



## Case report

# Microsurgical lymphaticovenular anastomosis for refractory chylous ascites following para-aortic lymph nodes dissection in a patient with tubal cancer



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## 1. Introduction

The development of postoperative chylous ascites is an important clinical issue in surgery for gynecological malignancy because of the extensive lymph node dissections. It is caused by operative trauma to the cisterna chyli or lymphatic vessels in the retroperitoneum and is commonly characterized by postoperative accumulation of chyle in the peritoneal cavity and appearance of milky fluid in the peritoneal drains (Aalami et al., 2000; Kaas et al., 2001). The incidence of chylous ascites is not well defined; however, reported incidence is 2–7.4% following surgical treatment for gynecological malignancies (Thie et al., 2016; Baiocchi et al., 2010). Although chylous ascites is a widespread problem, there are few reports in the literature and no guidelines or general therapy recommendations.

Chylous ascites are successfully managed with conservative treatment in most patients, including a low-fat diet, total parenteral nutrition, administration of octreotide, and paracentesis. Furthermore, therapeutic lymphography, surgical ligation, or peritoneovenous shunting may also be performed in cases wherein conservative management has failed (Aalami et al., 2000; Kaas et al., 2001; Thie et al., 2016; Baiocchi et al., 2010).

We report a case with refractory chylous ascites after surgery for tubal cancer, which was successfully treated with microsurgical lymphaticovenular anastomosis (LVA).

## 2. Case report

A 71-year-old woman with tubal cancer, underwent a total

abdominal hysterectomy, bilateral salpingo-oophorectomy, infracolic omentectomy, and pelvic and para-aortic lymph node dissection up to the level of renal veins. Thirty-eight lymph nodes were dissected. A drainage tube was left in the pelvis. Using International Federation Gynecology and Obstetrics (FIGO) classification, she was pathologically diagnosed with stage IIIA1 left tubal high-grade serous adenocarcinoma. One of the dissected para-aortic lymph nodes showed pathologically confirmed metastasis.

Oral diet was initiated on postoperative day 2, and chylous fluid increased to around 2000 ml on postoperative day 5. Conservative management was initiated with low-fat oral diet with medium-chain triglycerides, subcutaneous octreotide 100 µg every 8 h, and total parenteral nutrition. After 45 days, the drain fluid remained unchanged, and hypoproteinemia continued. Consequently, the patient was referred to our hospital. Lymphoscintigraphy using <sup>99m</sup>Tc was performed, revealing lymph leakage from left lumbar lymph trunk (Fig. 1). LVA was recommended (Yamamoto et al., 2014). On postoperative day 66, the patient underwent LVA after written informed consent was obtained. Incision site was determined based on preoperative indocyanine green (ICG) lymphography findings, and a 2-cm incision was made around the left ankle under local anesthesia (Yamamoto et al., 2013). After detection of a suitable lymphatic vessel and venule, the lymphatic vessel was clamped proximal to the anastomosis site and then the limb distal to the anastomosis site was massaged to expand the lymphatic vessel, allowing easier creation of a window for side to end anastomosis. A window for anastomosis was created using microscissors and anastomosis was performed using 11–0 nylon (Fig. 2a, b). Lymph–blood border movement across the site of anastomosis was observed. The

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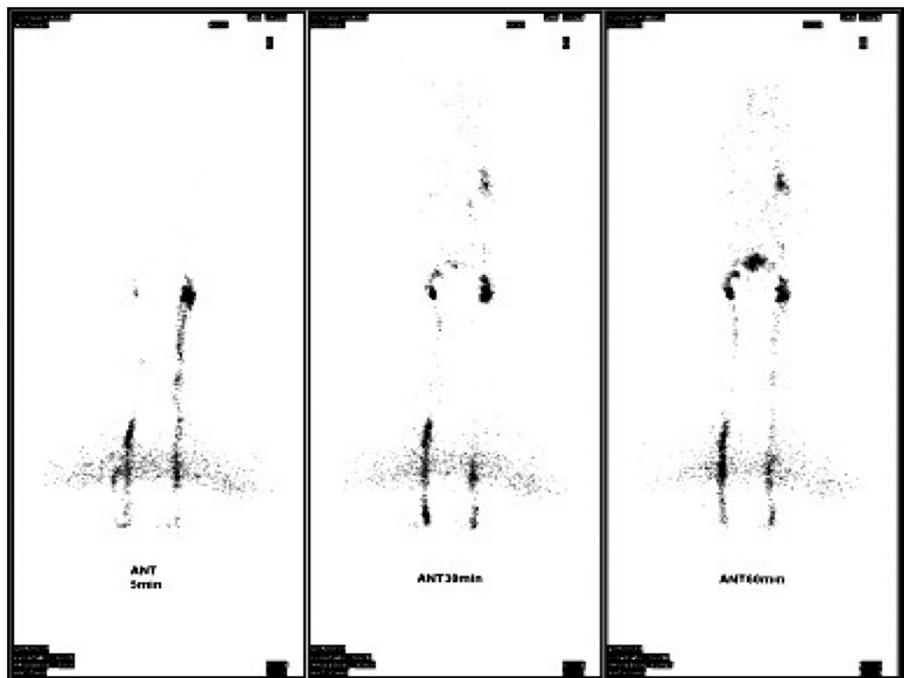


Fig. 1. Lymphoscintigraphy imaging at 5, 30, and 60 min post injection. Lymphoscintigraphy using  $^{99m}\text{Tc}$  was performed, revealing lymph leakage from the left lumbar lymph trunk.

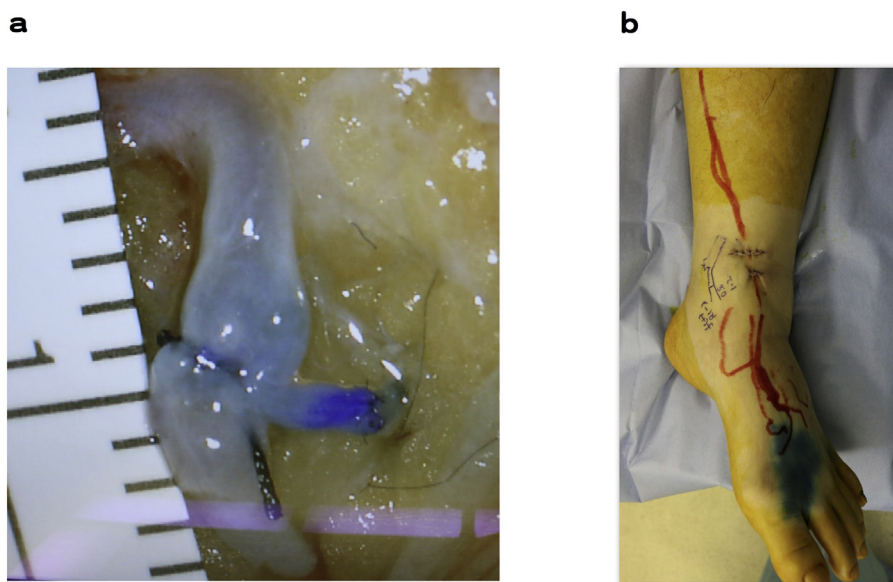


Fig. 2. a: After detection of suitable lymphatic vessel and venule, anastomosis (arrow) was performed using 11–0 nylon. b: A 2-cm long incision was made around the left ankle.

operative time was 105 min and the entire procedure was performed under local anesthesia.

The drainage volume began to decrease from postoperative day 7 onward, and the low-fat oral diet was discontinued on postoperative day 10. The patient received postoperative adjuvant paclitaxel and carboplatin chemotherapy on postoperative day 16. The drain was removed after a 50-ml drainage volume in 24 h on postoperative day 19, and she was discharged on postoperative day 22.

### 3. Discussion

We report a case with chylous ascites refractory to conservative management, which was successfully treated with LVA under local

anesthesia.

In cases of chylous ascites refractory to conservative treatment, lymphoscintigraphy may be used to identify the leak site and perform either image-guided sclerotherapy or surgical intervention (Kaas et al., 2001). Direct surgical ligation of the leakage from lymph vessels successfully relieved chylous ascites in 21 of 51 patients (Aalami et al., 2000). Preoperative intake of fatty meal or intraoperative lipophilic dye administration is required to identify the point of leakage, which contributes to the success of the surgical intervention (Link et al., 2006). Conservative therapy for 4–8 weeks is suggested before deciding on surgical intervention; however, this remains controversial. (Leibovitch et al., 2002; Combe et al., 1992). A resolution rate of 65% has been reported with conservative managements in 23 patients with a median

period of 13 weeks (Evans et al., 2006).

Peritoneovenous shunt is still thought to be a therapeutic or palliative management option for severe cases, particularly in patients whose poor performance status is a contraindication for surgery (Baiocchi et al., 2010). However, there are several concerning potential complications including sepsis, disseminated intravascular coagulation, hypokalemia, ascites leak, pulmonary edema, and occlusion of the shunt (Baiocchi et al., 2010; Evans et al., 2006).

There are alternatives for managing postoperative chylous ascites. Recently, several options have been extensively reported. These include microsurgical treatment or CO<sub>2</sub> laser for ligation of incompetent lymph vessels, chylovenous and lymphovenous shunts, and lymphaticovenous microsurgery. In particular, LVA and lymphatic-venous-lymphatic plastic microsurgery (Campisi and Boccardo, 2002) have extensive research supporting their efficacy in appropriate cases (Boccardo et al., 2007). These techniques provide functional solutions in each individual case for antigravitational discharge into the lumbar, iliopelvic, and inguinal lymph nodes. Boccardo et al. treated 16 cases of lymphatic and chylous disorders and demonstrated an excellent outcome. Eleven patients had no relapse, four patients had a persistence of a small quantity of ascites without protein imbalance, and all patients had an improvement in immunocompetence (Boccardo et al., 2007).

Our patient with refractory chylous ascites after surgery for tubal cancer, received great benefit from the microsurgical LVA, which is the treatment of choice. However, when considering the complexity of disease and difficulty of treatment, good outcomes are dependent on the skills of the plastic surgeons.

#### Author contribution

The work presented here was carried out in collaboration among all authors. YA, YS, and YA designed methods, analyzed the data, interpreted the results, and wrote the manuscript. SY and YS are plastic surgeon who performed the microsurgical lymphaticovenular anastomosis for our patient. All authors are chief doctors for the patients.

#### Conflict of interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

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