

# Robotic versus uniportal video-assisted thoracic surgery for lung cancer

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During the last two decades minimally invasive surgery for early stage lung cancer replaced open approaches with advantages for patients (less pain, less complications, shorter hospital stay). A prospective randomized controlled trial by Bendixen *et al.* demonstrated significantly less pain and better quality of life (1). Despite many proven advantages in retrospective trials, randomized controlled trials are rare. To date, randomized controlled trials comparing robotic versus conventional or uniportal video-assisted thoracic surgery are missing.

In the paper entitled “*Early outcomes of robotic versus uniportal video-assisted thoracic surgery for lung cancer: a propensity score-matched study*” (2), Yang and colleagues retrospectively reviewed 153 patients who underwent either uniportal or robotic (five-port approach) anatomic lung resection. They used a matched propensity score analysis to adjust for confounders by indication. Results did not show differences in chest tube duration, postoperative complication rates and length of hospital stay.

Interestingly, operating time did not differ in this study (RATS 150.24 min versus VATS 136.92 min), which is contrary to other studies. Bao *et al.* in 2016 reported (3) operating times of 136 min in the RATS versus 111 min in the conventional VATS group in a propensity matched study (69 pairs,  $P < 0.001$ ). Our own retrospective data, published in 2013 (4) did show significant longer operating time in the RATS group (215 min RATS versus 183 min VATS,  $P = 0.0362$ ). In conclusion, a RATS procedure takes

longer than a VATS procedure, which also increases costs. Cost comparisons are missing in the paper by Yang *et al.* but would be of great interest. Regarding the existing literature, a RATS procedure is around 44% more expensive than VATS (3,4).

Yang *et al.* did also analyze postoperative analgesic usage, which did not differ between the two groups. This result supports our clinical impression that postoperative pain between different minimally invasive techniques does show only little if any variation. Our impression is supported by a RCT published in 2016 (5), which could not demonstrate any difference in postoperative pain between UVATS and conventional VATS technique. And yet, we do find retrospective data (6,7) that show a trend towards less pain after UVATS and also studies that favor robotics over conventional VATS (8). Whether any of the minimally invasive approaches offers the benefit of less pain is still not clear and for answering this question we have to await randomized controlled trials.

Blood loss and number of dissected lymph node stations were the only parameters with significant difference in the study by Yang *et al.* Blood loss was 80.84 ml in the RATS versus 110.66 mL in the UVATS patients ( $P = 0.037$ ). Even though statistically significant, the difference might lack clinical relevance. The overall number of dissected lymph nodes is comparable in both groups. However, the authors report a higher number of dissected lymph nodes in lymph node station ATS 12 in the RATS group, which is also

described by Toker *et al.* (9). Yang *et al.* also describe a higher lymph node yield in the robotic group compared to a VATS group (10). We agree that lymph node dissection is highly important for adequate tumor staging. If higher lymph node yield and better lymph node clearance start to translate into a better overall and disease-free survival, this might be seen as the main advantage of a robotic approach in the future and might also help to overcome the burden of higher costs.

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### Footnote

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

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