minimally invasive techniques

Thoracosopic Ligation of a Thoracic Duct Leakage*

Frans Zoetmulder, MD, PhD; Emiel Rutgers, MD, PhD; and Paul Baas, MD

A patient in whom a chylothorax developed 4 years after treatment of a soft-tissue sarcoma by resection and radiotherapy is described. The thoracic duct leak could be identified and closed by thoracosopic intervention. (Chest 1994; 106:1233-34)

Key words: chylothorax; thoracic duct; thoracoscopy

Leakage of the thoracic duct and chylothorax is a potentially serious condition. The most frequent cause is surgical or accidental trauma. Also spontaneous chylothorax has been reported. Although treatment is controversial, drainage by tube thoracostomy is usually the first step. In case of continuous output of chylus, thoracostomy is advised to close the thoracic duct leak by mass ligation.

In this article, we describe a thoracoscopic treatment of a woman in whom a leak in the thoracic duct occurred 4 years after radiotherapy for a soft-tissue sarcoma.

CASE REPORT

A 51-year-old woman was first seen in the Netherlands Cancer Institute in 1988 with a large synoviosarcoma of the left paravertebral region. She was initially treated with combination chemotherapy. When the tumor showed progression, an extensive resection was carried out. The mediastinum was not opened during this operation. Postoperative radiotherapy was given to the original tumor bed and surroundings, including the lower mediastinum, up to a dose of 65 Gy using a shrinking field technique. After treatment, the patient recovered well and has remained free of recurrence. In May 1992, however, a routine chest radiograph showed pleural effusion in the left hemithorax. In November 1992, the patient complained of effort-dependent shortness of breath and the effusion had markedly increased. A computed tomographic (CT) scan confirmed the presence of massive pleural effusion. There were no lung metastases and no mediastinal abnormalities. Aspiration of the effusion showed chylus. No malignant cells were found.

*From the Departments of Surgery (Drs. Zoetmulder and Rutgers) and Pulmonology (Dr. Baas), Netherlands Cancer Institute, Amsterdam, the Netherlands.

In January 1993, the patient underwent thoracoscopy with dual purpose: to find the thoracic duct leak and if possible to ligate it. Shortly before operation the patient drank 50 mL of full cream. Standard thoracoscopy, using a double-lumen tube, was performed. After collapse of the lung, inspection of the pleural cavity by videoscope revealed approximately 1 L of chylus. There were no signs of tumor recurrence or other obvious causes for the thoracic duct leak. The leak could easily be recognized in the corner between diaphragm, esophagus, and pericardium by the bright white fat-containing chylus leaking from it (Fig 1). The lesion was about 5 mm in diameter and was bordered by thickened pleura. The pleura was picked up by forceps and pulled up to form a pleural tube. Around this tube a ligature was placed using a ligating loop (Surgilite, Autosuture, [Fig 2]). Inspection afterwards showed no more leakage. Under direct vision, sterile talcum powder was dispersed through the pleural cavity to effect pleurodesis. A thoracic drain was left behind.

The patient recovered well. Since the drain had not produced any chylus fluid, it was removed after 48 h. Pleural effusion has not recurred and the patient is well with an almost normal chest radiograph and pulmonary function at latest follow-up.

Figure 1. Artist's impression of the videoscopic view. The left lung is collapsed and retracted upwards. The leak in the thoracic duct is seen between the diaphragm on the right, the pericardium below, and the pulmonary ligament above.
DISCUSSION

Leakage of the thoracic duct and resulting chylothorax is a troublesome problem. Especially in cases of traumatic or postsurgical leaks, patients are often in a poor clinical state and there is an understandable hesitation to perform a full thoracotomy to ligate the thoracic duct. Thoracoscopy has obvious advantages in this situation. The modern videoscope together with the now available purpose-made tools have made an increasing variety of thoracoscopic interventions possible. The experience in our patient shows that ligation of a leaking thoracic duct is among them. Visualization of the thoracic duct leak was excellent thanks to the preloading with cream, which gives the chylus a clear white color. This case was unusual as it occurred rather spontaneously 4 years after irradiation. We have not found references of similar cases in the literature. The pleura, surrounding the leak, was thickened, which made ligation with the ligating loop (Surgitie) easy. In case of a traumatic postsurgical leak, this might be more difficult and clips or staples might be needed. Because the area of the thoracic duct where the leak occurred had been in the irradiation field, we added a talcum pleurodesis to the procedure, to obliterate the pleural space, as an extra guarantee against recurrence of the leakage. It is doubtful whether this was really necessary and we would probably omit it in patients without history of radiation. Kent and Pinson and Shirai et al have recently reported a case of successful thorascoscopic intervention in thoracic duct leaks. In accordance with our experience, both report simple identification of the exact site of the leak, and both report success, although the techniques of closure have been different.

We confirm that it is worthwhile to try thorascoscopic ligation of a thoracic duct leak before resorting to a thoracotomy.

REFERENCES


Thoracoscopic Ligation of a Thoracic Duct Leakage (Zoetmulder, Rutgers, Baas)