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The Right Middle and the Inferior Pulmonary Vein Forming a Common Trunk

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Abstract

We herein report a rare surgical case of the right middle lobe vein draining into the inferior pulmonary vein. The anatomical abnormalities in pulmonary veins can have a serious impact on complications during pulmonary surgery. Surgeons must be aware of any variation in the pulmonary vessels, and preoperative assessment of pulmonary venous anomalies is important during pulmonary surgery.

Keywords: Lung cancer; Pulmonary vein; Anatomical anomaly; Common trunk

Abbreviations

RMV: Right Middle Lobe Vein; IPV: Inferior Pulmonary Vein; CT: Computed Tomography

Case Presentation

We herein report a rare surgical case of the right middle lobe vein (RMV) draining into the inferior pulmonary vein (IPV). A 49-year-old woman was incidentally found to have a 15 mm pure ground glass nodule in the right lower lobe on chest computed tomography (CT). Primary lung cancer with a clinical stage of T1aN0M0 stage IA was suspected. Thoracoscopic right lower wedge resection was performed, followed by right lower lobectomy and lymph node dissection. During surgery, it was observed that the RMV emptied into the inferior pulmonary vein (**Figure 1**).

After the anterior part of the major fissure was divided, we carefully ligated and divided the inferior pulmonary vein using a vascular stapling device without injuring the middle pulmonary vein. Pathological examination of the resected specimen resulted in a diagnosis of T1aN1M0 stage IIB adenocarcinoma. Retrospectively, variation of the middle lobe vein drainage was evident on chest CT (**Figure 2**).

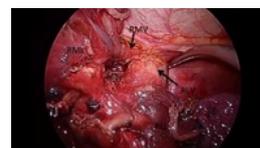


Figure 1 Chest computed tomography showing right middle pulmonary vein draining into the inferior pulmonary vein (RML: Right Middle Lobe, RLL: Right Lower Lobe, RMV: Right Middle Pulmonary Vein, RLV: Right Lower Pulmonary Vein).

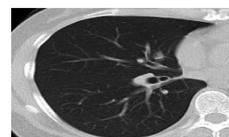


Figure 2 Variation of the middle lobe vein drainage evident on chest CT.

Discussion

Normally, the middle lobe vein unites to form the superior pulmonary vein, whereas in this case, the right middle lobe vein drained into the inferior pulmonary vein. Variations of pulmonary veins have been reported [1,2]. If these abnormalities are not considered, life-threatening complications such as uncontrolled bleeding, severe lung edema, or a greater extent of lung resection than expected may occur [3,4]. The efficacy of preoperative assessment of pulmonary vessels has been reported using three-dimensional CT for better understanding of the anatomical structure [5].

Conclusion

We highlight that surgeons must be aware of any variation in the pulmonary vessels, and preoperative assessment of pulmonary venous anomalies is important during pulmonary surgery, especially lobectomy.

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