Re-thoracoscopic surgery for middle lobe torsion after right upper lobectomy

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Abstract

After pulmonary resection, lobar torsion is a rare but potentially serious complication. The reported occurrence rate is 0.089–0.3%. Generally, management for this condition is exploration through ‘open technique’ thoracotomy with the resection of the affected lobe. A 68-year old male was diagnosed with right middle lobe torsion 1 day after a video-assisted thoracoscopic (VATS) right upper lobectomy. A second VATS right middle lobectomy was successfully performed through the same incisions. The careful follow-up and the prompt detection of lobar torsion using the VATS approach lead to a satisfactory outcome.

Keywords: Lobar torsion • Video-assisted thoracoscopic surgery

INTRODUCTION

After pulmonary resection, lobar torsion is a rare but potentially serious complication. The reported occurrence rate is 0.089–0.3% [1]. Generally, management for this condition is exploration through ‘open technique’ thoracotomy with the resection of the affected lobe. We report a case of right middle lobe torsion after a video-assisted thoracoscopic (VATS) right upper lobectomy, which was treated through a re-VATS approach.

CASE REPORT

A 68-year old male patient had an intermittent cough and blood-tinged spumt for 1 month. A computed tomographic (CT) scan revealed a 2-cm sized spiculated tumour, which was confirmed as an adenocarcinoma without lymph node involvement, using a percutaneous needle aspiration biopsy and positron emission tomography.

The patient initially underwent a two-incisional VATS right upper lobectomy with mediastinal lymph node dissection. Two incisions were made: a 1-cm sized thoracoscopic port at the 7th intercostal space on the middle axillary line and a 4-cm sized working port at the 5th intercostal space on the posterior axillary line.

On postoperative day 1, he presented with a fever of 38.2°C and a sinus tachycardia of 110 beats per minute. Arterial blood gases revealed a carbon dioxide tension of 43 mmHg and an oxygen tension of 129 mmHg on 24% supplemental oxygen. A chest radiograph showed a homogenous opacification near the right mediastinum with a pneumothorax, and a chest CT scan showed right middle lobe consolidation and atelectasis (Fig. 1). Bronchoscopy revealed a near-complete occlusion of the right middle bronchus that was diagnosed as right middle lobar torsion after VATS right upper lobectomy.

Re-exploration through VATS with the same incisions at the prior sites was performed on an emergency basis. The right middle lobe was congested and reduced, and appeared to be twisted 180° around the bronchovascular pedicle (Fig. 2). It was considered to be non-viable and was managed with a right middle lobectomy. Histopathological examination of the right middle lobe revealed acute inflammation and vascular dilatation filled with a blood clot. The patient was discharged on postoperative day 12 (from the initial operation) without any notable complications.

DISCUSSION

Lobar torsion represents a rotation of the bronchovascular pedicle, resulting in airway obstruction or vascular flow interruption, and typically occurs post-traumatically, postoperatively or spontaneously [1]. Lobectomy is the most common cause for lobar torsion, and the right middle lobe is most commonly affected [2]. Thus, Cable et al. [1] said that it seems reasonable to staple or suture the middle lobe to the lower lobe after a right upper lobectomy if the oblique fissure is complete to prevent middle lobe torsion. However, we did not perform stapling or suturing of the middle lobe to the lower lobe, although this case had a completely oblique fissure. The incidence of lobar torsion after lobectomy is very rare, and we have not experienced it in the 30 years since we started performing a lobectomy through thoracotomy or VATS. In addition, suturing or stapling for pneumectomy to prevent lobar torsion could induce an air leakage or additional costs. Therefore, we have not routinely performed pneumectomy during surgery.
The physical findings of lobar torsion include fever, tachycardia and loss of breath sounds over the affected lung field [1], and the radiological findings are more specific, rapid opacification or a serial positional change of the affected lobe. Bronchoscopy plays an important role in the early diagnosis of lobar torsion [2]. A bronchial occlusion as observed by bronchoscopy and a continued increase in the consolidation area indicate a diagnosis of lobar torsion. In this case, we performed a careful serial follow-up with a chest X-ray which prompted a chest CT scan and bronchoscopy when lobar torsion was initially suspected, which ensured a satisfactory outcome through the VATS approach.

There were no objective criteria for deciding on the best procedure for middle lobectomy or for detorsion with pneumopexy, at the time of the re-thoracoscopic surgery. Kanaan et al. [3] have reported on the successful reduction of the left lower lobe torsion in patients with no fever, and said that fever on presentation is likely a late finding and related to ischaemic or necrotic lung parenchyma which requires resection. Unfortunately, our patient had a fever despite a relatively early detection.

Generally, the management of lobar torsion is lobectomy through ‘open technique’ thoracotomy. Presently, VATS lobectomy is expanding with increasing surgical experience because open thoracotomies see more blood loss and more postoperative pain which worsens pulmonary function compared with minimally invasive thoracic surgery [4]. Sticco et al. [5] reported that the VATS middle lobectomy was successfully performed for middle lobar torsion after open thoracotomy and right upper lobe lobectomy. This may offer a second option with possible benefits over the open technique. However, Duan et al. [2] insisted that VATS may aggravate the entry of toxic substances into the circulatory system, resulting in a high detorsion rate because it commonly involves moving, pressing and turning over the residuary lobe. Furthermore, the overexpansion of the torsional lobe increases the difficulty of VATS. Therefore, VATS should be used conservatively and only in selected cases. Moreover, Duan et al. [2] believed that VATS lobectomy contributed to the development of lung torsion because vessel dissection, lymph node resection and thorax haemostasis all move and rotate the residuary lobe repeatedly during VATS lobectomy. In this case, we successfully performed the VATS right upper lobectomy followed by VATS right middle lobectomy again for right middle lobe torsion through the same incisions. We believe that the careful follow-up and the prompt detection of lobar torsion using the VATS approach lead to a satisfactory outcome. However, the occurrence of lobar torsion after VATS and the outcome of VATS management of lobar torsion should be validated in more cases.

Conflict of interest: none declared.

REFERENCES