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Case Report

Laparoscopic repair of massive Bochdalek hernia

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ABSTRACT

Bochdalek hernias are a rare diaphragmatic hernia, usually diagnosed in childhood. We report a case of a large Bochdalek hernia containing omentum, stomach, left colon and some small bowel (jejunum) including mesentery, the superior pole of the left kidney, spleen and tail of pancreas diagnosed in adulthood. Our patient underwent a laparoscopic repair of this massive hernia with a composite mesh with an excellent post-operative outcome.

Keywords: Bochdalek, Diaphragmatic hernias, Hernia

INTRODUCTION

Bochdalek hernias are characterised by a congenital posterolateral diaphragmatic defect allowing herniation of abdominal viscera into the thoracic cavity.[1] Diaphragmatic hernias are rare, and less commonly detected in adulthood. Brown and Horton reported incidence of 0.17% in adults, particularly those containing multiple abdominal viscera.[2-6] Bochdalek hernias are the most common congenital diaphragmatic defect, usually occurring on the left with a higher incidence in males.[1-3]

We describe a man with a Bochdalek hernia containing the left kidney, stomach, omentum, pancreas, spleen, and splenic flexure and transverse colon who presented with persistent dyspnoea and dysphagia since childhood. This was repaired in an elective setting with an excellent post-operative outcome.

CASE REPORT

A 32-year-old man had an incidental finding of a diaphragmatic hernia on a chest X-ray for immigration purposes. His symptoms at this time included some problems with indigestion and heartburn that had been ongoing for several years which he managed conservatively, and a history of dyspnoea on exercise which had been attributed to childhood asthma. He was otherwise medically well with no other medical history, no medications and no known allergies.

On computed tomography (CT), a posterior diaphragmatic hernia (inaccurately) measuring 9×9 cm, containing omentum, stomach, left colon and some small bowel (jejunum) including mesentery, the superior pole of the left kidney, spleen, tail of pancreas, and with compression of the left lower lobe of lung and right cardiac displacement (Figure 1).

This patient was booked for surgical repair under the upper gastrointestinal surgery team. After consultation with the anaesthetist we decided the best approach would be single lung ventilation with a double lumen endotracheal tube and the left lung deflated. The patient was positioned in a lazy right lateral position with table break and foot plate to get maximal head elevation. A laparoscopic approach was utilised to reduce the hernia sac and contents with division of adhesions of abdominal viscera within the thorax. Intra-operatively the hernia was found to be larger at 15×8 cm omentum, stomach, left colon and some small bowel (jejunum) including mesentery, the superior pole of the left kidney, spleen and tail of pancreas. The small bowel was reduced and the splenic flexure was mobilised down prior to mobilisation of the splenic flexure (including kidney)

from within the thoracic cavity. The spleen and stomach were dissected for reduction. Mobilising the left kidney was originally around Gerota's fascia but importantly the pancreatic was dissected down onto the posterior aspect of the hernia neck exposing quadratus lumborum, psoas muscle and the subcostal, iliohypogastric and ilioinguinal nerve. This was followed by mobilisation and reduction of the stomach and the reduction of the splenic artery and tail of pancreas. The diaphragmatic defect was closed medially by interrupted 0 - ethibond sutures. Laterally the defect was too large for a primary closure, and a Symbotex (Medtronic UK, 2013) composite mesh was used to bridge the defect with a 5 cm overlap. The lung was re-expanded intra-operatively to fill the left hemi-thorax using 30 mmHg of PEEP, and an intercostal catheter (ICC) positioned.

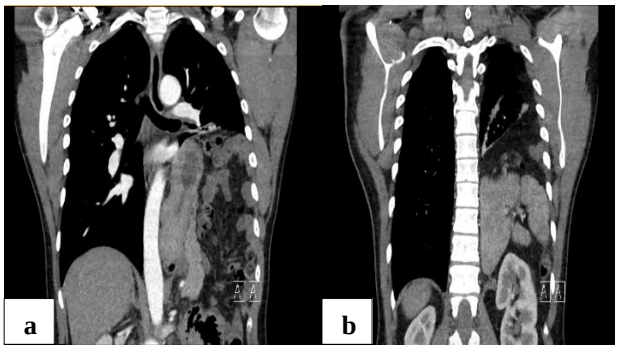

Figure 1: CT for pre-operative planning of large Bochdalek hernia containing omentum, stomach, left colon and some small bowel (jejunum) including mesentery, the superior pole of the left kidney, spleen, tail of pancreas, and with compression of the left lower lobe of lung and right cardiac displacement; (a) CT chest and (b) CT abdomen.

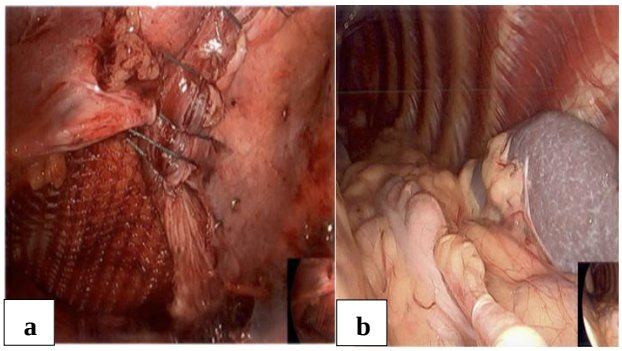

Figure 2 (a and b): Intra-operative images of large Bochdalek hernia containing omentum, stomach, colon and some small bowel including mesentery, the upper pole of the left kidney, spleen, tail of pancreas with suture and bio-absorbable mesh repair.

Postoperatively the patient was observed in the intensive care unit overnight with an ICC. A small pneumothorax persisted for post-operatively, but stabilised. The ICC was removed at day 7 with a post-catheter chest X-ray with a stable small left sided apical pneumothorax. The patient was discharged on day 9 with a follow up plan to review in as an outpatient in 6 weeks and of CT with further review in 3 months.

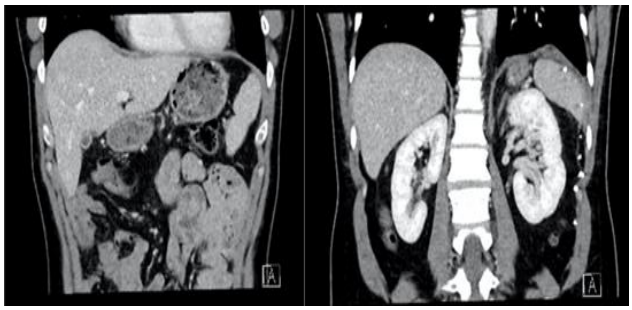

Figure 3: Computed tomography at 3 months follow up post repair.

DISCUSSION

Previous cases of Bochdalek hernias containing multiple abdominal viscera have been reported in the literature with a mixture of open cases and small cases repaired with laparoscopic surgery.[4-7] There have also been reports of smaller single or dual-viscera Bochdalek hernias being repaired in the literature.[6-9] We report the laparoscopic repair of a large Bochdalek hernia containing multiple abdominal viscera that underwent repair via a laparoscopic approach.

Diaphragmatic hernias are rare, and Bochdalek hernias are the most common type.[3] There is general consensus that a fit patient should undergo a repair of their Bochdalek hernia whether or not they are symptomatic due to the risk of complications including strangulation of the gut leading to severe morbidity and mortality.[3] Minimally invasive techniques may also improve the ease of hernia reduction, and were associated with lower morbidity and a reduced hospital stay.[3,10]

Concern of erosion of the mesh into the gastrointestinal organs represents a theoretical risk.[11] A composite (Symbotex, Medtronic UK 2013) mesh was used to prevent this as it features minimized visceral attachment.

The hernia was particularly large and a repair was indicated given the patient's exercise induced dyspnoea and eating difficulties previously attributed to childhood asthma. Given the otherwise well patient, an elective laparoscopic approach for the repair was able to be considered.

Despite lifelong collapse of the left lower lobe of the lung, it was able to be re-inflated under vision intra-operatively. The benefits of a laparoscopic approach include improved vision into the thoracic cavity during the reduction of multiple abdominal viscera, as well as reduced post-operative pain and morbidity. The patient remained well and asymptomatic at the 3 months follow up review (Figure 3).

CONCLUSION

This Bochdaleck hernia is unique in the literature given the significant size of the hernia containing multiple abdominal viscera repaired with a laparoscopic surgical approach. The repair had an excellent outcome. A laparoscopic approach, where indicated, is effective and can reduce post-operative morbidity for the patient.

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