



The association between the use of powered staplers and the decreased postoperative complications following VATS lobectomy

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In the May 2018 issue of *Adv Ther*, Miller *et al.* (1), reported on the influence of powered and tissue specific endoscopic stapling technology on clinical and economic results of VATS lobectomy procedures. This was a real world, non-randomized study, based on data extracted from the Premier Healthcare Database. The study compared, hospital length of stay (LOS), operating room time, hospital charges, complications, discharge status and readmissions, between 659 patients who had undergone VATS lobectomy with powered staplers and 3100 who had undergone lobectomy with manual stapling procedure. The authors reported that powered stapler group had overall shorter LOS (4.9 *vs.* 5.9 days, $P<0.001$), lower total hospital costs (\$23.841 *vs.* \$26.052, $P=0.009$) and lower rates of combined hemostasis complications (bleeding and/or transfusions; 8.5% *vs.* 16%, $P<0.001$) and transfusions (4.3% *vs.* 6.8%, $P=0.002$) compared with the manual stapler group. Operating room time, discharge status, other complications (air leak complications, pneumonia and infections) and all-cause readmissions did not differ significantly between the study groups. Furthermore, in the subgroup analyses, the authors aimed to compare the two predominant manufacturers within the powered (99.4% Ethicon) and manual (75.8% Medtronic) staplers; the former group resulted to have statistically significant shorter LOS (4.89 *vs.* 5.66 days, $P<0.037$), lower total hospital costs (\$23.785 *vs.* \$26.180, $P=0.008$), lower equipment costs (\$5,021 *vs.* \$5,989, $P=0.016$), lower room and board costs (\$6,795 *vs.* \$7,984, $P=0.039$) and lower rates of both the composite hemostasis complication outcome (8.2% *vs.* 13.9%, $P=0.022$) and

transfusion (4.7% *vs.* 9.3%, $P=0.018$). Statistical analysis, restricted to the Ethicon PVS (powered vascular stapler), revealed shorter LOS (4.99 *vs.* 5.82 days, $P=0.047$) and lower rates of the composite hemostasis complication outcome (4.8% *vs.* 14.2%, $P=0.01$) compared to the Medtronic manual staplers. Additionally, in the subgroup of the COPD patients, lower rates of the composite hemostasis complication outcome (8.6% *vs.* 18.9%, $P=0.002$) and transfusion (6.2% *vs.* 13.2%, $P=0.011$) were observed in favour of the powered staplers group.

Postoperative outcome and hospitalization costs have been frequently adopted as indicators for quality of care (2,3). Various adverse events have been reported to complicate major thoracic surgery procedures (4); among these, the rate of cardiovascular complications can be high (5). In order to improve the postoperative outcome of major thoracic surgery candidates any clinical and instrumental risk feature need to be thoroughly identified (6,7). Moreover, over the past decade, the widespread of minimally-invasive thoracic surgery has helped to reduce hospital costs, LOS and incidence of complications (8). Furthermore, the standardization of surgical techniques, the definition of the learning curve and the development of highly sophisticated devices have led to an improvement in intraoperative performance and postoperative results (8,9). Given that endoscopic staplers are necessary in VATS surgery, a comparison among current devices would benefit clinical activity (10).

Here, Miller *et al.* sought to address this issue. However, this analysis was narrow in its scope in that it compared only

the two “predominant players” in each field. Comparing the powered versus the manual devices in the bariatric surgery setting, Roy *et al.*, reported better economic outcomes and lower bleeding/transfusion rates for the former (11). Likewise, in the thoracic surgery field, surgeons participating in a Chinese multicentre study including 94 VATS procedures reported excellent results regarding the articulation and usability of powered staplers (12). In line with the above, Miller *et al.*, stated that powered staplers were associated not only to superior clinical outcomes, but also to lower costs and better hospital resource use (1). What seems to be troubling with the Miller *et al.* study is that the sub analyses comparing the “two predominant manufactures” was not thoroughly explained regarding its motivation. In conclusion, it is desirable that in the near future prospective randomized studies seek to concentrate on demonstrating associations between the use of powered staplers and postoperative complications following VATS lobectomy.

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