

Lympho-nodo-venous Shunt for Filarial Lymphoedema

Jayant D Mohite¹, Yatindra Kashid^{2*}

¹Ex Professor, Department of General Surgery, Seth GS Medical College and KEM Hospital, Mumbai- 400 012.

²Associate Professor, Department of General Surgery, ESIC Medical College and Hospital, Faridabad, Haryana

ABSTRACT

Background: Treatment for lymphoedema is a lifelong process. Conservative treatments often fail, and no surgical procedures offer complete cure. Several patients reported in miserable condition seeking help for heaviness of limb, discharge, disfigurement, lymphangitis, elephantiasis, and restricted mobility. Hence, we decided to undertake this prospective study of lymphonodovenous shunt (LNVS) for various stages of lymphoedema.

Methods: Thirty-one patients underwent LNVS in three years duration study. Six patients underwent debulking surgery a week later. Nine patients underwent bilateral procedure.

Results: More than 50% reduction in oedema occurred in 24/31 (77.41%) patients within first five days. Three of six patients with Grade IV lymphoedema who had undergone debulking surgery and skin grafting at follow-up showed hypertrophic scarring, ulceration and exophytic keratosis at split skin grafting (SSG) area.

Conclusion: LNVS is a procedure not free from complications like infection and hematoma. Yet the procedure was found to be safe, simple, and easy. It also helped to reduce the incidences of postoperative lymphangitis attacks. We recommend the procedure for Grade II-III lymphoedema and for Grade IV lymphoedema in combination with debulking surgery.

Keywords: Filariasis, Elephantiasis.

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*Corresponding Author

Dr. Yatindra Kashid.
15, Shioji Sankul, Bela DeSouza Road,
Jail road, Nashik Road,
Nashik, 422 101, Maharashtra State.
Email: yatindrakashid@gmail.com

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INTRODUCTION

Of the several procedures available for the surgical management of the lymphoedema, lymphonodovenous shunt (LNVS) is commonly employed.¹ The task of the surgeon is to restore the balance quantitatively between the lymphatic load and the lymphatic transport capacity.² Surgery is thought to be indicated only if conservative treatment fails. We feel it is preferable to operate during the oedema stage and not when the whole system is destroyed. Several patients came in miserable conditions requesting us to help them in some way as they were fed-up with the discharge, heaviness, and restrictions of movements. Hence, we proposed this prospective study to carry out LNVS in patients presenting with filarial lymphoedema. We


included patients having Grade-II to IV lymphoedema. The grading was followed according to WHO criteria.³

Grade-I : Oedema spontaneously reversible on elevation.

Grade-II : Oedema not spontaneously reversible on elevation. Skin normal.

Grade-III : Oedema not spontaneously reversible on elevation. Skin thickened.

Grade-IV : Oedema not spontaneously reversible on elevation. Skin thickened with warty/papillomatous growth.

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METHODS

Thirty-one consecutive patient who underwent LNVS over a period of three years were included in the study. All patients underwent a detailed history and thorough physical examination. Duration of lymphoedema, frequency of lymphangitis attacks and history of past treatment were recorded. Oedema volume was not measured as suggested by others.⁴ Measurements and girths at different fixed levels were taken and recorded.

The procedure was carried out in each patient under spinal anaesthesia and one dose of antibiotic perioperatively. A 5 cm transverse incision was taken on the thigh, 2 cm below the saphenofemoral junction. The incision was deepened through the layers to identify the long saphenous vein. The vein was dissected out through the surroundings, to lift it up very freely. The lower end was reached as low down as possible and at a suitable length it was divided. The end of vein towards the knee was ligated and transfixed. The other end was occluded with the bulldog clamp. By releasing this clamp, the back bleed (competency of sapheno-femoral valve) was also checked.

A good sized, fleshy lymph node was searched for in the nearby vicinity. Without disturbing too much tissue around a lymph node, a small part of lymph node facing towards the vein was excised and preserved for histopathology. The exposed medulla of the lymph node, the cortex and the capsule were confirmed. The open vein end was anastomosed to the cut end of the lymph node either end-end or end-side depending on the size of the lymph node. The suture material used for the anastomosis was 5/0 polypropylene double armed. Continuous sutures were taken with vascular instruments. No operating microscope / loupes were used. After testing for leak and the free lie of the vein on the anastomosis, the wound was closed in layers. The patients were ambulated after 6–8 hours of surgery and thereafter.

Elastic support bandage was avoided for first month. The patients were checked for the size of the limb and girth daily for one week and then weekly for one month. Later they were followed up monthly. One patient underwent complete scrotal wall excision and split skin grafting (SSG) at the same sitting. Six patients underwent debulking surgery at foot/leg at the end of 7 days and further stepwise SSG.

RESULTS

Among the 31 patients, 17 were men and 14 women. Most patients were in the 20–40 years of age group. The duration of lymphoedema varied from 6 months to 17 years. Nine patients underwent bilateral procedures. Fifteen patients had Grade-II lymphoedema (Fig.1), nine had Grade-III and seven had Grade-IV. Most patients had 1–2 lymphangitis / adenitis attacks per year. Only three patients had reflux of blood from the femoral vein to great saphenous vein. Even in these patients, anastomosis was carried out safely. There was no operative mortality. One patient died in the wards five days after debulking procedure. While she was awaiting SSG, she probably died due to a cause not related to surgery. This patient did not have any sign of invasive sepsis. All patients had primary healing of thigh wounds. Three patients showed local sepsis in the wounds with slough formation after debulking surgery. This was brought under control with antibiotics, dressings and followed by early SSG. More than 50% reduction in oedema occurred in 24 patients (77.41%) within first five days (Fig.2), but this rate did not

continue any further. Six of seven patients who had Grade-IV lymphoedema and who underwent debulking procedure later had wrinkling of the skin and softening of hard fibrosclerotic skin and subcutaneous tissue by this time. Three of them at follow-up had hypertrophic scarring, ulceration and exophytic keratosis at the SSG area.

Fig 1: Preoperative clinical photograph showing tense filarial lymphoedema (Grade II) of lower limb with a discharging wound on the leg.



Fig 2: Postoperative clinical photograph showing decrease in the filarial lymphoedema and limb girth of lower limb in the same patient with healing of the discharging wound on the leg.



DISCUSSION

Conservative management is the best approach for the majority of early lymphoedemas. Hygienic measures, massage, local hyperthermia, crepe bandage and exercises will eschew the need of surgery.² Treatment for lymphoedema is a lifelong process. A patient with severe lymphoedema that has lasted ten years or more has a 10% chance of being affected by lymphangiosarcoma indicating need for some form of surgery.² Only excisional operations do not cure the underlying condition. Such procedures are associated with persistent lymphorrhoea and thereby infection.

No surgical procedure for lymphoedema offers complete cure, significant improvement is only possible by a variety of methods. The Charles's operation (staged excision of skin and subcutaneous tissue) and Thomson's dermal flap operations are most popular. Axial and myocutaneous flaps and microsurgical bypass procedures hold promises. SSG after excisional procedure may not be feasible in one sitting and they are often unstable and breakdown easily. Postoperative

eczema and hypertrophic scar is a known sequelae following such procedures.

Vigorous intermittent pneumatic compression combined with limited surgery is described for huge lymphoedema of the extremities.⁵ Omentoplasty is advised after a failed LNVS to decrease lymphoedema.⁶

LNVS gives a rapid relief of lymphoedema in the early postoperative period followed by slow reduction.⁷ Even in our study, around 77.41% (24/31) of patients had fast decrease in oedema. Charle's operation has shown immediate volume and circumference reduction and takes up grafts in 84%. Infection is the commonest complication. Thompson's operation does not satisfactorily decrease volume and circumference.⁷

LNVS at inguinal area gives 90% success.⁸ However, in an enormously swollen leg the dilated distal lymphatics may not be adequately drained and hence a distal lymphatic venous anastomosis may be tried which may offer further reduction and thereby making debulking effective.⁸ In addition to this, some studies have also documented reduction in lymphangitis attacks which is a good indicator of response to surgery.⁹

All of six patients in our series, the excisional surgery showed good results, LNVS prior to debulking surgery helped in reducing lymphorrhoea, and healing of discharging wounds. LNVS done in 77 patients (306 anastomoses) resulted in an average reduction of oedema of 75% in follow-up ranging up to 11 years.¹⁰

Factors influencing response in 75 patients, who underwent LNVS were studied.⁶ Predominant complications in this study were lymphorrhoea, wound infection and haematoma. In the immediate postoperative period 25–50% oedema volume reduced in 46% cases and more than 50% reduction was achieved in 17.3% cases. Significant reduction in the postoperative attacks of adenolymphangitis was also seen. Best results of LNVS are seen with large volume lymphoedema (Volume > 2 L).⁴ This is in contrary to a study which showed as the initial oedema volume increases, the results are progressively poorer.¹¹ Our study failed to show any definite results.

CT scan can be used to confirm objectively functioning of the lymphovenous anastomosis.¹² In this scan, disappearance of supra and subfacial oedema and diminution of the subcutaneous fat layer can be compared pre and postoperatively. Direct confirmation of long-term patency of lymphovenous anastomosis is unavailable.¹³

Lymphangiography and lymphoscintiscan were used to test patency of such anastomosis. Both the methods are scarcely available and are not free from complications. Even preoperatively they cannot be done properly due to skin changes. Hence, we did not use them. In our study, the only evidence of such patency was on clinical grounds when patients remained symptom-free.

As regards the effect of duration of lymphoedema on the outcome of surgery, it was seen in a study,⁴ that patients with longer duration of oedema (upto ten years) showed marginally better results. It is possible that after this time increasing fibrosis and obliteration of lymphatic channels result in poor response.⁴

LNVS is a procedure not free from complications like infection and haematoma, there may be additional problem at the site of excisional surgery in terms of hypertrophic scarring, ulceration, loss of sensation on the overlying skin and exophytic keratosis.

CONCLUSION

Yet, the procedure of LNVS was found to be safe, simple and easy and patients were most happy after the procedure. There was early reduction in the oedema and improved flexion at the joints, decreased burning sensation. It also reduced the incidences of postoperative lymphangitis attacks. We feel this surgery can be done for Grade-II to III stage disease. For Stage-IV a combination of excisional surgery within first seven days of this surgery is required for better outcome, as also shown by others.

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