Case report

Treatment of postoperative chylothorax through laparoscopic thoracic duct ligation

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Received 26 October 2001; received in revised form 28 November 2001; accepted 3 December 2001

Abstract

We report the laparoscopic transhiatal thoracic duct ligation to solve postoperative chylothorax after right total pleurectomy for malignant diffuse mesothelioma.

Keywords: Chylothorax; Thoracic duct ligation; Laparoscopy

1. Introduction

Postoperative chylothorax is not a frequent complication, but it may seriously affect the patient’s general status, causing hydroelectrolytic disbalance, hypoproteinemia, immunologic deficiency (because of despoiling of antibodies), and restrictive respiratory disorders due to lung compression [1,2].

We report the case of a patient who underwent laparoscopic transhiatal thoracic duct ligation to solve a right chylothorax, secondary to a total pleurectomy for malignant diffuse mesothelioma.

This kind of approach to thoracic duct ligation was not found in the bibliography.

2. Case report

The patient is a 50-year-old woman who consulted us because of progressive dyspnea and right pleural effusion. She had no smoking history and lived in an area that is hardly industrial with little smog in the south of Argentina. She underwent several evacuating punctures of serous liquid which were negative for neoplastic cells. We decided to perform a video-thoracoscopy that revealed small white nodules along parietal pleura.

The biopsy results showed malignant mesothelioma.

Total parietal pleurectomy through a right thoracotomy was performed on July 26, 2001. Postoperative recovery was successful with complete lung expansion.

Forty-eight hours after surgery, we observed a daily drainage output of about 800–1000 cm³, which became lactescent with oral intake.

Chylothorax was confirmed through cream intake test and laboratory analysis.

Free-fat diet was indicated during 5 days but chylous flow was not reduced. Oral feeding was interrupted and parenteral nutrition started for another 7 days up to the second surgery.

The drainage output was persistently high.

Ten days after surgery, it was decided to perform a surgical ligation of the thoracic duct but the patient showed severe hypoproteinemia, metabolic acidosis, and impaired prothrombin time (25%). She was given K vitamin and metabolic disturbance was corrected.

In order to avoid a second surgery through the right or left thorax, we planned to perform a laparoscopic transhiatal approach.

With a recovered prothrombin (83%), 14 days after surgery, a thoracic duct ligation through a laparoscopic transhiatal approach was performed.

Six hours before the procedure, the patient was administered 250 g of cream in order to recognize the duct. The patient was operated on in a lithotomy position, placing the ports in the same way as for hiatal hernia repair. After dividing the gastrohepatic omentum, the left and the right crus were dissected in order to identify the esophagus. Distal esophagus and aorta were dissected along the mediastinum. Finally, on the right side of the aorta, lying on the vertebral body, the thoracic duct was clearly recognized, ligated, and

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clipped (Fig. 1). We did not try to identify the fistula site for it was not considered necessary.

The postoperative course was uneventful.

The pleural tube was removed 72 h after surgery and the patient was discharged on the 7th day.

3. Discussion

Surgical injury of thoracic duct is infrequent, but it has been described as a complication in almost all surgical intrathoracic procedures (esophageal, cardiovascular, and lung surgery) [1,2].

Spontaneous fistula sealing may be expected in about 50–60% of the cases.

Better knowledge about physiology, pathogenesis, diagnosis, and chylous fistula treatment has reduced mortality from 50 to 10%. It is well known that chyle has fat, albumin, globulin, fibrinogen, electrolytes, and cell elements such as lymphocytes and erythrocytes. It also contains antibodies, prothrombin, and fibrinogen. Despoiling of globulins interferes with the immunologic state [1]. When chyle loss is abundant and prolonged, it causes severe metabolic disorders which may lead to the patient’s death.

These changes caused coagulation defects, metabolic acidosis, and hypoproteinemia in our patient. This fact made us postpone surgical correction.

It is wise to wait up to 2 weeks before deciding thoracic duct ligation.

Suggested surgery is supradiaphragmatic thoracic duct ligation, according to Lampson’s description in 1948 [3]. It can be performed by thoracotomy or video assisted thoracic surgery through the same side or through the contralateral side, approaching prevertebral tissue for its mass ligation [2–4].

A second thoracotomy through the right side may be difficult and dangerous because of lung adherences to the thoracic wall, mainly when the lung is correctly expanded as in our patient, and contralateral thoracotomy implies the compromise of both hemithoraces.

So we consider that our suggestion in this communication is easily performed and it is much less traumatic for the patient than any of the other usual approaches for thoracic duct ligation [5]. It may be considered as a good indication in obese patients as it avoids laparotomy. Possible contraindications would be previous surgeries in upper abdomen or over diaphragmatic hiatus because of adherences and patient’s hemodynamic instability. Other potential contraindications could be coagulopathy, concomitant abdominal pathology which requires laparotomy (for example, traumatic chylothorax in polytrauma patients), pregnancy, and severe chronic obstructive pulmonary disease.

Regarding potential complications, it is important to identify the azygos vein in order to avoid its damage and hemorrhagic accident.

4. Conclusions

Transhiatal laparoscopic thoracic duct ligation for treatment of postoperative chylothorax can be considered a safe and fast procedure with low morbidity, easier to perform, and not as aggressive as a second transthoracic or laparotomic approach for patients who go through this surgical complication.

Thus, the decision of an early thoracic duct ligation, which avoids the clinical effects of prolonged chyle spoiling and reduces hospital stay and costs, will be much easier to take.

References


