


# Massive pleural effusion in porous diaphragm syndrome due to lymphatic leakage after pelvic surgery

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## Key message

We present the case of a patient who developed a massive right pleural effusion after pelvic surgery, not thoracic surgery. Lymphatic leakage into the abdominal cavity after pelvic surgery can cause massive pleural effusion when complicated with porous diaphragm syndrome.

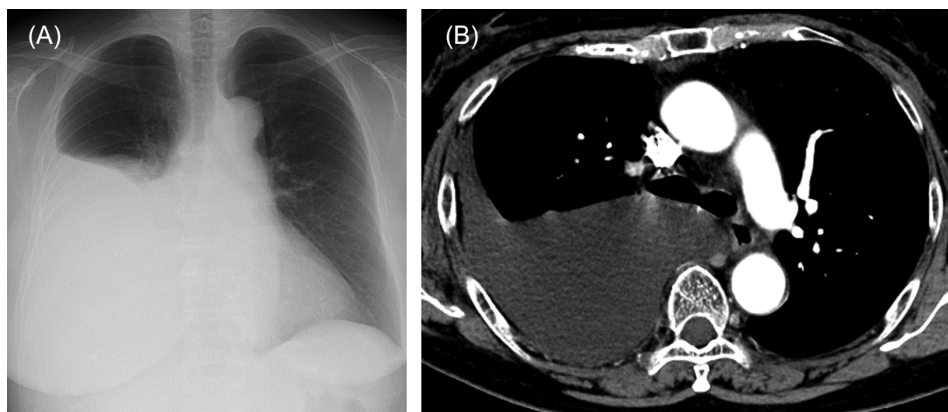
## KEYWORDS

lymphatic leakage, pelvic surgery, pleural effusion, porous diaphragm syndrome

## CLINICAL IMAGE

A 66-year-old woman underwent hysterectomy with pelvic lymphadenectomy for uterine cancer. On postoperative day 27, she developed dyspnoea, and chest imaging showed massive right pleural effusion with mild ascites (Figure 1). The pleural effusion was clear and exudative with normal pH, glucose, cholesterol and triglyceride levels, and lymphocyte predominance. A chest drain was placed, but the effusion persisted.

We considered the pleural effusion to have been caused by lymphatic leakage after pelvic lymphadenectomy and performed lymphangiography. Ethiodized oil administered to the inguinal lymph nodes leaked into the right thoracic cavity before contrast-enhancement of the thoracic lymphatic vessels (Figure 2), suggesting that lymphatic leakage below the diaphragm caused the right pleural effusion because of porous diaphragm syndrome. Pleural effusion decreased with ethiodized oil treatment (Figure 3). Lymphatic leakage



**FIGURE 1** The chest radiograph (A) and computed tomography (B) on postoperative day 27 show massive right pleural effusion.

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**FIGURE 2** The lymphangiography image shows ethiodized oil leaking into the right thoracic cavity (white arrow), which was injected into the pelvic lymphatic vessels.



**FIGURE 3** The chest radiograph acquired 4 days after lymphangiography using ethiodized oil shows no evidence of re-accumulation of pleural effusion.

following pelvic lymphadenectomy can cause lymphatic ascites.<sup>1</sup> Owing to the negative pressure in the thoracic cavity,<sup>2</sup> the leaked lymphatic fluid was drawn into the thoracic cavity through diaphragmatic traffic. This is the first reported case of massive pleural effusion in porous diaphragm syndrome secondary to pelvic lymphadenectomy-

induced lymphatic leakage. Clinicians should be aware that lymphatic leakage after pelvic surgery can cause massive pleural effusion when complicated with porous diaphragm syndrome.

#### **AUTHOR CONTRIBUTIONS**

Takunori Ogawa was responsible for drafting the work; conception and design of the work; and acquisition, analysis, and interpretation of the data. Masashi Nishimura and Tomomi Tanigaki collected the clinical data and drafted the original manuscript. Koji Sumi, Yasuhiro Enjoji and Yohsuke Suyama performed the lymphangiography and critically revised the manuscript for important intellectual content. Akihiko Kawana critically revised the manuscript for important intellectual content. Yoshifumi Kimizuka was responsible for revising the manuscript critically for important intellectual content. All authors have confirmed the final manuscript and agreed to publication.

#### **CONFLICT OF INTEREST STATEMENT**

None declared.

#### **DATA AVAILABILITY STATEMENT**

The data that support the findings of this study are available from the corresponding author upon reasonable request.

#### **ETHICS STATEMENT**

The authors declare that appropriate written informed consent was obtained for the publication of this manuscript and accompanying images.

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