

Outcomes of Single Versus Multi-Port VATS: Data from VIOLET a UK Multi-Centre RCT of VATS Versus Thoracotomy for Lung Cancer Surgery

Objective

It is postulated that surgery through a single keyhole supplied by one intercostal nerve may be less painful (and lead to a faster recovery) compared to the use of multiple keyholes affecting many intercostal nerves. We analysed data collected from the keyhole surgery arm of a randomised controlled trial to compare the pain of lobectomy for lung cancer using one versus multiple keyholes.

Methods

A pre-specified exploratory subgroup analysis was stated in our original protocol to compare pain scores within the VATS lobectomy group by single versus multiple port sites using direct (regression) and indirect comparison (comparing the difference with respect to thoracotomy) methods. In hospital, visual analogue scale pain scores were used, and analgesic ratios calculated for comparison. After discharge, pain was evaluated using participants self-reporting of European Organisation for Research and Treatment of Cancer (EORTC) QLQ-C30 pain scores up to one year.

Results

From July 2015 to February 2019, we randomised 503 participants. After excluding 50 participants who did not receive a lobectomy, surgery was performed using single-port access in 42, multiple port access in 166 and thoracotomy in 245 participants.

On day 1, the median pain score was 3 for single-port VATS, 4 for multiple port VATS and 4 for participants receiving a thoracotomy, and by day 2 it was 3 for both VATS groups versus 4 for the thoracotomy group. No differences were observed between single and multiple port VATS when modelled using a direct comparison, at a mean difference of -0.11 (95% CI -0.91 to 0.69) or indirect comparison at a mean difference of -0.13 (95% CI -0.96 to 0.69). The mean analgesic ratio (single/multiple port) was 0.75 (95% CI 0.64 to 0.87) for direct comparison and 0.90 (95% CI 0.64 to 1.25) for indirect comparison.

After discharge, pain scores for the single port VATS were observed to be lower than multiple port VATS and correspondingly physical function was higher for single port VATS compared to multiple port VATS in the first 3 months of follow up.

Conclusions

There were no consistent observable differences in pain when lobectomy for lung cancer was undertaken using one or multiple keyholes. Whilst the improvements in pain scores and function was consistently in favour of single port surgery especially after discharge and up to three months, the clinical and statistical significance was uncertain.

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