

Do we need complementary locoregional analgesia in patients undergoing minimally invasive thoracic surgical procedures?

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Pain control after minimally invasive thoracic surgery is a contemporary question, which still raises passionate debates. The study published by Ghee and colleagues (1) evaluated continuous subpleural bupivacaine in a prospective randomized trial and concluded to no benefit. Eighty-six patients admitted for VATS lobectomy or wedge resection were randomly assigned either to continuous subpleural bupivacaine or to intraoperative incision site injection, associated with standard oral or intravenous painkillers as per request. Post-operative consumption of narcotics, acetaminophen or non-steroidal anti-inflammatory drugs was similar in both groups in a linear mixed model analysis. Self-reported usage of non-steroidal anti-inflammatory drugs was higher on post-operative days 4, 5, 6 and 7 in the subpleural infusion group, while daily pain scores were similar. Length of hospital stay and 30-day pain scores were comparable.

Failure to demonstrate any beneficial effect of continuous subpleural infusion with local anaesthetics matches with our own findings. We have conducted a prospective randomized trial in patients who underwent open thoracotomy for lobectomy, comparing subpleural infusion with bupivacaine to infusion with saline; there was no significant difference between the two groups (2).

For any attempt to explain these results, we have to answer first the question about what causes pain after VATS procedures. The most obvious factor is the surgical approach itself. Intercostal insertion of trocars through a

stabwound minimizes trauma to skin and muscular layers, and is significantly less painful than full thoracotomy (3). Nonetheless, we cannot deny a stress to the intercostal vasculonervous bundle throughout the procedure. This is particularly true when large bore trocars (12 mm) are utilized in patients with narrow intercostal spaces such as small-sized ladies. Duration of surgery is also a confounding factor, acting both by prolonged compression of the intercostal nerve and by prolonged tissue trauma owing to multiple repeated insertions of instruments through the utility thoracotomy. Last but not least, post-operative pain is also related to the calibre of the chest tube and to duration of drainage. Especially in VATS patients, there is a marked drop of the level of pain synchronously to the removal of the chest tube. This study pooled together wedge resections with lobectomies. However, we must admit that lobectomy with node dissection is a much longer and more complex operation compared to a simple and expedite wedge excision, accordingly, it is likely that duration of chest tube drainage is longer for lobectomy patients.

Several reasons may contribute to the negative result of this study. First of all, the sample size is rather small, with patients differing by many parameters including type of operation (wedge versus lobectomy) and body mass index among others. Compared to thoracotomy, the level of pain is certainly lower and fades away earlier. Hence, we may hypothesize that utilization of standard pain medications achieves a satisfactory control, especially in those patients

with early weaning from the chest tube. With this in mind, it appears unfair to pool together minor procedures such as wedge resections with major anatomic resections. There might be technical issues adding to the previous remarks. It is questionable whether placement of the catheter has been identical and in the appropriate area in all patients. While the prevalent idea is to cover the metameres injured by the utility incision, it is likely that most of the post-operative pain is originating from the metameres hosting the chest tube. In some patients, the perfusate might escape into the pleural space through tiny lacerations occurring during placement of the catheter.

Which alternatives may be used to optimize pain control? While utilization of smaller trocars is limited by the size of instruments, insertion of smaller chest tubes has been effective in our hands. We currently use 19 Fr Blake-type drains which offer the advantage of improved permeability. Loco-regional anaesthesia enjoys increasing popularity. While epidural analgesia is considered excessive in VATS patients, low paravertebral or serratus block might be considered to cover pain caused by the chest tube (4). Any effort should be made to remove the chest tube as early as possible. Surgeons need to develop intraoperative strategies to reduce air leak with particular care during dissection of fissures or intersegmental planes; buttressing of staple lines has been recommended in patients with significant emphysematous changes (5).

Taking into account the results presented by Ghee and colleagues, the question whether locoregional anaesthesia is really needed in complement of traditional pain medications in VATS patients remains open. This study suggests that adding subpleural anaesthesia to standard treatment does not enhance optimal patient comfort and early discharge.

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Footnote

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