Section: Surgery

Original Research Article

COMPARATIVE STUDY OF OPEN SURGERY AND RADIO FREQUENCY ABLATION FOR VARICOSE VEINS" IN A TERTIARY CARE CENTRE, TAMIL NADU

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ABSTRACT

Background: Radio frequency ablation in the therapy of choice for superficial and perforator venous reflux in the current era (RFA).Both RFA and venous stripping cause obliteration of the superficial venous system in the near term. Both groups show similar clinical improvement as indicated by CEAP and venous severity score. RFA on other hand is less painful than surgery. Patients who have undergone RFA are able to return to work sooner than those who have had surgery. The aim of the study was to compare the efficacy between conventional open surgery and RFA for varicose vein.

Materials and Methods: The study was conducted in the Department of General Surgery, Government Coimbatore Medical College and Hospital, Coimbatore. It is a comparative study conducted during the year 2020-2021.Preoperative and postoperative details will be collected from the patients admitted for open surgeries and radio frequency ablation The collected data will be entered in the MS excel sheet Windows 10. The analysis was done using SPSS 23.

Results: Most common age group in our study was 41-50 years22(37%).Male were predominant in our study 42(70%).Right side was commonly observed 32(53.33%).The post hospital infection , post hospital stay, intraoperative bleeding was found more in surgery group compared to RFA group and was found to be statistically significant. Postop ambulation was less than one day in RFA group study participants.

Conclusion: In the modern period, endovenous radio frequency ablation has become the preferred alternative treatment for superficial and perforator venous reflux illness. In terms of morbidity and outcome the RFA not only outperforms standard vein stripping and perforator interruption but it also lowers the creation of neovascularization which is commonly blamed for higher recurrence rates after venous stripping.

Keywords: Sapheno femoral junction, long saphenous vein, Radio frequency ablation, Sapheno popliteal vein,Chronic venous insufficiency.

INTRODUCTION

Abnormal dilated and tortuous veins in the leg are known as Varicose veins. They tend to occur in any area in the body but mostly in lower limbs.[1] The incidence of Varicose veins is of 10%.[2] It is a common problem in adults. Many studies have found that every fifth women and every sixth men will have varicose vein.[3] In Superficial and deep venous system communication is established by perforators. Due to unidirectional blood flow the effective venous drainage is maintained.[4] Varicose veins is caused mainly due to any pathology which will affect the valve.

Chronic cough, old age, female sex, family history of venous disease, obesity, pregnancy and prolonged standing are the risk factors. The pathophysiology of varicose vein is still in debate but many involved are genetic predisposition, weakened vascular walls, incompetent valves and increased intravenous pressure. The patients generally presents with Ankle edema, chronic eczema, disfigurement, ulceration,

disability, bleeding,foot deformities and impairment in quality of disorder.[5]

Varicose veins are one of the many costs that man must pay in order to achieve an upright posture, and it has existed since prehistoric times. It's always been a struggle. As the disease progress invasive techniques or procedures have to be done. They are sclerotherapy, SPJ ligation, Trendenlenburg's ligation, GSV stripping, stab avulsion, perforator ligation and sub fascial endoscopic perforator surgery. As similar results of surgery are obtained by alternative treatment known as Endovenous thermal ablation techniques.[6] Newer minimally invasive procedures in the treatment of varicose veins include radio frequency ablation (RFA), transilluminated power phelebectomy (TIPP), foam sclerotherapy, and endovenous laser therapy (EVLT).

RFA has been the most widely accepted of these procedures by patients all around the world. When compared to traditional surgery, it is less intrusive and requires less post-operative care and suffering. The aim of the study was to compare the efficacy between conventional open surgery and RFA for varicose vein.

MATERIALS AND METHODS

Study Period: May 2020- December 2021.

Study Place: Department of General surgery and vascular surgery in Government Coimbatore Medical college Hospital.

Study Design: Comparative study.

Sample Size: As per inclusion and exclusion criteria the study participants were recruited. The final sample size was 60 patients,30 patients in each category.

Inclusion Criteria

- Primary varicose veins with sapheno femoral incompetence.
- CEAP grade 2 & 3 patients are selected.

Exclusion Criteria

- Secondary varicose veins
- Age more than 70 years
- Age less than 19 years
- Tortuous veins
- Patients with Pacemakers
- Pregnancy
- Unmarried

Data collection methods: The data was collected using a predesigned and pretested questionnaire. Detailed history like name, age, sex, residence, presenting complaints were noted. Preoperative and postoperative data will be collected from inpatients admitted to the above specified hospitals for open operations and radio frequency ablation, and the data will be compared. CEAP Classification, recurrence and residual disease, number of days in the hospital, pain score, post-operative bleeding, edema, and infection will all be discussed.

Data entry and analysis: The collected data will be entered in the MS excel sheet Windows 10. The analysis was done using SPSS 23. Descriptive statistics was expressed in terms of mean values and percentages. Chi square test was done for comparison two categorical variables. Continuous variables were expressed in mean and standard deviation. Continuous variables were analyzed using unpaired t test and Anova test. P value less than 0.05 is considered to be statistically significant.

RESULTS

The results were tabulated on a spreadsheet, and statistical analysis was performed with the help of a bio statistician using SPSS software.

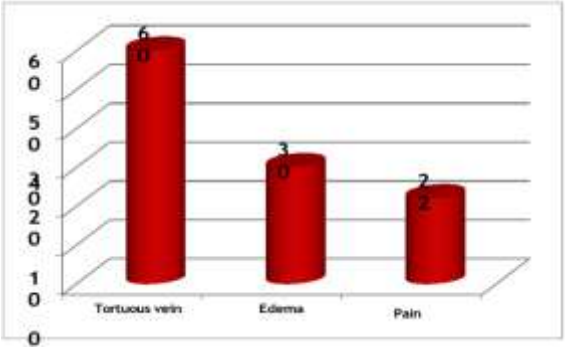

Figure 1: Symptoms at the time of presentation

Table 1: Baseline Characteristics

Baseline characteristics	Number(N)	Percentage(%)
Age category		
<30	6	10
31-40	16	27
41-50	22	37
51-60	8	13
>60	8	13
Sex		
Male	42	70
Female	18	30

The most common age group in our study was 41-50 years 22(37%) followed by 31- 40 years 16(27%). Male predominance was observed 42(70%).

Table 2: Pathology

Pathology	Number(N)	Percentage(%)
Superficial Superficial with perforator	12 48	20% 80%
Gsv Ssv Gsv+Ssv	40 8 12	66.7% 13.3% 20%

Superficial with perforator was most common 48(80%). GSV was found more 40(66.7%).

Table 3: Preop characteristics

Preop characteristics	Number(N)	Percentage (%)
Side involved		
Right	32	53.33%
Left	20	33.33%
B/L	8	13.33%
Preop CEAP		
C2	30	50%
C3	30	50%
Preop Edema Grade 1	20	33.33%
Grade 2	10	16.66%

Right side was most commonly involved side 32 (53.33%). Preop CEAP was equal in the study participants. Grade I edema was most common 20(33.33%).

Table 4: Postop Characteristics

Postop characteristics	Surgery	RFA	P value
Post CEAP CEAP(C-0) CEAP (C-1)	21(70%) 9(30%)	23(77%) 7(23%)	0.27
Bleeding Present Absent Bleeding Mild Severe	 7 23 5(17%) 2(7%)	 3 27 3(10%) 0(0%)	0.08
Post op infection Present Absent	 2(7%) 28(93%)	 1(3%) 29(97%)	0.55
Painkiller requirement Yes No	30(100%) 0(0%)	3(10%) 27(90%)	<0.001*
Post op Hospital stay <3 days ≥3 days	 1(3%) 29(97%)	 30(100%) 0(0%)	<0.001*
Post op Ambulation 1day <1 day >1 day	 2(7%) 28(93%)	 29(97%) 1(3%)	0.001*
Intraop Bleeding Yes No	 8(27%) 22(73%)	 2(7%) 28(93%)	0.03*

The post op Hospital infection was found more in surgery compared to RFA. The pain killer requirement was found in all study participants in surgery group 30(100%).Post op hospital stay was more in Surgery group study participants and intraoperative bleeding was more in surgery group. Postop ambulation was less than one day in RFA group study participants. Statistically significant difference observed in Post op hospital stay,intraop bleeding and post op ambulation.

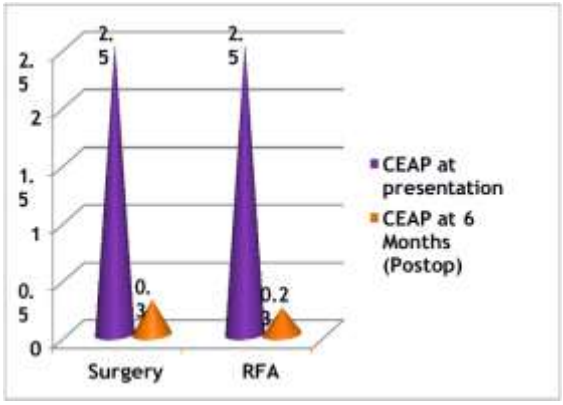

Figure 2: CEAP at presentation and 6 months postoperative

The mean CEAP class improved from 2.5 to 0.3 in the surgery group. The mean CEAP class improved

from 2.5 to 0.23 in the RFA group. There was no statistically significant difference between the improvements seen in both groups (p=0.55).

DISCUSSION

In our study peak age of presentation was between 41-50 years with an mean age of 44.78. In Naithani V et al,[7] study the most common age group was 20-50 years and the mean age was 35 years. In Sharma et al study most common age group was 20-40 years which is contrast to our results. In our study male: female ratio = 2.33:1 with male predominance was observed. In Naithani V et al,[7] study the male predominance was observed similar to our results and the M:F ratio is 4:1. Similar results was also observed in Sharma et al,[8] study where male predominance was observed.

Dilated and tortuous veins was the predominant symptom in almost all patient. Pain and lower limb edema were the secondary symptoms in this study. In this study the involvement of superficial venous system with perforator incompetence (80%) was more when compared to superficial venous system alone(20%).

In this study GSV involvement was found to be predominant present in 66.66% of the patients. SSV involvement was present in 13.33%. Both GSV and SSV involvement was present in 20% of the study population. Both RFA and conventional surgery group have the goal of removing defective veins from the venous circulation in order to reduce venous hypertension and, as a result, relieve symptoms while avoiding major morbidity. The early follow-up is focused on comparing procedure- related problems, patients' recovery and quality of life outcomes following surgery, and the procedure's impact on hemodynamic and clinical outcomes within two weeks.

The RFA group has much less postoperative pain than the conventional surgery groups. The number of analgesics required in the RFA group was statistically lower than conventional surgery group. The per-operative bleeding was significantly less in RFA group when compared to conventional surgery group. Post operative infection was also found to be more in conventional surgery group compared to RFA group. Similar complications was also observed in Naithani V et al study.[7] Other than this the other complications observed in conventional surgery group are Hematoma and Discharge. In Sharma et al,[8] study the postop complications like Bleeding was observed in 8 ,inflammation was observed in 32 study participants and hematoma was observed in 5 more in surgery group compared to RFA group. Inflammation and bleeding was found to be statistically significant.

Post op ambulation was quicker in RFA group when compared to surgery group, also the RFA group returns to normal physical activity more quickly than the conventional surgery group. Similar results was also seen in Naithani V et al study.[7] The RFA group of patients had less hospital stay when compared to conventional surgery group which is similar to Naithani V et al study.[7] Surgery and RFA took approximately the same procedure time in our study. In contrast in Sharma et al,[8] study the duration of surgery was less in RFA group 16.2 compared to Surgery group 55.4%.

There was significant improvement in post op CEAP after 6month in all patients irrespective of nature of treatment (RFA and surgery) The most significant distinction between the two groups was in terms of patient recovery. The average time it took for the RFA patient to resume regular activities was 1.5 days, compared to around 5 days for conventional surgery group.

Both the RFA and venous stripping procedures were successful, and the problems between the groups in the study were essentially identical to those seen in prior trials. There were significant disparities in the patients' rehabilitation and return to work. The most crucial factor to remember is that RFA is the preferred treatment.

Pictures

Varicose vein – Long saphenous vein

Flush ligation of saphenofemoral junction

Ligation of distal end of saphenous vein

Mayo's Stripping.

Sub facial ligation of perforator

CONCLUSION

In the modern day, endovenous radio frequency ablation is the preferred treatment option for superficial and perforator venous reflux illness. The RFA not only outperforms standard vein stripping and perforator interruption in terms of morbidity and result, but it also lowers neovascularization, which is commonly blamed for higher recurrence rates after venous stripping.

Surgery and RFA both obliterate the superficial venous system in the short term (3 months). Both groups show similar clinical improvement as indicated by CEAP class. In both categories, complications are minimal and occur seldom. RFA has a lower morbidity rate than surgery. Patients who underwent RFA were able to return to work sooner. RFA causes much less post-operative pain than surgery.

Limitations: The sample size is small. The study is a single center study so the results cannot be generalized.

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