

Intercostal Nerves Radiofrequency Ablation and External Oblique Intercostal Block for Long-term Abdominal Drains-Associated Pain

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Introduction

- External oblique intercostal (EOI) plane block** is a novel technique effective in achieving upper midline and lateral abdominal wall analgesia.
- It has been reported to improve postoperative pain control in patients after laparoscopic cholecystectomy, nephrectomy, and liver transplant.¹⁻³
- Intercostal nerve blocks** are well studied and are useful for pain management as the primary intervention or as adjuncts, such as for pain after thoracotomies cholecystectomies.⁴⁻⁷
- Thermal radiofrequency ablation (RFA)** is a minimally invasive technique aimed at providing long term pain relief through nerve cell death from coagulation necrosis.⁸⁻⁹
- It is frequently used in outpatient settings for treatment of chronic pain.¹⁰
- We report the case of a patient s/p pancreatic necrosectomy and multiple abdominal drains placement who had significant pain relief after bilateral EOI plane block and intercostal nerve radiofrequency ablation.

Methods

- As this case report is devoid of patient identifiable information, it is exempt from IRB review requirements as per Tufts policy.
- Patient informed consent was obtained for the publication of this case.

Case Report

- 29 year old male with history of gallstone pancreatitis complicated by acute necrotizing pancreatitis, infected pancreatic necrosis, and development of multiple intra-abdominal abscesses s/p pancreatic necrosectomy.
- Required multiple long-term abdominal drains placement, requiring frequent admissions for dyspnea, low PO intake and cachexia in setting of intolerable pain around the drain sites. Notably, his upper drains were in an intercostal position.
- This was a bilateral and multilevel procedure.
- Starting with the left side at the T6/T7 level, with the patient in left lateral decubitus position, a 27G 33mm needle was advanced under direct US guidance deep to the external oblique and 5 ml of 1% lidocaine injected incrementally in the external oblique intercostal facial plane. The patient tolerated the procedure well and endorsed great and immediate improvement in pain.

Figure 1. External Oblique Intercostal Block ¹¹

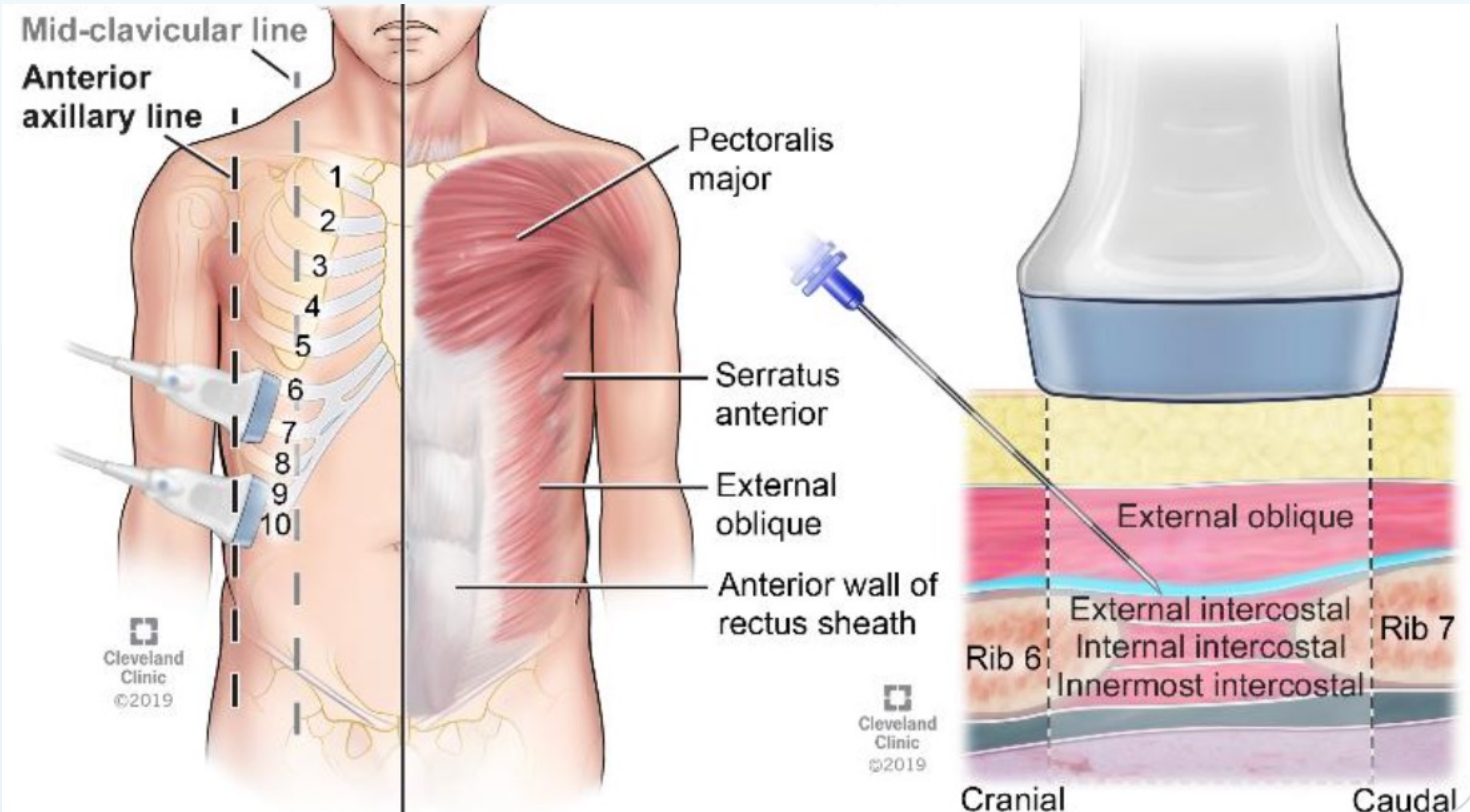


Figure 2. Intercostal Nerve Anatomy ¹²

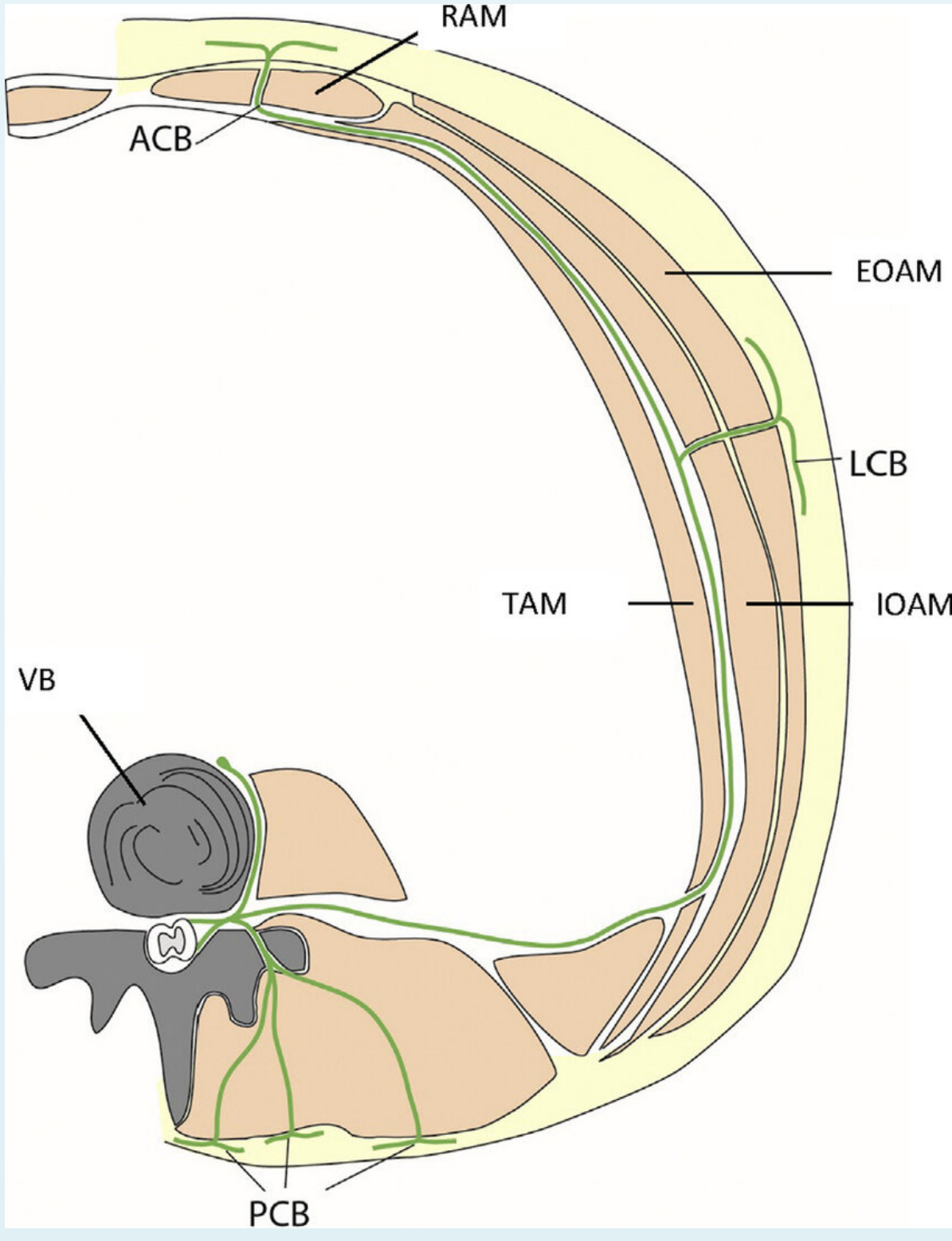
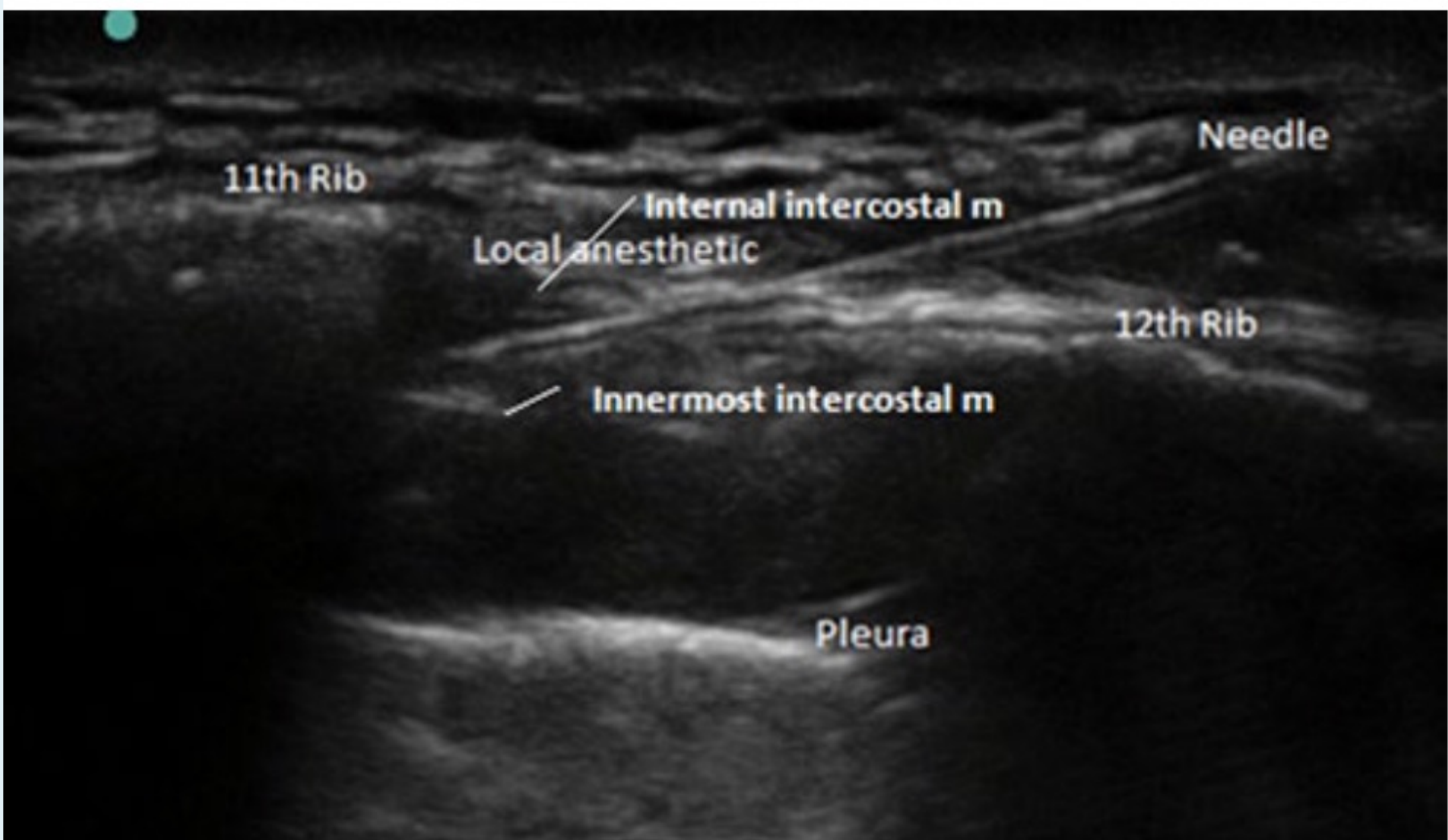


Figure 3. Intercostal Nerve Block ¹³



- Subsequently, the T6/T7 intercostal nerve level was identified, and a 25G, 2-inch needle was inserted and advanced until the tip was just below the inferior border of the rib and 1% lidocaine was injected.
- 22G 50 mm active tip RF cannula was introduced using in plane technique and gradually advanced under US towards prior identified target area. Sensory and motor testing were then performed with no abnormal rib cage movements.
- 2 ml of 2% lidocaine was injected followed by a 2 minute wait.
- Subsequently, pulsed RF at 42C for 2 minutes, a total of 2 burns (rotating the needle after initial burst) were performed.
- Prior to cannula removal, 2 mg dexamethasone, 50mcg clonidine and 7 ml 0.25% bupivacaine were injected.
- The same procedure was then performed at T9/10 and T11/12, followed by the right side.
- The patient reported tremendous immediate pain relief.
- Importantly, the patient no longer required admissions for pain control, regained his appetite, improved his nutritional status, and reported significant improvement in his quality of life during his follow-up sessions at the surgery clinic. His drains were removed 6 weeks later.

Conclusion

- Intercostal nerve RFA is a practical option for the treatment of anterior abdominal pain in the setting of long-term abdominal drains.
- While intercostal nerve blocks also provide pain relief, their effect is short lasting and not an ideal option for patients who require prolonged pain control.
- While RFAs are commonly done in the outpatient setting for chronic pain relief, their application in the acute/inpatient setting for anticipated prolonged pain and recovery appear promising.
- Additionally, EOI plane blocks demonstrate to be a worthwhile and simple approach for anterior abdominal pain with immediate relief across an extended surface area.

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