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Continuous Paravertebral Blocks for Analgesia Following Mastectomy

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the probe than the other way round. Jiggling the needle and relying on tissue movements are never good enough for identifying needle tip. Supervisors should always instruct the trainees to stop advancing the needle when the tip is not visualized, ensuring that the previously mentioned practice is carried out appropriately to improve safety.

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The author declares no conflict of interest.

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Continuous Paravertebral Blocks for Analgesia Following Mastectomy
The Jury Is Still Out

Accepted for publication: April 22, 2014.

To the Editor:

We read with interest the thoughtful editorial "Primum Non Nocere" authored by Drs Buckenmaier and Bleckner addressing our study of the use of continuous paravertebral nerve blocks (cPVBs) following mastectomy.[1] We thank them for their balanced assessment and would like to comment on 2 topics that were raised in the editorial.

First, our study found a statistically significant difference between a cPNB with ropivacaine versus saline not only in pain scores the day following surgery but also a decreased pain-related functional deficit during the infusion.[2] In contrast, a very similar study published previously by Buckenmaier and colleagues did not detect any benefits to providing a cPNB following breast surgery.[3] Within their editorial, the authors suggest this difference in findings was due to "…the aggressive multimodal pain management protocol that was standard at our institution during the study period likely rendered any analgesic contribution of the cPNB moot in breast surgery patients." However, the only difference in "multimodal" analgesics was that in the negative study, subjects received the oral nonsteroidal anti-inflammatory medication naproxen (they also received oral opioid and acetaminophen, when breakthrough pain warranted it, but subjects of the positive study also received scheduled acetaminophen plus oral opioid, when warranted). While the inclusion of scheduled naproxen could have been the critical difference between the 2 studies, we believe it is certainly at least as probable that procedure-specific factors account for the previous study's negative findings: 67% of subjects underwent breast conservation surgery—removal of the cancerous tissue and a small portion of surrounding breast tissue—whereas only 33% underwent mastectomy. In contrast, our study with positive findings included only subjects having mastectomy. Considering mastectomy—on average—results in a greater degree of pain than breast conservation surgery,[4] it is very possible that including 33%—versus 100%—of patients having the more painful procedure (mastectomy) accounts for the difference in findings between the 2 clinical trials.

Second, Drs Buckenmaier and Bleckner question the risk-benefit ratio of providing cPNB to patients having mastectomy, noting—certainly accurately—that both the risks and benefits of this intervention have yet to be fully elucidated. Relatedly, they query, "…will the addition of long-term analgesia as provided by these catheters decrease the incidence of chronic postmastectomy pain or cancer recurrence?"[3] In other words, it is possible that long-term benefits might help outweigh any increased short-term risks. Since publication of our initial investigation, we completed a prospective study following the same subjects out to 1 year. The results were positive, with the functional deficits due to chronic pain experienced by those subjects originally receiving a placebo (saline) cPNB higher than those for subjects who had received active treatment a full 12 months earlier ($P = 0.007$).[5]

We completely agree with our colleagues' assessment that our single trial including 60 subjects—even if randomized, double-masked, and placebo-controlled—certainly does not mandate a change in standard of care. However, given what we believe is a probable explanation for the Buckenmaier and colleagues' study's negative results (67% of subjects underwent a procedure less painful than mastectomy), along with our recent finding that a short-term intervention (60 hours of cPVB) may result in decreased persistent/chronic postmastectomy pain after one year, we believe that the risk-benefit ratio of cPVB for mastectomy deserves to be reassessed and that further well-controlled trials are required to provide robust data on which practitioners may base their treatment.

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Raising a Red Flag Over TAP Blocks

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To the Editor:

I read with interest the case reports by Weiss and colleagues[1] documenting seizures as a complication of the transversus abdominis plane (TAP) block. Ultrasound-guided TAP block has become popular after cesarean delivery (CD) because it produces excellent anterior wall analgesia via blockade of the lower thoracic intercostal nerves. In general, higher local anesthetic (LA) volumes are used because success depends on LA dispersal along the intermuscular septum. However, a recent study[2] corroborated that after CD, TAP block confers minimal analgesic benefit over intraoperative spinal morphine.

Currently, there is no consensus on either appropriate volumes or safe maximum LA doses for TAP blocks. In a review of LA toxicity, Rosenberg et al[3] opined that, in certain conditions, such as late pregnancy or uremia, maximal dosages should

be reduced because of increased LA uptake. Griffiths et al[4] performed bilateral TAP blocks under general anesthesia using 40 mL ropivacaine (total dose, 0.3 μg/kg) and demonstrated that plasma levels peak approximately 30 minutes. Although these levels exceeded the toxic threshold for ropivacaine (2.2 μg/mL), clinical signs of neurotoxicity were not seen because patients remained anesthetized. However, when the block is performed at the end of surgery, toxicity may easily manifest because suprathreshold levels are reached only when consciousness has returned.

An analogy can be drawn between TAP block and tumescent liposuction with regard to high-dose LA and toxicity. Popularized in the early 1990s, the tumescent technique entails the subcutaneous infusion of supramaximal doses of lidocaine with epinephrine (up to 55 mg/kg). At that time, the incidence of tumescence-induced LA toxicity was unknown because reporting of adverse events was not mandatory. Rao et al[5] reviewed the records of New York's chief medical officer from 1993 through 1998 and identified 5 tumescent liposuction deaths all preceded by severe paroxysmal hypotension and bradycardia. Although 2 cases revealed lidocaine toxicity, the real incidence is unknown because assays were not uniformly performed. Since then, it has been shown that lidocaine levels rise for 16 hours after tumescent liposuction. In contrast, Kato et al[6] found with TAP blocks that lidocaine concentrations peak approximately 30 minutes, with the highest plateaus associated with LA absorption from the muscle compartment.

Importantly, the report by Weiss et al[1] highlights the potential for TAP block–related LA toxicity. In the setting of TAP block after regional anesthesia for CD, increased vigilance and preemptive safety measures are warranted. These should include limitation of total LA dose, confirmation of intrafascial injection, and 1-hour postblock observation.

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The author declares no conflict of interest.

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