Advantage of Earlier Thoracoscopic Clipping of Thoracic Duct for Post-operation Chylothorax Following Thoracic Aneurysm Surgery

We report that an earlier thoracoscopic clipping of the thoracic duct was advantageous in a case of post-operation chylothorax that occurred following thoracic aneurysm surgery. A 61-year-old man developed chylothorax on postoperative day 2 following graft replacement of the descending thoracic aorta using a left-sided thoracotomy. Since a replaced graft infection is lethal, earlier thoracoscopic clipping of the thoracic duct through the right side chest wall was indicated. The patient underwent thoracoscopic clipping on postoperative day 7 and was successfully treated. The duration of drainage was 2 days and oral intake was started on the seventh day. From our results, we recommend a thoracoscopic procedure through the opposite (right) side chest wall in the early stage of chylothorax development following thoracic aneurysm surgery. (Jpn J Thorac Cardiovasc Surg 2003; 51: 378–380)

Key words: earlier application, chylothorax, thoracic aneurysm, thoracoscopic clipping

Nobuaki Hirata, MD, Takayoshi Ueno, MD, Akira Amemiya, MD, Norihisa Shigemura, MD,*
Akinori Akashi, MD,* and Tetsuo Kido, MD.**

Chylothorax is a challenging clinical problem that shows high mortality and morbidity when left untreated, especially when it develops following thoracic aneurysm surgery.[1,2] There is no consensus regarding the indications for surgical intervention, however, suggested guidelines include average daily loss of chyle exceeding 500 ml over a 5-day period, failure of conservative treatment after 14 days, and nutritional complications. However, following aneurysm surgery, prolonged continuous tube drainage increases the risk of graft infection.

Thoracoscopic ligation of the thoracic duct through the right side chest wall has been shown to be a safe and effective treatment for chylothorax, and may also help to avoid a thoracotomy and its associated morbidity.[3,4] Accordingly, we recommend a thoracoscopic procedure in the early stage of developing chylothorax. Herein, we describe the advantage of an earlier thoracoscopic clipping of the thoracic duct for a case of post-operation chylothorax following aneurysmal surgery.

From the Division of Cardiovascular Surgery, the *Division of General Thoracic Surgery, Takarazuka Municipal Hospital, Hyogo, and the **Division of Chest Surgery, Osaka Police Hospital, Osaka, Japan.

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Address for reprints: Nobuaki Hirata, MD, Division of Cardiovascular Surgery, Takarazuka Municipal Hospital, 4-5-1 Kohama, Takarazuka, Hyogo 665-0827, Japan.

Case

A 61-year-old man developed chylothorax on postoperative day 2 following graft replacement of the descending thoracic aorta for a dissecting thoracic aneurysm using a left-sided thoracotomy. The amount of continuous tube drainage was approximately 1,200 ml/day during the first 3 days. Accordingly, oral intake was ceased and parenteral hyperalimentation was started, further, the chest drainage tube was extracted and intermittent aspiration was performed for the prevention of graft infection. The amount of aspiration during the next 3 days was approximately 400 ml, however, a chest X-ray revealed a massive amount of pleural effusion. Accordingly, on postoperative day 4 we determined that the condition of the patient indicated thoracoscopic clipping of the thoracic duct, because of the non-invasiveness of such a procedure and to prevent lethal infection in the replaced graft, which our chest surgical team subsequently performed on postoperative

day 7.

General anesthesia was established using a double-lumen endotracheal tube. The patient was turned onto his left side and 200 ml of milk was administrated through a nasogastric tube. Three intercostal ports were made in the right side lateral chest wall, 1 for the thoracoscope and 2 for the instruments. The mediastinal pleura was incised above the diaphragm to create a space with a lateral border of the azygos vein and a medial border of the aorta. The thoracic duct, a pale 3-mm tubular structure, was located in the fatty layer between the azygos vein and the aorta. After clear identification of the duct, 4 hemoclips were placed (Fig. 1). There was no procedure-related mortality or morbidity, and the patient was successfully treated with thoracoscopic clipping of the thoracic duct. The duration of drainage was 2 days. Oral intake was started on day 7 after thoracoscopic clipping and parenteral hyperalimentation was finished on day 9 with no further complications.

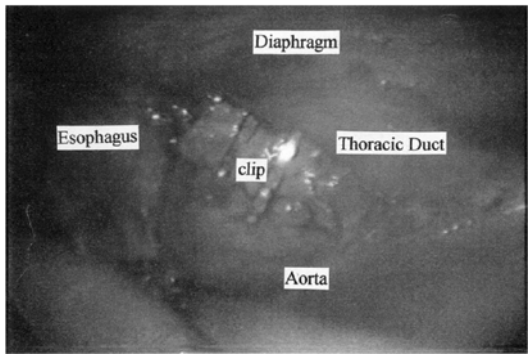

Fig. 1. Thoracoscopic findings showing the clipped thoracic duct, a pale 3-mm tubular structure, located in the fatty layer between the azygos vein and the aorta.

Discussion

There is no consensus regarding surgical intervention indications for chylothorax. During prolonged chyle loss, the body reserves become depleted and both cell-mediated and humoral responses are impaired, increasing the risk of bacteremia and viral sepsis, especially after 2 weeks.[5] In general, surgical treatment has been suggested following a traumatic event in adults if the daily loss of chyle over a 5-day period exceeds 1,500 ml, or is 300 ml per day for 8 days.[6-8] However, those indications do not apply for chylothorax that develops following aneurysm surgery, because any infection in the replaced graft is lethal, thus, prolonged continuous chest drainage and frequent intermittent aspiration are not desirable. Accordingly, on postoperative day 4 we determined that a thoracoscopic procedure was indicated, which our chest surgical team performed on postoperative day 7.

There remains considerable controversy over the usefulness and type of surgical treatment in cases of chylothorax,[9,10] though the goal of any procedure is to discontinue the leakage of chyle. It is difficult to find the leakage point in an injured thoracic duct, though it usually occurs from the afferent portion into the left subclavian vein, in the left thorax. In addition, searching for the leaking point close to an artificial graft might induce infection. Accordingly, we recommend that the thoracic duct be ligatured in the lower part of the thorax using a right-sided approach. Video thoracoscopy is becoming widely used for the management of chylothorax, as it offers less postoperative pain and pulmonary dysfunction, and also enables precise ligation and division of the thoracic duct just above the diaphragm through the right side of chest wall.[3,4]

The most important point of this procedure is that the mediastinal pleura must be incised above the diaphragm to create a space with a lateral border of the azygos vein and a medial border of the aorta. The thoracic duct, a pale 3-mm tubular structure, can be located in the fatty layer between the azygos vein and the aorta. However, a variety of courses for the thoracic duct must also be kept in mind. If we can not obtain a perfect result using this procedure, we believe that minimizing the loss of chyle results in better clinical courses in those patients.

In summary, we found an advantage with earlier thoracoscopic clipping of the thoracic duct regarding the timing of re-operation and recommend a thoracoscopic procedure through the right side chest wall for post-operation chylothorax that occurs following thoracic aneurysm surgery.

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