

Epidural for mini-invasive thoracic surgery: do we need a sledgehammer to crack a nut?

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In thoracic surgery, big changes have taken place in the past three decades. Video-assisted thoracic surgery (VATS) was introduced only 25 years ago but has since rapidly evolved, going from three–four ports to two and finally just one: wide, disfiguring incisions have turned into minimal accesses, and the old concept of thoracoscopy has been recast from a diagnostic tool limited to pleural diseases to a full-operative surgical procedure capable of eradicating extensive pulmonary masses (1). The effective gain of VATS over open thoracotomy in terms of costs and long-term outcomes has not been properly quantified, but hospital stay is definitely shorter, and there are hints of a mortality benefit (2). As a result of the reduced invasivity, VATS is also less painful, at least in the perioperative phase but possibly even in the long term (3). Incidentally, a small study has recently postulated against this view and claimed VATS to trigger just as much pain as open thoracotomy, but was flawed by multiple biases, the major being the use of different perioperative analgesia protocols (only intravenous drugs for the first while epidural for the second, respectively) (4).

While many surgeons have worked hard to keep at pace, anesthesiologists seem less aware of this development. Not all: some have taken an active role into making the surgical advances possible, working in parallel to maximize the benefits of the thoracoscopic approach (5); brand new, valuable blocks have been devised and tested. Yet some of the old, no longer justifiable practices hold strong. Despite the availability of safer, easy-to-perform regional blocks, epidural

is still often referenced as the gold standard for thoracic analgesia. There are studies supporting its superiority even after VATS, when in fact it is too often compared only against an exclusively intravenous regimen. Ironically, in terms of pain, it is the VATS that gets questioned when an epidural is present, instead of the other way around (6).

Given the major impact of pain in both patient satisfaction and recovery after thoracic surgery, the adoption of regional anesthesia is indeed highly recommended, but nowadays there are solid alternatives to the epidural. Peripheral blocks are preferable for their unilateral nature, no risk of epidural hematoma, and a less extensive sympathetic block, hence a reduced rate of complications. Beside the neuraxial techniques, analgesia for thoracic surgery can in fact be obtained by infiltration of local anesthetics in (I) a paraspinal location, in order to soak the nerves after their emergence, or (II) a fascial plane, to imbibe both the porous muscular tissue and the adjacent nerves. Paravertebral and intercostal blocks are well-established examples of the first kind that have shown discrete results (7), such that some authors consider the paravertebral a gold standard after VATS (8), but other blocks have recently been devised. The retrolaminar was introduced in 2011 as a safer variant of the paravertebral, but failed to prove as effective (9) nor has been adequately tested after lung surgery. In 2013, the serratus anterior plane block was described as a fascial block of remarkable efficacy; unfortunately, it does not consistently cover the posterior chest wall (10) and it is therefore more suitable as an adjuvant

or a rescue strategy. Finally in 2016 the erector spinae plane block (ESPB) was presented (11), and has since been gaining acclaim: according to the current understanding it acts as both a fascial and a paraspinal block, and has coherently displayed notable results. Only case reports and series are available at the moment, but as we write, multiple trials are underway to further investigate it (12). The initial reports are impressive and the expectations are high: we have been using it for a while and so far the results are promising.

By using ultrasound guidance, peripheral blocks can be performed before incision. With VATS, moreover, their goal is not limited to postoperative analgesia, and they often assume a prime role for the intraoperative management as well. This preemptive sensory block could have a very positive impact on the insurgence of post-surgical chronic pain syndromes. In addition, thanks to the reduced surgical invasivity and the improved knowledge of the physiology of ventilation, non-intubated lung surgery is nowadays a reality (13) [truth be told, there are precedents: in the 1930s spinal thoracic anesthesia was used in awake patients (14), though in a setting where safety standards were hardly what they are today, and reports of such practices are now read more for historical curiosity than for scientific comparison].

Undeniably, the performance of peripheral blocks requires training and experience. However, the side effects of a thoracic epidural cannot be underestimated either. It may be justified in the emergency setting, but no longer for elective procedures in an experienced center. Both the clinical and the academic world should take note of this paradigm change, and develop more coherent studies and internal protocols. We believe a true evolution has occurred, and it is hardly finished. The days of the epidural as the optimal analgesia for thoracic surgery, instead, are likely so.

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Footnote

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