



Establishment of a safe thoracoscopic surgery

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Response to: Zieliński M. Time to remind old good principles. *J Thorac Dis* 2019. doi: 10.21037/jtd.2019.02.60.

Subotic D, Hojski A, Wiese M, *et al.* Use of staplers and adverse events in thoracic surgery. *J Thorac Dis* 2019. doi: 10.21037/jtd.2019.03.13.

Submitted Apr 03, 2019. Accepted for publication Apr 15, 2019.

doi: 10.21037/jtd.2019.04.75

View this article at: <http://dx.doi.org/10.21037/jtd.2019.04.75>

We thank Dr. Marcin and Dr. Dragan and colleagues for their valuable comment on our article (1,2).

As Dr. Marcin mentioned, older techniques of managing pulmonary arterial and venous branches with ligatures or sutures have been replaced with staplers with the standardization of video-assisted thoracic surgery (VATS), which made the techniques easier and faster. However, adverse events (AEs) caused by vascular stapling occasionally occur. AEs are rare but lead to serious complications. We showed in a previous report that stress on pulmonary vessels due to, for example, twisting and lifting decreased the durability of the stumps, and reduction of the stress on the vessels by firing as little as possible will enable safer surgeries (3). Such caution is similar to that observed in the treatment of pulmonary vessels in the past. Even now that surgical equipment has advanced, avoiding stress when using staplers while securing the sutures is important.

Dragan and colleagues described the history of stapling in thoracoscopic surgery and discussed the proper use of staplers (2). They mentioned not only pulmonary vessels but also stapler use for the bronchus and lung tissues. Poor closure of the pulmonary vessels, bronchi, and lung tissue causes adverse events such as bleeding, bronchopleural fistula (BPF), and prolonged air leak, respectively. As they also mentioned, AEs related to lung tissue stapling are caused more by the skills and technique of the surgeon rather than by the mechanical problem. With regard to the bronchus, BPF due to poor closure is a serious complication, and thoracic surgeons have devised methods to cover the bronchial stump with tissues such as pericardial fat tissue and intercostal muscles, and to maintain the blood flow at the stump. As for how to use staples, we have only

examined their use for blood vessels, but it is believed to be similar for bronchial use. Avoiding stress such as that from twisting and lifting when using staplers for the pulmonary bronchi may lead to a safer thoracic surgery.

In recent years, reports of robot-assisted thoracic surgery (RATS) have been increasing (4-6). Three-dimensional visualization, the “wrist-like” action of the instruments, and ease of fine dissection in a confined space, which are the features of the surgical robot (da Vinci; Intuitive Surgical, Sunnyvale, CA, USA), are considered highly attractive considering the limited working space in the thoracic cavity and the many advantages. RATS may require the use of various devices beyond VATS. However, the definition of the port position is considered to result in a more limited insertion angle than VATS. In addition, the absence of sense of touch in the surgical robot is a problem, and visualizing the stress applied to the tissue when using the device seems more important.

Safe use of the device is now essential for the establishment of a safe thoracoscopic surgery. However, little research has been conducted on how to use the device safely, and research on the proper method for using the new device is highly important.

Acknowledgements

None.

Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

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Cite this article as: Shimizu N, Tanaka Y, Maniwa Y. Establishment of a safe thoracoscopic surgery. *J Thorac Dis* 2019;11(Suppl 9):S1430-S1431. doi: 10.21037/jtd.2019.04.75