Laparoscopic Excision of Intrathoracic Oesophageal Duplication Cyst in a Singaporean Adult Male

Dear Editor,

Oesophageal duplication cysts are rare congenital maldevelopments of the posterior primitive foregut and mostly present in childhood.[1] Patients usually present with dysphagia and sometimes chest discomfort. Complete surgical excision is the standard treatment. In this case report, we describe a laparoscopic transperitoneal approach to surgical excision of a duplication cyst of the intrathoracic oesophagus. This case report is the first account of laparoscopic transhiatal excision of intrathoracic oesophageal duplication cyst among adults in Singapore.

Case Report

A 22-year-old male, with no previous medical history, presented with 3 month history of recurrent dyspepsia and dysphagia. A physical examination yielded no abnormalities. Gastroscopy revealed a large submucosal mass in the lower oesophagus 2 cm proximal to the gastro-oesophageal junction (Fig. 1).

Computed tomography (CT) scan of the thorax was performed to further characterise the lesion. It showed a well defined intramural mass with water density arising from the lower oesophagus, measuring 6.6 cm x 6.4 cm x 6 cm. The cystic lesion effaced the oesophageal lumen with no obvious breach in the serosal and mucosal layers (Figs. 2A and 2B).

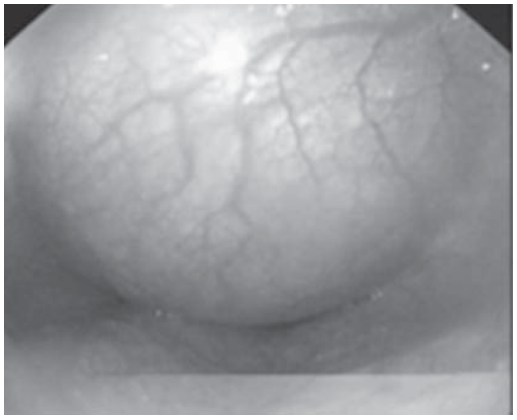

Fig. 1. Endoscopic image of distal esophageal duplication cyst.

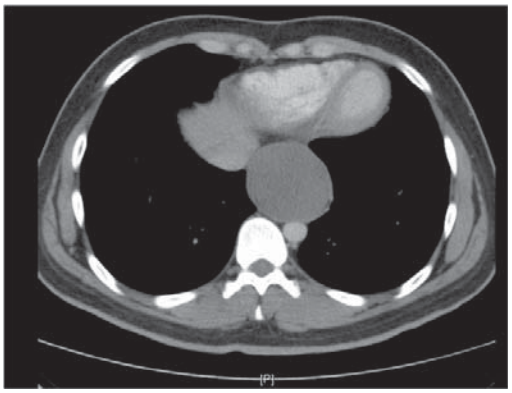

Fig. 2A. CT scan of the lower thoracic region showing the cyst effacing the distal oesophagus (axial view).

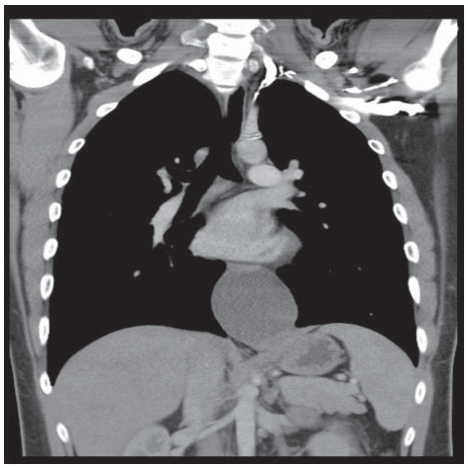

Fig. 2B. CT scan of the oesophageal duplication cyst (coronal view).

This was further confirmed on endoscopic ultrasound of the oesophagus. A 67 mm by 57 mm hypo-echoic mass was seen just above the gastro-oesophageal junction. Endoscopic aspiration of the cyst was performed: microscopic examination of cystic fluid showed sheets of benign ciliated epithelial cells in a background of foamy macrophages and no evidence of malignancy.

Based on the investigations, a diagnosis of a lower oesophageal duplication cyst was made. As the cyst was favourably located in the lower oesophagus, a laparoscopic transhiatal approach was deemed the most suitable.

The patient was positioned supine with a 30 degree head up tilt. Two 10 mm ports were placed at the umbilicus and left hypochondrium, with two 5 mm working ports inserted in the right hypochondrium and left lateral rectus, respectively (Fig. 2C). Pneumo-peritoneum was created after carbon dioxide insufflation and 10 mm 30 degree endoscope (Karl Storz Instruments, Tuttlingen, Germany) was inserted through the infra-umbilical port. The liver was retracted with an Iron Intern™ retractor and the lesser omentum entered to identify and isolate the right crura. The angle of His was dilated and the distal oesophagus was exposed.

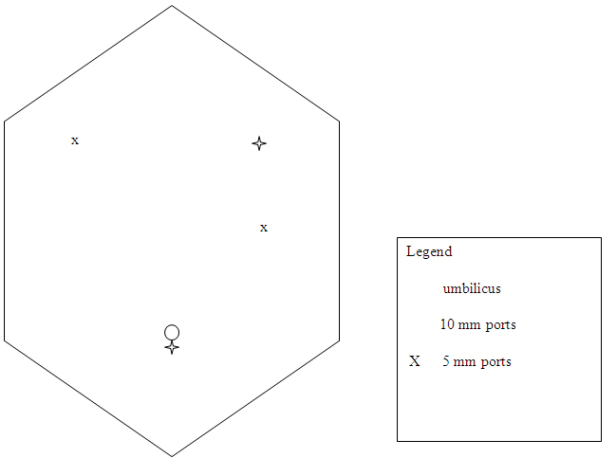

Fig. 2C. Illustration of the ports placement at the abdominal wall.

The lower intrathoracic oesophagus was slung and retracted caudally, and antero-lateral mobilisation of the oesophagus was performed. The finding of interest was a 7cm intramural cystic lesion arising from the lower thoracic oesophagus, extending to dilated hiatus (Fig. 3A). Careful dissection of the soft tissue and muscular layers of the distal oesophagus was performed to isolate the cyst. This was performed through a 4 cm incision at the distal oesophagus at the level of hiatus. Its cystic content was aspirated until clear to enable excision of the entire cyst wall.

We repaired oesophageal muscles in 2 layers using interrupted Vicryl™ 2-0 and continuous V-Loc™ 3-0 sutures (Fig. 3B). On-table oesophagoscopy confirmed no stenosis in the lumen and air-leak test confirmed no breach in mucosa. The specimen was then retrieved using a pouch device. The dilated hiatus was approximated with continuous Vicryl™ 2-0. Ports were withdrawn and abdominal wall closed accordingly.

Postoperative recovery of the patient was uneventful. He tolerated progressive feeds starting from postoperative day 4 and was discharged. Gastrografin study showed normal oesophagus and he has been eating well for the past 6 months.

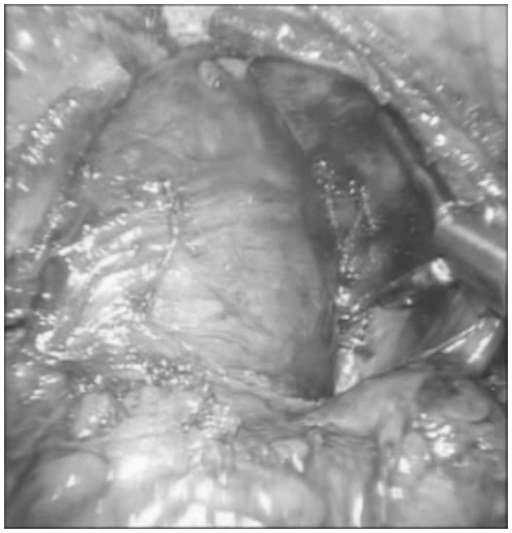

Fig. 3A. Laparoscopic image of the oesophageal duplication cyst.

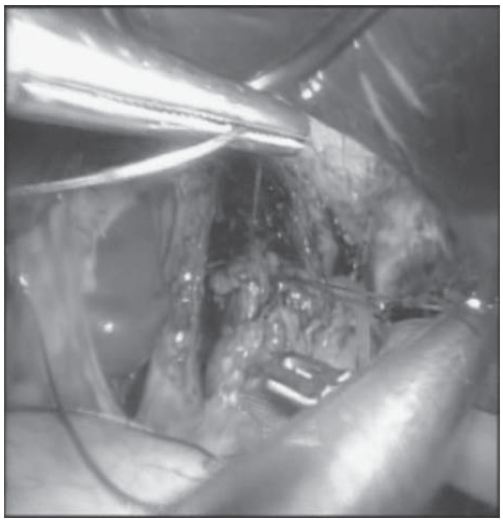

Fig. 3B. Repair of the muscular layer of distal oesophagus (transhiatal).

Discussion

Oesophageal duplication cysts are rare medical entities, occurring about 1 in 8000 live births with the majority of cysts situated in the distal thoracic oesophagus.[1] The aetiology of duplication cyst has been well elucidated as maldevelopment of the primitive foregut with separate histological entities; one of simple epithelial-lined cyst and another of a separate tube duplicated alongside the oesophagus which is lined with various linings. Mediastinal cysts can be classified as oesophageal duplications if they are close to the oesophageal wall, are covered by 2 muscle

layers, and if the lining is squamous, columnar, cuboid, pseudostratified, or ciliated epithelium.[2]

A case series among adults in Singapore described 3 asymptomatic adults who were diagnosed incidentally from routine chest radiographs while the fourth was diagnosed after presenting with cough and dysphagia. At that time, only 1 out of the 4 cases was resected thoracoscopically.[3] As history and physical examination is non-specific, diagnosis is usually obtained via imaging of the lesion, with CT scan and endoscopic ultrasound (EUS) being the investigations of choice. EUS has a 2-fold advantage; both diagnostic and therapeutic.[4] This is because the cyst content can be aspirated for immediate temporary relief of symptoms and for histological analysis of the cyst content.[5] Definitive diagnosis is obtained after surgery. In this case, the histology result of the specimen showed benign epithelial cyst wall.

Most oesophageal duplication cysts are diagnosed in the paediatric age group and in the thoracic cavity. There are a few published case series on thoracoscopic resection of intrathoracic oesophageal duplication or bronchogenic cyst among adults.[6,7] Moreover, there were less than 10 cases of excision of intra-abdominal oesophageal duplication cyst reported.[8,9]

In a case described by Kin et al,[8] he reported a laparoscopic approach to resection of an intra-abdominal distal oesophageal duplication cyst. In his case, the cyst was enucleated en masse.[9] In comparison, we aspirated the cyst's content prior to excision due to the large cyst size in this case. Repair of the oesophageal wall with precise apposition of the muscular wall was performed similarly to prevent pseudo-diverticulum formation. Upon completion of the procedure, oesophagoscopy was performed to ensure that there was no mucosa breach.

This case report is the first account of laparoscopic transhiatal excision of intrathoracic oesophageal duplication cyst among adults in Singapore. In this case, we concluded that laparoscopic approach to excision of duplication cyst is safe, well tolerated and minimally invasive, especially in an anatomical position with difficult surgical access.

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