Influence of Intraoperative Bleeding during Video-Assisted Thoracic Surgery for Non-Small Cell Lung Cancer

To the Editor:

We read with interest the article by Yamashita et al. [1] that focused on their personal experience in the management of intraoperative bleeding and postoperative outcomes.

Several articles have been published during the last decade comparing video-assisted thoracic surgery (VATS) with open surgery in terms of postoperative outcomes and long-term survival in early staged or locally advanced non-small-cell lung cancer [2]. VATS lung resections proved to be safe and successful. In the literature, only a few statistical analyses are available regarding intraoperative complications leading to thoracotomy and troubleshooting maneuvers [3].

The following points must be underlined.

The percentages of vessel injuries during VATS resections was 4.7%, and tumor location or pathologic stage were not prognostic factors. Injury rate for trainees was higher than for skilled surgeons without statistical significance. These data confirm that the percentage of intraoperative bleeding during VATS is acceptable and seem to suggest that a decrease of vessel injuries is not achievable by patient selection based on tumor size, location, or nodal involvement. However, the authors have not reported the pathologic stage of their cases, including in this study “all those patients who had a suspected resectable NSCLC at CT and PET/CT scan” [1]. It would be interesting to know in greater detail the patient’s status of nodal involvement.

The most frequent injuries were at pulmonary artery branches (17/26) and main pulmonary artery (4/26). Venous injuries were rare. Devices used at the moment of injury (e.g., ultrasonic coagulation shears [UCS], stapler, scissors, forceps) were equally represented. It is remarkable that most of the vessel injuries occurred while passing the stapler around vessels or using UCS on misrecognized vessels larger than 3 mm. These reports identify the maneuvers during VATS resection that need the greatest care. Reporting our experience, we no longer use UCS during lobar hilar dissection, and we limit its use to nodal or pleural adhesion dissection.

We congratulate the authors for showing methods of access to thorax and troubleshooting maneuvers in case of vessel injuries. Their article is highly illustrative and supported by brilliant results. Perioperative and long-term outcomes were not different from those of patients without vessel injuries, excepting for mean operating time. The article suggests that VATS resection is safe also in case of intraoperative complications if correct troubleshooting maneuvers are adopted.

We conclude that the experience reported by the authors includes the majority of lobectomies and segmentectomies. It includes also some sleeve lobectomies, pneumonectomies, and one completion pneumonectomy—surgeries for which the VATS approach is not widely accepted.

Alessandro Baisi, MD
Matilde De Simone, MD, PhD
Federico Raveglia, MD
Ugo Ciofﬁ, MD, PhD
Thoracic Surgery Unit
Azienda Ospedaliera San Paolo Milano
University of Milan
Via Antonio Di Rudini 8, 20142
Milan, Italy
e-mail: alessandrp.baisi@unimi.it

References


Reply

To the Editor:

We appreciate the interest of Baisi and colleagues [1] in our article. We reported our experience with intraoperative bleeding during thoracoscopic surgical procedures and troubleshooting for the treatment of non-small cell lung cancer [2].

Baisi and colleagues pointed out that a 4.7% rate of vessel injury was acceptable; however, there is the possibility that tumor location and pathologic stage may be related to the injury rate. Our data showed that the tumor location did not affect vessel injury rates. This study included patients with resectable non-small cell lung cancer that included clinical nodal involvement, except bulky or multistational N2 disease. Nineteen of 434 (4.4%) patients with pathologic node negativity had vessel injuries; by contrast, 7 of 123 (1.7%) patients with pathologic nodal involvement had vessel injuries. There was no significant difference between these two groups (p = 0.63). Taken together, our results showed that vessel injury was not related to nodal metastases per se unless there was bulky nodal involvement. However, we emphasize that these results include patient selection bias, and the surgeon’s skill needs to be evaluated.

Although our results showed that vessel injuries were due to three cases of silicosis and two cases of old pleuritis with regard to comorbidity, they may show that an adhesive node still remains the most dangerous situation.

Devices for video-assisted thoracic surgery (VATS), especially ultrasonic coagulation shears, were the most commonly used devices associated with injuries. Accordingly, thermal injuries from ultrasonic coagulation shears should be avoided for a safe operation.

We showed a flowchart of troubleshooting in a figure because most surgeons have great concerns about intraoperative bleeding and maneuvers for controlling it. The perioperative and long-term outcomes did not differ from those in noninjury cases. However, inasmuch as massive bleeding and blood transfusion may induce immunosuppression and decrease cancer-specific survival [3], the surgeon should make an effort to avoid bleeding regardless of our results.

In conclusion, although this report showed the feasibility and safety of VATS with intraoperative bleeding if an adequate maneuver is applied, the conclusion to be drawn is that extreme caution is required, with troubleshooting by a skilled surgeon in a center of expertise. The proliferation of VATS should be a cause of concern unless effectual step-by-step management can be applied.

Shin-ichi Yamashita, MD, PhD
Akinori Iwasaki, MD, PhD
Katsunobu Kawaihara, MD, PhD

Department of General Thoracic, Breast and Pediatric Surgery
Fukuoka University School of Medicine
7-45-1 Nanakuma, Jonanku, Fukuoka 814-0180, Japan
e-mail: yamashita@fukuoka-u.ac.jp