“Early” thoracic duct ligation for chylothorax after esophagectomy means “now”

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In this study by Brinkmann and colleagues,¹ the incidence of chylothorax after Ivor Lewis esophagectomy (which included primary elective thoracic duct ligation) is reported (Figure 1). In addition, the associated morbidity and mortality are analyzed and subsequent management is reviewed. According to Brinkmann and colleagues,¹ “A review of the literature reveals that we still do not know how to determine which patients can be managed conservatively and which require surgical intervention ... [and that] the timing of reoperation remains incompletely specified.” Unfortunately, this study does not compare therapeutic approaches, nor does it analyze the timing of intervention for most patients with postoperative chylothorax. Nevertheless, this series does demonstrate 2 important points: (1) routine ligation of the thoracic duct at the time of esophagectomy is associated with a low risk of chylothorax and (2) the thoracic duct is usually located precisely and can reproducibly be ligated discreetly, as opposed to the need to use “mass ligation.”

Although the postoperative care of the patients in this study appears to be algorithm guided, the practices described by Brinkmann and colleagues¹ appeared unnecessarily dogmatic. Chest tubes were removed only on the basis of chest tube output, irrespective of whether enteral nutrition had been started. Enteral nutrition is described as being instituted on postoperative day 7, later than in most series and irrespective of the timing of the resolution of ileus. The timing of reoperation is unclear; Brinkmann and colleagues¹ state that patients with high-output chylothorax were taken back to the operating room for religation of the thoracic duct 2 days after diagnosis. Why 2 days? Why, then, is the median time from esophagectomy to repeat duct ligation 13 days? According to the algorithms, it should have been sooner.

Although the management of patients with low-output or medium-output fistulas is debatable, most thoracic surgeons would agree that early thoracic duct ligation or religation is

Thoracic duct ligation during esophagectomy.

Central Message

Chylothorax after esophagectomy is devastating if not addressed promptly. Thoracic duct ligation should be performed soon after diagnosis.

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the most appropriate strategy for patients with high-output fistulas (defined in the literature as 1000 mL/d and in this study as 20 mL/kg/d). Whether this is accomplished by thoracoscopy, thoracotomy, or thoracic duct embolization is dependent on institutional experience and expertise. Brinkmann and colleagues¹ support this strategy; however, their study does not address this specific issue (timing of management of high-output chylothorax).

In this study, for patients with medium-output chylothorax, the median time to duct religation is 29 days, and it is from this group that the conclusions regarding prompt surgical treatment are drawn, supportive of numerous other studies in the literature. Although there were only 4 patients in this group, the strategy of early reintervention for medium-output (as well as high-output) fistulas is probably best.

This study represents a large experience with Ivor Lewis esophagectomy, with a low postoperative chylothorax rate and a successful strategy of early religation in those with medium-output or high-output recurrent chylous fistulas. Several questions, however, remain. In patients with medium-output fistulas, how long is it reasonable to wait to determine whether these fistulas will convert to low-output fistulas and perhaps resolve without surgery? In these patients, what is the role of adjunctive therapies (medium-chain triglyceride diet, total parental nutrition, somatostatin) to manage output and avoid reoperation? How would the current nutritional status influence the decision? What is the role of thoracic duct embolization

FIGURE 1. Automatic clip applicator placed on the individually dissected thoracic duct during esophagectomy.

in patients for whom early reoperation is not ideal (such as those with concurrent pneumonia or other postoperative complications)? What is the role of thoracic duct embolization for all patients?

Finally, with such a large experience, there may be lessons that Brinkmann and colleagues could share. In the 17 patients in whom thoracic duct ligation at the time of esophagectomy failed, was failure potentially technically avoidable? What did they observe at reoperation? If

religation closer to the diaphragm was successful, why was this approach not used primarily in all patients?

Chylothorax after esophagectomy is relatively uncommon, and even less likely if thoracic duct ligation is performed at the time of resection. Thoracic duct ligation is best performed by precisely identifying the duct, as opposed to mass ligation. Although chylothorax is uncommon, it can be a devastating complication if not addressed promptly, leading to malnutrition, dehydration, and other complications. In their report of this large series, Brinkmann and colleagues¹ advocate for the strategy of early ligation, and that strategy is supported in the literature. Although this study used rethoracotomy, it is certainly possible that thoracoscopy and thoracic duct embolization represent acceptable alternatives.

Reference

1. Brinkmann S, Schroeder W, Junggeburth K, Gutschow CA, Bludau B, Hoelscher AH, et al. Incidence and management of chylothorax after Ivor Lewis esophagectomy for cancer of the esophagus. *J Thorac Cardiovasc Surg*. 2016;151:1398-404.