Letter to the Editor

# Intraoperative conversion: it happens, we should smartly deal with it

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Starnes SL. Analyzing intraoperative conversion of thoracoscopic lobectomy: acceptable outcome or failure? J Thorac Dis 2019;11:643-5;

Raveglia F, Scarci M, Cioffi U, *et al.* Intra-operative conversion during video-assisted thoracoscopic surgery lobectomy is not a failure as long as emergency is avoided. J Thorac Dis 2019;11:638-42;

Subramanian M, Puri V. Is a complicated VATS lung resection better than no VATS at all?—converting our stance on intraoperative conversions. J Thorac Dis 2019;11:S1366-8;

Kim D. Invited editorial on "Intraoperative conversion during video-assisted thoracoscopy does not constitute a treatment failure". J Thorac Dis 2019;11:S1231-3.

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Switching our approach intraoperatively from a minimally invasive to an open procedure, also known as intraoperative conversion, exist inherently since the implementation of the video-assisted thoracoscopic surgery (VATS). This intraoperative change of course has become a major concern especially with the spread of VATS in lung cancer surgery. Despite its prevention and because of its ineluctability, this intraoperative event is often seen as a complication or a failure, and remains somewhat of a taboo.

Studying intraoperative conversion prospectively seems almost impracticable, so we aimed to evaluate retrospectively the short-term outcomes of patient treated with VATS with intraoperative conversion to thoracotomy compared with those treated with thoracotomy upfront. Following a propensity score analysis with adjustment (no matching), because of a more comorbid cohort of patient in the VATS with conversion group, we observed a 90-day mortality rate of 5.4% *vs.* 3.7% between the VATS conversion and Thoracotomy group respectively, without statistical significant difference (1). We enhanced this evaluation by assessing risk factors for postoperative mortality in the cohort, finding no differences related to the surgical approach (VATS with conversion *vs.* thoracotomy) after multivariate analysis (1).

We acknowledged that the methodology of this study contained several biases, because of its retrospective design, but also because of the moderate number of subjects in the VATS with conversion group (n=56). However, it was a serious and honest attempt to evaluate our practice in this field, and a try to outreach the idea that a complicated VATS is not inferior than a planned thoracotomy in lung cancer surgery.

Several authors shared their experienced point of view about intraoperative conversion and regarding our results, with converging opinions and meaningful conclusions highlighting our concerns (2-6). Firstly, patient safety and optimal oncological results should be our prime concerns. One surgeon should consider intraoperative conversion as a smart move, giving the opportunity to safely perform a technical or difficult at-risk step during surgery, or to avoid a non-optimal oncological resection or incomplete lymphadenectomy.

Secondly, reasons for intraoperative conversions are drastically different according to the context. Emergency conversions are related to a vascular injury, while non-emergent conversions are due to oncological (extended procedure non eligible for VATS with full satisfaction) or

anatomical/technical reasons (single lung ventilation issue, dense pleural adhesions, calcified lymph nodes, patient morphology...). Even in the absence of data, emergent conversions may be more a burden than non-emergent conversions in terms of postoperative complications. Also, there is always a place for improvement in preoperative planning to avoid intraoperative anatomical or technical difficulties leading to conversion.

These considerations should lead the surgeon not to forsake VATS approach for difficult cases in fear of conversion, but cleverly use VATS in broadened indications.

Another perspective should also be considered as intraoperative conversion is also a change of course regarding perioperative analgesic care, especially in an era of ERAS program with strict objectives in pain control. Despite one-lung ventilation management can be helped by thoracotomy conversion, anaesthetic team should consider the possible negative effects of this strategy change on postoperative outcomes. Indeed, pain due to thoracotomy is higher than VATS' pain, and can directly impact breathing movements, leading to perioperative atelectasis and pulmonary infection. For any type of single shot regional anaesthesia used in initial strategy, it seems to be reasonable to upgrade the analgesia with a continuous type of block. If epidural catheter may remain the gold standard for thoracotomy, its insertion can be risked in situation of general anaesthesia, and a later insertion when patient is fully wake-up may retard pain management. Consequently, continuous paravertebral block with reinforced multimodal analgesia is probably the best analgesic strategy. Other type of continuous block, like erector spinae block, need further investigations to assess its utility in this situation. Surgical insertion of paravertebral catheter should be a safer and earlier (before end of the surgery) approach to decrease pain at immediate wake-up (7). Other anaesthetics consideration, like goal-directed fluid management must be all the more strengthened in conversion strategy, according to the decreased pulmonary outcomes in excessive fluid administration. About monitoring, it can reasonably stay as it was in VATS, except in major bleeding.

In summary, intraoperative conversion is an event thoracic surgeons have to deal with, keeping in mind that patient safety and oncological results should be our prime concerns. Further study should be useful either to evaluate the difference between emergent and non-emergent causes of conversions, but also to assess an eventual impact on long-term survival compared to an upfront open resection for lung cancer.

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## Footnote

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

*Ethical Statement:* The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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