Bronchial anastomosis using complete continuous suture in videoassisted thoracic surgery sleeve lobectomy

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Introduction

Thoracotomy is the traditional way to perform a bronchial sleeve lobectomy, but it also can be performed by video-assisted thoracic surgery (VATS). The worldwide experience with VATS lobectomy is now sufficiently large enough to compare this procedure with open thoracotomy. Multiple interrupted sutures are preferred in bronchial anastomosis, but it can be done using complete continuous suture. We reported a case of VATS sleeve resection using continuous suture in bronchial anastomosis.

Operative technique

A carcinoma in the right upper lobe with bronchial occlusion and distal pneumonitis was diagnosed in a 64-year-old man. Preoperative evaluation included a computed tomographic scan of the chest, positron emission tomographic scan, fiberoptic bronchoscopy, and pulmonary function tests with diffusion capacity.

VATS was the proposed approach for the patient (Video 1). We placed the patient in a left lateral decubitus position. A 1 cm port on the middle axillary line in the seventh intercostal space was the first port used primarily for thoracoscopy. The second and the third ports, 2 and 1.5 cm respectively, on the anterior axillary line in the fourth intercostal space and the posterior axillary line in the ninth intercostal space, were used for manipulation of the lung.

The right upper lobe vein was divided with a 45 mm vascular stapler while taking care to avoid injury to the middle lobe vein. The truncus anterior branch of the right pulmonary artery and two branches of posterior ascending artery were then divided

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ISSN: 2072-1439 © Pioneer Bioscience Publishing Company. All rights reserved. in a similar manner with hemolock. After division of the arterial supply to the right upper lobe and identification of the arteries supplying the middle and lower lobes, the major and minor fissures were completed with a 60 mm linear stapler.

Following resection of hilar lymph node and inter-lobes lymph node, the bronchial sleeve resection may begin. The bronchus intermedius were circumferentially dissected 1.0 cm away from right upper bronchi, then mobilization of right upper lobe, dissected the right mainstem bronchi 1.5 cm away from right upper bronchi. With care being taken not to devascularize the airway.

Dividing the inferior pulmonary ligament was performed to release the tension of airway anastomosis. The end-to-end anastomosis begun by placing traction sutures at both of the cartilaginous-membranous junctions to help approximate the intermediate and mainstem bronchi. We used 3-0 prolene (Ethicon, Somerville, NJ) continuous sutures to close the membranous and bronchial cartilage (from posterior to anterior) with the help of an endoscopic knot-pusher. The sutures were dragged tight at one time, anastomosis was tested for pneumostasis by submerging it under saline and inflating the lung to a pressure of 20 cm of water. We finished by tying knots under camera without using any tissue flap to protect the anastomosis.

The overall surgical time was 260 minutes. The patient was discharged from the hospital on the 11th postoperative day. The pathologic examination revealed a 3.5-cm bronchial squamous cell carcinoma with no lymph node involvement. The postoperative bronchoscopy confirmed no stenosis.

Comments

Since the first VATS lobectomy performed in the early 1990s, many authors worldwide have published reports confirming its safety and advantages, including smaller incisions, decreased postoperative pain, shorter length of stay, decreased chest tube output and duration, decreased blood loss, better preservation of pulmonary function, and earlier return to normal activities (1-3). VATS lobectomy may even offer reduced rates of complications

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and better survival (1). These results are obtained without sacrificing the oncologic principles of thoracic surgery (4). However, the need for sleeve resection has been an absolute contraindication for VATS lobectomy until recently. The first report of VATS sleeve resection only appeared 10 years ago (5). There are few reports of VATS sleeve resection performed with no direct visualization and no rib retractor.

We generally divided the bronchus intermedius first to ensure the tumor does not extend more distally, which may necessitate a pneumonectomy to achieve an R0 resection. The bronchus should be divided at a right angle to its long axis and between cartilages. Most of reports describe the VATS approach using interrupted sutures in anastomosis, especially in bronchus cartilage reconstruction (6). The end-to-end anastomosis could also be performed by complete continuous suture. Since 2003, we have used continuous suture to complete both membranous bronchus and cartilage anastomosis at one time through thoractomy. Consequently, as we accumulated experience, we were able to perform sleeve lobectomy with VATS. Complete continuous suture was an ideal way to avoid tangling the ends of the untied ends. With an endoscopic knot-



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As experience has grown with VATS lobectomy, the list of absolute and relative contraindications to VATS has shrunk. VATS sleeve lobectomy becomes more popular with acceptable morbidity and mortality as well as short length of stay (7).

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