



ABSTRACTS: VOLUME 4, SPECIAL ISSUE

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Stapler-Less Uniportal Video-Assisted Thoracoscopic Surgery: Case Series and Review of the Literature

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Published in March 2023

Background: With the world's trend towards minimally invasive surgical techniques, video-assisted thoracoscopic surgery (VATS) is now a well-established technique worldwide. Mechanical stapling is routinely employed for bronchial and pulmonary vasculature sealing and ligation during anatomical lung resection. The use of staplers is associated with high operating costs, bleeding, reopening and infections. This high stapler cost affected the spread and use of VATS in less developed countries where staplers can't be afforded. In this study, we demonstrate the feasibility and outcomes from the first case series of uniportal VATS lobectomies and segmentectomies without the use of a stapler.

Methods: A retrospective review of 7 stapler-less uniportal VATS lobectomy, segmentectomy, and wedge resection surgeries between March 2021 and February 2022 were included. Data collected from the patient's records included: the length of the operation, length of the intensive care unit and hospital stay, intraoperative complications, blood loss, open thoracotomy conversion rate, postoperative complications, drain removal day, postoperative analgesic use, and the estimated cost.

Results: 7 staplers-less uniportal VATS were performed at the hospital, of which 3 were females and 4 males. The mean age was 49 years. The length of the operations ranges between



(48-118) minutes with an average of 80 minutes, while the estimated blood loss was minimal (10-100 ml) in 6 patients; however, one patient was converted to open thoracotomy due to bleeding (1500 ml) that was not related to the clipping site. The median time for drain removal was 3.25 days with a range of (1-10) days. All patients were hemodynamically stable postoperatively, with no patients developing a wound infection. The average hospital stay was 5 days with a range of (2-11).

Conclusions: Our experience demonstrated short operative time, minimal blood loss, and short length of stay when dealing stapler-less technique. Stapler-less VATS is a feasible option when surgeons with adequate VATS skills are available, it is associated with short operation time and a lower cost burden than conventional VATS procedure, this cost reduction is going to help the spread of using the minimally invasive video-based approach (VATS) instead of the traditional extensive thoracotomy in many places of the world.

Keywords: Video-assisted thoracic surgery (VATS); uniportal VATS; stapler-less VATS, minimally invasive thoracic surgery.