Ultrasound-guided bilateral erector spinae plane block versus intrathecal morphine for analgesia in living donors for liver transplantation: A randomized noninferiority trial

RyungA Kang,¹ Duck Hwan Choi,¹ Justin Sangwook Ko,¹ Han Bum Jo,² Jin Soo Kim²

From the department of Anesthesiology and Pain Medicine, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea

Department of Anesthesiology and Pain Medicine, Ajou

Background

- Preoperative ITM administration is an effective analgesic method in living donor hepatectomy.
- But, is associated with adverse effects, including postoperative nausea, vomiting, and pruritus.
- The ESP block has been shown to provide effective postoperative analgesia after various laparoscopic abdominal surgeries.
- We hypothesized that it would provide noninferior postoperative analgesia compared to ITM and reduce postoperative nausea/vomiting and pruritus.

Materials & Methods

- A non-inferiority trial
- Fifty-four patients scheduled for pure laparoscopic right donor hepatectomy were randomly assigned to one of two groups: an ESP group ($n=27$) and an ITM group ($n=27$).
 - ESP group received preoperative bilateral single-injection ESP blocks at the level of the T8 transverse process with an injection of 20 mL 0.5% ropivacaine with 5mcg/mL epinephrine on each side).
 - ITM group received a preoperative intrathecal injection of 400 μ g morphine sulfate .

- The primary outcome was the pain score at rest 24 hours after surgery as assessed by an 11-point numeric rating scale.
- The predetermined noninferiority limit was 1.
- Incidences of postoperative nausea/vomiting and pruritus were assessed.

Results

- The mean resting pain score 24 hours after surgery was 2.5 ± 1.0 in the ESP group and 1.3 ± 1.1 in the ITM group ($p < 0.001$).
- The mean treatment difference (ESP–ITM) in the 24-hour pain score was 1.2 (95% confidence interval [CI]: 0.7 to 1.8), and the upper limit of the 95% CI (1.8) was higher than the prespecified noninferiority margin ($\delta=1$), indicating that ESP was inferior to ITM.

- Pain scores between the groups were similar 48 and 72 hours after the operation.
- There was no significant difference in cumulative opioid consumption at 24, 48, and 72 hours, or patient satisfaction with analgesia.
- The ESP group had a significantly lower incidence of postoperative vomiting [2 (7%) vs. 13 (48%) patients, $p=0.002$] and pruritus [2 (7%) vs. 25 (93%) patients, $p < 0.001$].

Conclusions

- Bilateral single-injection ESP block resulted in higher resting pain scores 24 hours after surgery compared to ITM and thus did not meet the conditions of non-inferiority.
- However, the pain intensity with ESP block was mild (mean $< 3/10$) and associated with reduced incidence of postoperative vomiting and pruritus.
- It may therefore still be considered a viable option for postoperative analgesia after laparoscopic living donor hepatectomy.

38th Annual
ESRA
Congress

BILBAO, SPAIN
11-14 SEPTEMBER
2019