



CASE REPORT **AESTHETIC**

Postsurgical lower limb lymphocele managed with microsurgical lymphovenous anastomosis: a case report

Collette Massy-Westropp MBBS  0000-0002-5795-9891,^{1,a} Jennifer Roy BMBS, MSurgSci, FRACS (Plast)  0000-0001-6593-0602¹

¹ Department of Plastic and Reconstructive Surgery, Royal Adelaide Hospital, South Australia, AUSTRALIA

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Introduction

A lymphocele is a non-epithelialised collection of lymphatic fluid, caused by an impairment of lymphatic drainage.¹ They are a common postoperative complication, especially following procedures that interrupt large lymphatic channels and have been documented after body contouring, renal, pelvic, urologic and vascular procedures.¹ Complications of lymphoceles include cosmetic deformity, wound breakdown, impaired mobility and infection.³ Lymphoceles can be difficult to diagnose clinically and currently, there is no consensus among surgical communities with regards to preferred management options.¹

This case report documents the use of microsurgical lymphovenous anastomosis (LVA) for the management of an iatrogenic lymphocele with associated lymphoedema, occurring secondary to medial thigh reduction surgery.

Case

A 38-year-old woman developed a palpable, non-tender and fluctuant swelling in her left distal medial thigh in the weeks following a bilateral revision medial thigh reduction to improve functionality post massive weight loss, involving a vertical skin excision from the groin to the knee. She was also noted to have and ipsilateral pitting oedema refractory to limb elevation (lymphoedema grade II).² Conservative management techniques including limb rest and elevation, repeated percutaneous drainage, intralesional corticosteroid injection and compression with graduated compression stockings were trialled for approximately five months. These measures were unsuccessful in reducing the medial thigh mass and

lower leg swelling, which were the patient's main concerns. The patient was then formally evaluated using indocyanine green (ICG) lymphography in the outpatient clinic, which confirmed the presence of a medial thigh lymphocele with a single feeding lymphatic vessel. Lymphography also showed lymph back flow—again supporting the diagnosis of local lymphoedema. Bioimpedance spectroscopy for the assessment of concurrent lymphoedema revealed an elevated lymphoedema index (L-Dex) score of +33 (normal range < +10).⁶ Considering the failure of conservative management to improve the patient's symptoms, they were determined to be a candidate for LVA surgery.

^a Corresponding author: Collette Massy-Westropp MBBS; collette.massy-westropp@sa.gov.au

Preoperatively, ICG dye was injected into the first and fourth toe web spaces and posterior to the medial and lateral malleolus. This allowed for the use of intraoperative lymphography with a SPY Portable Handheld Imager (SPY-PHI; Stryker, Kalamazoo, MI, USA) to identify the lymphatic vessel draining into the lymphocele in real time. The lymphocele was excised via an elliptical incision into the distal end of the previous thigh reduction scar. Local scar tissue from the previous procedures was not significant. An adjacent venule of a similar diameter to the lymphatic vessel was identified, dissected and the feeding lymph vessel and venule were joined by microsurgical anastomosis in an end-to-end fashion using 11-0 nylon interrupted sutures. A Blake drain (Johnson & Johnson, New Brunswick, NJ, USA) was placed prior to closure. Patency of the anastomosis was confirmed with repeat intraoperative ICG lymphography.

Postoperatively, the patient's recovery was uncomplicated and the drain was removed the following day after minimal drainage was observed. The patient was instructed to maintain the limb in an elevated and straightened position until their follow up outpatient appointment two weeks later. Additionally, she continued using graduated compression garments that were appropriately re-fitted. No lymphocele recurrence was observed by the patient or treating team at six months postoperatively, which was confirmed by a repeat ICG study. The associated lymphoedema had also resolved as evidenced by an L-Dex score of + 6.8 and + 9.4 (within normal range) at five days and four months following surgery respectively.⁶

Discussion

Despite being a common postoperative complication, lymphoceles are often inaccurately diagnosed clinically and mistaken for seromas or lymphoedema.⁴ For this reason, it is possible that their true incidence is underreported. The availability and use of ICG mapping in recent years has enabled a thorough and objective visual assessment of lymphatic fluid accumulation, prompting the use of microsurgical techniques to restore lymphatic drainage.⁴

Lymphovenous anastomosis surgery involves redirecting lymphatic flow into an adjacent vein, physiologically mimicking a normally functional

lymphatic vessel.³ This procedure has only recently been described for the treatment of iatrogenic lymphoceles, having previously been acknowledged in the management of postoperative lymphoedema. Moreover, this is the first documented use of this technique in Australian literature.

Conservative, nonsurgical management options for lower limb lymphoceles include limb elevation, graduated compression bandaging and percutaneous drainage.¹ Previously reported surgical techniques incorporate lymphatic vessel ligation with sclerotherapy and excision. The outcomes of these treatment modalities for lymphoceles are poor, with many patients requiring repeat interventions.¹ Surgical techniques such as sclerotherapy and lymphatic vessel ligation can instead exacerbate the problem because they may further impair lymphatic function.⁷ Lymphovenous anastomosis surgery is proving to be favourable over these procedures because it is a more definitive solution.³

Thigh reduction surgery and similar debulking procedures pose a high risk of lymphocele formation, which can be difficult to treat because of the concomitant tissue volume deficit.^{3,5} It has been reported that chronic lymphatic fluid accumulation affects close to 100 per cent of patients who undergo large medial thigh soft tissue resections.⁷ While the volume deficit was not of concern in this case, other case reports have combined LVA with simultaneous tissue transfer to restore limb contour and provide internal compression to reduce the chance of lymphocele recurrence.^{1,3}

Conclusion

Lymphovenous anastomosis is a minimally invasive technique that could be more commonly used in the management of iatrogenic lymphoceles without further impairing lymphatic function. Indocyanine green study preceding LVA surgery was a reliable method for accurately identifying this and treating the underlying pathology in a manner that replicates normal physiology. Definitive lymphatic fluid accumulation treatment can provide improvement to a patient's self-esteem, quality of life and mobility. This procedure provided both subjective and objective resolution of the lymphocele and associated lymphoedema affecting the patient in the described case.



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Conflict of interest

The authors have no conflicts of interest to disclose.

Patient consent

The patient has given informed consent to the publication of images and/or data.

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References

- 1 Borud LJ, Cooper JS, Slavin SA. New management algorithm for lymphocele following medial thigh lift. *Plast Reconstr Surg*. Apr 2008;121(4):1450–455. <https://doi.org/10.1097/01.prs.0000304474.55740.79> PMID:18349668
- 2 Executive Committee of the International Society of Lymphology. The diagnosis and treatment of peripheral lymphedema: 2020 consensus document of the International Society of Lymphology. *Lymphology*. 2020;53(1):3–19. <https://doi.org/10.2458/lymph.4649>
- 3 Scaglioni MF, Meroni M and Fritsche E. Lymphovenous anastomosis (LVA) for treatment of iatrogenic lymphocele in the thigh. *Microsurg*. 2021;41(1):19–25. <https://doi.org/10.1002/micr.30594> PMID:32343453
- 4 Singer M, Aliano K, Stavrides S, Davenport T. Lymphatic mapping in the treatment of chronic seroma: a case series. *Eplasty*. Feb 2015;15:e7. PMID: 25848444
- 5 Sisti A, Cuomo R, Zerini I, Tassinari J, Brandi C, Grimaldi L, et al. Complications associated with medial thigh lift: A comprehensive literature review. *J Cutan Aesthet Surg*. Dec 2015;8(4):191–97. <https://doi.org/10.4103/0974-2077.172189> PMID:26865783
- 6 Suehiro K, Morikage N, Harada T, Samura M, Takeuchi Y, Mizoguchi T, et al. Application of the L-Dex score for the assessment of bilateral leg edema. *Lymphat Res Biol*. Feb 2018;16(1):65–68. <https://doi.org/10.1089/lrb.2016.0053> PMID:28346864
- 7 Uyulmaz S, Planegger A, Gruherz L, Giovanoli P, Lindenblatt N. Lymphovenous anastomoses and microscopic lymphatic ligations for the treatment of persistent lymphocele. *Plast Reconstr Surg*. Feb 2021;9(2):e3407. <https://doi.org/10.1097/GOX.0000000000003407> PMID:33680658