Session VI: Innovative/Experimental
MONDAY, 16 JUNE 2014
16:00 - 17:30

F-036
HIGH-QUALITY THREE-DIMENSIONAL IMAGE SIMULATION FOR THORACOSCOPIC ANATOMICAL LUNG RESECTION: RESULTS OF PREOPERATIVE ASSESSMENT OF PULMONARY VESSELS AND SHORT-TERM SURGICAL OUTCOMES IN 125 CONSECUTIVE CASES
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Objectives: Anatomical variants of pulmonary vessels may carry serious risks such as unexpected bleeding in patients undergoing video-assisted thoracic surgery (VATS). The aim of this study is to evaluate the effectiveness of the three-dimensional computed tomography (3D-CT) software in short-term surgical outcomes and the preoperative assessment of variations of pulmonary vessel branching pattern in performing VATS.

Methods: From May 2011 through January 2013, a total of 561 patients underwent pulmonary resection at our department. Among them, 180 consecutive patients who had undergone a VATS anatomical lung resection were included in the study; 125 patients in whom 3D-CT imaging was performed (3D-CT group), followed by segmentectomy (n=5) or lobectomy (n=120), and 55 patients without preoperative 3D imaging (Control group). Pulmonary vessel branching patterns observed intraoperatively were compared with the 3D images. Short-term outcomes, including postoperative complications, were retrieved from available clinical records. The occurrence of postoperative complications in this study was defined as grade 2 or more severe complication under the Common Terminology Criteria for Adverse Events (version 4.0) or the Clavien-Dindo classification system.

Results: The frequency of patients with postoperative complications in the 3D-CT and control groups were 8% and 18%, and patients in the 3D-CT group showed significantly lower incidence of postoperative complications than those in the control group (P<0.05). According to the intraoperative findings, 97.8% (309 of 316) of pulmonary artery branches were precisely identified on the 3D images. The sizes of the 7 undetected branches (right upper lobe 5, left upper lobe 2) ranged from 1-2 mm. The 3D images accurately revealed 15 cases (12%) of anomalous or unusual pulmonary artery branches and 5 cases (4%) of variant pulmonary veins.

Conclusions: High-quality 3D-CT clearly revealed the individual anatomies of pulmonary vessels and could play an important role in safe VATS anatomical resection.

Disclosure: No significant relationships.