



Fig 4a/b: Ultrasound image showing anatomy prior to the superficial cervical block/Image with false color overlay. Fig 4c: Ultrasound image showing the needle position and local anesthesia deposit spread with false color overlay. (Abbreviations: SCM = Sternocleidomastoid, MSM = Middle Scalene Muscle, ASM = Anterior Scalene Muscle, CA = Carotid)

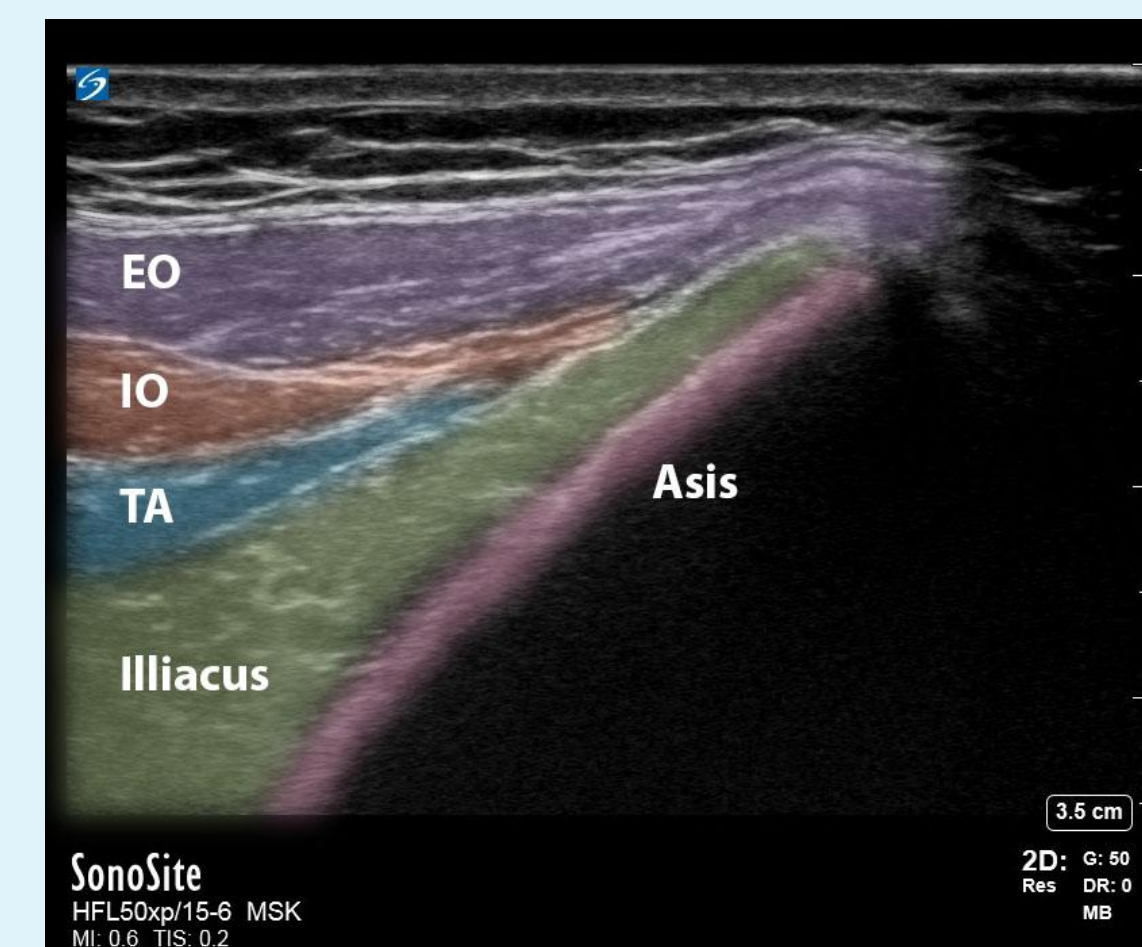
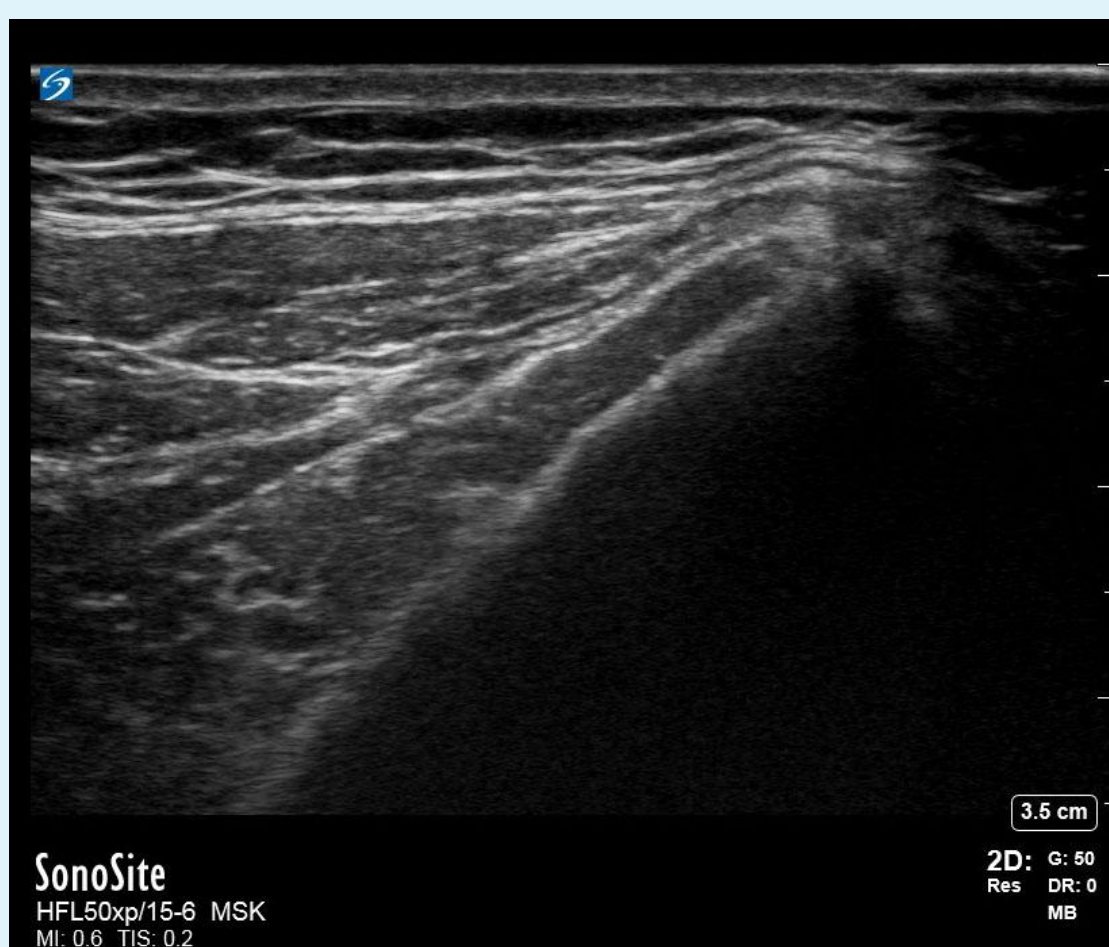
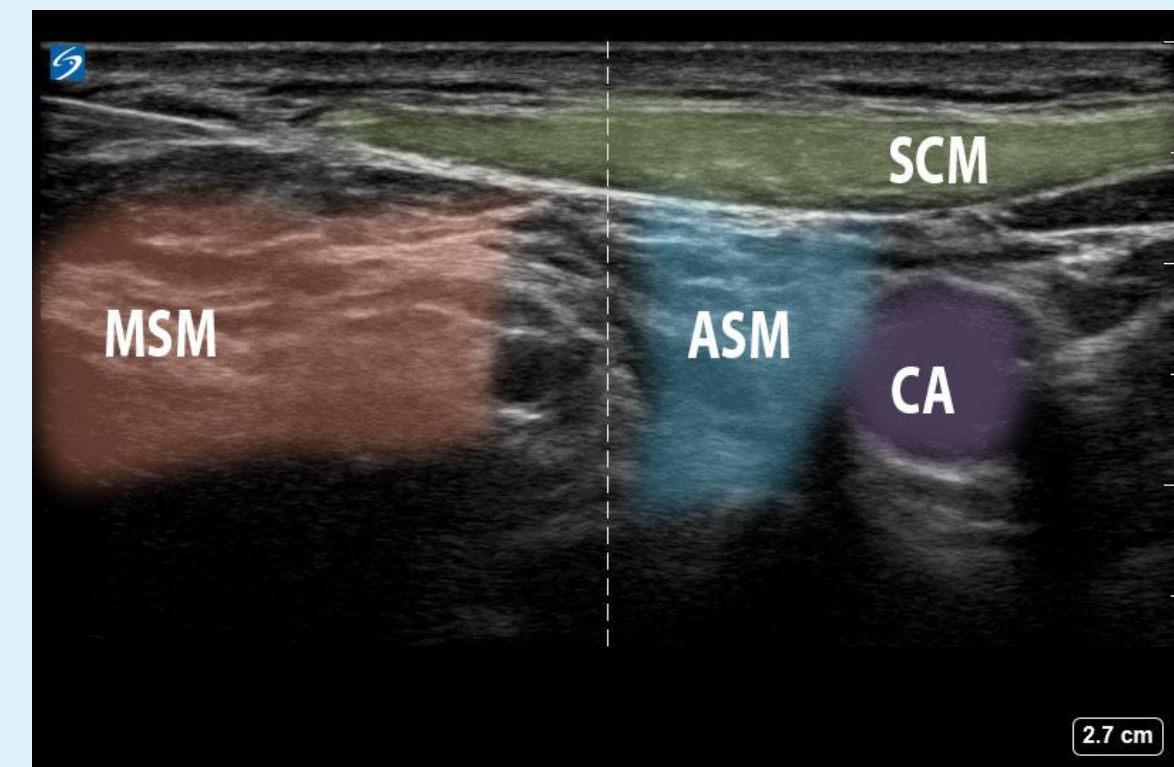


Figure 2a (left) Pre-injection ilioinguinal block ultrasound image; Figure 2b (right) same image with labels

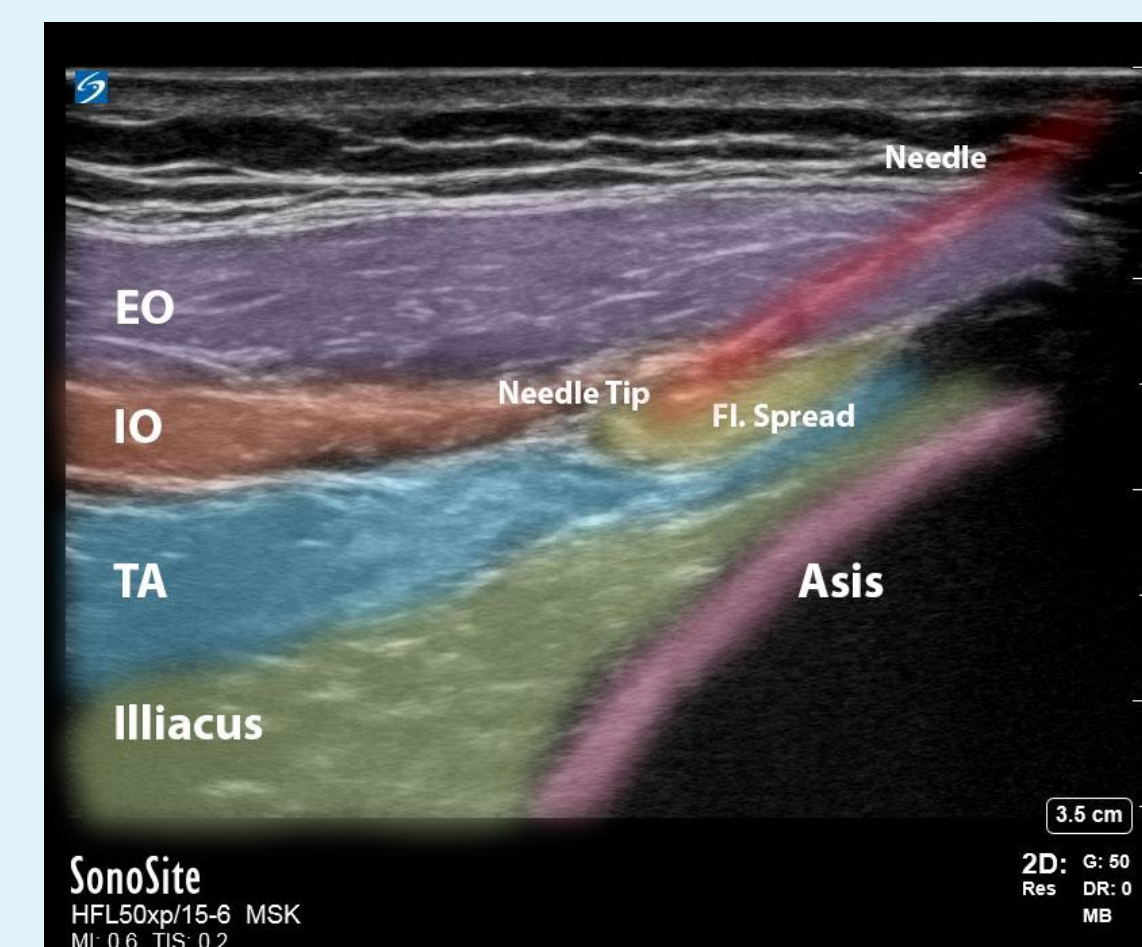


Figure 2a (left) Post-injection ilioinguinal block ultrasound image; Figure 2b (right) same image with labels

Opioid-sparing multimodal analgesia with superficial cervical plexus and ilioinguinal/iliohypogastric blocks in thoracic endovascular aortic repair with carotid-subclavian arterial bypass: a case report

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Introduction

Thoracic endovascular aneurysm repair (TEVAR) is the standard of care for repair of large or unstable thoracic abdominal aneurysms (AAA) in patient who do not have anatomic vascular abnormalities warranting open repair. The femoral artery is the most common entry point for TEVAR, with a groin incision providing vascular access. However, in certain cases where the intimal tear is in close proximity to the origin of the great vessels, adjunctive carotid-subclavian bypass is often performed to minimize the risk of cerebral, spinal cord, and upper extremity. Unfortunately, the multiple incisions needed to facilitate this approach can cause significant postoperative discomfort and pain. Poor pain management during the early postoperative period can cause significant issues with the patient's pulmonary (pneumonia, splinting, atelectasis, bronchial secretions), cardiovascular (increased oxygen consumption and tachycardia), and endocrine (stress response, hyperglycemia) systems. In this case report, we briefly describe using a combination of a superficial cervical block, ilioinguinal block and multimodal analgesia for a patient undergoing EVAR with robust pain control and high patient satisfaction. Written consent for publication and HIPAA authorization was obtained from the patient.

Case Description

A 53-year-old patient with past medical history significant for hypertension, and multiple myeloma presented for a thoracic endovascular aortic repair. Of importance, the patient disclosed having a severe intolerance to long-acting opioids. After a thorough discussion, the patient consented to both bilateral superficial cervical plexus blocks and an ilioinguinal / iliohypogastric block. On the day of surgery, the patient had standard anesthetic monitoring as well as invasive arterial blood pressure monitoring and transesophageal echocardiography. General anesthesia was induced with lidocaine 1% (PF), etomidate, and rocuronium. General anesthesia was maintained with inhaled anesthetics as well as a continuous infusion of remifentanyl at 0.05 mcg/kg/min and dexmedetomidine at 0.6 mcg/kg/hr.

Case Description (continued)

Prior to beginning the superficial cervical plexus block, the patient neck and anterior chest was prepped with chlorhexidine 4%. A SonoSite X-Porte HFL50xp 15-6 Mhz linear ultrasound probe (Sonosite, Bothell WA) was positioned at the midpoint of the patient's clavicle and moved to identify the sternocleidomastoid muscle, carotid artery, C6 nerve root, and C5 transverse process. A 22-gauge, 50-mm 22-gauge Stimulplex needle (B-Braun, Melsungen, Germany) was advanced between the sternocleidomastoid and the scalene muscles via in-plane approach under ultrasound guidance. After the position of the needle tip was confirmed, 10 mL of 0.25% bupivacaine was injected. Following the superficial cervical plexus block, bilateral ilioinguinal blocks were performed. After skin disinfection, surface landmarks, including the ASIS, the inguinal ligament, and the line connecting the ASIS to the umbilicus, were identified. After identification, the ultrasound probe was positioned in a superomedial to inferolateral plane (perpendicular to the expected course of the nerve) at the ASIS and slowly moved proximally along the line between the ASIS and the umbilicus until the ilioinguinal nerve was visualized approximately 2 cm from the ASIS in the facial plane between the internal oblique and transversus abdominus muscles. A 22 G, 50 mm insulated needle (Sonoplex Stim, Pajunk, Germany) was inserted initially inferolateral to the US transducer and guided superomedially within the plane of the image as it was advanced deeper. After negative aspiration, 15 mL bupivacaine 0.25% with 4 mg dexamethasone was injected into the facial plane immediately adjacent to the ilioinguinal nerve. The block procedure was then repeated on the contralateral side. After completion of blocks, the TEVAR was uneventfully completed. Postoperative opioid consumption data can be seen below.

Post op Day	Pain Score	Opioid Consumption	MEQ	Cumulative MEQ
0	2	Hydromorphone 2 mg, Hydromorphone 2 mg	16	16
1	5	Hydromorphone 2 mg	8	24
2	0	None	0	24

Discussion

In this case report, we report the successful use of regional anesthesia with ultrasound guided superficial cervical plexus blocks and ilioinguinal blocks to provide an opioid-sparing anesthetic for a patient undergoing endovascular repair of an aortic aneurysm. The use of both of these blocks is a relatively new method for providing analgesia for TEVAR, where either general anesthesia or injection of local anesthetic in combination with significant doses of IV medication were previously used. The rationale for the use of these blocks is to provide more proximal and complete nociceptive blockade of the operative field than can be achieved with local anesthesia so that fewer and smaller doses of IV opioids are necessary to provide adequate pain control. Another important element of the anesthetic regimen included preemptive administration of dexmedetomidine, which has been shown to have anti-allodynic properties. Although no retrospective studies investigating the efficacy of this approach has been completed in the past, we believe that further research is warranted.

References

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