

# LOBAR TORSION FOLLOWING LEFT UPPER LOBECTOMY WITH VATS APPROACH: A CASE REPORT

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## ABSTRACT

### Introduction

Torsion or twisting of the left lower lobe following left upper lobe lobectomy is a rare, but severe complication. According to the literature, the outcome of this complication is necrotic pneumonitis, most often followed by pneumonectomy. According to different authors its frequency ranges between 0,1% and 0,4% from all operated patients. We treated a patient with pulmonary torsion with a favorable outcome.

**Case report:** A 56 years-old patient with peripheral carcinoma of the left upper lobe of the lung underwent a typical upper left lobectomy. On the third postoperative day, there was a sudden deterioration in patient's condition, which led to the diagnosis of torsion of the lower pulmonary lobe. Using the video-thoroscopic approach we were able to restore the proper position of the remaining lobe without any ischemic parenchymal alterations. The condition of the patient stabilized, and she discharged without any further complications.

**Discussion:** The described clinical case is significant in several aspects. Firstly the emergency invasive diagnosis is essential when similar complications are suspected and is crucial for preserving the vitality of the lung parenchyma. Secondly the minimally invasive video-thoroscopic approach is a safer procedure and it should, therefore, precede the thoracotomy.

**Conclusion:** The rarity of this complication is the most likely reason for the lack of reports in the literature. In our case, we were able to avoid pneumonectomy and the patient recovered well. When there are more such cases described, then we will have a functional standard algorithm to follow.

**KEYWORDS:** giant lipoma; benign tumor; wide excision

### Introduction

Lobar torsion is a rare, but severe postoperative complication following pulmonary resection. Thoracic surgery departments

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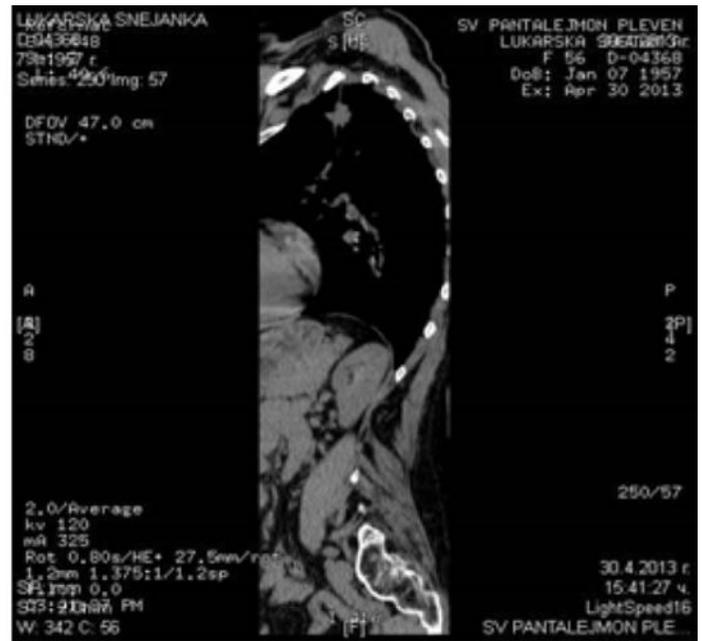


Figure 1: Preoperative CT of the lung.

report an incidence rate from 0.089% to 0.4% (1-2). This complication leads to twisting of the bronchovascular pedicle, atelectasis, lobar ischemia, infarction and fatal gangrene.(3) The typical recommended surgical management be pneumonectomy.(4)

### Case Report

A 56-year old female patient with a tumor formation in the left upper lobe staged as T1N0M0 of the left lung was admitted for surgical treatment via anatomical left upper lobectomy with MLND by left thoracotomy approach. Following the surgery, the pathology result revealed highly differentiated peripheral adenocarcinoma of the left upper lobe, T1aN0M0G1. (Figure 1; Figure 2)

An anatomical upper left lobectomy performed. At the end of the intervention, the left lower lobe expanded fully. The early postoperative period was smooth and the routine x-ray 6 hours after the surgery depicted an unfolded lung well exposed with a small partial pneumothorax. (Figure 3)

On the third postoperative day, following active rehabilitation, the patient experienced sharp substernal pain and a dyspnea attack. Pulmonary auscultation revealed absent breath sounds on the left side. A repeated chest x-ray confirmed total upper lobe consolidation and 6 hours later a subtotal pneumothorax, high standing left dome of the diaphragm, atelectasis of remaining parenchyma and two horizontal hydroaeric levels. The haematological data was in referential values. (Figure 4)

Bronchoscopy revealed four hours after complication intact left upper lobe bronchial stump with distal obstruction. A decision for urgent video-assisted reoperation made after eight hours. Two thoracoports placed. The intraoperative findings included: atelectasis of the lower lobe, folding, and torsion of the intermediate bronchus distal from the stump of the upper lobe bronchus, thin fibrous adhesions, forming separated supradiaphragmatic and paravertebral effusions, adhesions between the thoracotomy incision and the visceral pleura. There were no signs of hemodynamic or ischemic disturbances found in the left lower lobe.

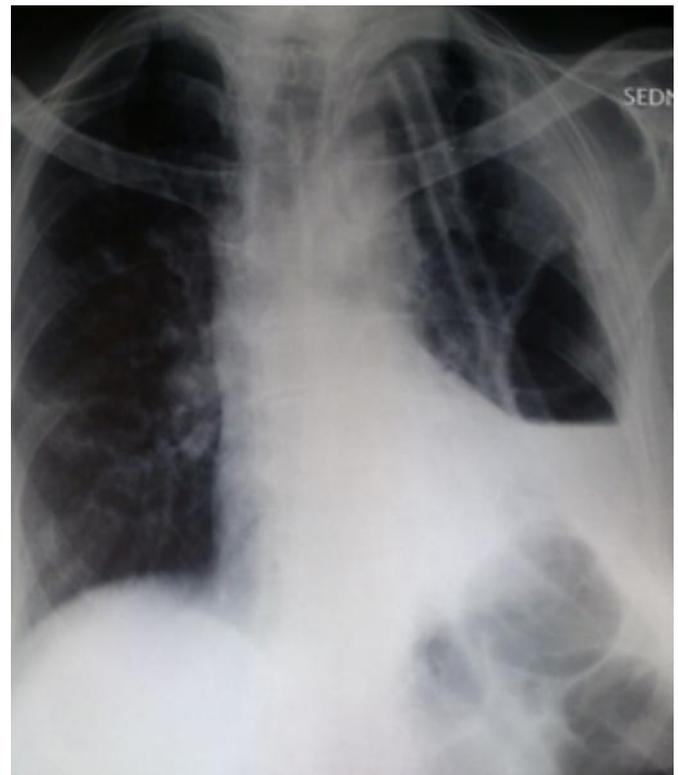


Figure 2: Postoperative chest x-ray - lung expanded.



**Figure 3:** Total opacity of the left lung.



**Figure 4:** Subtotal pneumothorax.

Adhesiolysis performed in a blunt manner, and the separated effusions were evacuated. The left lower lobe rotated in the correct position after which by the application of positive pressure in the left lumen of the endobronchial tube the lobe expanded fully. We did not perform a pulmopexy. (Figure 5)

Pleural scarification performed, and two chest drains placed – one in the sixth intercostal space directed towards the pulmonary dome, and a second in the second intercostals space along the medioclavicular line. (Figure 6) The early postoperative period went smoothly. The control (routine) radiograph revealed expanded lung, high position of the diaphragm and a minimal apical pneumothorax. (Figure 7) The patient discharged after 12 days. Routine radiographs from the first and third postoperative month revealed a fully expanded left lobe. (Figure 8) The PET scan on 6-th month did not disclose recurrence of the main disease.

## Discussion

Pulmonary torsion may be caused by a surgical intervention, trauma, or it may occur spontaneously.

According to different authors, the incidence rate for lobar torsion as a postoperative complication is from 0.089% to 0.4%.

Clinical signs vary from persistent cough with dyspnea to acute dyspnea observed in patients with active aspiration due to bronchial stump dehiscence. Initially radiographs reveal total radiolucent shading of the affected side of the thorax. The latter findings are characteristic of other more common postoperative complications such as pulmonary infarction, atelectasis or inflammation, which makes them diagnostically less informative. After several hours, the findings include an elevated hemidiaphragm, atelectasis of the remaining parenchyma, partial pneumothorax, and hydroaeric levels.

The bronchoscopy findings include distal lower lobe bronchial obstruction and perhaps an insufficiency of the bronchial stump. According to the majority of authors, who have published similar cases, CT imaging with 3D reconstruction is the most accurate diagnostic methodology for this complication (4,5). CT-angiography may be taken into account if a vessel obstruction due to hilar lung torsion is suspected.(6)

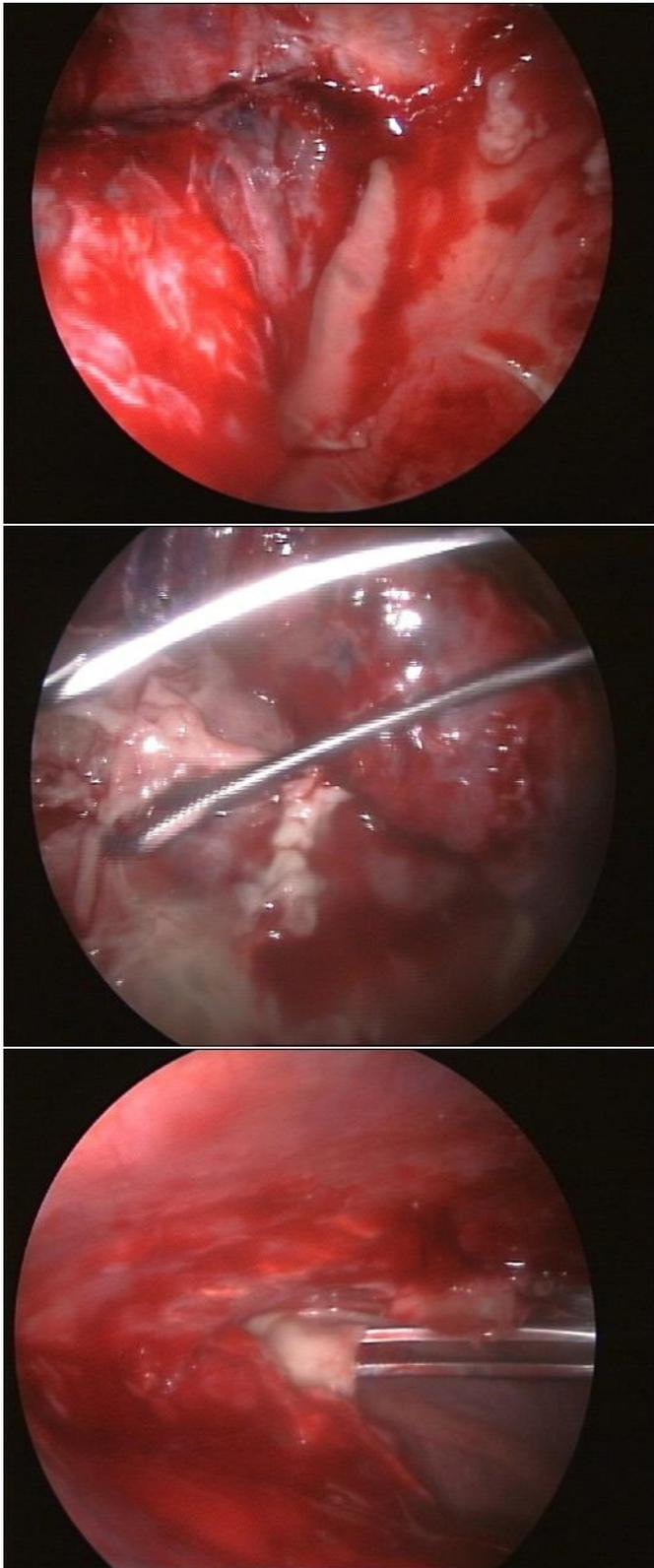
The few described cases of this complication worldwide are the reason there is not a standard diagnostic algorithm. In most cases, the surgical treatment of choice is pneumonectomy of the affected hemithorax.

In our case, we were able to detorque (untwist) the remaining lobe. Using controlled active aspiration from two opposing drains, we assured the correct positioning in the early postoperative period. Pleural scarification and the formation of adhesions between the parietal and visceral pleura further assured permanent, stable positioning. In cases of residual lobe torsion following pulmonary resection without lung necrosis, the VATS may be the definitive diagnostic modality in the early postoperative period. VATS may also evaluate the extent of residual lobe damage, as well as to provide opportunities for better future functional outcomes if the lobe is properly fixated. VATS has to be done prior to thoracotomy.

If a thoracoscopic surgery is unsuccessful, but the residual lobe is vital, prior to pulmonectomy, an open pleuropexy and methods for diaphragmic relaxation or thoracoplasty aiming to reduce the volume of the pleural cavity should be considered.

## Authors' Statements

*Competing Interests*



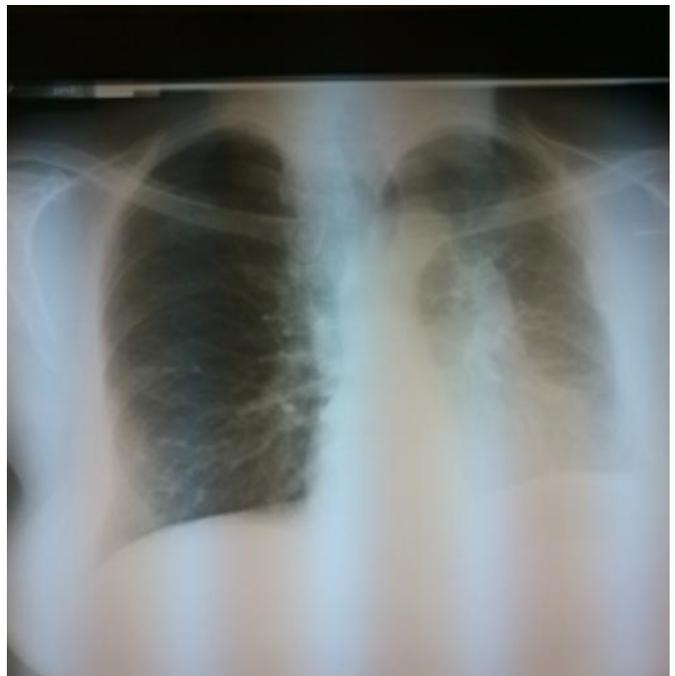
**Figure 5:** VATS Adhesiolysis.



**Figure 6:** Position of the chest drains after VATS intervention



**Figure 7:** Chest X-ray after VATS intervention.



**Figure 8:** Chest X-ray 3 months postoperatively.

The authors declare no conflict of interest.

## References

1. Hennink S, Wouters MW, Klomp HM, Baas P. Necrotizing pneumonitis caused by postoperative pulmonary torsion. *Interact. Cardiovasc Thorac Surg* 2008;7:144-5.
2. Kanemitsu S, Tanaka K, Suzuki H, Tokui T, Kinoshita T. Pulmonary torsion following right upper lobectomy. *Ann Thorac Cardiovasc Surg* 2006;12:417-9.
3. Sonia HY Lam, Stephen CW Cheung, WK Tso. Left lower lobe torsion after upper lobectomy, *Hong Kong Med J*. Vol 16 No 5, 2010.
4. Gilkeson RC, Lange P, Kirby TJ. Lung torsion after lung transplantation: evaluation with helical CT. *AJR Am J Roentgenol*.2000;174:1341-3.
5. Kanaan S, Boswell WD, Hagen JA. Clinical and radiographic signs lead to early detection of lobar torsion and subsequent successful intervention. *J Thorac Cardiovasc Surg* 2006;132:720-1
6. Encin S, Kumbasar U, Kayi Cangir A, Atasoy C, Kavukzu S. A new non-invasive diagnostic method for lung lobe torsion: pulmonary CT angiography. *Tuberk Toraks* 2007;55:83-6.