



Diaphragmatic hernia as an infrequent complication of left pneumonectomy

María Emilia Cano¹, Fabiola Adélia Perin¹, Stephan Soder¹

Pneumonectomy is a complex procedure, associated with significant morbidity and mortality.⁽¹⁾ The most frequent complications involve the cardiovascular and respiratory systems.⁽²⁾ A 51-year-old patient underwent left pneumonectomy for lung cancer. Adhesions between the visceral and parietal pleura were found intraoperatively and dissected with monopolar electrocautery. The patient presented a successful recovery after the surgery and was discharged from hospital after nine days.

In the second month after surgery, the patient experienced a sudden onset of abdominal and thoracic pain accompanied by vomiting. The CT showed a left diaphragmatic hernia, with the presence of the stomach in the left pleural cavity. After initial measures, such as insertion of a nasogastric tube, a supra-umbilical laparotomy was performed, with satisfactory reduction of the stomach into the abdominal cavity and closure of the diaphragmatic defect with non-absorbable suture reinforced with polypropylene mesh.

Diaphragmatic hernia is a rare complication after pneumonectomy and can occur during hospital recovery

or as a late postoperative complication.⁽³⁾ The iatrogenic cause is considered in this case due to the time it took for the complication to occur. The mechanism of the hernia could be a result of unintentional thinning of the diaphragm during the dissection of adhesions, which makes it more prone to rupture. The abdominal approach is recommended for the management of herniated abdominal structures, allowing correction of the diaphragmatic defect.

AUTHOR CONTRIBUTIONS

MEC: conceptualization (Lead). SD: reviewing & editing of the manuscript (Lead). All of the authors equally contributed with formal analysis, investigation, methodology, visualization, supervision, and drafting of the manuscript, and they approved the final version of the manuscript.

CONFLICTS OF INTEREST

None declared.

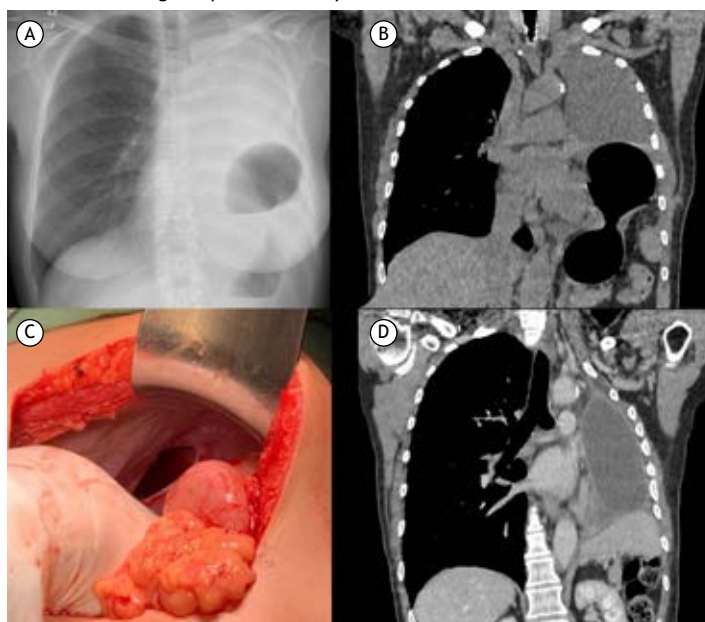


Figure 1. In A, a chest x-ray (frontal) performed on admission. In B., chest CT showing diaphragmatic hernia with gastric contents and pleural fluid filling the post-pneumonectomy cavity. In C, intraoperative image with identification of the diaphragmatic defect. In D, a control chest CT scan two years after diaphragmatic correction showing no herniation.

REFERENCES

- Shapiro M, Swanson SJ, Wright CD, Chin C, Sheng S, Wisnivesky J, et al. Predictors of major morbidity and mortality after pneumonectomy utilizing the Society for Thoracic Surgeons General Thoracic Surgery Database. *Ann Thorac Surg.* 2010;90(3):927-935. <https://doi.org/10.1016/j.athoracsur.2010.05.041>
- Beshara M, Bora V. *Pneumonectomy.* Treasure Island (FL): StatPearls Publishing [Internet]; 2023. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK555969/>
- Batirel HF, Uygur-Bayramicli O, Guler S, Yildizeli B, Yuksel M. Laparoscopic repair of a gastric volvulus occurring as a long-term complication of left pneumonectomy: report of a case. *Surg Today.* 2007;37(1):43-45. <https://doi.org/10.1007/s00595-006-3339-x>

1. Departamento de Cirurgia, Pavilhão Pereira Filho, Irmandade Santa Casa de Misericórdia de Porto Alegre, Porto Alegre (RS) Brasil.