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## A case of VATS under MAC

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## INTRODUCTION

The field of thoracic surgery is evolving and the invention of video-assisted thoracic surgery (VATS) has changed the way surgeons treat thoracic diseases by focusing on a minimally invasive approach. Similarly, less conventional thoracic anesthesia strategies have evolved to encompass less invasive surgical techniques and enhance fast track perioperative pathways.<sup>1</sup> The term non-intubated VATS refers to thoracic operations that are performed without general anesthesia and mechanical ventilation in spontaneously breathing subjects.<sup>2</sup> Research through the years has shown that non-intubated VATS is a safe and feasible technique for thoracic surgery.

## CASE DESCRIPTION

A 76-year-old man with COPD, emphysema, and left recurrent pneumothorax presented with dyspnea and large basilar loculated left spontaneous pneumothorax. Despite initial chest tube placement, the pneumothorax persisted. He underwent a video-assisted thoracoscopic mechanical pleurodesis and larger bore thoracostomy tube placement. The procedure was performed under monitored anesthesia care with dexmedetomidine, propofol, and remifentanyl infusions. Patient remained sedated and comfortable throughout surgery. Preinduction oxygen saturation was 88% and during the case the patient maintained spontaneous ventilation with oxygen saturations of 99% on 15 liters via facemask. He tolerated the procedure well and transferred to the recovery room in satisfactory condition.

## DISCUSSION

Non-intubated VATS has been extensively promoted and proven safe for treatment of pleural effusion, empyema, bullous emphysema, spontaneous pneumothorax, biopsy of interstitial lung disease, wedge resection of lung nodules, lobectomies, mediastinal biopsy and tumor excision.<sup>3</sup>

The main advantage of non-intubated thoracic surgery is to avoid the perioperative morbidity associated with the deleterious effects of general anesthesia and one lung ventilation. These include airway pressure induced injury, atelectasis, hypoxemia, ventilation/perfusion mismatch, throat pain, laryngeal/tracheal injuries, cognitive dysfunction, residual neuromuscular blockade, etc.

Non-intubated patients have been shown to have shorter total operating time, shorter duration of pleural fluid leakage, decreased postoperative hospital stay, lower postoperative morbidity and mortality, lower cost, earlier postoperative improvement in physical function and decreased mental confusion.<sup>5</sup>

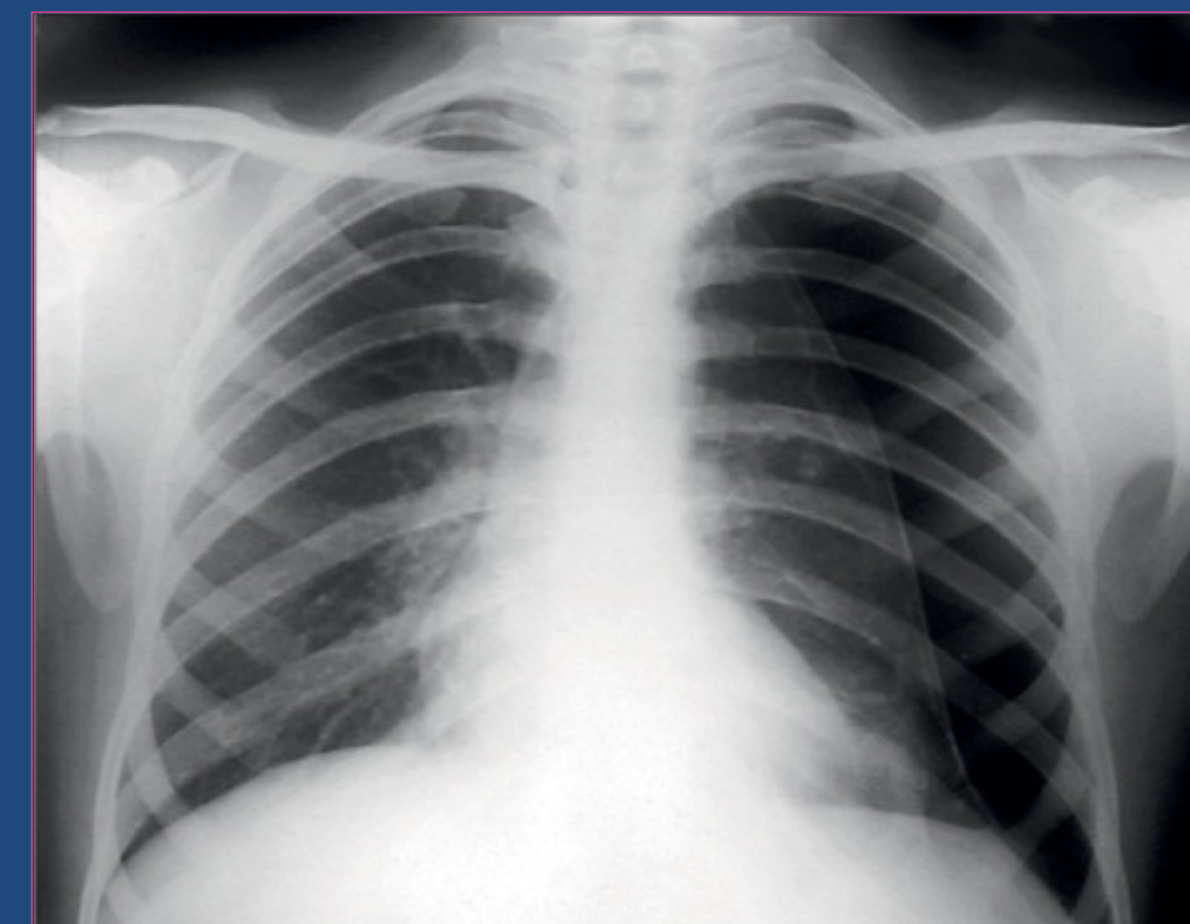


Fig. 1. Radiographic image of a patient with a left spontaneous pneumothorax

Lee, P. Primary spontaneous pneumothorax: to pleurodesis or not? *Lancet*. 2013;381(9874):1252-1254. Copyright © 2013. Zephyr/Science Photo Library. Image obtained from Clinical Key .

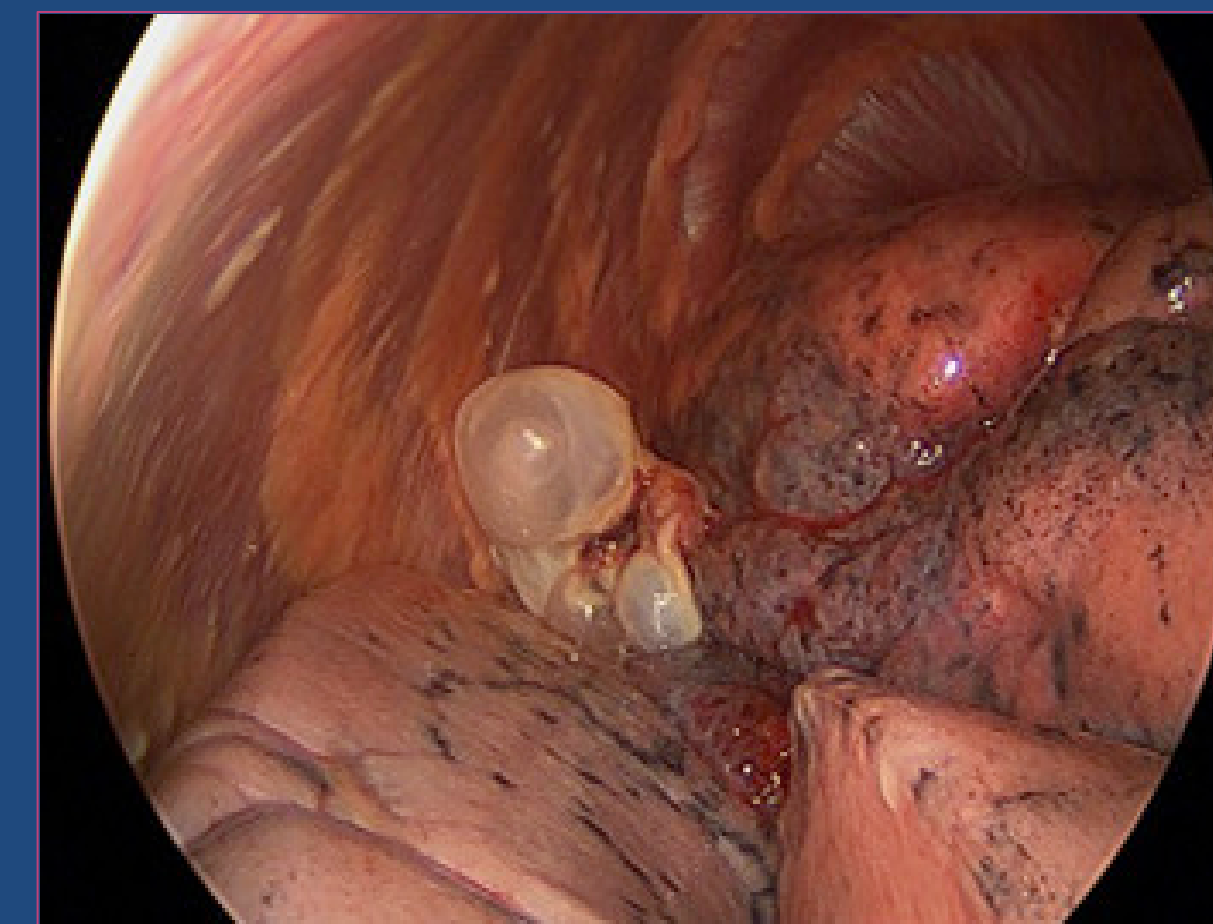


Fig. 2. Video assisted thoracoscopic surgery (VATS) showing blebs in patient with spontaneous pneumothorax

Segraves JM, Dulohery MM. Primary spontaneous pneumothorax due to high bleb burden. *Respir Med Case Rep*. 2016;19:109-111. Copyright © 2016 The Authors. Image obtained from Clinical Key .

## PATHOPHYSIOLOGY

For non-intubated VATS to be successful, a thorough understanding of the underlying mechanisms of spontaneous ventilation during lung surgery is important.

- ✓ The match of ventilation and perfusion is better maintained in the dependent lung during spontaneous ventilation
- ✓ In the anesthetized patient, the non-dependent lung receives zero ventilation and perfusion decreases due to hypoxic pulmonary vasoconstriction. In non-intubated patients, perfusion to the dependent ventilated lung is better because of low/negative pressure in the lung. Intrapulmonary shunt and hypoxemia is reduced and lung recruitment is increased maintaining diaphragmatic function.
- ✓ During a non-intubated approach, there is a risk of experiencing carbon dioxide rebreathing effect however it is rare to need ventilatory support.<sup>4</sup>

## CONCLUSION

For non-intubated VATS to be successful, minimizing pain and stress along with effortless spontaneous ventilation needs to be achieved. Anesthetic options include sedation with Propofol, remifentanyl, benzodiazepines, and dexmedetomidine infusions, thoracic epidural anesthesia, thoracic paravertebral block, intercostal nerve block, and local infiltration. To prevent coughing during the procedure, lidocaine inhalation, stellate ganglion block or a vagal nerve block can be performed to inhibit cough reflex.<sup>3</sup> Now that feasible, reliable, and safer anesthetic modalities exist as an alternative to general anesthesia and one lung ventilation for VATS, the non-intubated approach is becoming more utilized in practice.

## REFERENCES

1. Irons JF, Martinez G. Anesthetic considerations for non-intubated thoracic surgery. *J Vis Surg*. 2016;2:61.
2. Tacconi F, Pompeo E. Non-intubated video-assisted thoracic surgery: where does evidence stand? *J Thorac Dis*. 2016;8(Suppl 4):S364-S375.
3. Yang J-T, Hung M-H, Chen J-S, Cheng Y-J. Anesthetic consideration for nonintubated VATS. *J Thorac Dis*. 2014;6(1):10-13.
4. Gonzalez-Rivas D, Bonome C, Fieira E, et al; Non-intubated video-assisted thoracoscopic lung resections: the future of thoracic surgery? *Eur J Cardiothorac Surg*. 2016; 49(3):721-31.
5. Mineo TC, Sellitri F, Tacconi F, Ambrogi V. Quality of life and outcomes after nonintubated versus intubated video-thoracoscopic pleurodesis for malignant pleural effusion: comparison by a case-matched study. *J Palliat Med*. 2014;17:761-8.