www.directivepublications.org

World Journal of Clinical Surgery

ISSN 2766-6182

Case Report

Multidisciplinary Management Of Recurrent Scrotal Lymphedema: A Case Report.

Abdullah N. Maarouf, Nulvin Jenan Bozo.

1. *Abdullah N. Maarouf, Dept. of Plastic Surgery, Aalborg University Hospital*
2. *Nulvin Jenan Bozo, Dept. of Plastic Surgery, Aalborg University Hospital Denmark, Aalborg 9000, Soendre skovvej 3 Aalborg University Hospital.*

Abstract

A man in his 50s presented with recurrent scrotal lymphedema following initial surgical treatment, which involved excision of lymphedematous tissue and a split-thickness skin graft. Over time, his condition recurred, causing significant symptoms, including pain, recurrent infections, and restricted mobility, leading to a considerable reduction in quality of life. A second multidisciplinary surgical intervention successfully addressed the recurrence, involving the excision of 1 kg of lymphedematous tissue and reconstruction using flap surgery. This case underscores the importance of multidisciplinary management in complex recurrent scrotal lymphedema to restore functionality and improve patient outcomes.

INTRODUCTION

Scrotal lymphedema is a rare and debilitating condition characterized by lymphatic obstruction in the genital region, resulting in chronic swelling, fibrosis, and functional impairment (1). Primary (idiopathic) lymphedema arises from intrinsic lymphatic vessel defects, while secondary causes, such as infections, trauma, or radiation, exacerbate its development (2). The condition poses significant challenges, particularly in advanced or recurrent cases, and requires comprehensive management to address both functional and aesthetic concerns (3, 4). Recurrence after surgical intervention is not uncommon, necessitating advanced multidisciplinary approaches for effective management (5).

CASE PRESENTATION

A man in his 50s developed scrotal lymphedema 10 years ago following an infection in the testes. He underwent surgery in 2016, which involved the removal of lymphedematous tissue and the application of a split-thickness skin graft to the penis and affected areas. Despite initial treatment, the condition recurred and progressively worsened, causing significant pain, recurrent fungal infections, and pronounced scrotal heaviness. These symptoms led to restricted mobility and a substantial decrease in quality of life (**Picture 1**).

An MRI was performed to evaluate the extent of the condition. The imaging revealed normal-sized testes bilaterally, with the right testis measuring 3.6 × 3.2 cm and the left testis measuring 4.6 × 2.7 cm (**Picture 2.A and 2.B**) . Bilateral varicocele and small hydroceles were noted, while the penis demonstrated no abnormalities. No prior MRI scans were available for comparison.

Physical examination confirmed severe scrotal lymphedema with notable deformity and asymmetry. Given the severity and imaging findings, a multidisciplinary surgical approach was planned, involving the plastic surgery and urology teams.

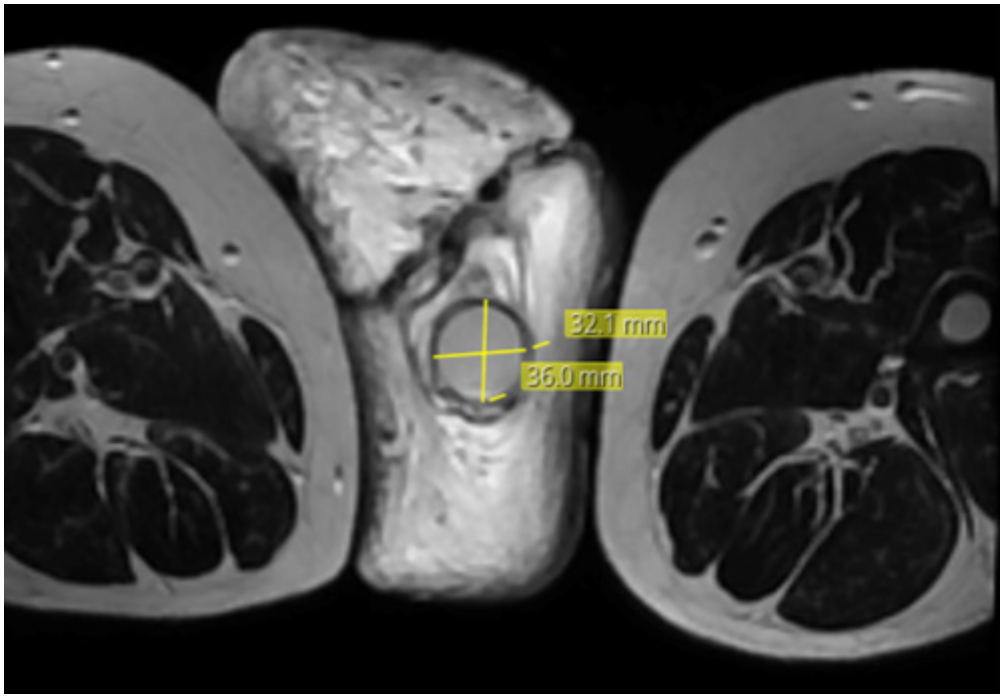
***Corresponding Author:** Abdullah Maarouf, Department of Plastic Surgery, Aalborg University Hospital,Denmark, Aalborg 9000, **Tel :** +4528141758, **Email:** abdulnm@outlook.com

Received: 26-Jan-2025, Manuscript No. WJCSR-4470 **; Editor Assigned:** 28-Jan-2025 **; Reviewed:** 25-Feb-2025, QC No.WJCSR-4470 **; Published:** 26-Feb-2025, **DOI: 1**0.52338/wjsurgy.2025.4470

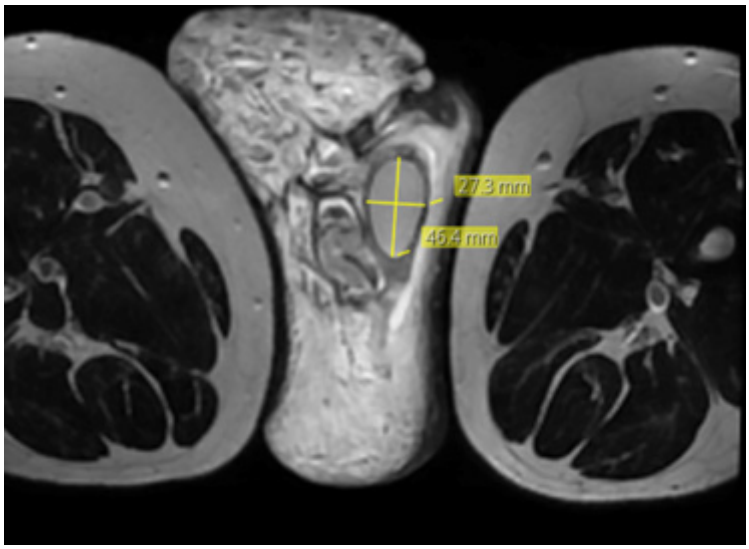
Citation: Abdullah Maarouf. Multidisciplinary management of recurrent scrotal lymphedema: A case report. World Journal of Clinical Surgery. 2025 February; 9(1). doi: 10.52338/wjsurgy.2025.4470.

Picture 1. outpatient clinic.

Picture 2.A. MRI of right testes



Picture 2. B. MRI of left testis

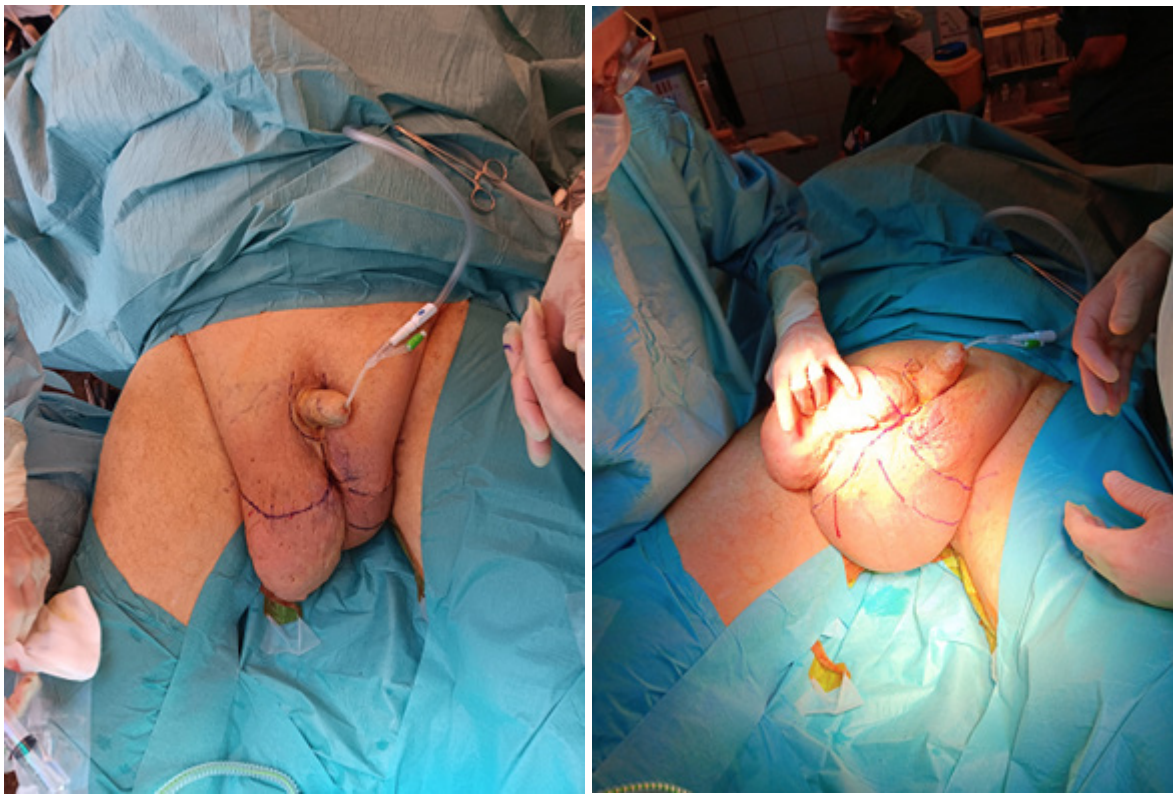


SURGICAL APPROACH

The procedure was conducted collaboratively by the plastic surgery and urology teams (**Picture 3**). A longitudinal incision was made along the previous scar in the raphe, extending proximally along the right testis (**Picture 4**). Both testes were carefully dissected and mobilized by the urology team to assess the extent of lymphedematous involvement. On inspection, neither the funicular structures nor the testes showed signs of lymphedema, confirming that the condition was confined to the overlying tissues.

Picture 3. Pre-operative pictures.

Picture 4. Perioperative picture with the flap visualized



A total of 1 kg of lymphedematous tissue was excised with meticulous attention to preserving the spermatic cords and maintaining adequate vascular supply to the testes (**Picture 5**). To prevent torsion and ensure proper positioning, the right testis was fixed to the scrotal wall using a two-point fixation technique with absorbable sutures. The surgical site was then closed in layers, with two drains placed in the subcutaneous space to manage postoperative fluid accumulation. The drains were secured with Maxon 3-0 sutures for the subcutaneous layer and Dafilon 3-0 sutures for the skin closure (**Picture 6**).
To optimize healing and minimize the risk of complications, negative pressure wound therapy was applied using a Prevena VAC system set to 100 mmHg. This system was maintained for seven days postoperatively. The patient remained hospitalized for four days postoperatively, with an uneventful recovery and no complications.

Picture 5. A total mass of 1 kg tissue was removed.

Picture 6. Final result with the use of a transpositional flap.

Outcome and Follow-Up

Postoperatively, the patient experienced significant relief from symptoms. He reported a marked reduction in pain and scrotal heaviness, allowing him to resume daily activities previously restricted by his condition. Mobility improved considerably, and no recurrent infections were noted.

At the four-month follow-up, physical examination and imaging confirmed excellent surgical outcomes. The reconstructed scrotum demonstrated symmetry and function, with no signs of recurrent lymphedema. The flap used for reconstruction was well-vascularized, and no complications such as necrosis or hematoma were observed.

The patient reported significant improvements in quality of life, including psychological well-being, as the distress associated with his condition was alleviated.

DISCUSSION

Scrotal lymphedema is a rare condition characterized by chronic swelling resulting from lymphatic obstruction, which leads to significant physical, functional, and psychological impairments. The condition is classified into primary (congenital or idiopathic) and secondary forms. Secondary lymphedema often arises from trauma, infections such as filariasis, malignancy, or prior surgical interventions that disrupt the lymphatic flow (1). Globally, filariasis remains the leading cause of scrotal lymphedema, particularly in endemic regions, affecting millions of individuals. In contrast, in non-endemic regions, cases are predominantly linked to postoperative complications, infections, or malignancies (1, 2). The recurrence of scrotal lymphedema, as observed in this case, highlights the challenges associated with its surgical management. Surgical approaches for scrotal lymphedema aim to alleviate symptoms, restore functionality, and improve quality of life (3). However, surgery is often considered a last resort for severe cases, given the complexity and risk of recurrence (6). The key principles of surgery involve complete excision of the lymphedematous tissue, preservation of vital structures, and reconstruction to achieve optimal outcomes (4). This case emphasizes the importance of a multidisciplinary approach, integrating urological and plastic surgical expertise. The successful surgical intervention demonstrated that careful preoperative planning, meticulous surgical techniques, and comprehensive postoperative care can significantly improve patient outcomes, including functional and psychological well-being. Advanced imaging, such as MRI, is critical for preoperative planning to delineate the extent of tissue involvement and assess the condition of underlying structures. Negative pressure wound therapy, as used in this case, has been shown to promote wound healing, reduce infection rates, and improve overall outcomes in reconstructive procedures (5).

Emerging treatment modalities for scrotal lymphedema focus on enhancing lymphatic drainage and reducing recurrence. Techniques such as vascularized lymph node transfer (VLNT) and lymphaticovenular anastomosis (LVA) are showing

promise in improving outcomes for patients with chronic lymphedema (10, 11). VLNT involves the transfer of healthy lymph nodes to the affected area to restore lymphatic drainage, while LVA creates direct connections between lymphatic vessels and veins to bypass obstructed pathways (10, 12). Combining VLNT and LVA has demonstrated potential in managing complex or refractory cases of lymphedema, particularly in cases involving multiple areas of lymphatic dysfunction (12). The integration of minimally invasive techniques, such as robotic-assisted VLNT, further reduces patient morbidity and recovery time (13).

Additionally, advanced imaging technologies, such as indocyanine green (ICG) lymphography, allow for real-time visualization of lymphatic vessels and precise mapping of affected areas, aiding in surgical planning and postoperative evaluation. These imaging modalities enable surgeons to tailor interventions more effectively, improving long-term outcomes (14). Future developments also include the exploration of bioengineered lymphatic grafts and targeted pharmacotherapies, such as lymphangiogenic growth factors, which hold potential for further enhancing lymphatic regeneration and reducing recurrence (10, 12). However, these approaches require extensive research and clinical trials to establish their efficacy and safety in scrotal lymphedema management. By building on cases like this and advancing treatment strategies, clinicians can continue to improve the quality of life for patients suffering from this challenging condition.

Disclosure Statements

Authors' Contribution: All authors have significantly contributed to the research and manuscript preparation. Dr. Abdullah N. Maarouf wrote the manuscript, reviewed the literature, and drafted the manuscript (1st author). Dr. Nulvin Bozo (2nd author) performed the manuscript review and validation read. All authors reviewed and approved the final version of the manuscript.

Conflict of Interest: The authors declare no conflicts of interest related to this study.

Written Acknowledgments

Consent of Cited Content and Individuals: We have obtained written consent from all individuals and sources cited within the manuscript.

Personal Communications: Written consent has been obtained from individuals whose personal communications are cited in the manuscript.

Usage of Copyrighted/Protected Material: We have obtained signed authorization from both the author and the publisher for any copyrighted or protected material used in the manuscript.

Clinical Images: A signed consent form from the subject whose clinical images are presented in the study is included.

We look forward to your positive response and are happy to provide any additional information or documentation required.

REFERENCES

1. McDougal WS. Lymphedema of the external genitalia. J Urol. 2003;170(3):711-6.
2. Whitaker J. Best practice in managing scrotal lymphoedema. Br J Community Nurs. 2007;12(10):S17-21.
3. ElKiran YM, Elshafei AM, Abdelgawad MS, et al. Surgery Is the Last Resort for Huge Scrotal Lymphedema: A Series of Challenging Cases. Arch Plast Surg. 2023;50(2):182-187.
4. Moffatt CJ, Murray S. The experience of living with lymphedema. J Lymphoedema. 2010;5(1):39-44.
5. Michaelides A, Watterson PA. Surgical management of scrotal lymphedema: techniques and outcomes. Urology. 2000;56(6):1134-9.
6. Papadopoulos G, Pappas A. Reconstructive strategies for scrotal lymphedema: lessons from case series. Plast Reconstr Surg. 2015;135(3):473e-481e.
7. Orgill DP, Bayer LR. Negative pressure wound therapy: principles and mechanisms of action. Scars Burn Heal. 2018;4:2059513118814312.
8. Becker C, Assouad J, Riquet M, Hidden G. Postoperative care and lymphatic surgery advancements: implications for secondary lymphedema. Ann Surg. 2006;243(3):313-317.
9. Yamamoto T, Yamamoto N. Lymphatic reconstruction for chronic lymphedema: a systematic review. J Surg Oncol. 2021;123(2):473-480.
10. Saaristo AM, Niemi TS, Viitanen TP, et al. Vascularized lymph node transfer for lymphedema: a systematic review. Ann Plast Surg. 2012;68(3):234-238.
11. Suami H, Chang DW. Lymphaticovenous anastomosis and its role in lymphedema surgery. J Surg Oncol. 2018;118(2):235-240.
12. Patel KM, Lin CY, Cheng MH. Advances in surgical management of lymphedema: VLNT and LVA. Clin Plast Surg. 2016;43(2):417-425.
13. Chang DW, Suami H. Robotic-assisted vascularized lymph node transfer for lymphedema. J Robot Surg. 2020;14(3):493-500.
14. Yamamoto T, Narushima M, Yoshimatsu H, et al. Indocyanine green lymphography for lymphedema: a review of its current applications and future directions. Plast Reconstr Surg. 2016;138(3):394-401.