Editorial

RATS: a word is enough to the wise

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Comment on: Cerfolio RJ, Ghanim AF, Dylewski M, *et al.* The long-term survival of robotic lobectomy for non-small cell lung cancer: A multi-institutional study. J Thorac Cardiovasc Surg 2018;155:778-86.

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There is no doubt that the interest in robotic technology to treat lung cancer has grown widely, since the first robotic lobectomies were reported in 2003 by Morgan *et al.* and Ashton *et al*. (1,2). Minimal invasive techniques have evolved as standard for early stage lung cancer surgery and several technical variations were established. Several variations of video thoracoscopic techniques and the robotic approach are all in use with some surgeons clearly favoring one approach (3-6) whereas others deliberately move from one technique to the other (7,8). While the operation that is performed remains unchanged proponents of each technique highlight the advantages of their own approach. The authors of the article "The long-term survival of robotic lobectomy for non-small cell lung cancer: A multi-institutional study" (9) are highly dedicated robotic surgeons and well known for the excellent robotic programs in their institutions. The outcomes reported from these institutions represent the state of the art that can be achieved with regard to the technical approach for robotic lobectomy. However, the overall management and algorithms for multimodal treatment in more advanced stages of non-small cell lung cancer (NSCLC), which are of crucial importance for long term outcome, are not outlined in detail. The current publication (9) reports on the largest retrospective series of robotically assisted thoracoscopic surgical lobectomies for NSCLC including 1,139 patients from 4 institutions with a median follow-up of 30 months.

Patients were well selected for the robotic approach with a median FEV of 85% predicted, which is in the low risk range. Surprisingly DLCO values are not available for the majority of patients.

Perioperative data vary somewhat between institutions and generally are comparable to video-assisted thoracoscopic surgery (VATS) series (10). The 30- and 90-day operative mortality is excellent with 0.2% and 0.5%, respectively.

While the perioperative results are good the authors correctly state that the true value of an oncologic surgical technique is the stage specific 5-year survival and local recurrence rate. One of the co-authors of the study published a series in 2012 with 27 months median follow-up. The authors claim to provide the worldwide longest follow-up after robotic lobectomy, yet covering an observation period from 2003–2016 only 30 months median follow-up are available suggesting an increase in patient numbers in the most recent period.

We agree with the authors, that the use of an adequate preoperative invasive mediastinal staging leads to better identification of N2 disease, however a relatively high rate of N2 upstaging is observed leading to the question whether staging algorithms were comparable in all participating institutions. The IIIA/N2 5-year stage-specific survival (73%) is exceptionally high, however with 30 months median follow-up this represents an interim analysis rather than a mature 5-year follow-up with only 29% of patients having reached the 5 years after surgery.

An increasing number of retrospective series demonstrating feasibility and good outcomes with all of the available minimally invasive techniques are available, however no prospective comparison between patients treated with some therapeutic algorithms undergoing surgery with different technical approaches is published so far. Retrospective comparisons of large databases describe equal perioperative as well as long term survival outcomes (7,11-13).

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When analyzing Cerfolio's publication one additional important issue needs to be considered. The study was performed in highly selected centers, where most of the minimal invasive procedures are performed with the robotic technology. Thus, the reported outcomes might not be transferable to all centers and surgeons. In the end we always have to reflect whether the good results are technique-dependent or surgeon-dependent only? In high-volume institutions generally, better outcomes are reported than in smaller units due to the expertise of the entire multi-professional team. In more advanced stages the multi-disciplinary approach is crucial to obtain good outcomes.

In summary the robotic technology holds great potential for thoracic surgery and with future refinements and improvements in cost-effectiveness will be more widely used. This report demonstrates, that robotic-assisted thoracoscopic surgery (RATS) can achieve promising oncologic mid-term results. RATS is no more the future, is the reality.

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Footnote

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

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