Commentary: Power surg(ery)—The new era of staple-less surgery

Scott J. Swanson, MD

From the Division of Thoracic Surgery, Brigham and Women's Hospital, Boston, Mass.

Disclosures: Author has nothing to disclose with regard to commercial support.

Received for publication Sept 30, 2019; revisions received Sept 30, 2019; accepted for publication Sept 30, 2019.

Address for reprints: Scott J. Swanson, MD, Division of Thoracic Surgery, Brigham and Women's Hospital, 75

Francis St, Boston, MA 02115 (E-mail: SJSwanson@bwh.harvard.edu).

J Thorac Cardiovasc Surg 2020;159:314

0022-5223/\$36.00

Copyright © 2019 Published by Elsevier Inc. on behalf of The American Association for Thoracic Surgery

<https://doi.org/10.1016/j.jtcvs.2019.09.145>

Scott J. Swanson, MD

Central Message

Energy use in lung surgery is safe and effective.

See Article page 301.

The phase II study published in the current issue of the *Journal* by the VATS PA study working group examining the use of ultrasonic energy to divide small (7 mm or less) pulmonary artery branches during minimally invasive lobectomy or segmentectomy in 7 centers reaffirms the efficacy and safety of this method.¹ This study further demonstrates the usefulness of advanced energy in making lung surgery easier and safer. This technology clearly works when used correctly, as shown by these authors and others.² Ultrasonic energy is also effective for pulmonary veins of a similar size.² The current size limitation (7 mm) may be related to the energy device jaw length, and with further technological development, the vessel size that can be safely divided may increase. The key detail is to avoid any folding of the vessel when the jaws are closed to permit proper opposition of the vessel walls resulting in reliable sealing. It turns out that, given the current device, 7 mm is the size above which the vessel begins to fold.

In addition, small amounts of lung parenchyma can be divided with energy, and this does not appear to increase the length of air leak. However, to divide large amounts of lung parenchyma or segmental or lobar bronchi is not reasonable at this point secondary to inadequate annealing of the tissue. It may be that, with further development, this will be possible. It is reasonable to expect that the standard stapling of vessels and tissue, which has been

successfully performed for more than 50 years, will evolve. In the future, we should be able to do careful and safe lung surgery with one device that facilitates bloodless and easy dissection as well control of the lung tissue, bronchial, and vascular structures in an efficient manner. Such advances will make minimally invasive lung surgery simpler to perform, thus increasing the number of surgeons and, as a result, patients who benefit from the least-invasive approach. Lieberman and his colleagues are to be congratulated for helping to usher in this new era.

References

1. Liberman M, Goudie E, Morse C, Hanna WC, Evans NR, Yasufuku K, et al; the VATS PA Study Working Group. Prospective, multicenter, international phase 2 trial evaluating ultrasonic energy for pulmonary artery branch sealing in video-assisted thoracoscopic surgery lobectomy. *J Thorac Cardiovasc Surg.* 2020;159:301-11.
2. White A, Kucukak S, Lee DN, Swanson SJ. Energy-based ligation of pulmonary vessels: a six-year experience with ultrasonic shears in video-assisted thoracoscopic lobectomy and segmentectomy. *Ann Thorac Surg.* 2016;101:133-7.