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Postoperative groin lymphocele: an overview of old and new therapeutical strategies

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Abstract

Lymphatic complications (lymphoma and lymphorrhae) following vascular access or interventions in the groin are frequently benign but may increase the risk of wound infection, need for reintervention, and prolong the length of the hospital stay.

Several management strategies have been developed so far, including percutaneous drainage, chemical sclerotherapy, and surgery, but a validated treatment algorithm has yet to be established in the current literature.

In this paper, the authors investigated the indications and outcomes of currently available strategies for treating groin lymphocele following surgical dissection of the femoral vessels and suggested an algorithm for treating this potentially severe complication.

Introduction

Femoral vessels are the most common and reliable site for vascular access during endovascular procedures or for cannula insertion during extra-corporeal circulation during cardiothoracic operations.¹

Vessels can be accessed either percutaneously or by a surgical cutdown, during which the disruption of lymphatic channels may lead to lymphocele formation. Despite being commonly benign and frequently eligible to conservative treatment, groin lymphoceles might represent a potentially severe and invalidating complication when complicated in lymphocutaneous fistulation or predispose to surgical site infection.²⁻⁴ In such cases, more or less invasive interventional management may be required, including percutaneous aspiration and compression, surgical resection of the lymphocele's cavity, direct primary closure of lymphatic vessels, or even coverage with muscle flap. However, a validated treatment algorithm has yet to be established.²⁻⁶

In this paper, we investigated the indications and outcomes of currently available strategies for treating inguinal lymphocele following femoral vessel dissection and suggested an algorithm for treating this potentially severe complication.

Epidemiology and risk factors

The reported incidence of groin lymphocele following a procedure involving the femoral vessels ranges between 1 and 87 % of cases^{7,8} without any difference in prevalence among sexes.

For instance, it has been reported that groin lymphoceles may occur in 16% of patients after insertion of cannulas for venous-arterial Extracorporeal Membrane Oxygenation (ECMO), in 4.7-20% of cases

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following biopsy of sentinel lymph node and between 2% and 15% of cases following arterial revascularization procedures.⁹⁻¹¹

Several risk factors such as malnutrition, steroid therapy, diabetes, renal failure in dialysis, and redo groin procedures have been reported to be associated with groin lymphocele as they all predispose to persistent lymphorrhea following a traumatic insult.⁹

Conversely, percutaneous access and closure devices have been associated with fewer wound complications when compared with intervention requiring a surgical cutdown of the femoral vessels and may, therefore, also reduce the risk of lymphocele formation.¹⁰

Conflicting evidence is currently at disposal about the different impacts of groin incision directionality (vertical versus transverse) in lymphatic leakage.^{8,9,12}

Clinical presentation and diagnosis

Groin lymphocele is suspected when the patient presents groin swelling or persistent clear or straw-colored drainage from the surgical wound in association or not with edema of the lower limb (Figure 1).¹³⁻¹⁵

Anyhow, the definitive diagnosis should be confirmed with Duplex Ultrasound (DUS): the exam normally detects a thin-walled circumscribed hypoechoic/anechoic collection of fluid, without any evidence of active bleeding or multiple loculated collections that may be suggestive of an abscess.

Computed tomography scans and aspirate sample confirmations are not routinely used but could be indicated in selected cases when a deep infection is suspected.

Treatment

Controversies currently exist about the optimal management strategies for such conditions since no agreed-on algorithm exists for the treatment of lymphoceles (Figure 2, Figure 3).

Conservative management is based on the use of broad-spectrum antibiotics, local compression garments, and leg elevation that seem to be effective in a high percentage of patients (Figure 4).¹⁶

Dietary restriction for fatty food also seems to play a role in improving the reabsorption of the lymphocele.

However, when conservative treatment fails, a more or less invasive interventional strategy is indicated.

Among those, percutaneous strategies rely on the aspirations of the lymph and in serial instillations of chemical substances (sclerosing agents as fibrin glue or alcohol) that cause inflammation in the lymphocele cavity.¹⁰ The rationale of this technique is to irritate the lymphocele wall activating local inflammation and fibrosis of the lymphatic channels.

Intranodal embolization using n-butyl cyanoacrylate glue mixed or not with iodized oil is an emerging treatment option for persistent lymphatic leakage. The procedure should be anticipated with an intranodal lymphangiography with iodinated contrast to confirm lymphatic leakage and correctly identify the target of the embolization (Figure 5).¹⁷

Persistent high-output lymphoceles are managed with percutaneous aspiration, drainage, or sclerosis. Rarely when all minimally invasive approaches fail, traditional surgery with lymphocele evacuation is mandatory.¹⁸ Despite several methods that have been reported so far (including lymphocele excision with either ligation of the lymphatic or creation of a shunt with an anastomosis between

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lymphatic and collaterals of great saphenous vein), all rely on the unique rationale to close the lymphatics merging at the lymphocele.

In the treatment of recurrent groin lymphocele, the ligation of lymph vessels appears to be the most appropriate strategy that results in immediate resolution of lymphatic leaking in most cases. However, since the anatomy of the groin lymphatic is complex, and the ability to properly identify the origin of the leak is crucial for successful treatment, leaking lymphatics should be identified using the blue coloring and managed region per region ligating every single vessel with titanium clips.

Negative pressure therapy may be needed in some cases after surgery to allow wound closure, while for large lymphoceles, a muscle flap may be indicated.¹⁹

Indeed, local vascularized muscle flaps (including those of the sartorius, rectus femoris, and gracilis muscle) represent an early definitive treatment for lymphatic leakages as they reduce the dead space around the vessels and guarantee antimicrobial activity.²⁰⁻²²

Outcomes

Conservative management, consisting of bed rest, elevation, compression, and prophylactic antibiotics, was found to be effective in two studies with a success rate of 75% to 90%,^{16,23,24} although Tyndall *et al.* pointed out a significantly longer time to resolution when compared to intervention as early lymphatic ligation.¹⁶

Lymphatico-venous anastomosis is conversely effective in the treatment of post-surgical lymphoceles unsuccessfully managed with conservative strategies. Indeed, Scaglioni and colleagues reported a 100% success rate with 8 months mean follow-up in their experience with 11 patients presenting iatrogenic lymphocele in the thigh after an unsuccessful conservative therapy, who were treated by

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means of one or more lymphatico-venous anastomoses and additional pedicled sartorius flap for dead space obliteration in three cases.¹⁹

Accurate wound closure and long-term drainage (more than two weeks), may be a valuable alternative, as shown by Van den Brande *et al.* in their case series, including 23 lymphocutaneous fistulas developed following various vascular procedures in the groin, who reported a success rate of 82.6 % at a mean follow-up of 12 months.²³

Lymphocele sclerotherapy with topical doxycycline is conversely successful in 77-90%^{3,25} of cases with a reported median healing time of 3 days in the study by the group of Cnotliwy.³ Similarly, in a series of 38 post-surgical lymphocele treated by sclerotherapy with a combination of povidone iodine, alcohol, and doxycycline a significant difference in the average size of the initial cavity was noted before and after treatment.²⁵

Conclusions

Inguinal lymphocele following femoral vessel dissection is a potentially severe complication.

To date, there are no consensus guidelines for management of postoperative groin lymphocele and data currently reported in literature shows that the conservative management, despite efficacious in selected cases with minimal leaking, is related to longer hospital stays and higher recurrence rate.

Alternative interventional strategies in case of large, recurring, or infected lymphocele should be undertaken including percutaneous instillation of sclerosing agents, primary wound closure, cavity decortication and lymphatic-venous anastomosis or muscle flap considering individualized patient's need and the lymphocele extension.

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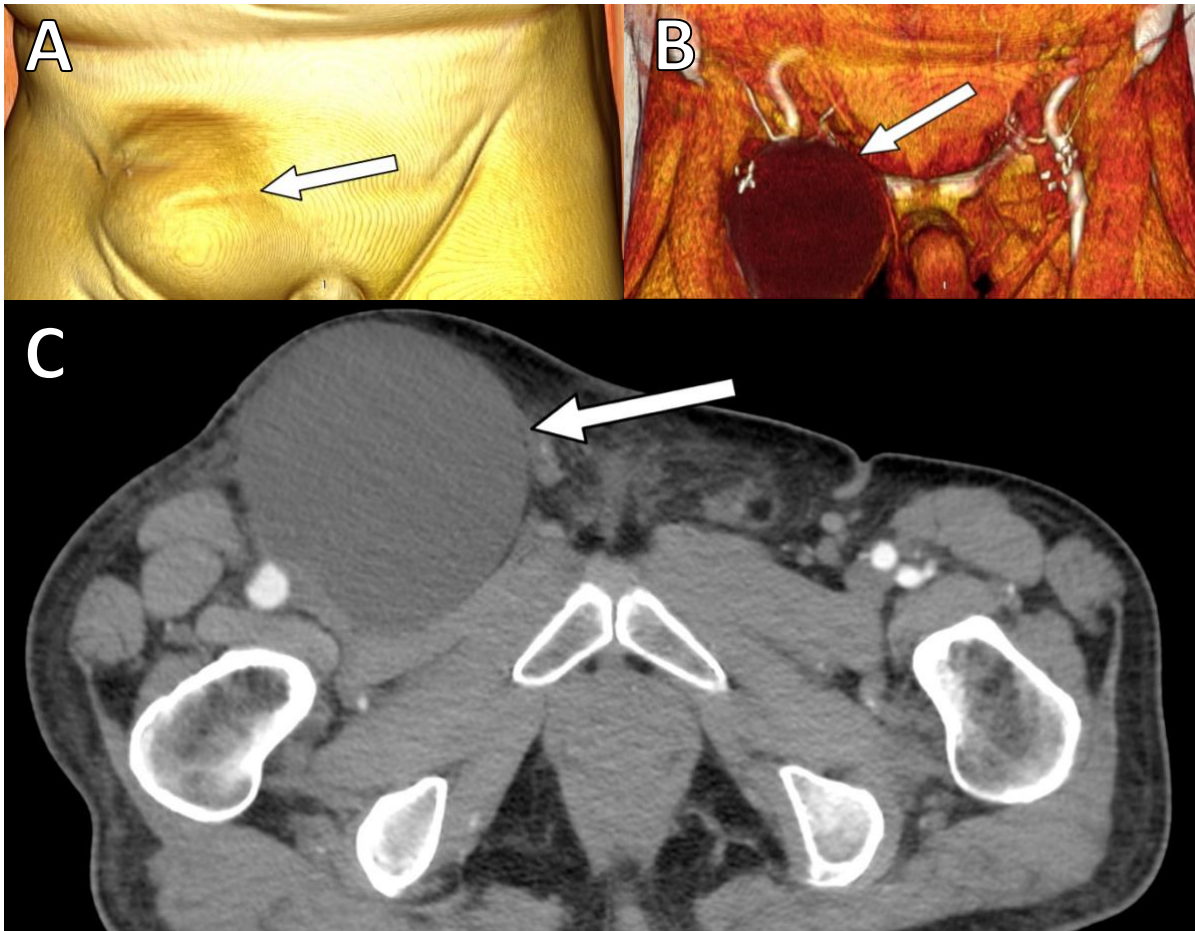


Figure 1. Computed angiography showing the case of a 5 cm lymphocele of the right groin following surgical dissection of the femoral vessels.

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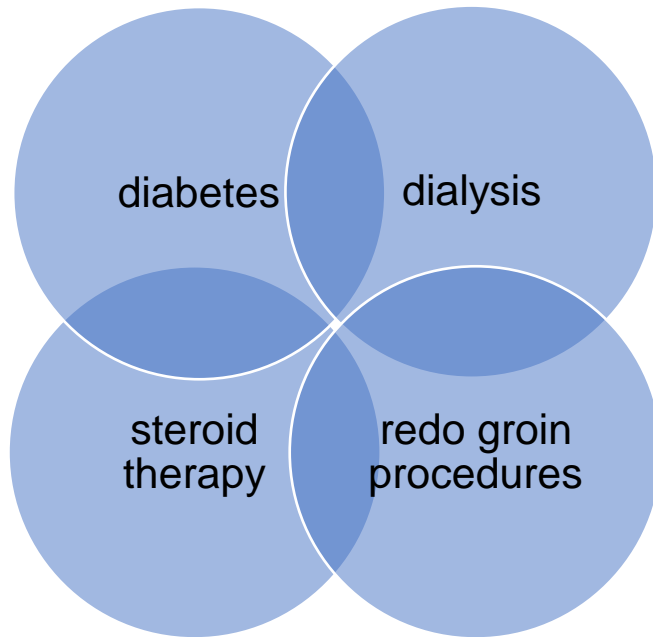


Figure 2. Risk factors for lymphocele following groin dissection.

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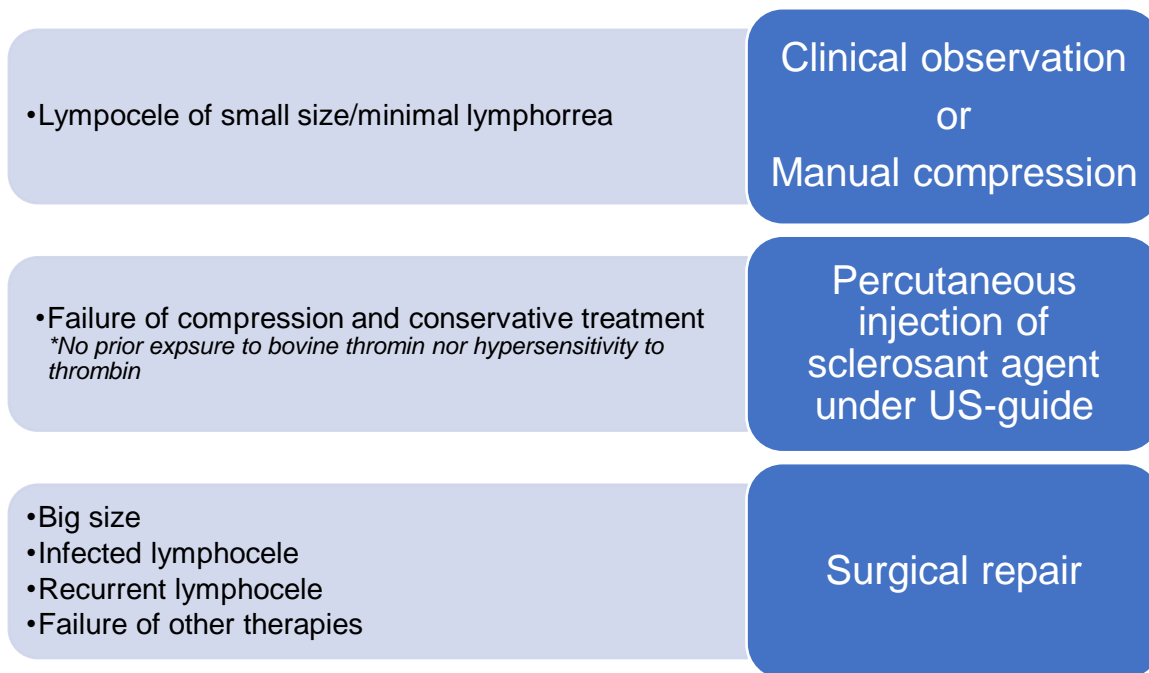


Figure 3. Indication for the different management strategies.

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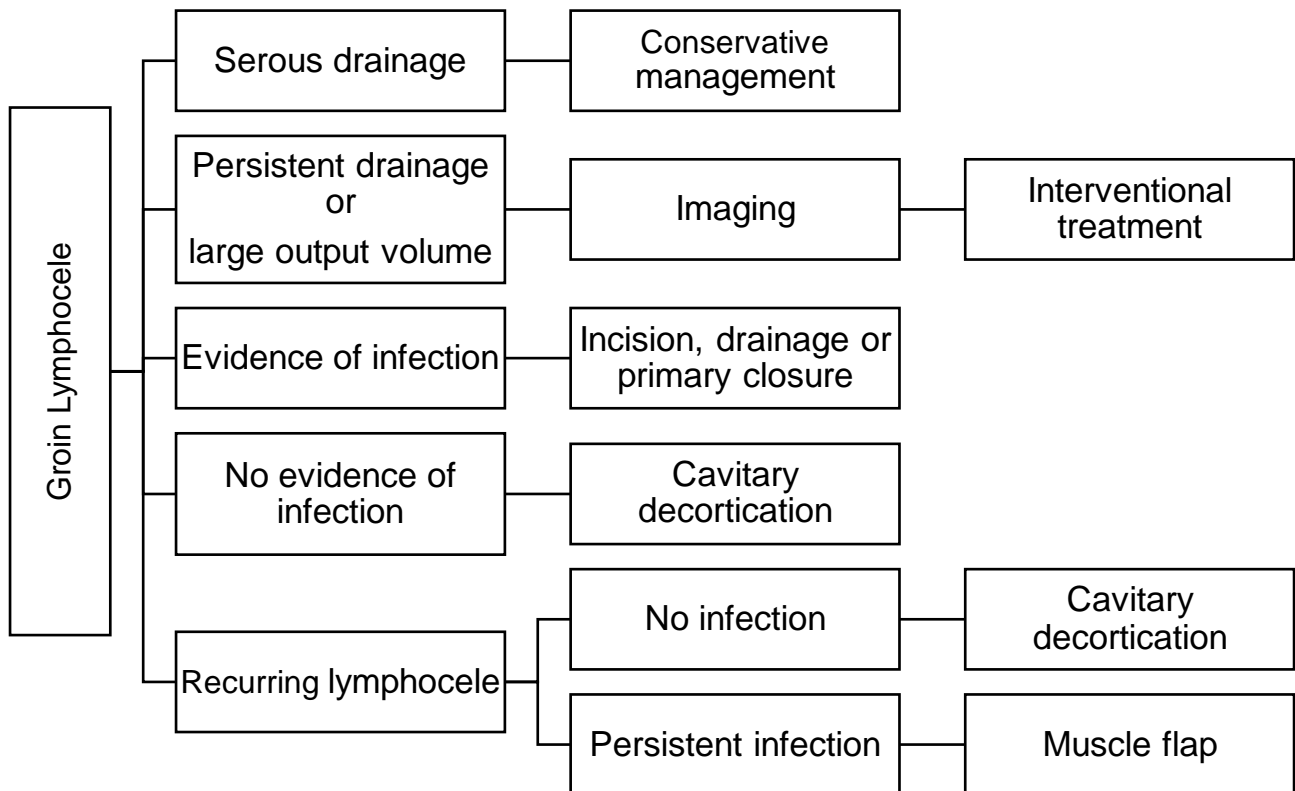


Figure 4. Algorithm for management of groin Lymphocele following vascular dissection.

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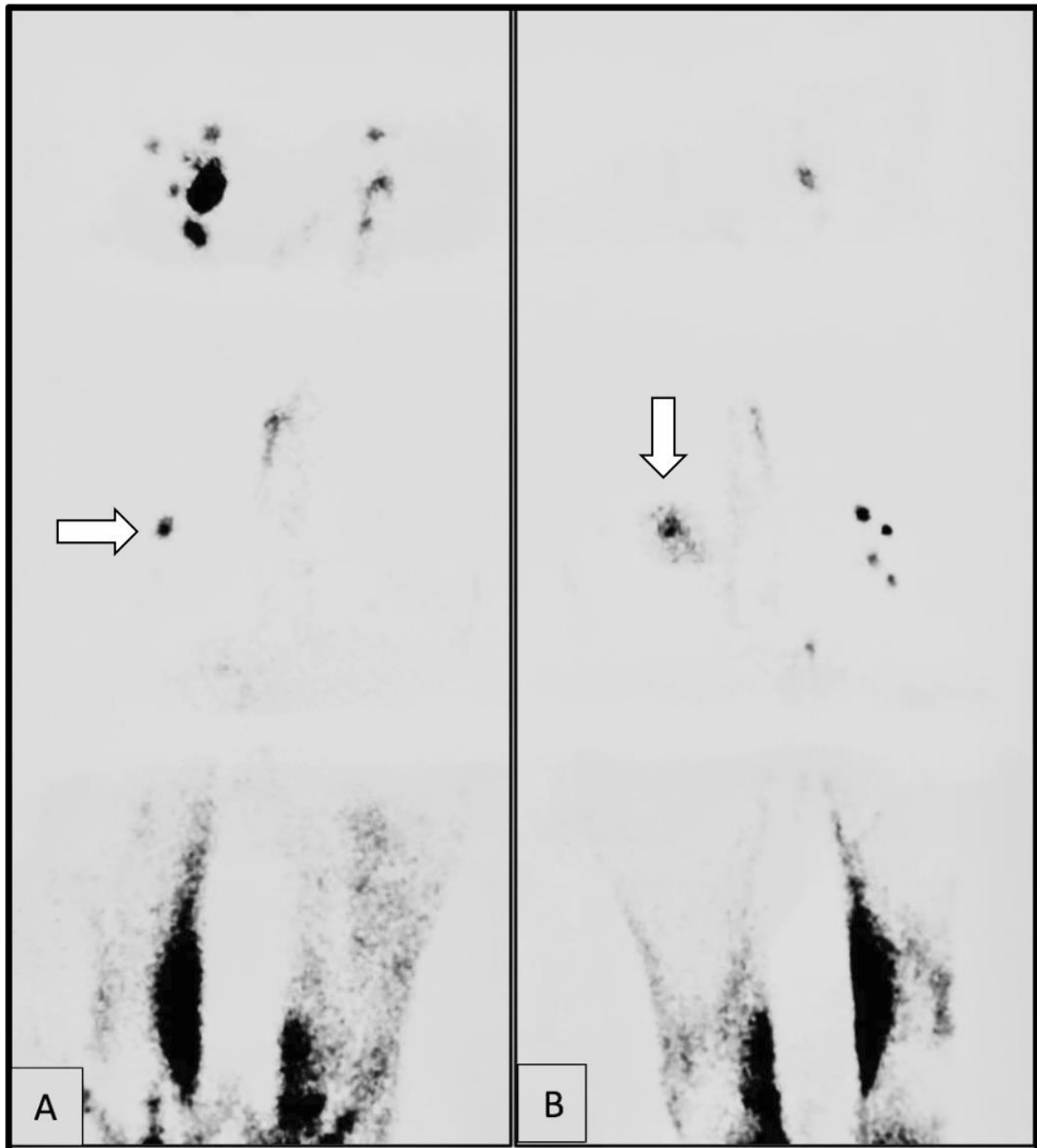


Figure 5. Lymphoscintigraphy in anterior (A) and posterior (B) view with unusual uptake in the popliteal lymph nodes and a small lymphocele (arrow) in the right groin (courtesy of Doctor Giuseppe Visconti, Department of Plastic and Reconstructive Surgery and the Breast Unit, Catholic University of "Sacro Cuore," University Hospital "A. Gemelli").

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