A video-assisted thoracic surgical lobectomy for a lung tumour with a rare anomalous pulmonary artery

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Abstract

A detailed knowledge of anomalies of the anatomical course of the pulmonary vessels is extremely important for video-assisted thoracic surgery (VATS). Inadvertent vascular ligation and dissection are catastrophic for patients undergoing lobectomy. We describe a case with a rare anomaly of the left pulmonary artery and highlight the importance of identifying the courses of pulmonary vessels for VATS lobectomy.

Keywords: Video-assisted thoracic surgery • Anomaly • Pulmonary artery

INTRODUCTION

With the development of video-assisted thoracic surgery (VATS), a detailed knowledge of the potential anomalies of the anatomical course of the pulmonary vessels is extremely important for the thoracic surgeon. In particular, for some exceptional variations of the pulmonary vessels, detailed knowledge of these anomalies avoids inadvertent vascular ligations and dissections.

CASE REPORT

A 68-year old man with a 5-day history of coughing and haemoptysis was admitted to our department. The chest computed tomography (CT) scan revealed a peripherally located circular mass in the left lower lobe, measuring about 3 cm in diameter. The clinical stage of cT1bN0M0 indicated a surgical resection. Under general anaesthesia and double-lumen intubation, a left VATS approach using three ports was performed (incision 10 mm long for the 30 degree thoracoscope through the eighth intercostal space in the mid-axillary line; utility incision of about 40 mm through the fifth intercostal space at the anterior level with no rib spreading, accompanied by subscapular incision of about 15 mm). During the operation, an anomalous vessel was noted, which passed between the superior pulmonary vein (SPV) and the inferior pulmonary vein (IPV), immediately inferior to the left lower bronchus (LB) and adjacent to the SPV from the aspect of the anterior hilus (Fig. 1). The vessel was identified as an anomalous basilar branch of the left inferior pulmonary artery (IPA) after careful review of the CT scan intraoperatively (Fig. 2). A VATS left lobectomy was then performed, and a chest drain was inserted at the end of the procedure.

The patient had an uneventful postoperative course. The postoperative diagnosis was pT1bN0M0 lung adenocarcinoma.

DISCUSSION

This type of anomaly of the course of the left inferior pulmonary artery is exceptional and not described in the standard textbooks of thoracic surgery. To the best of our knowledge, only two similar case reports have been published in the recent international literature, concerning the left superior pulmonary artery [1, 2]. Currently, VATS for lobectomy has been shown to be a safe and feasible surgical procedure in experienced hands. The incidence of catastrophic intraoperative complications during VATS lobectomy is low but fatal. Avoidance of such complications is enhanced by sound knowledge of the anatomical relationships, careful dissection, awareness of the potential complications and judicious conversion to thoracotomy when appropriate [3]. It is essential to identify the courses of pulmonary vessels when a left inferior lobectomy is initiated. The IPV must be dissected, but care should be taken to ensure that the SPV exists and that there is no common venous trunk or other anomaly present [4]. Normally, the left pulmonary artery gives rise to the basilar branches of the IPA at approximately the level of the oblique fissure. The basilar branch is conventionally located anterior and superior to the LB, distant from the bifurcation angle of the SPV and IPV. In this case, we noted the unexpectedly anomalous basilar branch of the IPA, anterior and inferior to the LB and adjacent to the bifurcation angle of the SPV and the IPV, and these were really confusing and vexing us intraoperatively.

A conversion to thoracotomy was performed unnecessarily in this case, partly due to the complete oblique fissure and lack of adhesion to the surrounding structures. Consequently, the anomalous artery sheath was easily dissected and the artery...
then stapled without damage to the wall of the pulmonary artery and the membrane of the bronchus.

CONCLUSION

This type of anomaly of the IPA is rare and it is independent of the SPV and IPV; however, a detailed knowledge of the anomaly and its potential presence is extraordinarily significant for the training and practising thoracic surgeon. We recommend that surgeons should look carefully for this possibility preoperatively, even consulting with radiologists.

REFERENCES


Conflict of interest: none declared.