Original Research Article

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Surgical management of varicose veins: a comparative analysis between radiofrequency ablation and open surgery with venous stripping

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ABSTRACT

Background: Varicose veins are a common condition affecting the lower limbs. Apart from having cosmetic problem, if not treated in time it can have some serious complications and are difficult to treat. Multiple modes of surgical management exist for the disease.

Methods: This is a prospective clinical study, done over a period of 5-years, between February 2015 to February 2020. Patients were divided into 2 groups: group I (n=103) included those who underwent open surgical to treatment with venous stripping. Group II (n=104) included those who subjected to Radiofrequency ablation (RFA). Groups were selected with comparable physical parameters. Various parameters like bleeding, hematoma, blood requirement, postoperative inflammation, pain, numbness, mobilization, date of discharge and resuming duties were compared. All patients were followed up for 1y ear.

Results: Majority of our patients belongs to age group 20-40 years with mean age of 35year in both groups. Male has dominance over female with male to female ratio 4:1. We noticed significant complication in group I than group II, such as bleeding (20:1), hematoma (5:0), inflammation (60:1) and blood requirement (1:0). In group II, we noticed early mobilization of patient (1day v/s 3 days), discharge from hospital (1day v/s 5 days) and resuming duties (5 days

Conclusion: RFA keeps an edge over open surgical treatment with venous stripping.

Keywords: Varicose vein, RFA, Open surgery

INTRODUCTION

Varicose veins are described as abnormal dilated and tortuous veins seen in the leg; they are seen in 10% of the general population.1

In venous system communication between the superficial and deep venous system is achieved through perforators. Effective venous drainage is maintained because of the unidirectional flow of blood, by means of valves. Any pathology causing these valves to not function properly may lead to formation of varicose veins.2

As the disease progresses there is need for invasive procedures, which include sclerotherapy, surgeries like Trendelenburg's procedure, SPJ ligation, GSV stripping, perforator ligation, stab avulsion and sub facial endoscopic perforator surgery. Endovenous thermal ablation techniques are providing a great alternative to surgery as they achieve similar results with minimum insult.3

RFA device has bipolar RFA probe in which both the electrodes are in same probe with an insulator between the electrodes and Radiofrequency Generator Unit.

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Mechanism

In Bipolar RFA catheter-based approach, generator delivers energy to the vein wall creating conductive heating that contracts the vein wall causing shortening of collagen fibrils, destruction of endothelium and venous lumen shrinkage fibrotically shrinking the vein.

METHODS

This is a prospective study done in Department of Cardio thoracic and vascular surgery, RNT Medical college, Udaipur, Rajasthan, over a period of 5-years from February 2015 to February 2020. Patients were divided into 2 groups: group I (n=103) included those who underwent open surgical treatment with venous stripping. Group II (n=104) included those who subjected to RFA. Various parameters like bleeding, hematoma, blood requirement, postoperative inflammation, pain, numbness, mobilization, date of discharge and resuming duties were compared. All patients were followed up for 1 year.

Selection and exclusion criteria were like: This is a clinical and comparative study. Physical parameters like age, sex, height and weights etc were comparable in both the groups. Further patients of CEAP grade 2s-6 were taken into consideration.

Though a clinical study, ethical committee was informed

Techniques and methods

In Group I - done via multiple incisions

- Saphano -femoral junction as well as tributaries were ligated and divided.
- 2. Ligation of multiple perforators done.
- 3. Venous stripping using disposable stripper done.
- 4. Compressive crape bandaging done.

In Group II - Radiofrequency ablation (RFA) we used

- 1. Small incision in inguinal region to ligate and divide all three tributaries and SFJ done, as we know recurrence at later stage are due to these tributaries.
- 2. A small incision just above ankle (medial malleolus) about 0.5 CM to ligate and divide ankle perforators and used for RFA probe insertion.
- 3. We feel there is no need of ultrasonic guidance as we can feel probe, distally.

RESULTS

This study was very selective and included only two groups of therapeutic modalities in patients. Other modalities like conservative management, external laser treatment, injection sclerotherapy was not included. Both groups were selected with comparable age, sex, height, weight and occupation distribution. Majority of patients were in active stage of life i.e. age group 20-50 years, with mean age of 35 years in both groups. Male has dominance over female with male to female ratio 4:1. We noticed significant complication in group I as compared to group II, such as bleeding (20:1), hematoma (5:0), Inflammation (60:1) and Blood requirement (1:0). In group II, we noticed early mobilization of patient (1day v/s 3 day), discharge from hospital (1-day v/s 5 days) and resuming duties (5-days v/s 2 weeks).

Average duration of procedure in RFA surgery took 15 minutes as compare to open surgery with venous stripping, which required 1 hour.

Table 1: Observation.

Variables	Group 1	Group 2
Criteria		
Number of cases	103	104
Average duration of surgery	1 hr	15 min
Blood required	1 patient	nil
Complications		
Bleeding	20 patients	1 patient
Hematoma	5	Nil
Inflammation (wound site)	60 patients	1 patient
Discharge after	5 days	1 day
Resume duties	2 weeks	5 days

DISCUSSION

Varicose veins are twisted, dilated veins most commonly located on the lower extremities.¹ Risk factors include chronic cough, constipation, family history of venous disease, female sex, obesity, older age, pregnancy, and prolonged standing. The exact pathophysiology is debated, but it involves a genetic predisposition, incompetent valves, weakened vascular walls, and increased intravenous pressure.² Patients with varicose veins can be presented with ankle oedema, disfigurement, chronic eczema, disability, ulceration, bleeding, foot deformities and impairment in the life quality.⁴ A heavy, achy feeling; itching or burning; and worsening with prolonged standing are all symptoms of varicose veins. Potential complications include infection, leg ulcers, stasis changes, and thrombosis.

In our series, patients were male dominating (4:1) in active stage of life and have standing posture job. Patients age belongs to 20-40 years (mean age 35 years).

The surgical treatment of ligation and stripping of the greater saphenous veins has been fairly standard for nearly the last 100 years, more recent studies have questioned this approach.^{5,6} Treatment options for varicose veins include conservative management, external laser treatment, injection sclerotherapy, surgery and endovenous interventions with RFA or LASER.^{4,7}

In this study we compare two different modalities of treatments and their outcome. RFA is a minimally invasive procedure with potential benefits like less tissue dissection and trauma. Due to this they experience considerably less pain, required less analgesia and were able to return to their activities more quickly. This improved confidence, lifestyle, social contacts, cosmetics, quality of life and satisfaction in the early days after the procedure.⁸

In this study, we observed the same; there was less bleeding (20:1), hematoma (5:0), blood requirement (1:0), postoperative inflammation (60:1), pain, numbness, and early mobilization, date of discharge after 5:1 day) and resuming job /duties (14:5 days).

CONCLUSION

RFA is time saving, has less complication and keeps an edge over open surgical treatment with venous stripping. It is safe, easy, less invasive, cosmetically better and has good results.

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Ethical approval: The study was approved by the

Institutional Ethics Committee

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