

■ Case Report

Microsurgical lymphaticovenous anastomosis for the treatment of obstructive lymphedema: a case series

Obstrüktif lenfödem tedavisinde mikrocerrahik lenfatikovenöz anastomoz: vaka serisi

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ABSTRACT

Treatment of lymphedema is challenging. The application of microsurgical techniques to the drainage of lymph in to the venous system offers new possibilities in this field. Herein we aimed to report the results of our cases treated with microsurgical lymphaticovenous implantation.

Keywords: lymphedema, mikrocerrahi

ÖZ

Lenfödem tedavisi oldukça zorlu bir tedavidir. Lenf sıvısının venöz sisteme drenajında mikrocerrahi yöntemlerin kullanılması bu alandaki yeniliklerdendir. Biz bu yazıdan- mikrocerrahik olarak lenfatikovenöz anastomoz tekniği ile tedavi edilen bir olgularımızın sonuçlarını sunmak istedik

Anahtar kelimeler: lenfödem, mikrocerrahi

Introduction

Treatment of lymphedema is challenging therefore therapeutic approaches consist of both non-operative and operative methods. There are many classical surgical approaches in the treatment of obstructive lymphedema of the lower extremities. The application of microsurgical techniques to the drainage of lymph in to the venous system offers new possibilities in this field [1]. This operation mimicks the natural anastomosis of the thoracic duct with subclavian vein, by the creation of microsurgical shunts between the lymphatics and veins. Lymphaticovenous anastomosis were experimentally attempted in 1966 and the first clinical operations were performed soon after [2].

Our Cases

From October 2009 to December 2017, 24 patients (14 females and 10 males) with lymphedema in lower limbs treated by microsurgical lymphaticovenous implantation. The age of the patients ranged from 4 to 65 years, the average age was 42.7 (Figure 1). The affected lower limb were 10 single right limbs, 6 single left limb and 8 bilateral limbs in 24 patients. The average duration of edema before treatment was 18.4 years (range 6-38). The diagnostic evaluation of the patients were made by lymphoscintigraphy as a test for selecting patients for derivative microsurgical operations. Lymphoscintigraphy clearly discriminates whether or not edema was of lymphatic

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origin and also provides important data about the etiologic and pathophysiologic aspects of the lymphedema (Figure 2). Doppler USG is performed in all patients to identify any venous system disorders possibly associated with lymphedema. The circumferences of the affected lower limb were measured at three levels; knee joint level, 16 cm below the joint level and the metatarsal head level. The measurements were done at the first visit, one month after the operation and at each follow-up visit every 3-6 months. The patients were also questioned regarding subjective postoperative changes.



Figure 1: Left lower limb lymphedema

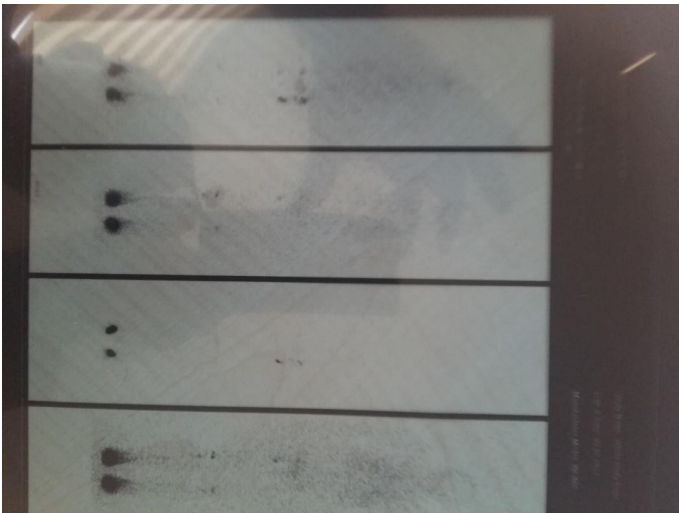


Figure 2: Preoperative lymphoscintigraphy of the lower limbs

The operations were carried out under local anesthesia. The skin incision was made and exploration of the saphenous vein was carried out first. After identification of the veins, the groin lymph nodes were detected later. The lymph node was decapsulated and the vein was occluded with silk sutures. Lymphaticovenous anastomosis was applied by using 8-0 polypropilen suture (Figure 3). With the use of patent blue dye, properly functioning lymphatics appear blue and the passage

of blue lymph into the saphenous vein verifies the patency of the lymphaticovenous anastomosis. The average time to perform the surgery was 1 to 1 and a half hours. Postoperatively the lower limb was bandaged and elevated at night.

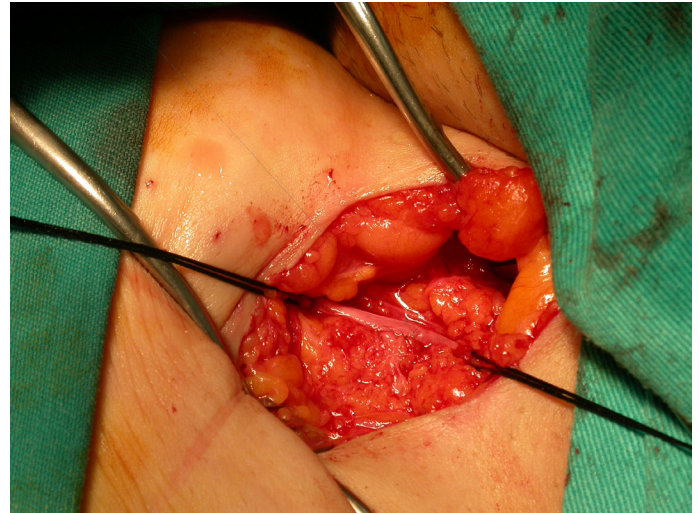


Figure 3: The lymph node was decapsulated and lymphaticovenous anastomosis applied

Results

Patients treated by lymphaticovenous anastomosis were followed from 2 months to 16 months, with an average follow-up 6 months. Subjective improvement was noted in 83% of patients. These patients felt more comfortable, with a decrease in size and weight, softer skin, and better fitting of shoes after surgery (Figure 4). Only one patient suffered from induration of the operated right lower extremity during the follow up period. Postoperative circumferential measurements showed a decrease in all site of the affected extremities. The average decrease was 3 cm at the knee joint level, 3.5 cm at the 16 cm below the joint level and 2.5 cm at the metatarsal head level.



Figure 4: Better fitting of shoes after surgery

Discussion

Lymphedema can be classified into primary and secondary. Primary lymphedema has unknown cause and can appear during any stage of life. Secondary lymphedema may result from surgery, chemotherapy, radiation, trauma and infection such as filariasis [3].

The first microsurgical derivative operations were those using lymphaticovenous implantation. These have been largely abandoned, except in endemic areas of filariasis such as India where thousands of these operations have been performed [4]. Besides functional loss and cosmetic deformities lymphedema also affects quality of life. The most important factor in the prevention of lymphedema is the education of the patient and their family. Combined physical therapy nonetheless represents the initial treatment of patients affected by lymphedema and it is best performed in specialized centers. The surgical timing follows completion of conservative treatment when further clinical improvement can no longer be achieved or recurrent lymphatic attacks are not further reduced [5].

The surgical management may be divided into two procedures. The first one is anatomical excision limb can be covered by skin graft or primary closure. The second one is the physiological lymph drainage bypass procedure [6,7]. With the advance of microsurgery, the lymphaticovenous anastomosis has been used for the creation of a new lymphatic bypass. Clinical outcome improves the earlier microsurgical is performed owing to absent or minimal fibrosclerotic alterations of the lymphatic walls and surrounding tissues.

Evaluation of the clinical results of lymphaticovenous anastomosis is difficult because of:

- i) Low show up rate of patients for periodic follow up because of stabilization of the state of the lower limb;
- ii) subjective assessments by patients of lower limb heaviness and pain carried out over years;
- iii) lack of visualization methods due to fast venous blood flow diluting the lymph tracer;
- iv) supplementary multimodal therapy such as massaging, elastic support, long term antibiotic prophylaxis used in most centers [8].

The findings support the theoretical expectation that primary hyperplastic and post lymphadenectomy patients benefitted most from lymphaticovenous implantation, while those with post inflammatory damage or primary lymphedema

benefitted least. Our study, also emphasizes the importance of identifying patients with primary lymphedema who have proximal vessels in order to maximise the benefit of lymphaticovenous implantation.

Although the number of our patients was not large and follow-up periods were not long, all lower extremities showed both subjective and objective improvements during the follow-up period.

Conclusion

This easy and simple method could be used widely and could provide stable improvement of lymphedema. Surgical treatments still have an important role in the management of lymphedema.

Declaration of conflict of interest

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