

Liposomal Bupivacaine in Transversus Abdominis Plane Block for ALIF Surgery: Insights from a Single-Surgeon Retrospective Study.

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Introduction

Perioperative pain management is a critical component in the recovery of patients undergoing Anterior Lumbar Interbody Fusion (ALIF). Patients undergoing spine surgery often exhibit tolerance to opioids. Regional anesthesia approaches have been extended to spinal surgery but there are few investigations evaluating Transversus Abdominis Plane (TAP) block and no publications evaluating liposomal bupivacaine (LB). We aim to investigate the impact of TAP block containing LB on recovery dynamics for ALIF surgery.

Methods

This was a single surgeon retrospective study conducted on 193 consecutive patients undergoing elective ALIF with posterior percutaneous instrumentation between 2017 and 2023. Patients received a TAP block (n=86) or no block (n=102). Tap block included 10-20ml of 0.25% bupivacaine and 133mg LB. Exclusion criteria included patients receiving a quadratus lumborum block, additional simultaneous procedures, and patients undergoing a stand-alone ALIF without posterior instrumentation

Results

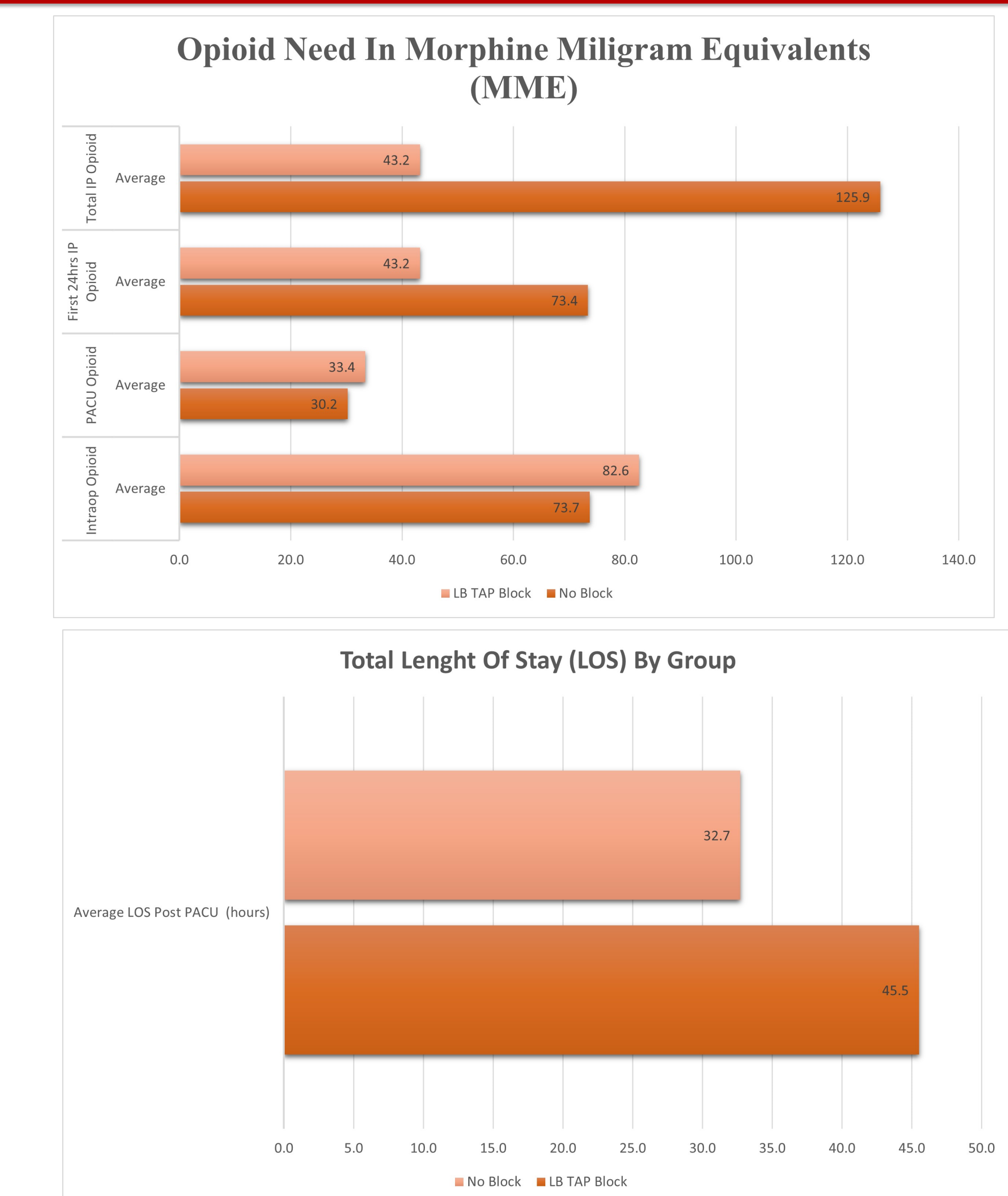
Patients who received a Liposomal Bupivacaine TAP block before ALIF surgery required fewer opioids and were discharged from the hospital sooner.

- 28.1% ($p < 0.001$) decreased average length of stay from PACU to discharge.
- 41.1% ($p < 0.001$) decreased inpatient opioid administration for the first 24 hours.
- 65.7% ($p < 0.001$) decreased total hospital opioid administration following PACU.

Other significant findings:

- 93% of non-block patients received posterior percutaneous infiltration with bupivacaine HCL, whereas only 50% of those in the LB TAP block group received it.
- Postoperative acetaminophen administration was decreased by 21.7% ($p < 0.001$).
- TAP block patients were twice as likely to need intraoperative ketamine compared to those with no block (OR 2.1, $p = 0.015$), and a small but significant increase in intraoperative opioids of 12.1% was observed ($p = 0.04$).
- There was no significant difference in surgical time, PACU time, ketorolac use, or 6-week opioid use status at the postoperative visit.

Results



Discussion

Incorporating LB TAP block in the multimodal pain management for ALIF resulted in notable improvements, including substantial reductions in hospitalization time and opioid requirements. The increased use of ketamine and opioids during surgery may indicate an unintentional effect from the reduced rate of posterior percutaneous infiltration with bupivacaine HCL in the LB TAP group during surgery.

Future prospective studies should explore LB in TAP blocks as part of a multimodal analgesic regimen in ALIF surgery patients, along with clarifying the optimal fascial plane block approach to enhance analgesic management.