

Combined minimally invasive para-esophageal hernia repair and lobectomy for lung cancer



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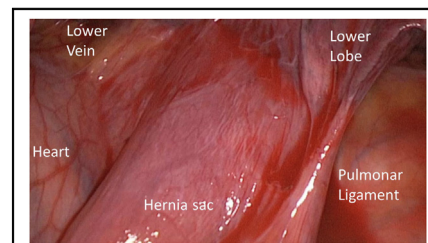
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The hernia sac that adhered to the mediastinum and lower lobe after hernia repair.

CENTRAL MESSAGE

Combined ipsilateral para-esophageal hernia repair and lobectomy prevented life-threatening complications such as intrathoracic gastric volvulus from the presence of hernia after lobectomy.

▶ Video clip is available online.

Herein, we report a combined minimally invasive surgical approach to manage ipsilateral para-esophageal hernia, and lung cancer concurrently, to alleviate potentially detrimental complications from the presence of hernia after lobectomy.

CASE DESCRIPTION

A 61-year-old morbidly obese woman (weight: 91 kg, body mass index: 41) with a history of arterial hypertension and chronic obstructive pulmonary disease (COPD) and with a known preexisting para-esophageal hernia was referred to our attention for management of early-stage lung adenocarcinoma of the left lower lobe (T1 cN0 M0) (Figure 1, A). No other lesions were found on whole body positron emission tomography scan. The patient complained only of occasional gastroesophageal reflux; for that her local gastroenterologist did not recommend surgical correction. After preoperative multidisciplinary assessment, the patient was scheduled for concomitant laparoscopic hernia repair and thoracoscopic lobectomy.

The patient was intubated with a double-lumen tube and the para-esophageal hernia was repaired through a standard laparoscopic approach. The hernia containing the stomach was reduced, and the hernia sac was excised. The gastric lipoma and gastric vessels were resected using LigaSure

(Medtronic) up to the left crura of the diaphragm. The hiatal hernia defect was closed with interrupted sutures, followed by a Dor fundoplication. Then, the patient was placed in a right lateral decubitus position and a standard triportal thoracoscopy with anterior access was performed. The pulmonary ligament was carefully resected from the hernia sac using a Harmonic device (Ethicon Endo-Surgery Inc), and the inferior pulmonary vein was isolated and mechanically resected. Then, the fissure between the S5 and S7 segment, the A6 artery branch, the basal pyramid artery, and the lower bronchus were sequentially stapled. After retrieval of the specimen, a radical lymphadenectomy completed the procedure, and 1 chest tube for drainage was left in the pleural cavity. Video 1 summarizes the procedure.

Total operative duration was 235 minutes, with 100 minutes for hernia repair and 135 minutes for lobectomy. The total estimated blood loss was 270 mL and no intraoperative issues were found. Surgical pathology confirmed a pT1 cN0 M0 adenocarcinoma, with negative surgical margins. Postoperative course was unremarkable. Chest drainage was removed 3 days later, and the patient was discharged 5 days after the operation. At 1-month follow-up, a computed tomography scan (Figure 1, B) and barium swallow radiograph showed expansion of the remaining lobe

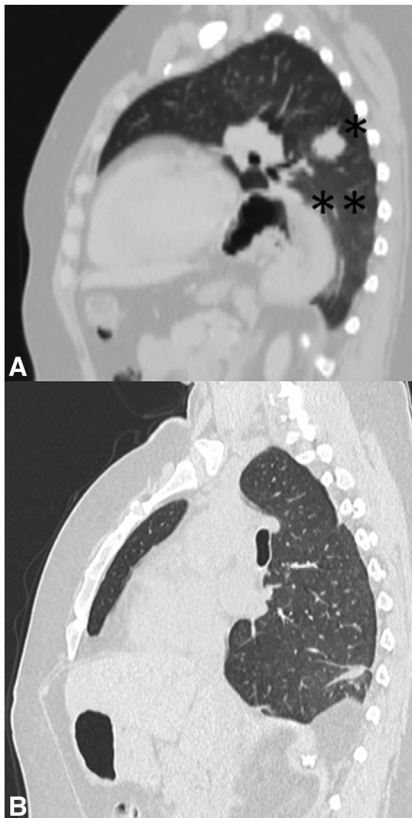
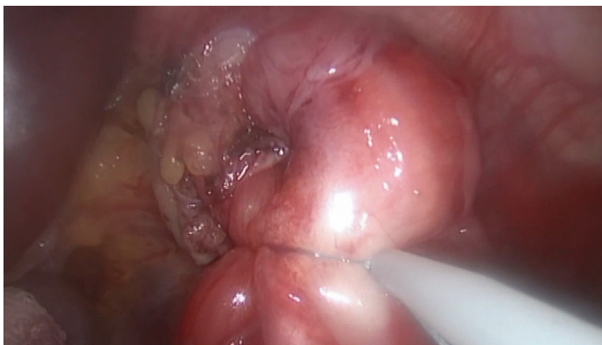


FIGURE 1. A, Preoperative computed tomography scan showing the pre-existing para-esophageal hernia and the lung cancer of *left* lower lobe. B, Postoperative computed tomography scan showing complete expansion of *left* upper lobe and no recurrence of para-esophageal hernia. *Lung cancer; **Paraesophageal hernia.

without hernia recurrence. The patient did not have symptoms of reflux and was able to tolerate an oral diet. The patient was followed with computed tomography scan every 3 months for the first 2 years for lung cancer and with yearly esophagogram for hernia repair. The patient gave a written informed consent for this publication.



VIDEO 1. Video edited to show the main steps of the procedure of laparoscopic hernia repair and thoracoscopic lower left lobectomy. Video available at: [https://www.jtcvs.org/article/S2666-2507\(22\)00472-2/fulltext](https://www.jtcvs.org/article/S2666-2507(22)00472-2/fulltext).

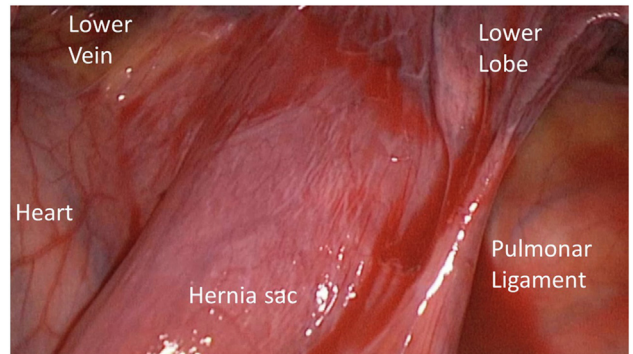


FIGURE 2. Intraoperative view showing the hernia sac, which adhered to the mediastinum and lower lobe, after hernia repair.

DISCUSSION

Thoracoscopic lobectomy is the recommended approach for management of early-stage lung cancer in high-risk patients at present, due to incurring less surgical trauma compared with thoracotomy,¹ but a preexisting paraesophageal hernia may increase the risk of postoperative morbidity and mortality. Ten previous cases reported intrathoracic gastric volvulus resulting from pneumonectomy or lobectomy associated with a known preexisting hiatal hernia.^{2,3} Thus, we planned simultaneous surgical repair of the hernia and lobectomy. This approach possibly prevented complications from the presence of hernia after lobectomy while the concomitant lobectomy did not increase the risk of postoperative complications (ie, esophageal or stomach perforation or acute dysphagia) related to the hernia repair itself.⁴ Potential additional advantages were that ipsilateral pleural or pericardial injuries related to the hernia repair were managed during lobectomy concurrently and that 1 dose of anesthesia, and 1 course of postanesthesia recovery were used for performing 2 different operations that would have required 2 staged procedures, with potential delay of lung cancer treatment.

Tolozan and colleagues³ reported the feasibility and safety of contralateral combined hiatal hernia repair with lobectomy for lung cancer, whereas in our case, for the first time, this procedure was performed on the same site. Technically, the presence of ipsilateral lung cancer did not interfere with the hernia repair, whereas the reposition of the stomach into the abdominal cavity facilitated thoracoscopic lobectomy (Figure 2) because the hernia, protruding into the posterior mediastinum, could complicate the identification and resection of the lower pulmonary vein, especially in a patient with obesity, as was seen here.

During hernia repair, great care was made to prevent iatrogenic communications between diaphragm and pleural cavity given the presence of ipsilateral lung cancer. For that, our strategy was not indicated in presence of ipsilateral pleural effusion, due to the potential risk of abdominal

contamination from pleural effusion, in case of diaphragm injury. A Dor rather than a Toupet fundoplication was performed because it was associated with a reduction of operative time (due to less dissection).⁵ It could be valuable because lobectomy should be performed after hernia repair.

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