

The authors reported no conflicts of interest.

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## THE POWER OF THE LIPOSOME

### To the Editor:

We read with interest the manuscript by Weksler and associates<sup>1</sup> regarding their randomized trial of bupivacaine with epinephrine versus liposomal bupivacaine (LB) for the management of patients undergoing minimally invasive lung resections. The authors should be commended on their work to study this important topic, as reducing opioid administration in the perioperative setting can reduce both short-term complications such as ileus and delirium as well as long-term outcomes such as opioid dependence.

The authors noted that their pain management protocol was to prescribe patient-controlled analgesia to all patients until chest tube removal, at which time they were transitioned to oral oxycodone with acetaminophen. Only 1 patient in each arm received ketorolac for breakthrough pain. No other adjuncts were used. Over the past few years, we have learned that Enhanced Recovery After Surgery (ERAS) programs using multimodality analgesia are highly effective in reducing length of stay and pulmonary complications<sup>2</sup> as well as minimizing the use of opioids both in the hospital and upon discharge.<sup>3,4</sup> It is in this context that we question whether the lack of an ERAS program may have contributed to the relatively high morphine equivalent dosage (mean  $47 \pm 5.4$  mg) and whether that may have contributed to the negative results in this study. For comparison, Martin and colleagues<sup>3</sup> demonstrated a median morphine equivalent dosage of 22 mg for patients

undergoing minimally invasive resections after implementation of an ERAS program.

In addition, the authors used a small volume of anesthetic in each interspace (1 mL). In our experience,<sup>5</sup> diluting the anesthetic with either saline, or, in the case of LB, with bupivacaine with epinephrine, provides a larger volume of fluid, which increases the chances of the medication interacting with the intercostal nerve, thus enhancing the effectiveness of the block. The authors describe an 8- or 9-level block, thus using 8 to 9 mL of local anesthetic total for their block. That equates to 106 to 120 mg of LB. Our practice is to use 266 mg of LB for our intercostal block.<sup>2</sup> This difference in dosing may have blunted the overall effect of the block, thus contributing to the negative results of the study. To this end, it would have been interesting to compare the 2 groups in this study with a placebo group to assess the efficacy of the intercostal nerve block. Moreover, the routine use of intravenous Dilaudid and oxycodone, along with this lower dosing of LB, may very well have masked any discernible differences between the 2 types of blocks examined.

This study should serve as a data point in the ongoing search to optimize perioperative analgesia in patients undergoing minimally invasive thoracic surgery, but it should not be the end of the road. With adequately powered randomized trials in conjunction with ERAS protocols, we may be able to identify the optimal setting in which to use LB to provide the safest, most cost-effective care to our patients.

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