

Severe Post Traumatic Intercostal Surgical Hernia Repaired: A Case Report

David Douglas Banga Nkomo ^{1,2}, Aubin Sandio ^{1*}, Sandra Yakan ¹, Linda Mokam Ngantchou ¹, Casimir Fankem ¹, Amel Tilbaut Tanon Ngoufo ², Isabelle Ineza ¹, Louis Joss Bitang ¹, William Ngatchou ^{3,4}

¹ Yaoundé Emergency Center, Yaoundé, Cameroon.

² Department of Surgery and Specialties, Anesthesia and Resuscitation, Faculty of Medicine and Pharmaceutical Sciences, University of Dschang, Cameroon.

³ Department of Surgery, General Hospital of Douala, Cameroon.

⁴ Department of Surgery and Specialties, Anesthesia and Resuscitation, Faculty of Medicine and Pharmaceutical Sciences, University of Douala, Cameroon.

***Corresponding Author:** Aubin Sandio, MD, MPH Wayne State University School of Medicine.

Received Date: January 27, 2023; **Accepted Date:** March 14, 2023; **Published Date:** March 27, 2023

Citation: David Douglas Banga Nkomo, Aubin Sandio, Sandra Yakan, Linda Mokam Ngantchou, Casimir Fankem. et al (2023). Severe Post Traumatic Intercostal Surgical Hernia Repaired: A Case Report. *J. Clinical Cardiology and Cardiovascular Interventions*, 6(3); DOI:10.31579/2641-0419/301

Copyright: © 2023 Aubin Sandio, This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Abstract

Intercostal hernia is defined as a protrusion of the lung parenchyma and or pleura through a defect in the intercostal muscles between adjacent ribs. It is a rare condition, usually asymptomatic, in most cases acquired following a chest trauma or following a chest surgery, and whose diagnosis is clinical. Intercostal hernia may be managed by a surgical repair or not. The decision to operate may be considered the size of the hernia, the symptoms, and the patient's comorbid conditions. We report a case of intercostal hernia occurring after penetrating chest trauma, and successfully treated surgically by thoracotomy in our center.

Keywords: intercostal hernia; chest trauma; surgical repair; thoracotomy

Introduction

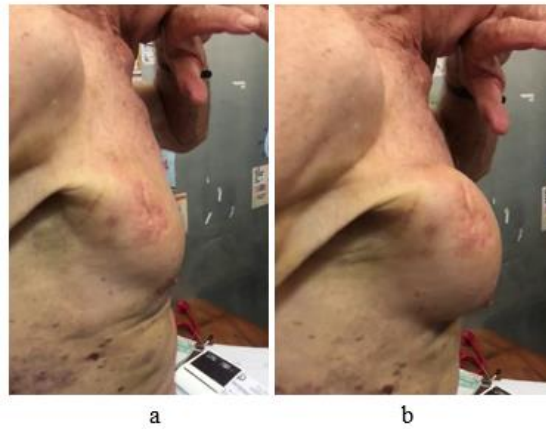
Intercostal hernia is defined as a protrusion of the lung parenchyma and or pleura through a defect in the intercostal muscles between adjacent ribs [1]. It can be congenital or acquired. When intercostal hernia is acquired, it can be iatrogenic, especially after thoracic surgery or it can be secondary to chest trauma [2]. Often asymptomatic, intercostal hernia is clinically revealed by a bulging mass, protruding through the chest wall. [3]. In some cases, surgical repair is the appropriate treatment. We report a case of this rare clinical condition occurring after thoracic trauma, and successfully treated surgically in our center.

Case Presentation

A 74-year-old man consulted in our clinic, for an impulsive swelling, on coughing, located at the external lateral border of the right pectoralis major

muscle, associated with a lapping sensation that had been evolving for about 3 months. Four months earlier, that man was stabbed with a knife, at that part of the chest, as well as in the lateral side of the right and left forearms. He sustained a longitudinal linear and deep wound of about 7 cm long, on the lateral border of right pectoralis major. He also sustained multiple minor wounds on both forearms. All these wounds were sutured and later on, evolved to scar formation. One month later, the patient noticed a gradual and progressively enlarged swelling at the right pectoral region, especially on coughing.

This painless swelling was formerly associated with a sensation of lapping in the right hemithorax as well as an effort dyspnea stage 2 of Sadoul. At his examination, the swelling was a bulging mass, protruding through the chest wall during coughing, or at the Valsalva maneuver (Figure 1).



- a- Before a Valsalva maneuver
- b- During Valsalva maneuver, resulting in a bulging mass, protruding through the chest wall

Figure 1: Clinical view of the chest of the patient

A chest X-ray followed by a thoracic CT scan was performed. They reveal a right hydro pneumothorax, and the second one revealed almost a rib fracture

with a bone defect at the level of the tumefaction (Figure 2). The diagnosis of intercostal hernia will be retained as well as the indication of a surgical repair.

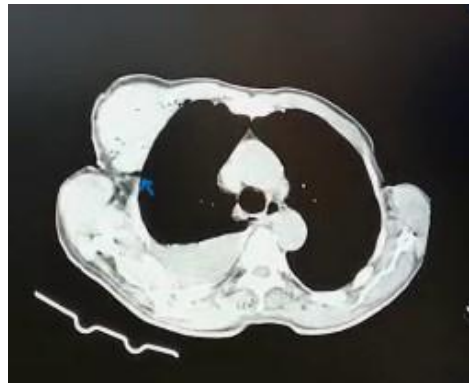
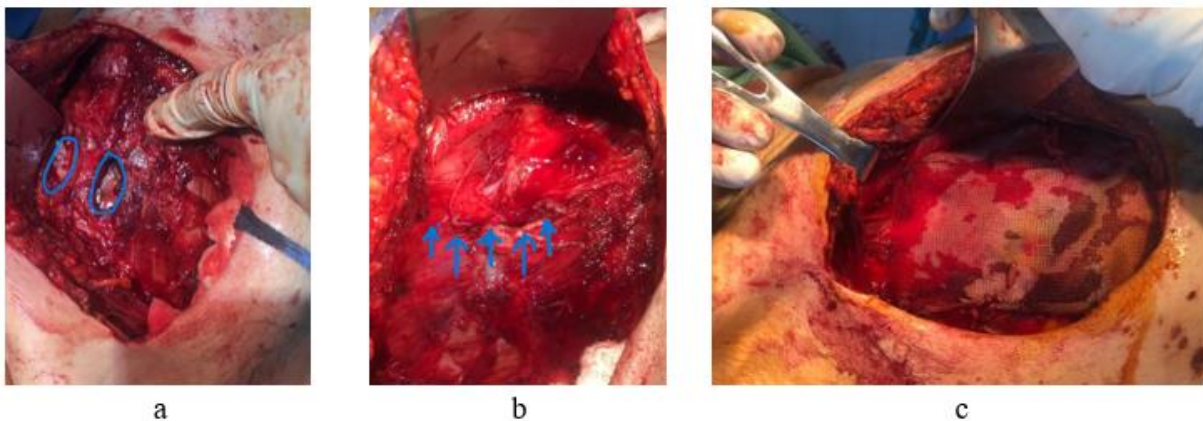


Figure 2: Computed tomography showing one of the intercostal muscular defect and rib fracture (Arrow in blue).

He was operated on by thoracotomy, during which, in addition to the bone defect causing a costal pseudarthrosis, a muscular defect on two intercostal

spaces of about 3 cm in diameter each, on either side of the bone defect, was also noticed (Figure 3).



- a- Operative view of the intercostal muscular defect
- b- Operative view of the rib fracture
- c- Postoperative after muscular defect repaired with prosthetic mesh

Figure 3: Operative view of the intercostal hernia

In addition, a pleural effusion of about 700 cc of sero sanguineous fluid will be aspirated through the muscular-bone defect. The lung looks normal in appearance. Intercostal hernia was treated by placing a dacron prosthesis. A plasty of the pectoralis major muscle was also performed. The surgical approach was closed with a chest tube as well as with redons positioned in the sub-muscular and subcutaneous spaces. The postoperative course was simple.

Discussion

Intercostal hernia is one of the four types of thoracic hernia according the anatomical classification made by *Morel-Lavallee* in 1845, including cervical lung hernia, diaphragmatic hernia and mediastinal hernia [4,5,6]. Even intercostal hernia is the most frequent of those four types, it remains a very rare clinical entity as there is less than one thousand cases reported on the literature, since the first case of thoracic hernia reported by *Rolland and al*, in 1499 [1,7]. There is an etiological classification made by *Minai and al*. According that classification, the etiology of intercostal hernia can be congenital or acquired. Nevertheless, the most common etiology is the traumatic one [8,9].

Unlike our patient who presented with shortness of breath, patients with intercostal hernia as well as patients with thoracic hernia are commonly asymptomatic. However, several patients may report pain, persistent cough, shortness of breath and often hemoptysis [10]. The diagnostic of intercostal hernia is clinical, based on the identification of a bulging mass of the chest, accentuated by Valsalva maneuver [2]. Imaging modalities may be useful to diagnose associated injuries or the status of the underlying lung.

Considered therapeutic management there is no consensus about. Conservative management and surgical management can be both considered. The decision, even usually made case by case, may always considered the size of the hernia which will allow the possibility of spontaneous healing, the symptoms (pain, dyspnea), the risk of parenchyma incarceration, and the patient's comorbid conditions [11,12]

In the literature review, for patient who have undergone surgical repair different procedures have been found in the literature ranging from chest wall reconstruction with or without prosthetic material to rib fixation and lung resection. Due to this wide range of procedures, *Kuckelman and al* describe a new classification (Traumatic Rib Cage Hernias (TRCH) grading system), based on the severity of the chest wall defect [13]. According to that classification our patient which present with intercostal muscle tear, of average 2 cm width, associated to one simple non-displaced adjacent rib fractures and none organ herniation must be classified on grade 1, and must benefited of rib plating spanning defect, prosthetic mesh reinforced repair of soft tissue defect. The surgical approach of the area of chest wall defect is always a direct approach as for our patient. A thoracotomy or minimally invasive approach can be considered when a lung resection is required [11]. Rib fractures can be repair with screwed plates or sutured with steels wires. The chest wall soft tissue defect can be repaired by primary closure, by implantation of a prosthetic mesh or by muscle flaps [14,15].

The outcome of surgical repaired intercostal hernia is usually good, as there is no reported mortality and morbidity.

Conclusion

Intercostal hernia is a clinical rare condition, usually asymptomatic, in most cases acquired and secondary to traumatism or following chest surgery, whom diagnostic is clinical, and which have a good outcome. The challenge in the management of that condition is, firstly, in the taking decision to operate or not the patient, and in the choice of surgical approach as well as in the choice of the procedure to perform. Thus, the decision to operate shall considered the size of the hernia, the symptoms, and the patient's comorbid conditions. The procedure to perform will depend of the status of underlying lung, the associated injuries and the availability of prosthetic material.

References

1. Davare D., Kiffin C., Sanchez R., Lee S., Carrillo E., Rosenthal A., Traumatic lung herniation following Skateboard Fall, Case Rep Med. 2016 (2017) 1–3
2. Minai O.A., Hammond G., Curtis A., Hernia of the lung: a case report and review of literature, Conn. Med. 61 (2) (1997) 77–81
3. Bhardwaj H., Bhardwaj B., Youness H., A painful sneeze, J. Bronchol. Intervent Pulmonol. 21 (1) (2014) 61–64.
4. Morel-Lavallee A. Hernies du poumon, Bull. Soc. de chir de Par 1 (1847) 75–81
5. Weissberg D. Lung hernia – A review. Adv Clin Exp Med 2013; 22 (5): 611–613.
6. Detorakis EE, Androulidakis E. Intercostal lung herniation – The role of imaging. J Radiol Case Rep 2014; 8(4): 16-24.
7. Goodman Henry I. Hernia of the lung. The Journal of Thoracic Surgery. 1932; 368-379.
8. Carlos Romero, Daryelle S. Varon, Salim Surani, Joseph Varone. Thoracic herniation secondary to pleural effusion. Respiratory Medicine Case Reports 23 (2018) 96–97.
9. Samira Mhamdi et al. Hernie pulmonaire intercostale secondaire à une thoracotomie: à propos d'un cas. Pan Afr Med J.2020
10. Sara Lopes; Rita Costa; João Maciel; Jorge Casanova; Pedro Cabral Bastos; Paulo Pinho. Lung hernia related with a rope bullfight: case report. Revista portuguesa de cirurgia cardiotorácica e vascular. 2019; (26); 3:219-222
11. Kara HV, Javidfar J, D'Amico TA. Spontaneous herniation of the lung and diaphragm treated with surgical repair. Ann Thorac Surg 2015;99:1821-1823.
12. Reardon MJ, Fabré J, Reardon PR, et al. Video-assisted repair of a traumatic intercostal pulmonary hernia. Ann Thorac Surg 1998;65:1155-1157
13. Kuckelman J, Karmy-Jones R, Windell E, et al. Hernies traumatiques de la cage thoracique: prise en charge opératoire et proposition d'un nouveau système de gradation basé sur l'anatomie. Suis J Surg . 2018;215(5):794-800. doi:10.1016/j.amjsurg.2017.12.013
14. Chiang TY, Yiu MF, Yang SM, Chau KC. Thoracoscopic management of incarcerated lung herniation after blunt chest trauma: a case report and literature review. J Thoracic Dis 2017.
15. Seder CW, Allen MS, Nichols FC, Wigle DA, Shen KR, Deschamps C, Cassivi SD. Primary and prosthetic repair of acquired chest Wall hernias: a 20-year experience. Ann Thorac Surg 2014; 98 (2): 484-489
16. Akkas Y, Peri NG, Kocer B, Kaplan T. Réparation d'une hernie pulmonaire avec des côtes prothétiques en titane et un maillage Prolene. Cardiovasque asiatique Thorac Ann . 2016;24(3):280-282.



This work is licensed under Creative Commons Attribution 4.0 License

To Submit Your Article Click Here:

Submit Manuscript

DOI:10.31579/2641-0419/301

Ready to submit your research? Choose Auctores and benefit from:

- fast, convenient online submission
- rigorous peer review by experienced research in your field
- rapid publication on acceptance
- authors retain copyrights
- unique DOI for all articles
- immediate, unrestricted online access

At Auctores, research is always in progress.

Learn more <https://auctoresonline.org/journals/clinical-cardiology-and-cardiovascular-interventions>