



Retrograde Distal Thoracic Duct Leak Embolization via Access Through Lymphocele After Thyroidectomy and Neck Dissection

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Keywords: Thoracic duct embolization; Lymphangiography; Lymphocele; Neck dissection; Thyroidectomy

We read with great interest the recent article by Moon et al. [1] regarding thoracic duct embolization (TDE) after neck dissection and would like to share a similar case resolved via a different route of access.

A 69-year-old female presented with chyle leakage. She had undergone total thyroidectomy with central neck dissection due to papillary thyroid carcinoma 10 years ago and wedge lung resection by video-assisted thoracic surgery due to metastasis. Additionally, she received right neck node dissection and radioactive iodine therapy 2 years ago due to recurrence. However, another recurrence of metastatic lymph nodes led to repeated left neck node dissection. After surgery, she suffered from left neck swelling, and subsequent

evaluation revealed chyle leakage and lymphocele. Conservative management with multiple sessions of aspiration and a non-fat diet did not improve the patient's symptoms. Ultimately, she was admitted to the hospital, and a Jackson-Pratt (JP) drain was inserted. A large amount of chyle (high-output chyle leakage, up to 990 mL/day) was drained, and the interventional radiology department was consulted for lymphatic embolization.

Bilateral inguinal intranodal lymphangiography and cone-beam CT revealed a small lymphatic duct without cisterna chyli at the renal hilar level. Direct access to the thoracic duct using a 22-gauge Chiba needle at the mid-abdominal level failed due to its small caliber (Fig. 1). During antegrade access, fast-moving chyle and ethiodized oil (Lipiodol, Guerbet, Paris, France) reached the point of leakage on the left side of the neck, and an injured thoracic duct was detected. A 5-French vascular sheath was placed at the apex of the lymphocele, and the point of leakage was catheterized retrogradely using a 1.98 Fr microcatheter and microwire (Parkway soft and Meister, Asahi Intecc, Aichi, Japan, respectively). The thoracic duct was then embolized using detachable coils (3 x 80 mm x 3, 4 x 100 mm x 4, Concerto, Medtronic, Minneapolis, MN, USA) and N-butyl-2-cyanoacrylate glue (Histoacryl, B. Braun, Melsungen, Germany) at a 1:1 ratio (glue: ethiodized oil) (Fig. 2). The chyle leakage resolved the next day, and the JP drain was removed 3 days later. The patient was discharged from the hospital with no adverse events 5 days after the procedure.

The study by Moon et al. [1] demonstrated that TDE is a safe and effective alternative to surgical treatment. Antegrade thoracic duct access could be used as a first attempt for TDE [1-3]. However, accessing the cisterna chyli is often difficult, and access cannot be achieved in up to 21.4% of cases [1], especially in patients with obesity or those with small or no cisternal chyli [4]. Retrograde access can be a viable alternative when antegrade access fails [4,5]. Suggested retrograde routes of access include direct thoracic duct puncture under ultrasound (US) guidance, transvenous cannulation, or through a JP drain [6,7]. It has been reported that using retrograde access in combination with antegrade access can increase the success rate of TDE up to 90% [8]. However, one study found that when retrograde access was employed alone, the reported technical success rate was 60% after neck dissection [4].

Received: March 11, 2024 **Revised:** March 17, 2024

Accepted: March 18, 2024

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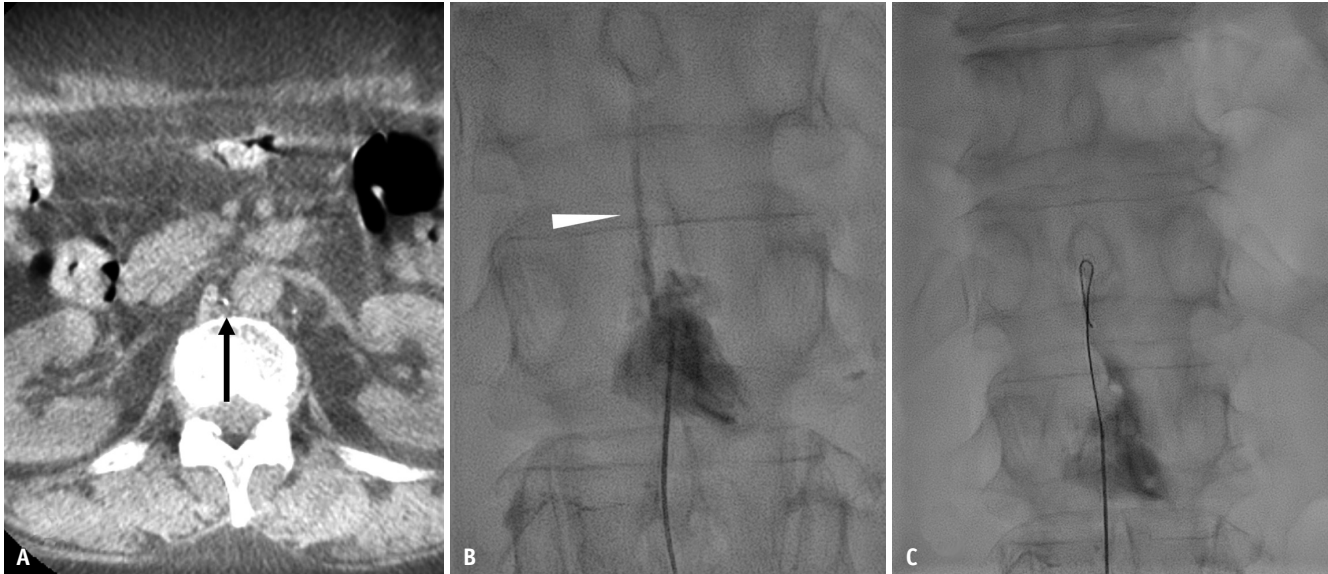


Fig. 1. Antegrade intranodal lymphangiography. **A:** Cone-beam CT showing a small thoracic duct at the renal hilum level (arrow). **B:** Direct transabdominal access under fluoroscopy guidance showing a thoracic duct (arrowhead). **C:** A microwire was placed in the duct, but cannulation failed as the duct was too small.

Causes of failure include premature termination, a small thoracic duct, erroneous image interpretation, and inability to identify the connection between the thoracic duct in the neck and the intrathoracic portion [4]. TDE is a significant challenge, particularly for inexperienced practitioners. Trans-lymphocele access could provide a straightforward route of access to the thoracic duct, especially in cases of high-output leakage, which are likely to have a larger orifice. Trans-lymphocele access for TDE has not been explicitly reported in literature. However, increasing the pressure of the lymphocele with contrast medium could possibly help to define the injured thoracic duct by retrograde filling. Further studies may be required to explore this lymphatic access option. This report has limitations in that only one case is presented. In addition, not all patients have an accessible lymphocele demonstrating an access to the thoracic duct.

In summary, in patients with chyle leakage and lymphocele formation after neck dissection, retrograde access via percutaneous access through lymphocele can serve as an alternate route of access that can substitute for cisterna chyli access or US-guided direct thoracic duct puncture methods.

Conflicts of Interest

Dong Jae Shim, who hold respective positions on the Editorial Board Member of the *Korean Journal of Radiology*, were not involved in the editorial evaluation or decision to publish this article. The remaining author has declared no

conflicts of interest.

Author Contributions

Conceptualization: Dong Jae Shim. Data curation: Doyoung Kim. Formal analysis: Dong Jae Shim. Investigation: Doyoung Kim. Methodology: Dong Jae Shim. Project administration: Dong Jae Shim. Resources: Dong Jae Shim. Software: Dong Jae Shim. Supervision: Dong Jae Shim. Validation: Dong Jae Shim. Visualization: Dong Jae Shim. Writing—original draft: Edward Wolfgang Lee. Writing—review & editing: Seung Hwan Baek, Dong Jae Shim.

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Funding Statement

None

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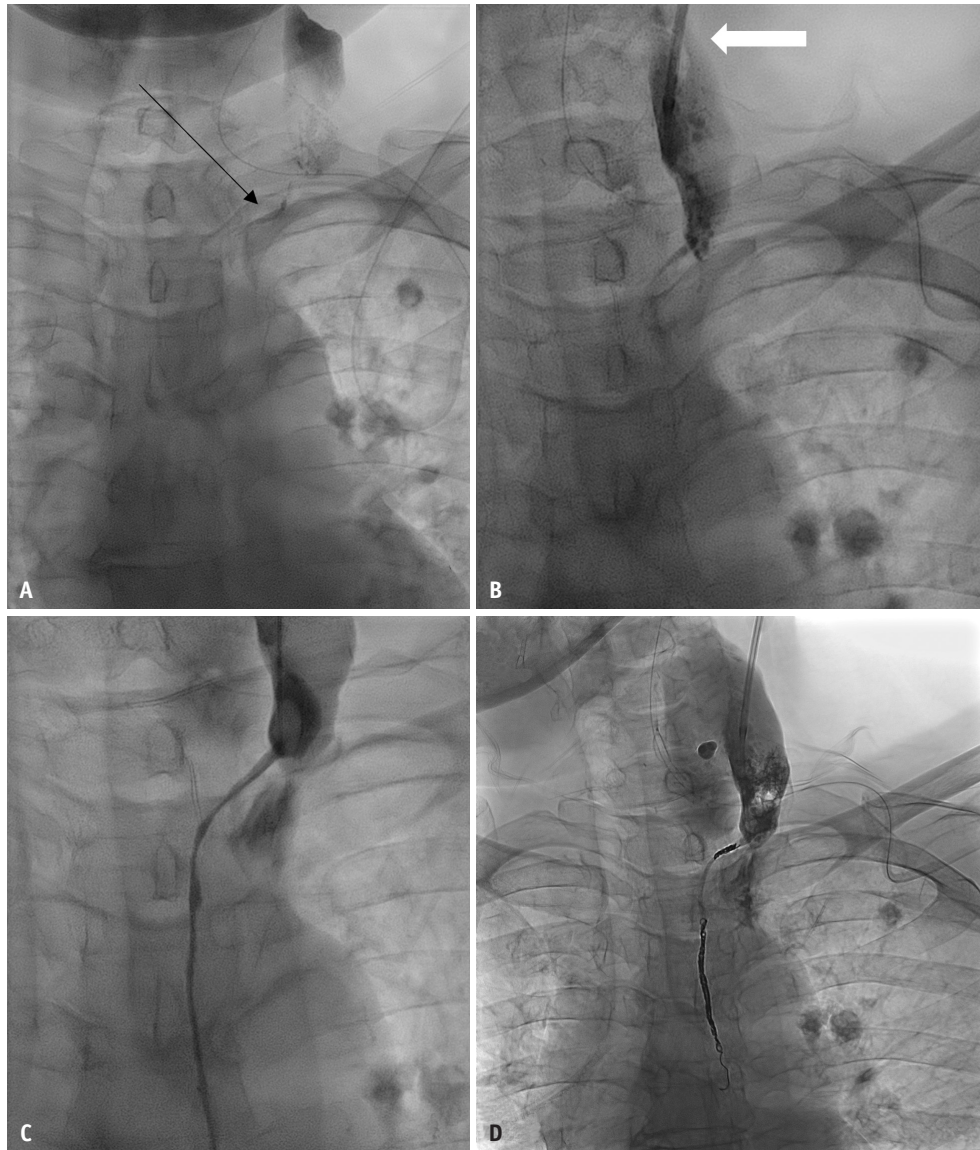


Fig. 2. Retrograde lymphangiography and thoracic duct embolization. **A:** Ethiodized oil was collected in the left neck lymphocele, and the thoracic duct was demonstrated with increased lymphocele pressure (arrow). **B:** A 5-Fr vascular sheath was placed at the apex of the lymphocele (arrow). **C:** Thoracic ductography was obtained via a microcatheter. **D:** The thoracic duct was embolized using detachable microcoils and a 1:1 mixture of N-butyl-2-cyanoacrylate and ethiodized oil.

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