Editorial Commentary

The price of robotic lobectomy

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In this month's Annals of Thoracic Surgery, Heiden and colleagues (1) present their study comparing the cost effectiveness of pulmonary lobectomy between open thoracotomy, video-assisted (VATS), and robotic-assisted lobectomy (RAL) approaches for early stage non-small cell lung cancer (NSCLC), adding to the growing literature assessing the efficacy of robotic-assisted thoracic surgery (RATS). There has been much debate in regards to the clinical outcomes both perioperatively and long-term between the different approaches. The literature has shown that VATS is safe with improved perioperative outcomes and at least equivalent long-term outcomes compared to open thoracotomy (2,3). Parsing out the differences between VATS and RAL has been more challenging.

Although it is generally acknowledged that RAL incurs significant cost, the question is whether any potential benefits of the robot outweigh these costs to justify its continued use. Using a decision analysis model, the authors' objective was to assess cost effectiveness at 1 year from both a healthcare and societal perspective. They conclude that RATS is not cost-effective when compared to VATS, which is consistent with previous studies (4,5) but with the caveat that it may be comparable at higher willingness-to-pay thresholds and attempt to identify factors which may improve the cost-effectiveness of RAL. Their analyses suggest that lower robot costs, shorter operating times, shorter lengths of stay, and lower conversion rates may improve cost-effectiveness of RAL. However, it remains unclear if any improvements would affect cost-effectiveness to a significant degree and this does not take into account the likely increasing costs of continually advancing robotic technology.

A noteworthy finding was that any minimally invasive approach is more cost-effective than open thoracotomy. It is clear that the savings on postoperative costs outweigh the upfront operating costs and that minimally invasive lobectomy should be the treatment of choice if feasible. Although the robot offers the possibility of performing more complex surgery less invasively, the ability to perform minimally invasive surgery is also surgeon-dependent and anatomy-dependent. The fact remains that the robot is simply another tool in the treatment of lung cancer that, no matter how you do the math, is a very expensive one costing approximately $2 million before factoring in maintenance and instrument costs.

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