



Post-thoracotomy lung hernia

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TO THE EDITOR:

A 66-year-old male, active smoker (45 pack-years), and a history of COPD, bronchial amyloidosis, and steroid dependence was referred to thoracic surgery due to chronic chest pain and chest wall deformity for the last 2 years. Six years before, he underwent a middle lobectomy at another hospital due to lung hamartoma.

Marked protrusion of the lung through a single intercostal space was identified at physical examination, revealing gross instability of the right lower lateral chest wall and costal margin, with reducible swelling and an overlying cough impulse. Chest CT confirmed lung herniation through the lateral portion of the fifth intercostal space (Figures 1A and 1B).

The patient underwent a right thoracotomy under general anesthesia with one-lung ventilation. The hernia sac was adherent to the edges of the thoracotomy. It was dissected from the surrounding tissue, and the lung was easily accessed. The herniated lung was viable, and the hernia was manually reduced. A prolene mesh patch was attached to the costal margins with nonabsorbable suture at the parietal pleural level, covering the defect (Figure 1C). The patient presented with bronchospasm during the postoperative period and required use of oral steroid therapy. Apart from that, the postoperative course was uneventful, and the patient was discharged on the ninth postoperative day. On follow-up, three months after surgery, there was no sign of recurrence.

Here, we reported the case of a patient with lung hernia at the lateral chest wall through the fifth intercostal space and not associated with costal fracture. The patient had undergone thoracotomy 6 years prior. Pain presented as the main symptom. Incarceration or ischemia of the tissue was not present.

Intercostal lung hernias are rare conditions characterized by the protrusion of lung parenchyma outside the thoracic cage.⁽¹⁾ The most common cause of acquired lung herniation is trauma, and injuries such as pneumothorax or rupture of great vessels can be associated.⁽²⁾ It may also occur after thoracotomy, intercostal tube placement, thoracoscopy, and violent coughing episodes.^(3,4) There may be late presentation.

Postsurgical lung hernias have also been reported after less extensive surgical procedures, such as minimally invasive cardiac surgery⁽⁵⁾ or robotic thymectomy for thymomas.⁽⁶⁾ In theory, robotic instruments have a remote center and are designed for being placed into the chest wall. This center offers a fixed point of rotation around which the instrument arm pivots, minimizing any tissue trauma. However, if the remote center has not been

placed exactly into the intercostal space, a pulmonary hernia may occur at the site of the minithoracotomy working port site.⁽⁵⁾

Acquired lung hernias most commonly occur on the right side in the fifth intercostal space, containing lung tissue.⁽³⁾ However, it may also contain abdominal contents if there is a transdiaphragmatic or thoracoabdominal component.⁽³⁾ Current data suggests that, in the setting of disrupted intercostal musculature from previous thoracotomy, predisposing factors for chest wall herniation include hyperinflation caused by COPD, poor tissue quality and healing capacity resulting from diabetes, obesity, and oral steroid use.⁽³⁾

The presentation of a chest wall hernia can be variable, ranging from asymptomatic reducible bulge to severe pain, persistent cough, shortness of breath, and hemoptysis.⁽⁷⁾ Consistent with this case, pain is the most common symptom associated with this condition.⁽³⁾ The diagnosis can be made clinically. However, imaging studies play an important role in the diagnosis of thoracic herniation. Although chest X-rays may help diagnosis, CT scanning is considered the gold standard to evaluate this condition, because it clearly demonstrates the defect protruding out of the thoracic wall.⁽⁴⁾ In the setting of acute traumatic chest wall injuries, in which the patient is too unstable for being transported to the chest CT room, the use of ultrasonography has been recently reported.⁽⁸⁾

There is a significant controversy as to the ideal management of these patients. Indications for acquired chest wall hernia repair include symptoms and incarceration.⁽³⁾ In cases of asymptomatic hernias, conservative management has also been described; however, surgical repair is generally recommended to avoid the risk of strangulation of the hernia contents.^(9,10) Thus, serial clinical and radiographic follow-up is mandatory.

Repair techniques may vary, ranging from primary closure to implantation of prosthetic or autologous material. In our case the intercostal hernia was repaired using a prolene mesh patch. To date, few studies have compared primary and prosthetic repair for differences in postoperative complications.⁽³⁾ In a retrospective review, 27 patients underwent chest wall herniorrhaphy. Mesh repair and primary repair were performed in 9 and 18 patients, respectively, and the complication rates were 22% and 42%. Prosthetic herniorrhaphy was not associated with an increased risk of postoperative complications in comparison with primary repair.⁽³⁾

This letter describes a post-thoracotomy chest wall lung hernia in a patient with COPD and steroid dependence. Surgical repair with prosthetic material was uneventful and, after three months, there was no sign of recurrence.

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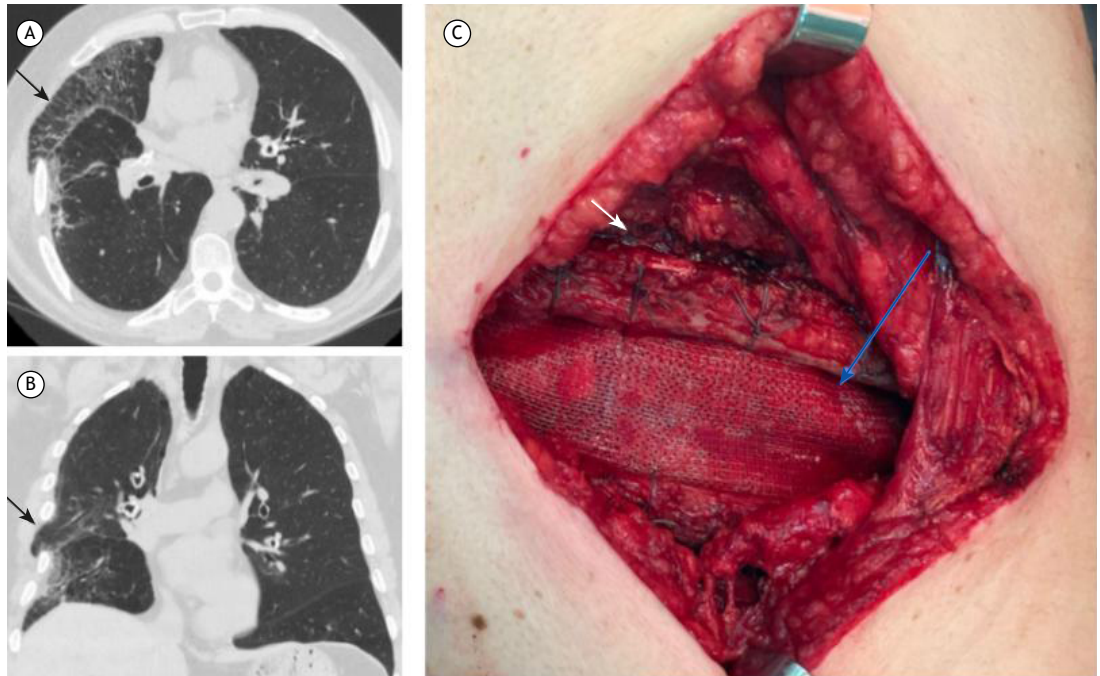


Figure 1. Axial and coronal CT scans of the chest during a Valsava maneuver (in A and B, respectively). In C, a photograph showing a prolene mesh patch attached to the costal margins with nonabsorbable suture at the parietal pleural level covering the defect.

AUTHOR CONTRIBUTIONS

All of the authors equally contributed to the writing and reviewing of the manuscript.

CONFLICT OF INTEREST

None declared.

REFERENCES

- Davare DL, Kiffin C, Sanchez R, Lee SK, Carrillo EH, Rosenthal AA. Traumatic Lung Herniation following Skateboard Fall. *Case Rep Med*. 2016;2016:9473906. <https://doi.org/10.1155/2016/9473906>
- Clark AJ, Hughes N, Chisti F. Traumatic extrathoracic lung herniation. *Br J Radiol*. 2009;82(976):e82-e84. <https://doi.org/10.1259/bjr/24198593>
- Seder CW, Allen MS, Nichols FC, Wigle DA, Shen KR, Deschamps C, et al. Primary and prosthetic repair of acquired chest wall hernias: a 20-year experience. *Ann Thorac Surg*. 2014;98(2):484-489. <https://doi.org/10.1016/j.athoracsur.2014.03.021>
- Waqar S, Vaughan P, Edwards JG. Late presentation of a traumatic lung hernia. *Ann Thorac Surg*. 2010;90(5):1715. <https://doi.org/10.1016/j.athoracsur.2010.02.022>
- Bhamidipati CM, Iyalla KI, Seymour KA, Lutz CJ. Lung hernia following robotic-assisted mitral valve repair. *J Card Surg*. 2012;27(4):460-463. <https://doi.org/10.1111/j.1540-8191.2012.01463.x>
- Keijzers M, Dingemans AM, Blaauwgeers H, van Suylen RJ, Hochstenbag M, van Garsse L, et al. 8 years' experience with robotic thymectomy for thymomas. *Surg Endosc*. 2014;28(4):1202-1208. <https://doi.org/10.1007/s00464-013-3309-5>
- Mhamdi S, Aouini I, Daboussi S, Mahfoudhi H, Lassoued MB, Kallel M, et al. Intercostal lung herniation secondary to thoracotomy: a case report. *Pan Afr Med J*. 2020;36:39. <https://doi.org/10.11604/pamj.2020.36.39.20054>
- Marlow S, Campbell T, Davis A, Patel HR. Emergency ultrasound in the diagnosis of traumatic extrathoracic lung herniation. *Am J Emerg Med*. 2013;31(3):633.e1-633.e6332. <https://doi.org/10.1016/j.ajem.2012.09.030>
- Weissberg D, Refaely Y. Hernia of the lung. *Ann Thorac Surg*. 2002;74(6):1963-1966. [https://doi.org/10.1016/S0003-4975\(02\)04077-8](https://doi.org/10.1016/S0003-4975(02)04077-8)
- François B, Desachy A, Cornu E, Ostyn E, Niquet L, Vignon P. Traumatic pulmonary hernia: surgical versus conservative management. *J Trauma*. 1998;44(1):217-219. <https://doi.org/10.1097/00005373-199801000-00035>