Robotic resection of a thoracic duct cyst

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INTRODUCTION

Thoracic duct cysts (TDCs) are uncommon, with only 63 cases reported in the literature.[1] Nevertheless, thoracic surgeons should consider the possibility of a TDC when a mass is found anywhere along the course of the thoracic duct. Surgical resection is performed to confirm diagnosis and to relieve symptoms. A minimally invasive thoracoscopic approach is preferred. Herein, we present the case of a robotic-assisted thoracoscopic resection of a TDC. To the best of our knowledge, robotic resection of a TDC has not been previously described.

CASE REPORT

A 69-year-old male presented with back tightness for 1 year. He denied chest pain, dysphagia or weight loss. Physical examination was unremarkable with clear breath sounds and no palpable lymphadenopathy. A computed tomography (CT) scan revealed a 5 cm × 3 cm homogeneous, cystic appearing right-sided para-oesophageal mass [Figure 1]. In the operating room, an oesophagogastrroduodenoscopy revealed normal oesophageal mucosa with no evidence of fistulous communication to the mass. A right robotic-assisted thoracoscopic resection of the para-oesophageal cystic mass was performed. The mass was 5 cm, distended and white [Figure 2]. There appeared to be a small feeding tubular structure consistent with the thoracic duct, which was doubly clipped and divided. The final pathology revealed a lymphovascular malformation consistent with TDC. Endothelial markers CD 31 and CD 34 were positive. Intraoperative cultures of the cyst fluid were negative. On the 1st post-operative day (POD), the patient developed signs of a chyle leak from the chest tube. After 48 h of dietary restriction, the patient was challenged with a high-fat diet, and the chyle leak returned. On POD 3, the patient was returned to the operating room for a redo thoracoscopy (non-robotic). One hour prior to surgery, the patient was
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administered a provocative quantity of high-fat cream by mouth to better identify the site of the leak. In the resection bed of the cyst, there was an obvious chyle leak just cephalad to the location of the prior surgical clips. This area was oversewn with 3–0 prolene suture, and an adjacent piece of mediastinal fat was used to buttress the area. On POD 3 from the redo thoracoscopy, another high-fat challenge was performed. No chyle leak was observed. The chest tube was removed, and the patient was discharged home 7 days after the initial operation on a regular diet.

DISCUSSION

TDCs can be observed anywhere along the course of the thoracic duct, from its origin at the cysterna chyli in the abdomen to the right posterior mediastinum to the left neck where the duct inserts into the confluence of the left subclavian and internal jugular veins. TDCs are thought to arise from a congenital weakness in the wall of the thoracic duct. Presenting symptoms can include dysphagia, dyspnoea, coughing, abdominal pain, spontaneous chylothorax, supraclavicular or neck mass or as an incidental finding on imaging.

Chest CT will usually identify a TDC, but magnetic resonance imaging can also be performed to further characterise lesions. Identification of a track from the mass to the cysterna chyli, most readily visible on T2-weighted imaging, will make the diagnosis of TDC much more likely. Endoscopic ultrasound (EUS) has also been employed to better narrow the differential diagnosis of a mediastinal mass. With a TDC, EUS will show a normal oesophageal wall with an adjacent cystic mass. An oesophageal duplication cyst, however, would be intramural on EUS.

Once a TDC is discovered, a thoracic surgical evaluation is required. Resection is often recommended to confirm histology and to prevent spontaneous rupture and subsequent chylothorax. TDCs are also removed for symptomatic relief and to reduce the theoretical risk of potential malignant transformation, although there have not yet been any published cases that describe malignant transformation.

Both open thoracotomy and thoracoscopic resection of TDC have been described in the literature, but a robotic approach has not. As the adoption of robotic surgery continues to evolve, we suspect that the resection of mediastinal masses such as TDCs will become more common. Further studies comparing robotic to non-robotic thoracoscopic resection of mediastinal masses (including TDC) would be helpful to determine the preferred treatment while minimising morbidity, length of stay and cost.

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Conflicts of interest
There are no conflicts of interest.

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