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Thoracic Surgery

Right Middle Lobectomy on Metallic Foreign Body Using the Uniportal Video Assisted Thoracoscopic Surgery: A First Experience in the Democratic Republic of Congo

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Abstract **Case Report**

The removal of metallic foreign bodies in the lower airways, a source of recurrent pneumonia, is not currently performed in the Congolese population using video-assisted thoracoscopy surgery (VATS) under unipulmonary ventilation. Multiple failures of rigid and/or flexible bronchoscopy are likely to be a cause of morbidity and mortality. To the best of our knowledge, we report a first experience in DRC, of right middle lobectomy on metallic foreign body by VATS in a 14-year-old girl after two years of accidental inhalation of a metallic key, in the face of two bronchoscopy failures. A partial transverse bronchotomy successfully performed under VATS allowed extraction of the foreign body followed by bronchial reconstruction with resection of the right middle lung lobe. The aim of the multidisciplinary team was to determine whether lobectomy by VATS would result in shorter hospital stays, fewer complications and faster recovery than lobectomy by thoracotomy, to review the key stages of case management using an unusual approach in the region, and to draw a conclusion based on this first experience.

Keywords: Metallic foreign body, pneumonia, lobectomy, video assisted thoracoscopic surgery (VATS).

INTRODUCTION

Although the technique of video-assisted thoracoscopy is of practical interest in thoracic surgery, it remains under-utilized by the majority of surgeons due to a lack of experience, whereas the data in the literature proves how successful VATS is for more complex thoracic problems [1-3]. Initially designed for diagnostic purposes, this technique is now used for therapeutic purposes in most centers around the world. Right middle lobectomy for removal of a metallic foreign body is a rare but crucial procedure in thoracic surgery [1, 4]. Recently, a significant breakthrough was achieved in the Democratic Republic of Congo (DRC) with a multidisciplinary team (thoracic surgeons' expert in uniport VATS, resuscitators, radiologists, nurses and physiotherapists), with a successful operation in a 14-year-old patient after two years of accidental inhalation of a metal key and in the face of two bronchoscopy failures. The aim of the article was to determine whether lobectomy by VATS would result in shorter hospital stays, fewer complications and faster recovery than lobectomy by thoracotomy, to review the key stages of case management using an unusual approach in the region, and to draw a conclusion based on this first experience.

CASE PRESENTATION

We report a case of a 14-year-old girl with no particular pathological history, who accidentally inhaled a metal key at the age of 12. After the neglected accident, coughing became routine in the patient, who was conscious, hemodynamically and respiratory stable throughout, apart from recurrent episodes of pneumonia. Episodes of fever were accompanied by a cough that became chronic and prompted the consultation. After a standard chest X-ray, recurrent metal foreign-body

pneumonia prompted bronchoscopy, which failed on two occasions (rigid and flexible) and at different intervals. During our visit to Kinshasa, the capital of the DRC, for a campaign and masterclass on the benefits of VATS, a CT scan of the patient's chest revealed hyperdense material in the right bronchus, associated with a foreign body resembling a metal key (Figure 1). The latter obstructed the entire bronchial lumen, with hypoperfusion of the right middle and lower lobes (Figure 2). Surgical removal was indicated. Under general anaesthesia with selective right intubation via a PA34R double-lumen tube in pressure-controlled mode, in a patient positioned in left lateral decubitus, a 2.5cm incision in the 5th right intercostal space enabled the placement of a VATS uniport (Figure 3). On exploration, the pleural cavity was free, with atelectasis of the entire right upper lobe. The posterior mediastinum was opened with stepwise haemostasis ligation, satisfactory exposure of the intermediate bronchial trunk, partial transverse bronchotomy performed. The bronchial lumen is virtually obstructed by a brownish substance which is retracted, extraction of the partially decayed (necrotic) key (Figure 4), aspiration of purulent secretions with metallic debris, bronchial suture with 4/0 corolene with needle 26 in continuous overlock, satisfactory seal test, generous pleural cleansing, placement of a pleurx 24 drain directed towards the apex, plane-by-plane closure of the wall. The procedure lasted 3 hours, with episodes of controlled hypercapnia, and the patient was extubated in the recovery room and then transferred to the intensive care unit for simple postoperative care. ICU management included multimodal analgesia, non-invasive ventilation, antibiotic therapy and respiratory physiotherapy. The operation was a success, with complete removal of the foreign body, removal of the chest tube on day 3 and gradual recovery of the patient's lung function, reduced post-operative pain and quicker resumption of daily activities.

The patient was released from intensive care on day 4 of her hospitalization.

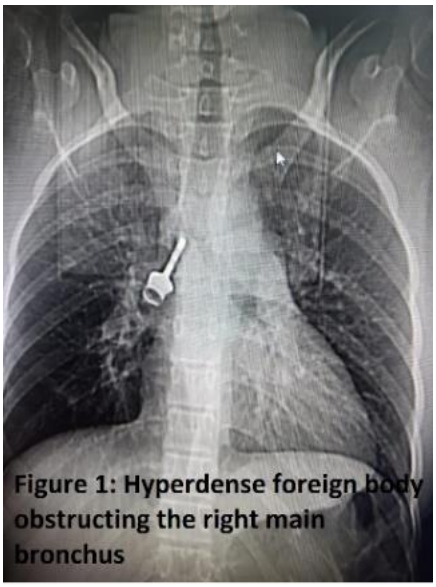

Figure 1: Hyperdense foreign body obstructing the right main bronchus

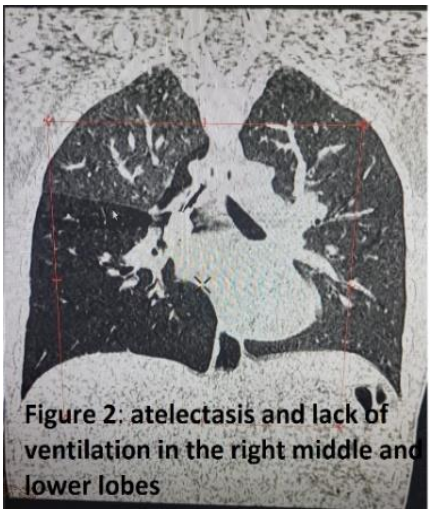

Figure 2: atelectasis and lack of ventilation in the right middle and lower lobes

Figure 3: VATS procedure

Figure 4: Rusty metal key removed

DISCUSSION

VATS is a highly reliable technique that is tending to supplant open thoracotomy in the surgical management of thoracic pathologies. It can be used for diagnostic and/or therapeutic exploration of persistent pneumothorax, old haemothorax, thoraco-pulmonary cancers, etc., when the patient's hemodynamic state allows [4, 5]. Usually, foreign bodies are extracted by bronchoscopy (flexible or rigid), and if this fails, a thoracotomy is performed. Failure of bronchoscopy is often due to pointed or sharp foreign bodies, whose extraction must be cautious to avoid causing local tissue damage. There is also a risk that, as in our case, the foreign body may be pushed in, worsening respiratory and infectious complications [5]. During VATS, it is essential for the patient to be on uni-pulmonary ventilation, which is not always possible for all patients undergoing thoracic surgery. The anaesthetist's experience in single-lung ventilation with a selective double-lumen tube is also crucial in limiting failures and complications.

However, the less invasive nature of VATS means less pain, shorter convalescence, shorter chest tube duration and better aesthetic results. This approach is more preferable to the open approach when possible and when the necessary expertise is available [4]. This successful VATS case in the DRC has paved the way for more advanced and effective treatments for similar cases in the future. Nevertheless, the technique's learning curve requires a significant number of gestures, generally between 50 and 100 depending on the authors [6]. We hope to go even further in the future, with a view to guaranteeing the safety of such patients, always within a multidisciplinary framework.

CONCLUSION

The VATS technique has proved effective and less invasive for removing foreign bodies from the lung parenchyma after bronchoscopy has failed, as demonstrated by our case. It allows a rapid return home with fewer complications. However, its handling requires highly qualified personnel.

REFERENCES

1. Asaf, B. B., Vijay, C. L., Bishnoi, S., Dua, N., & Kumar, A. (2017). Thoracoscopic foreign body removal and repair of bronchus intermedius following injury during failed bronchoscopic retrieval. *Lung India*, *34*(2), 182-184.
2. Landreneau, R. J., Mack, M. J., Hazelrigg, S. R., Dowling, R. D., Acuff, T. E., Magee, M. J., & Ferson, P. F. (1992). Video-assisted thoracic surgery: basic technical concepts and intercostal approach strategies. *The Annals of thoracic surgery*, *54*(4), 800-807.
3. Kaiser, L. R., & Bavaria, J. E. (1993). Complications of thoracoscopy. *The Annals of thoracic surgery*, *56*(3), 796-798.
4. Nagahiro, I., Andou, A., Aoe, M., Sano, Y., Date, H., & Shimizu, N. (2001). Pulmonary function, postoperative pain, and serum cytokine level after lobectomy: a comparison of VATS and conventional procedure. *The Annals of thoracic surgery*, *72*(2), 362-365.
5. Peter, S. Y., Chan, H. H., Lau, R. W., Capili, F. G., Underwood, M. J., & Wan, I. Y. (2016). Penetrating thoracic injury with retained foreign body: can video-assisted thoracic surgery take up the leading role in acute management?. *Journal of Thoracic Disease*, *8*(8), 2247.
6. Mazzella, A., Olland, A., Renaud, S., Santelmo, N., Falcoz, P. E., & Massard, G. (2015). Courbe d'apprentissage et plan de formation pour la lobectomie en vidéothoracoscopie. Revue systématique de la littérature.