



and Other Interventional Techniques

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Entirely thoracoscopic pneumonectomy using the prone position

A new technique

Abstract

Background: Reports on video-assisted pneumonectomy have remained scarce, despite early demonstration of its technical feasibility [1, 3–9]. A totally videothoracoscopic pneumonectomy was first reported by Conlan and Sandor [1]. The patient in this report was positioned in the full lateral position. In this video, we report a totally videothoracoscopic left-side pneumonectomy with the patient in prone position.

Methods: A 49-year-old man was admitted to our hospital for a bifocal cancer of the left lower lung lobe (LLL) and the cervical esophagus. The preoperative workup included a chest computed tomography (CT) scan showing a 3-cm mass of the laterobasal segment of the LLL, with retrotumoral atelectasis, lymph nodes smaller than 1 cm in diameter at the aortopulmonary window and under the carina, and finally posterolateral adhesences between the parietal and the visceral pleura. Flexible bronchoscopy confirmed the presence of a bronchial tumor at the offspring of the apical bronchus of the LLL. Biopsy showed invasive adenocarcinoma, and a CT scan of the neck and head was significant for tumoral infiltration of the cervical esophagus and retropharyngeal space. Gastroscopy showed a stenosis of the cervical esophagus and hypopharynx. Biopsy showed spinocellular epithelioma, but CT scan of the abdomen and bone scintigraphy did not show metastatic disease. A position emission tomography (PET) scan confirmed the findings of the CT scan. Pneumonectomy and esophagectomy by thoracoscopy, laparoscopy, and cervicotomy were proposed. The purpose of this video is to show the details of the thoracoscopic technique with the patient in the prone position.

Results: After induction of general anesthesia, a double-lumen endotracheal tube was placed. The patient was subsequently placed and strapped in a prone position. The surgical team was placed to the left of the patient. A 10-mm trocar was placed in the seventh intercostal space on the posterior axillary line, and a 30° angled video-

scope was introduced. Three additional 5-mm trocars were placed at the same level in the 5th, 9th, and 11th intercostal spaces on the posterior axillary line. The mediastinal pleura was opened just ventral to the aorta. The first structure identified was the left main bronchus, which was dissected free and transected with a linear stapler (blue load). The aortopulmonary window became immediately visible. Clearance of this window's lymphoglandular tissue showed, bottom to top, the inferior pulmonary vein, the superior pulmonary vein, and the pulmonary artery. These vascular structures were carefully dissected free with the cautery hook and transected with a vascular linear stapler (white load). The lung was freed entirely and placed in a retrieval bag for later transhiatal extraction during the laparoscopic phase of the esophagectomy. The intraoperative time for the pneumonectomy was 146 min, and intraoperative blood loss was 30 ml. The pathology report confirmed the presence of invasive, poorly differentiated adenocarcinoma. The bronchial section was free of tumor. One intrapulmonary lymphnode (N1) was positive, whereas all 10 N2 and N3 nodes harvested were free of disease. The tumor was thus staged as IIB (pT2N1Mx). The esophagectomy specimen showed fairly wide differentiated keratinizing of the spinocellular epithelioma with invasion of both pyriform sinuses and both sides of the glottis.

Conclusions: First described by Cuschieri et al. [2] in 1992, the prone position for thoracoscopy allows for a more direct approach to the aortopulmonary window under excellent visual and ergonomic circumstances. Dissection of the hilar larger vessels and performance of lymphnode sampling appear more straightforward because with this technique, the lung is kept out of harm's way, thanks to gravity.

Key words: Thoracoscopic surgery — Pneumonectomy — Lung cancer

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