AB005. Current status of video-assisted thoracoscopic surgery *vs.* robot-assisted thoracoscopic surgery in the treatment of lung cancer

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Background: To date, reports of comparison between robot-assisted (RATS) and video-assisted thoracoscopic surgery (VATS) for lung cancer are limited, and most of them are focused on lobectomy. In this study, we aimed to compare the perioperative outcomes of robotic and thoracoscopic anatomic pulmonary resection including lobectomy and segmentectomy for lung cancer to determine if there are advantages to transitioning to robotics by a surgeon who is already proficient in VATS.

Methods: A single surgeon proficient in VATS initiated a robotic anatomical lung resection program, and a retrospective study was conducted of the consecutive patients undergoing minimally invasive anatomical pulmonary resection (RATS or VATS) for lung cancer between 2015 June and 2017 December. The baseline characteristics, perioperative outcomes, and pathological results were collected and compared between the two groups.

Results: A total of 922 patients were included in this study: 302 patients underwent RATS (195 lobectomies and 107 segmentectomies) and 620 patients underwent VATS (546 lobectomies and 74 segmentectomies). The baseline characteristics including age, BMI, ASA score, smoking history, comorbidity, tumor size and tumor location were similar (P>0.05) between the two groups. There were no in-hospital or 30-day mortalities. The conversion rate to thoracotomy (0.7% *vs.* 2.3%, P=0.082) and postoperative complication rates (15.9% *vs.* 18.7%, P=0.062) were similar in the two groups. Compared with the VATS group, RATS group experienced shorter operative time [135 min (IQR, 110.0–170.0 min) *vs.* 160 min (IQR, 130.0–195.0 min), P=0.000], chest tube duration [3.0 d (IQR, 2.0–4.0 d) *vs.* 4.0 d (IQR, 3.0–5.0 d), P=0.000], length of stay [4.0 d (IQR, 3.0–5.0 d) *vs.* 6.0 d (IQR, 4.0–8.0 d), P=0.000], and less blood loss [100.0 mL (IQR, 50.0–150.0 mL) *vs.* 100.0 mL (IQR, 100.0–200.0 mL), P=0.000]. However, robotics was associated with higher costs [$11,319 (IQR, $10,661–$12,218) *vs.* $7,233 (IQR, $64,28–$8,184), P=0.000]. For the pathological outcomes, the histological type and pTNM staging distribution were similar between the two groups. However, the robotic approach yielded more dissected lymph nodes [10.0 (IQR, 8.0–14.0) *vs.* 9.0 (IQR, 6.0–14.8), P=0.013] and lymph node stations [6.0 (IQR, 5.0–7.0) *vs.* 4.0 d (IQR, 3.0–5.0), P=0.000].

Conclusions: Although with higher costs, there seems to be significant advantages for an established VATS surgeon to transition to robotics including the operative time, blood loss, lymph node dissection and postoperative recovery based on clinical outcomes. RATS should be studied further and compared with VATS in a randomized fashion to better define its potential advantages and disadvantages.

Keywords: Robot-assisted; video-assisted; thoracoscopic surgery; lung cancer

doi: 10.21037/shc.2018.AB005

Cite this abstract as: Zhang Y, Han Y, Li H. Current status of video-assisted thoracoscopic surgery *vs.* robot-assisted thoracoscopic surgery in the treatment of lung cancer. Shanghai Chest 2018;2:AB005.