

Erector Spinae Plane Catheters for Analgesia Post Orthotopic Liver Transplantation



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INTRODUCTION

Erector spinae plane (ESP) blocks are an emerging technique utilizing injection of local anaesthetic deep to erector spinae muscles under ultrasound guidance. Successful use in bariatric abdominal surgery¹ and ventral hernia repair² have been described. They show potential as part of an enhanced recovery protocol in major hepatobiliary surgery.

CASE REPORT

We describe the case of a 58 year-old woman who underwent orthotopic liver transplantation (OLT) for autoimmune hepatitis and recurrent biliary sepsis. Past medical history included well-controlled hypertension and L5 discectomy. Medications included prednisolone 5mg and azathioprine 50mg daily, and no drug allergies. Preoperative coagulation screen showed PT 13.1, APTT 26.9secs, INR 1.13 and platelets $193 \times 10^9/L$.

After routine induction of anaesthesia, liver transplantation proceeded uneventfully with procedure time 6 hours, blood loss 1000ml, and analgesia with intravenous fentanyl infusion 150-250micrograms/hour. Postoperatively, thromboelastography (TEG) was normal; coagulation screen showed PT 17.1secs, APTT 33.8secs, INR 1.48, and platelets $131 \times 10^9/L$.

Given the patient's excellent preoperative function, low MELD score, uncomplicated surgical course and coagulation status, bilateral ultrasound-guided ESP blocks were performed in the left lateral position at the level of the T7 transverse process. Boluses of 10ml bupivacaine 0.25% were given bilaterally through 18G Tuohy needle prior to ESP catheter insertion. Infusion of bupivacaine 0.15% was then commenced at 10ml/hr via Y-connectors to catheters. Extubation occurred in ICU on Postoperative Day (POD) 0, with pain scores in ICU from 4 to 6 over POD 0 to POD 2. Intravenous morphine boluses from POD 0 to POD 2 totalled 36mg, and nausea was treated with intravenous ondansetron 4mg and cyclizine 50mg. Repeat bilateral catheter boluses (bupivacaine 0.25% 8ml) on POD2 demonstrated T2-T12 sensory block, and oral analgesia was commenced POD 3 (oxycodone SR 5mg 12hourly, total oxycodone IR 25mg over POD3-8). Gut function returned on POD 4. ESP catheters were removed POD 5, and the patient discharged home safely POD 12.

DISCUSSION

ESP blocks were initially described by Forero³ for analgesia in thoracic neuropathic pain. The technique is emerging as beneficial for analgesia in bariatric surgery, ventral hernia repair surgery and thoracic surgery, among others. There is currently no literature regarding utilisation of ESP blocks and catheters in liver transplantation.

The mechanism of action proposed by Forero³ is craniocaudal spread of local anaesthetic deep to erector spinae muscles along the length of the thoracolumbar spine, allowing access of local anaesthetic to spinal nerve roots and indirect access to the paravertebral space. This was demonstrated by Chin¹ et al to provide both somatic and visceral analgesia of the abdominal region if injected at the level of the T7 transverse process.

ULTRASOUND IMAGES

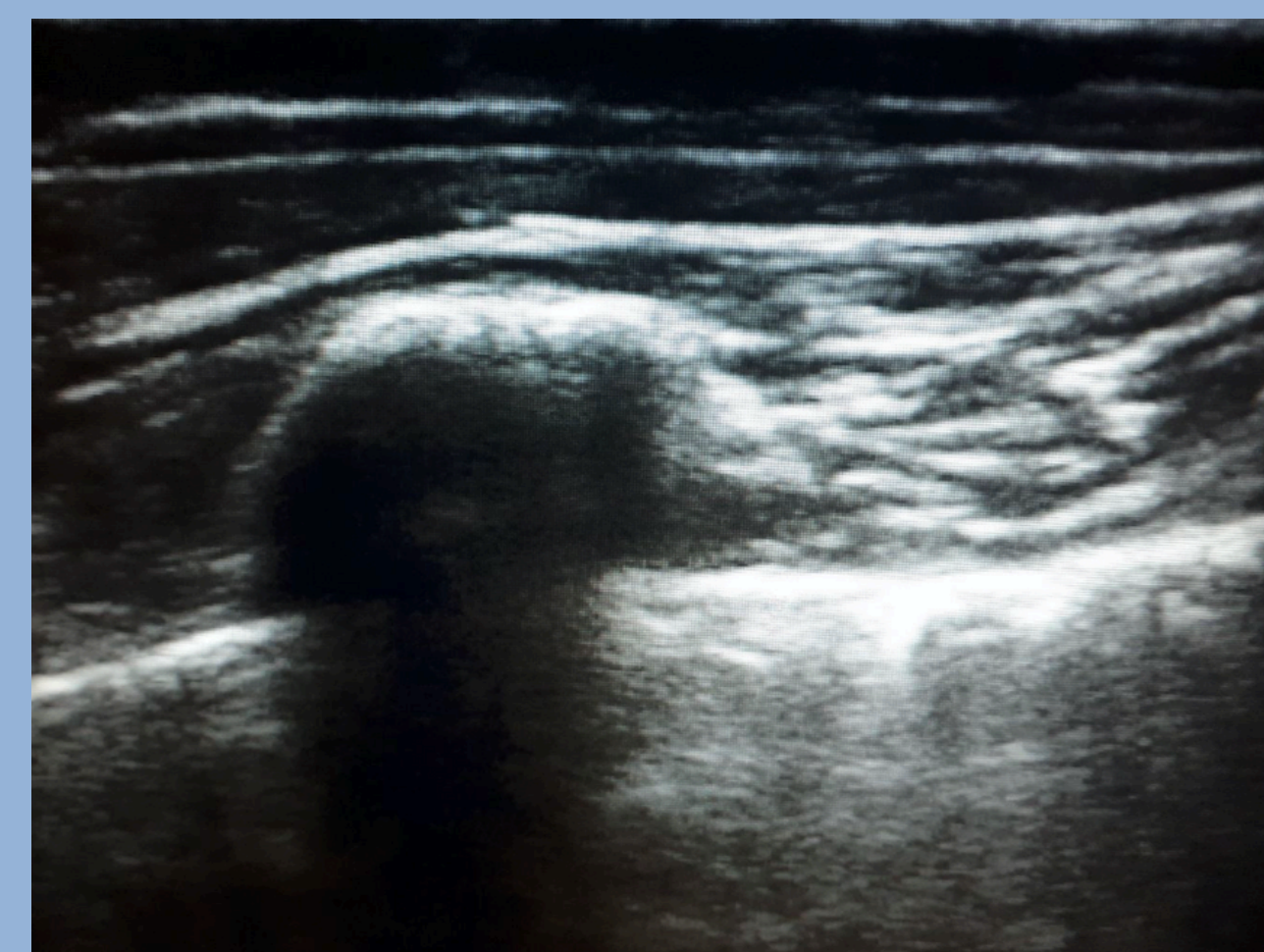


Image 1: Ultrasound imaging at T7 level demonstrating anatomy of rib as imaged in sagittal plane

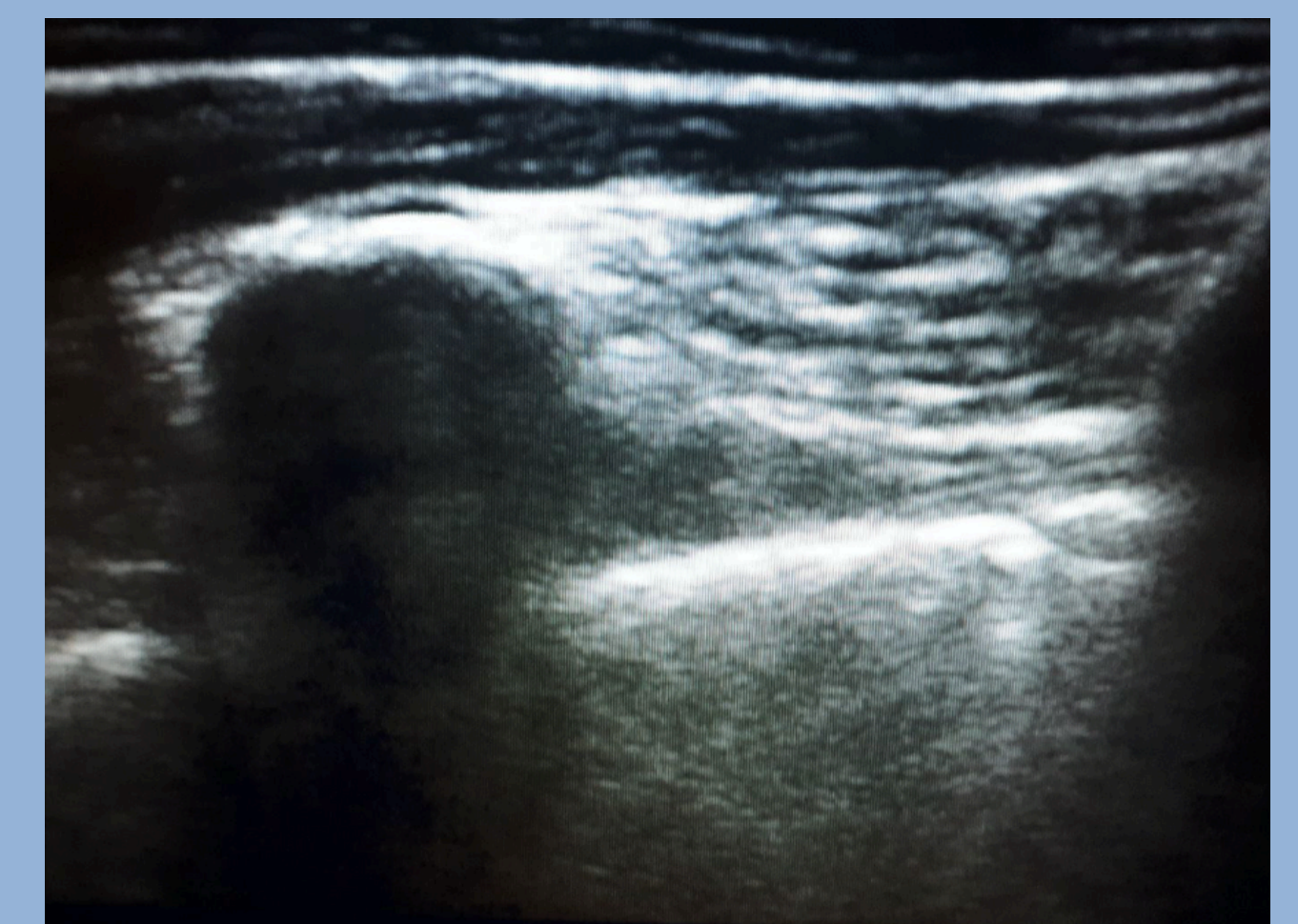


Image 2: Ultrasound imaging at T7 level demonstrating rib articulation with transverse process

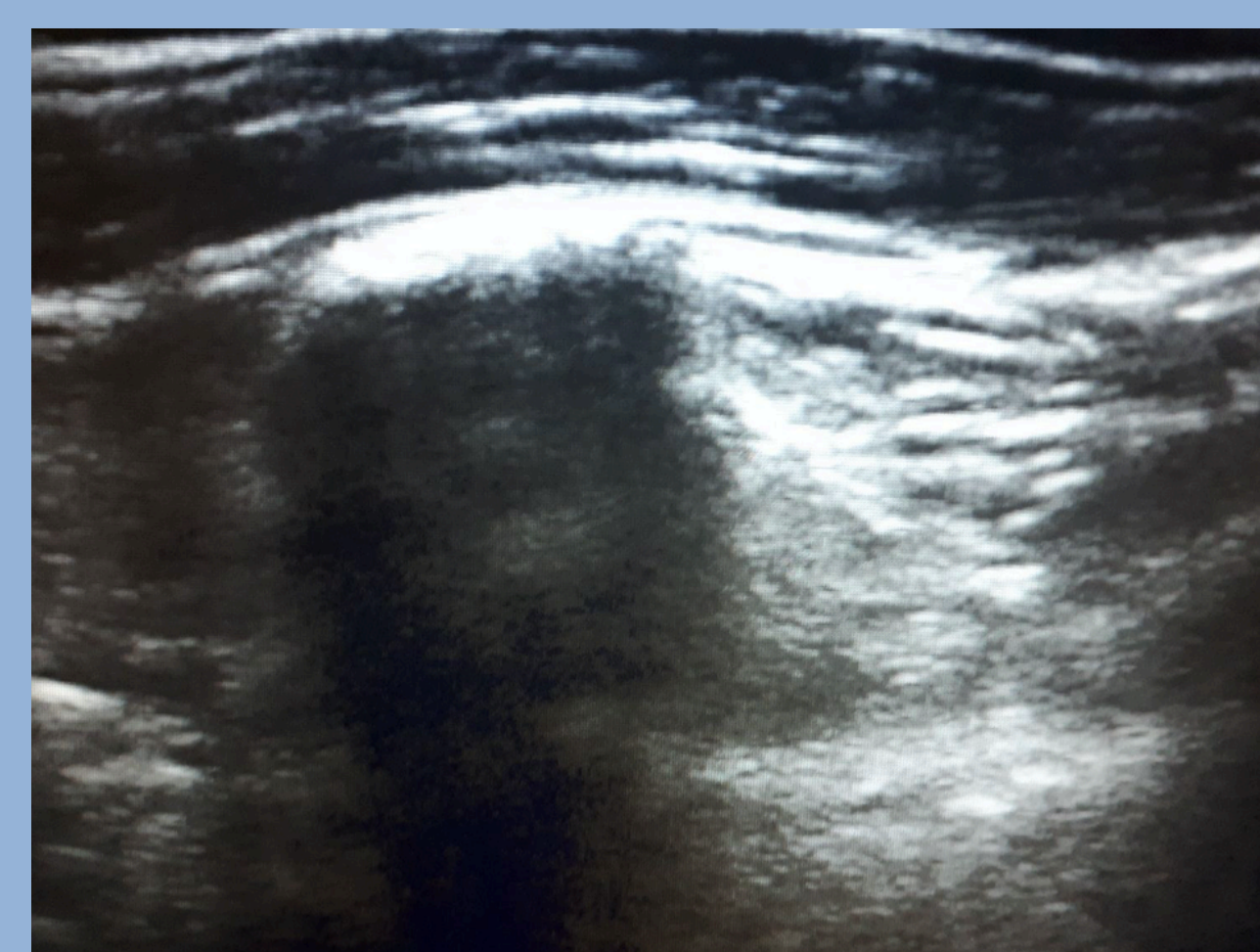


Image 3: Ultrasound imaging at T7 level demonstrating anatomy scanning medially showing transverse process

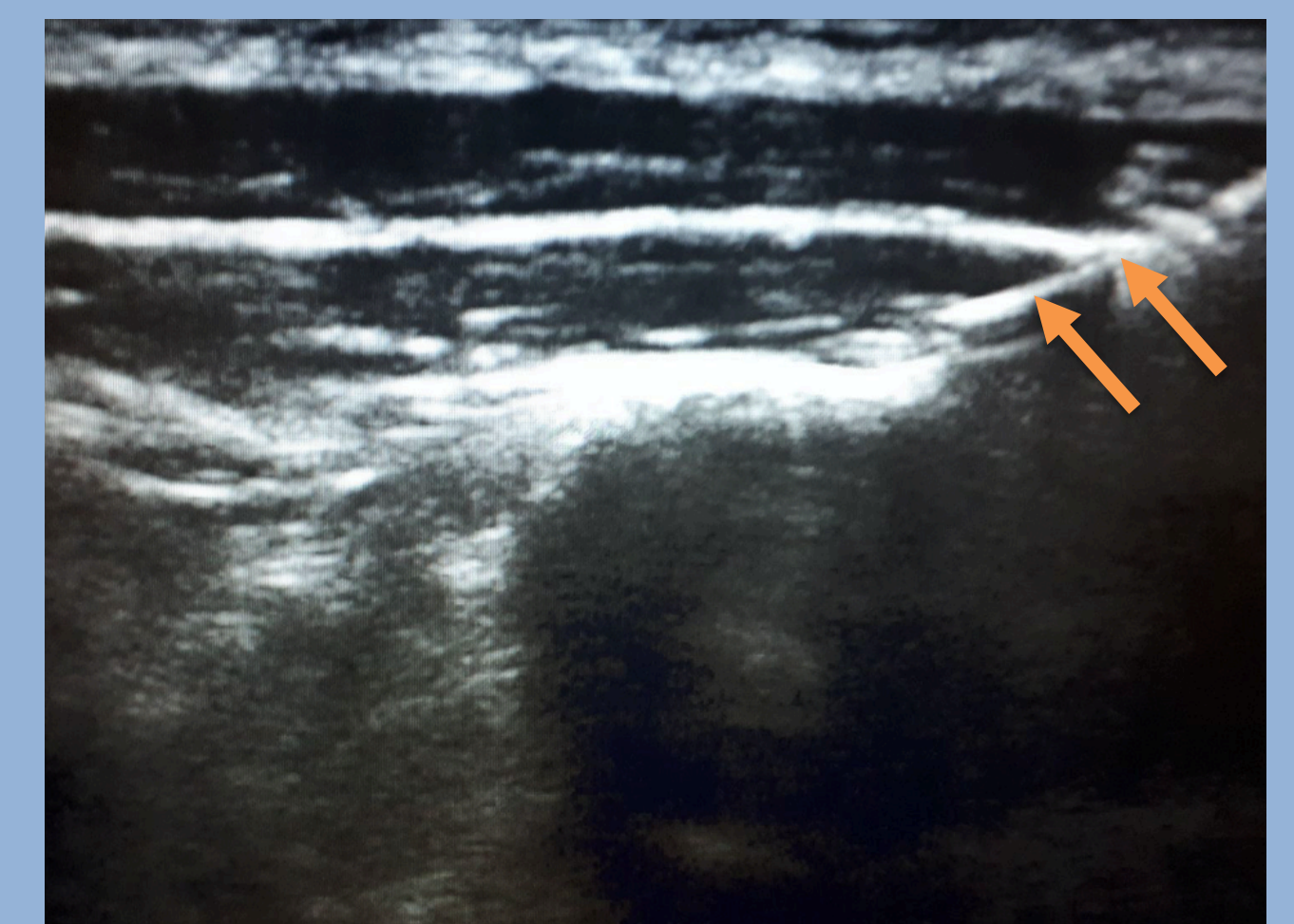


Image 4: Ultrasound imaging at T7 level demonstrating needle (orange arrows) in plane beneath ESM

CONCLUSION

ESP catheters may be a potentially useful analgesic technique employed as part of an enhanced recovery protocol for uncomplicated orthotopic liver transplantation patients. While experience at our institution has been positive, further studies are required to assess overall safety and utility.

REFERENCES

¹Chin KJ, Malhas L, Perlas A. Reg Anesth Pain Med. 2017; 42:372–376.

²Chin KJ, Adhikary SD, Sarwani N, Forero M. Anaesthesia 2017; 72: 452–60.

³Forero M, Adhikary SD, Lopez H, Tsui C, Chin KJ Reg Anesth Pain Med 2016; 41: 621–7.