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Case Report
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Laparoscopic Prosthetic Mesh Repair of Morgagni Hernia Containing Liver Lobe

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Abstract

Liver protrusion in Morgagni hernia is very rare pathology that could be undiagnosed and remain silent for many years. We report a 46 old female with diaphragmatic right anterior defect that was admitted for dysphagia, dyspnea and heart burn. CT scan revealed a transdiaphragmatic protrusion of omentum and liver lobe in thorax. Surgery is mandatory and laparoscopy is a gold standard approach in adult and in children. The procedure consists in a hernial sac plicature by self-anchoring surgical sutures. Tension-free closure of the defect was carried out using a partial absorbable mesh placed with absorbable tacks. The patient was discharged home on post operative day 3 without complications. There was no recurrence in symptoms after 18 months from surgery.

Introduction

Morgagni Hernia (MH) is uncommon defect or weakness in the diaphragm which occurs during fetal development and that requires surgical repair [1-3]. It could be unrecognized and remain silent for many years, becoming symptomatic in adult with subtle or severe, chronic or sudden symptoms based on the organ that protrudes. Liver protrusion is very rare. Use of prosthetic mesh during the laparoscopic treatment of MH was successfully first reported in 1994 [4]. We described an unusual large Morgagni Hernia (MH) containing omentum and hypertrophic portion of liver lobe treated by laparoscopy with use of partial absorbable mesh.

Case Presentation

A 46 old female with severe obesity (BMI: 41.6) was admitted to our surgery department for one month dysphagia, dyspnea and heartburn. She had history of dilated congenital heart disease, multinodular thyroid, chronic gout and chronic anemia and was on regular follow up. There was no history of chest or abdominal trauma and she had no previously abdominal operation. A thorough investigation revealed that at the age of three she was diagnosed a pericardiocelomatic cyst in the right phrenic corner. No further investigations were carried out for this cyst. On general physical examination there were no signs of peritoneal irritation and she presented stable with hemodinamically normal parameters. Upper endoscopy was normal. Respiratory system examination revealed occasionally crept bilaterally and mixed ventilatory disorders of moderate degree at spirometry. The chest X-ray showed pericardiophrenic opacity in the right lower corner and CT scan images on multi-planar format confirmed the anterior diaphragmatic hernia with protrusion of the omentum and part of the left liver parenchyma. The liver protrusion could be ascribed to the III hepatic segment (Figure 1a-1c).

The patient underwent laparoscopic surgery and it is placed in reverse Trendelenburg position with legs spread. Five ports are placed. The great omentum and an hypertrophic segment III of the liver "mushroom shaped" was found to be herniated into the thoracic cavity through a diaphragmatic defect measuring 8 cm × 6 cm (Figure 2 and 3). The prolonged septum of falciform ligament divided the hernia space in two cavities; therefore it was cut to have a single defect. The margins of hernia sac were dissected but the sac was not removed. It was used to close the gate by plicature with self-anchoring surgical sutures (Figure 3a). A partially absorbable mesh (Proceed®) was placed over the defect and secured to the margin with absorbable 5 mm tacks (SecureStrap®) (Figure 3b).

Postoperative period was uneventful and the patient was discharged on postoperative 4. There was no recurrence in symptoms after 18 months from surgery.

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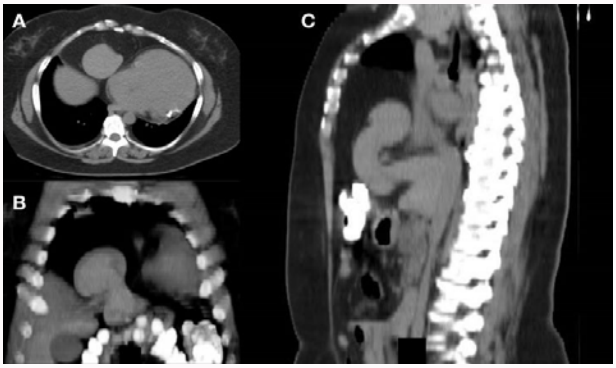

Figure 1: Preoperative CT scan shows anterior diaphragmatic defect at right cardiophrenic angle containing omental fat and liver lobe. In axial plane (A) a similar liver tissue mass is visible in thorax. In coronal (B) and sagittal (C) view is possible to see the characteristic "mushroom shaped" of liver lobe that herniated in thorax.

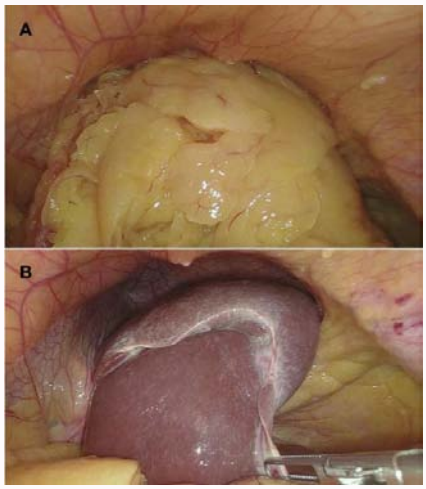

Figure 2: Intraoperative laparoscopic finding of diaphragmatic hernia containing omentum (A) and liver lobe (B).

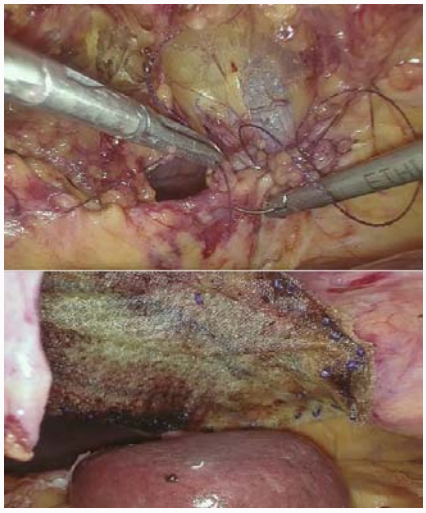

Figure 3: Intraoperative laparoscopic view of peritoneal plicature for the closure of the diaphragmatic defect (A). A final view of partial absorbable mesh placed with absorbable 5 mm tacks (B).

Discussion

In the second half of eighteen century during an autopsy the Italian anatomist Morgagni described a diaphragmatic hernia as protrusion of the abdominal viscera in the chest cavity. The congenital defect probably due to the improper fusion of structures during fetal development results in anterior defect of the diaphragm between septum transversum and the right and left costal origins. The protrusion of the viscera is caused by increasing of intra-abdominal pressure (cough, vomit, obesity, constipation, pregnancy). Usually (about 90%) it is on the right side of diaphragm and it can be asymptomatic (about 1/3rd) especially if there is not compression of thoracic organs and if bowel's portions are not interested in the protrusion [2,3]. The hernia is detected when symptoms occurred or incidentally. In our patient probably the congenital MH was misdiagnosis as pericardiocelomatic cyst and hernia was never suspected in repeated radiological imaging in past. Diagnosis of anterior diaphragmatic hernia was possible only with the appearance of respiratory and gastrointestinal symptoms. Imaging plays an important role in diagnosis and CT scan is really sensitive to confirm and differentiate the diagnosis and the content of the sac [5]. MH is very rare (2% to 5% of all diaphragmatic hernias) and liver is a singular content of the hernia (4% of MH) [6]. In our case the III segment of liver was hypertrophic and placed in chest as "mushroom shaped". This condition of hypertrophy and singular shaped suggests that the protrusion was not recent even though the symptoms were dated five months. Treatment is surgical, reducing the contents and repair the defect. Today laparoscopy is the procedure of choice in adult but also in newborn or children. There are no consensuses in the literature about the management of the hernia sac and the gap. It is reported in literature that the excision of the sac is uselessness, difficult and risky [7]. Unlike of hiatal hernia were sac resection is crucial for its reduction, the contents of MH usually reduces easily. Therefore the sac resection could be unnecessary [8]. We believe that the peritoneum should be cut along the edge of the hernia neck in order to use the peritoneum to close the gap. This procedure increases the adhesion area of the mesh and reduces the risk of seroma. The mesh can be fixed to muscle and aponeurosis.

The first use of prosthetic mesh in laparoscopic repair of MH was reported by Rau that had employed a Marlex mesh. Over the years other types of prosthetic materials have been reported and the concept of "tension-free" was also applied in diaphragmatic hernia [9]. We have used a partially absorbable mesh named Proceed® anchored with helicoidal staples. This type of mesh with its bioresorbable layer reduce the postoperative visceral adhesions and offer a good result of reinforcement.

Conclusion

It is undeniable that the advent of laparoscopy has changed the surgical approach to MH. The surgical treatment is mandatory also in asymptomatic when hernia is detected incidentally. We believe that the use of prosthetic mesh is feasible and ensures immediate and long term results reducing the chances of recurrence.

References

1. Young MC, Saddoughi SA, Aho JW, Harmsen WS, Allen MS, Blackmon SA, et al. Comparison of laparoscopic versus open surgical management of morgagni hernia. Ann Thorac Surg. 2019;107(1):257- 61.

2. Arikan S, Dogan MB, Kocakusak A, Ersoz F, Sari S, Duzkoylu Y, et al. Morgagni's Hernia: Analysis of 21 patients with our clinical experience in diagnosis and treatment. Indian J Surg. 2018;80(3):239- 44.

3. Govindaraj V, Joseph J, Dwivedi DP, Rajeshkumar, Kumar BN. 65-year-old lady with right sided chest pain-interesting radiology. J Clin Diagn Res. 2016;10(12):2-3.

4. Rau HG, Schardey HM, Lange V. Laparoscopic repair of a Morgagni hernia. Surg Endosc. 1994;8:1439-42.

5. Altinkaya N, Parlakgümüş A, Koc Z, Ulusan S. Morgagni hernia: Diagnosis with multi detector computed tomography and treatment. Hernia. 2010;14(3):277-81.

6. Horton JD, Hofmann LJ, Hetz SP. Presentation and management of Morgagni hernias in adult: A review of 298 cases. Surg Endosc. 2008;22:1413-20.

7. Godazandeh G, Mokhtari-esbuie F. Laparoscopic repair of Morgagni hernia: Three-case presentation and the literature. Case Rep Surg. 2016;2016:1-4.

8. Kelly MD. Laparoscopic repair of strangulated Morgagni hernia. World J Emerg Surg. 2007;2:27.

9. Bortul M, Calligaris L, Gheller P. Laparoscopic repair of a Morgagni-Larrey Hernia. J Laparoendosc Adv Surg Tech A. 1998;8(5):309-13.