



Figure 1: Neuraxial placement prior to awake laminectomy



Fig 2: Staged photograph showing transducer and needle orientation during ESP block.

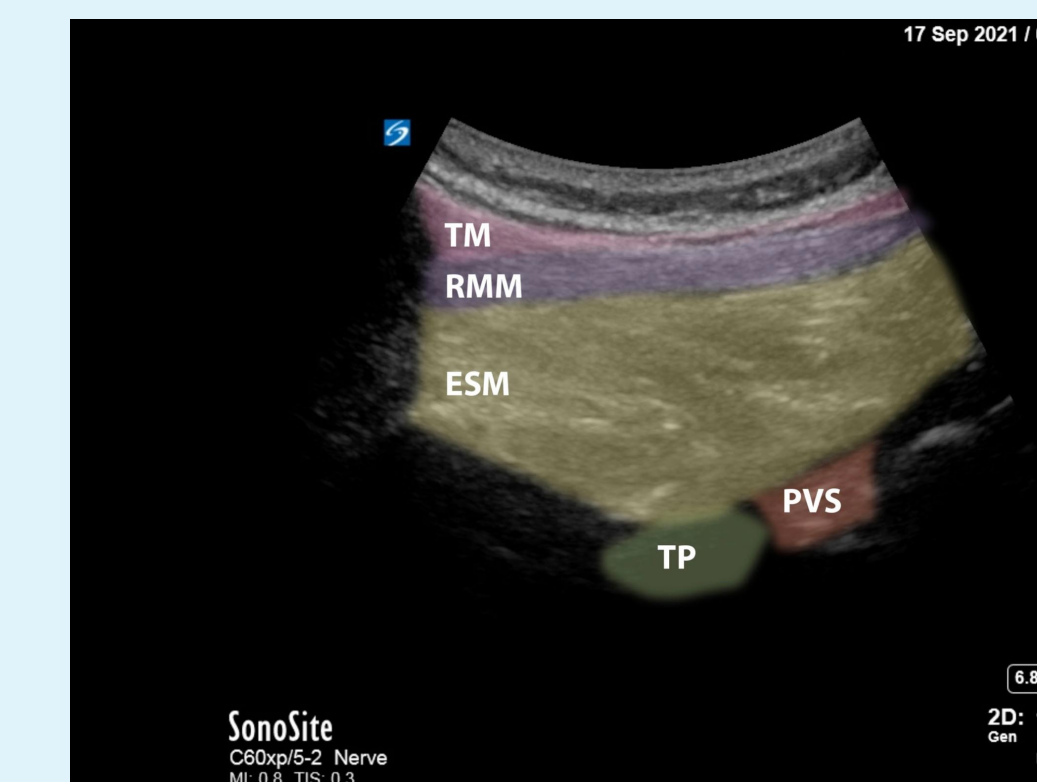
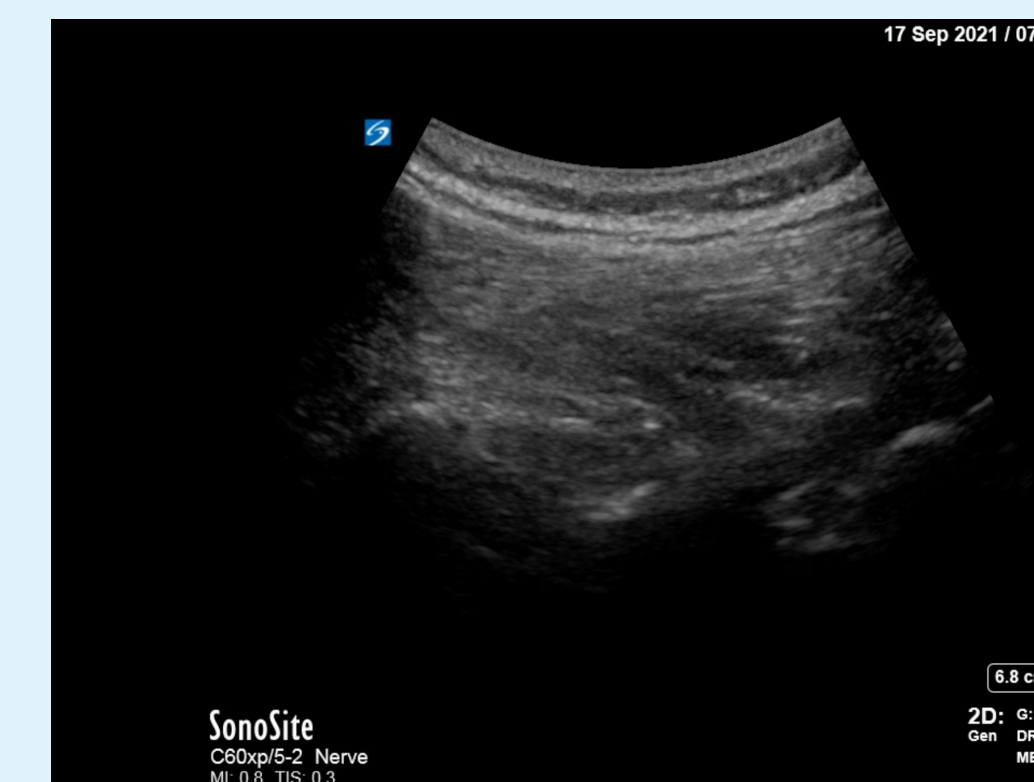


Figure 3: Ultrasound image of erector spinae plane (ESP) block prior to local anesthetic infiltration: Fig 3a illustrates unedited image, Fig 3b shows false-color overlay

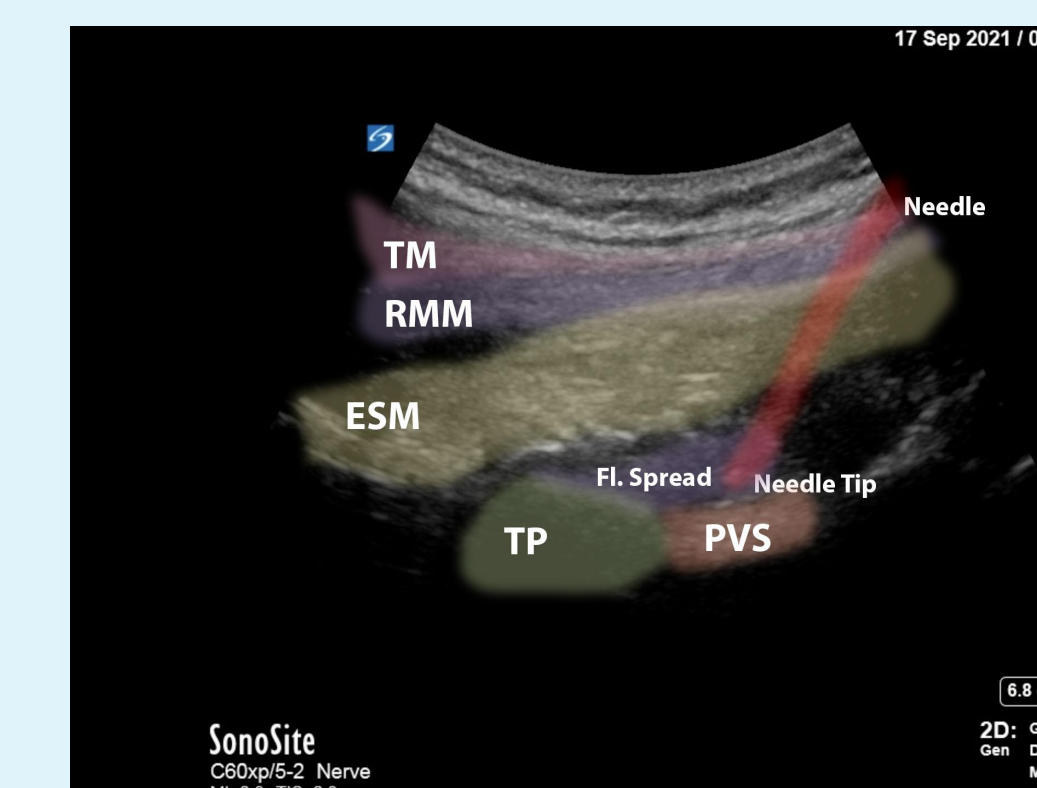
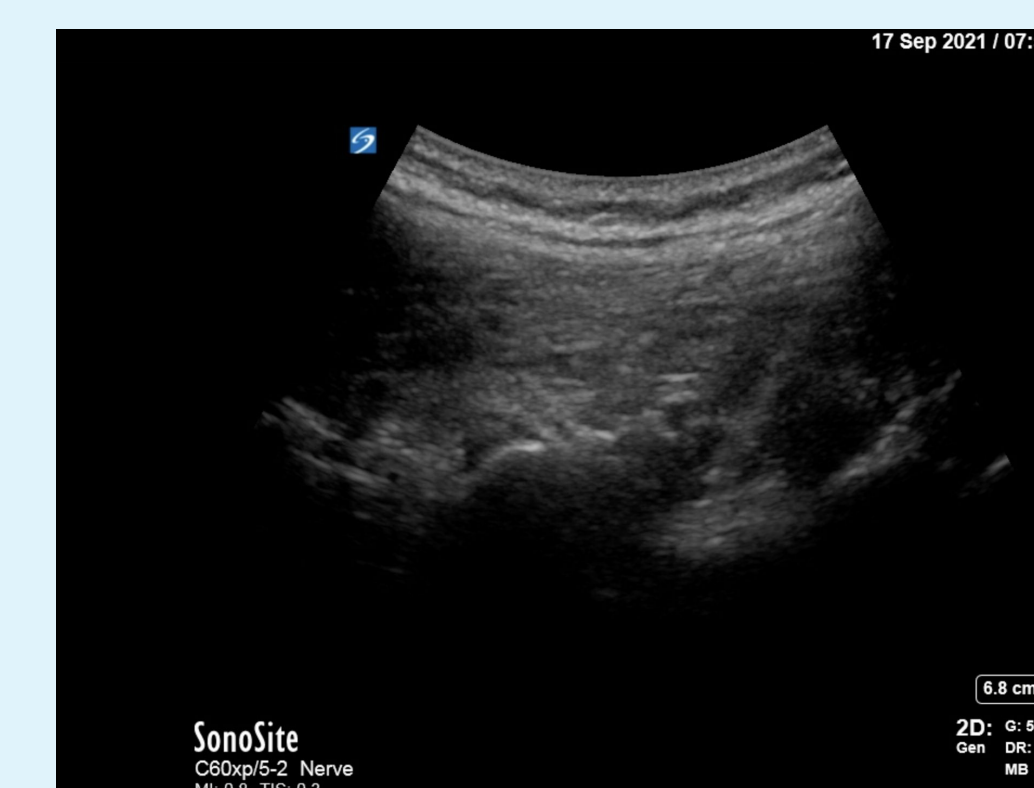


Figure 4: Ultrasound image of erector spinae plane (ESP) block after local anesthetic infiltration: Fig 4a illustrates unedited ultrasound image, Fig 4b shows false-color overlay  
Abbreviations: TM = Trapezius; RMM = Rhomboid; ESM = Erector Spinae Muscle; TP = Thoracic Process; PVS = Paravertebral Space; Fl. Spread = Fluid Spread

# Multimodal opioid-sparing analgesia for laminectomy using spinal anesthesia and ESP blocks: A Case Report

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## Introduction

Lumbar spinal stenosis is one of the most common orthopedic disorders in elderly populations, and can be found in 20% of subjects aged older than 60 and up to 80% of subjects older than 70. This disorder can have profound ramifications, including spinal claudication, back and leg pain, and disability. Although corrective spinal decompression is typically done under general anesthesia using opioid analgesics for pain-control, there is an increasing interest in the use of opioid-sparing combined regional / neuraxial techniques to reduce the likelihood of (1) postoperative cognitive dysfunction and (2) opioid-related adverse effects.

In this case report, we briefly describe a successful, novel approach of using a combination of spinal anesthetic, erector spinae blocks and multimodal analgesia for a patient undergoing a L4/L5 laminectomy with successful pain control and high patient satisfaction. An informed consent was provided by the patient for this case report.

## Case Description

An 84-year-old woman with well controlled CAD, mild dementia, history of PONV and postoperative cognitive dysfunction presented for an L4-L5 MIS laminectomy. She flatly refused general anesthesia. Spinal anesthesia with ESP block were agreed upon during preoperative conference. Once in the OR, the patient was seated and bony landmarks were palpated. 1mg IV midazolam was administered for sedation. After sterile prep/drape, 25-gauge Pencan spinal needle was easily inserted at L4-5 level on the first pass and 12mg isobaric bupivacaine admixed with fentanyl 10 mcg were injected intrathecally. The patient was immediately placed in the supine position. Prior to full effect of the spinal block, she positioned herself prone on a Wilson frame, with special care to avoid brachial plexus injury.

## Case Description (continued)

After positioning of the patient, light sedation was initiated by an intravenous infusion of dexmedetomidine 0.4 mcg/kg/hr and propofol 50 mcg/kg/min. 25mg of IV ketamine were given as well. After optimal sedation levels were achieved, bilateral erector spinae plane (ESP) blocks were performed. After skin disinfection, sterile draping was placed over the patient's back and the ultrasound probe was sheathed. The block was performed at the transverse process of L4 using a SonoSite X-Porte C60XP (5-2MHz) curvilinear ultrasound probe, which was placed in a parasagittal plane 2 cm from midline. The deep plane to the erector spinae muscle (ESM) was identified, and a 22 G, 3-1/8 in non-insulated needle (Ultraplex 360<sup>®</sup>, B.Braun, USA) was inserted craniocaudally in plane between the transverse process and the fascia of the ESM. After negative aspiration, 30ml of 0.25% bupivacaine mixed with 5mg PF dexamethasone was injected on each side. The correct position was confirmed by visualizing the solution lifting the ESM off the transverse process. Spread of local anesthetic between the L4 and L5 transverse processes was thereafter visually tracked with the transducer. Surgical incision was performed after 20 min and the surgery lasted 1.3 h, during which the hemodynamic state of the patient remained stable, with excellent pain control under light sedation.

After successful completion of laminectomy, intravenous acetaminophen 1000mg and ketorolac 15mg were given at the end of the procedure. Shortly thereafter, the patient was transferred to the post-anesthesia care unit with no report of pain. The patient's pain scores & opioid consumption can be seen below:

Postop Day	Pain Score	Opioid Consumption	PO Morphine MEQ	Cumulative MEQ
0	0	None	0	0
1	0	Tramadol 50mg PO	5	5

The patient was discharged home on postoperative day 2 and was very satisfied with her perioperative/postoperative care.

## Discussion

In this case report, we report the successful use of spinal anesthesia with erector spinae blocks to provide an opioid-sparing anesthetic for a patient undergoing a minimally invasive laminectomy. Although general anesthesia is much more commonly used for spine surgery, there is evidence that there is reduced operating time, reduced re-emergence time, and improved patient satisfaction with spinal anesthesia. The use of ESP blocks in addition to spinal anesthesia provides long-lasting postoperative analgesia by blocking branches of the thoracic and abdominal spinal nerves. Other important elements of the anesthetic regimen included preemptive administration of ketamine, which has been shown to have both anti-hyperalgesic and anti-allodynic properties due to its ability to block the NMDA receptor. Although this approach has been successful in managing a minimally invasive laminectomy, it is unclear if it would be as effective for other surgical decompression techniques. The potential that this approach may hold for significantly improving postoperative pain control in this patient population warrants further investigation.

## Acknowledgements & References

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