpindi.[7] This disproportion of prevalence in Pakistan may be of multi factorial reasons. Firstly the patients in our study were of poor socioeconomic class belonging mostly to remote rural areas with very poor awareness about Their disease evidenced by the fact that the mean duration of

varicose veins in our patients was more than 23 year and secondly the medical facilities available at Rawalpindi are much better than our areas and selected patients in their study were mostly soldiers of armed forces who are advised early surgical treatment. This higher prevalence in our study because of delayed presentation made it almost comparable to the Western studies, where the incidence of the disease as a whole and its complication is high in spite of early consultation.[20, 29-31] It is interesting to note that the varicose veins in the patients with positive family were bilateral, involving both saphenous systems and with venous ulcerations.

The preoperative clinical assessment of the patients was carried out exclusively by physical examination including tourniquet tests and the Doppler or Duplex scan was needed only in two cases to assess the status of deep / superficial veins and the perforators. It is supporting the statement of Kim J et al and Vrouenraets BC et al[8-9] that tourniquet tests are still valid to assess the patients against the recommendations of Mercer KG et al that Doppler and/ or Duplex scan is mandatory before the varicose vein surgery.[11] So it is very logical to recommend the preoperative assessment of the patients clinically by thorough and careful examination which is quick and compatible to our low socioeconomic setup and should not waste time and money unnecessarily on sophisticated investigations when the clinical examination is much conclusive.

The majority (86.67%) of our patients was not willing to adopt the surgical procedure as a day case for their varicose veins even after explanation about the procedure and its advantages and insisted for hospital admission before elective surgery. This observation in our study is totally in contradiction to the results of Cambell B et al where 88% of the patients preferred the procedure as a day case surgery under general anesthesia even for their bilateral varicosities.[24] This gross diversity of results is quite apparent by the fact that their patients have good awareness about the merits and demerits of a day case surgical procedure as compared to our patients unaware of modern health facilities and strategies. These preferences expressed by well informed patients should be considered when planning services for the treatment of varicose veins to avoid postoperative litigations.[27] The results also stress the need for imminent adoption of national health policies in Pakistan about public health education.

The safety of the standard technique of ligation, stripping and avulsion as a day case operation can be measured by our results that there was no perioperative mortality of the procedure performed under general and spinal anaesthesia favoring the study by Mofidi R et al.[25] Although no tourniquet was used during surgery against the recommendations of Sykes TC et al and Robinson J et al[18-19] but the pneumatic tourniquets during varicose vein surgery to reduce blood loss can not be ignored by the fact that one patient in our study had to take blood transfusion to replace the blood loss during surgery which prolonged the postoperative hospital stay in this old patient.

Although two patients (13.33%) in our study developed noticeable postoperative complications (Table IV) in contradiction to the 1.9% patients of Mofidi R et al but 66.67% of our patients were discharged on the day of surgery thus comparable to his 72% patients. A further 20% required overnight hospital admission due to minor anesthetic complications & patient preference and the remaining 13.34% patients remained admitted for more than 36 hours in the ward who are comparable respectively to 25% and 4% patients of Mofidi et al.[25] The low rate of immediate postoperative complications of the Western study may be because of optimal working circumstances and the relatively better physical fitness of patients as compared to our setup as evidenced by the fact that majority of their patients were of high socioeconomic class. The need for longer hospital stay was associated with the use of spinal anesthesia and patient preference compared to old age and spinal anesthetic complication of Western study.[25] This bulk of over night or longer hospital stay of patients can be reduced remarkably

by the use of good general anesthetic agent for induction like propofol[16] and the promotion of tumescent local anesthetic technique for ambulatory varicose vein operations to avoid spinal anesthesia in consensus to Cohn MS et al.[17]

On first follow up visit although our three (20%) patients developed postoperative complications in contradiction to the Western studies but the percentage of individual complications that is 6.67% for each of wound hematoma, infection and saphenous nerve lesion is comparable to the 6%,5% and 6% of Lacroix H et al and to the 9%,7% &5.5% of Nelzen et al respectively for the three complications.[27,38] These minor complications are in favor of the good feasibility of the varicose vein surgery as a day case procedure as evidenced by our observation that 93.34% of our patients were satisfied by the treatment strategy which is comparable to 91% of Nelzen et al.[27]

In many countries varicose veins are probably the commonest disorder presenting to general surgeons and an average of 30% of the district nursing time is estimated to be spent on caring the patients with venous ulcers. For a disease of such magnitude relatively little epidemiological research seems to have been carried out which is the status seems to be fact in our country.[26,39] Although no population based study has been carried out but the total incidence of the varicose veins may be quite higher than reported in a very few randomized studies thus suggesting it an underestimated public health problem like the Western countries and it may put a great socioeconomic impact on our health policies.[26]

It is highly suggested to adopt the effective national health policies to deal many such problems as a day case procedure because the risk factors for varicose veins and other diseases are increasing day by day by the westernization of our societies.

CONCLUSION

Although varicose vein surgery is safe, acceptable and cost effective as a day case or ambulatory surgical procedure but if attempted in all patients, overnight admission will be required in a significant proportion. Provided the preoperative assessment is accurate and the principles of selective surgical procedures are followed, the surgeon is able to perform it as a day case with a low complication rate and excellent cosmetic results. There is also and immense need to adopt a national health policy for proper epidemiological study of varicose veins and to establish day case surgery units for many such for many such diseases.

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