

On the article “prospective study of quality of life after lung cancer resection”

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We read with interest the results of the prospective study by Hopkins *et al.* (1) which collected data on quality of life (QOL), including pain and mood disorders, after thoracotomy versus VATS resection. The authors conclude that VATS and thoracotomy patients had similar late QOL outcomes.

We would like to express some observations that challenge the validity of these conclusions.

A first concern is the lack of information on missing patients. How many patients underwent lung resection in the study period in the three centers? How many patients were excluded from the analysis and for what reasons? Were there any patients excluded because they were dead at the time when the questionnaires were sent out?

Second, we would like to point at the heterogeneity of the population included in the analysis, showing significant differences in ethnicity, histology and surgical procedure. Some corrections should be adopted in such circumstance in order to account for the differences between the study populations (2). This is even more relevant when considering that the authors openly disclose the existence of a selection bias, when stating that “the more complex procedures had thoracotomies, while the less complex procedures (wedge resections) were performed by VATS”. A very different postoperative QOL is expected following pneumonectomy, lobectomy and wedge resection. A subgroup analysis based on the type and extent of the lung resection could have been attempted in order to better fulfill the aim of the present study. But with only 14 VATS lobectomies compared to 42 in the open group, 4 open wedge resections compared to 11 and 13 open segmentectomy compared to 6 in the VATS group, no

adequately powered statistical analysis could have ever been performed. Moreover, in order to properly assess QOL after surgery, baseline QOL should have been studied and the decline in QOL related to surgery quantified. What we also missed is objective information on baseline and postoperative performance status, cardiorespiratory function, exercise capacity and complications. In fact, even if adequate measures were adopted to correct for the differences between the two groups, still some concerns would remain as to the reliability of any QOL analysis based solely on patients' subjective information, collected at one single postoperative timepoint as presented in this study.

Pain reduction after VATS compared to open surgery is well documented (3,4) and might play a substantial role in the reduction of cardiorespiratory complications as well as in the overall faster recovery. Unfortunately, no information is provided in the present study on pain medications, which might constitute a non-negligible confounder in case of post-thoracotomy pain syndrome. With this in mind, pain scores were not found to be statistically different between VATS and thoracotomy at 6 months. Not only the lack of a statistical significance does not imply equal results between two groups (5), the study is also significantly underpowered. The first randomized controlled trial (RCT) on VATS versus open lobectomy has recently been published (4). Interestingly, the primary endpoints were pain and QOL. In this well designed RCT, a sample size of 103 patients per arm was deemed necessary in order to detect a difference of at least 20% in the proportion of patients who experienced moderate-to-severe postoperative pain. Given the non-randomized nature of the study by Hopkins *et al.*, an even larger population would have been required in order to

achieve an adequately powered analysis.

As a consequence of all the above mentioned limitations, the conclusions of the study by Hopkins *et al.* that VATS and thoracotomy patients had similar QOL outcomes are not supported by the evidence provided.

QOL and pain scores might be suitable tools to evaluate the early postoperative phase after lung cancer resection. But in a later stage, when pain is supposed to have naturally subsided in most patients, why should we still focus on pain? Adherence to adjuvant therapy (when indicated) seems a more promising surrogate marker for mid-term QOL and indeed some differences between VATS and thoracotomy have already been shown with regard to this parameter (3). Future research should focus on finding additional parameters that might better describe long term function after thoracic surgery.

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Footnote

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to declare.

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