

Ultrasound Guided Retrolaminar Block for Multiple Rib Fractures Provided 36 Hours of Pain Relief and Improved Respiratory Status

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INTRODUCTION

Rib fractures occur in approximately 35% of blunt trauma patients and can be a major cause of morbidity and mortality, especially in older patients with a higher number of ribs fractured [1]. Regional anesthesia can be utilized to help with pain control, improve respiratory mechanics and even potentially aid in weaning from mechanical ventilation [2]. Multiple options exist to provide analgesia to the ribs and thoracic wall. We present a case of an older adult with multiple rib fractures who was not a candidate for epidural, paravertebral, or erector spinae plane (ESP) blocks, and therefore was offered the less commonly utilized ultrasound-guided retrolaminar block, from which he had significant analgesic effect.

CASE REPORT

A 75-year-old male presented after falling 20-feet while chain-sawing branches and was found to have left 9-12 posterior rib fractures, as well as T9-11 and L1-5 transverse process fractures, left superior pubic ramus fracture, and bilateral sacral ala fractures. His medical history was significant for immune thrombocytopenia (ITP), hypertension, diabetes, active marijuana use, and former tobacco use. He was started on a multimodal pain regimen with acetaminophen, methocarbamol, lidocaine patches, morphine, and PTA gabapentin. The Acute Pain Service was consulted on hospital day 2 for pain management optimization and consideration of regional or neuraxial intervention. At that time, the patient reported “100/10” pain with movement and was having side effects of sedation and pruritus with opioids.

- Not a candidate for neuraxial or paravertebral block given thrombocytopenia (PLT: 87) and poor ultrasound visualization due to a large hematoma overlying the left/central mid back.
- Not suitable for ESP given transverse process fractures. Serratus anterior block (SAB) was not performed as the rib fractures were posterior.
- Therefore, a single shot ultrasound-guided left retrolaminar block [3] was performed at T10 using the SonoSite SII, Braun 20 g 100 mm echogenic needle. Ropivacaine 0.5% 30 mL with dexamethasone 4 mg was administered. A catheter for continuous infusion was not placed due to patient preference.

Fig 1

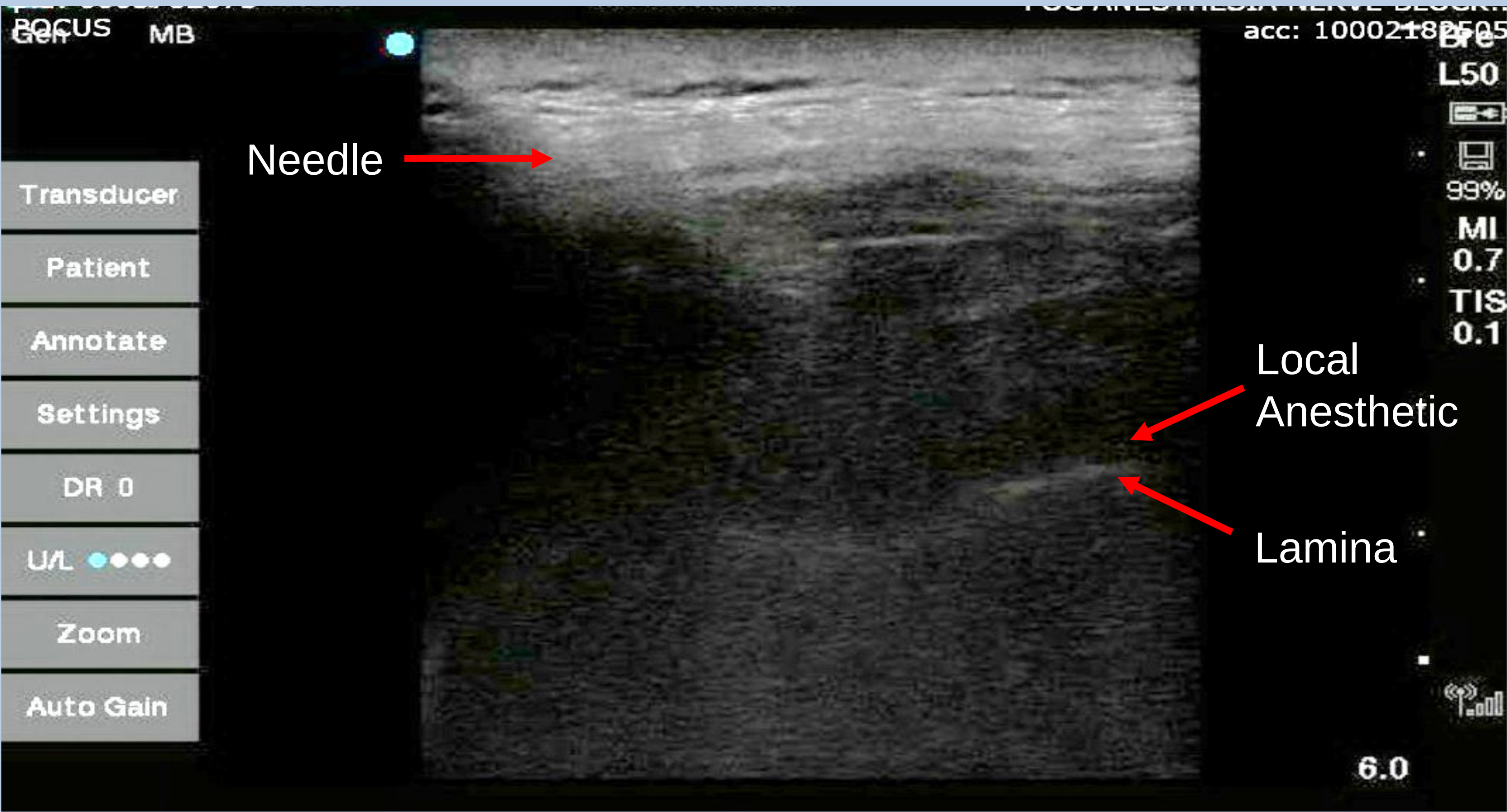


Fig 2

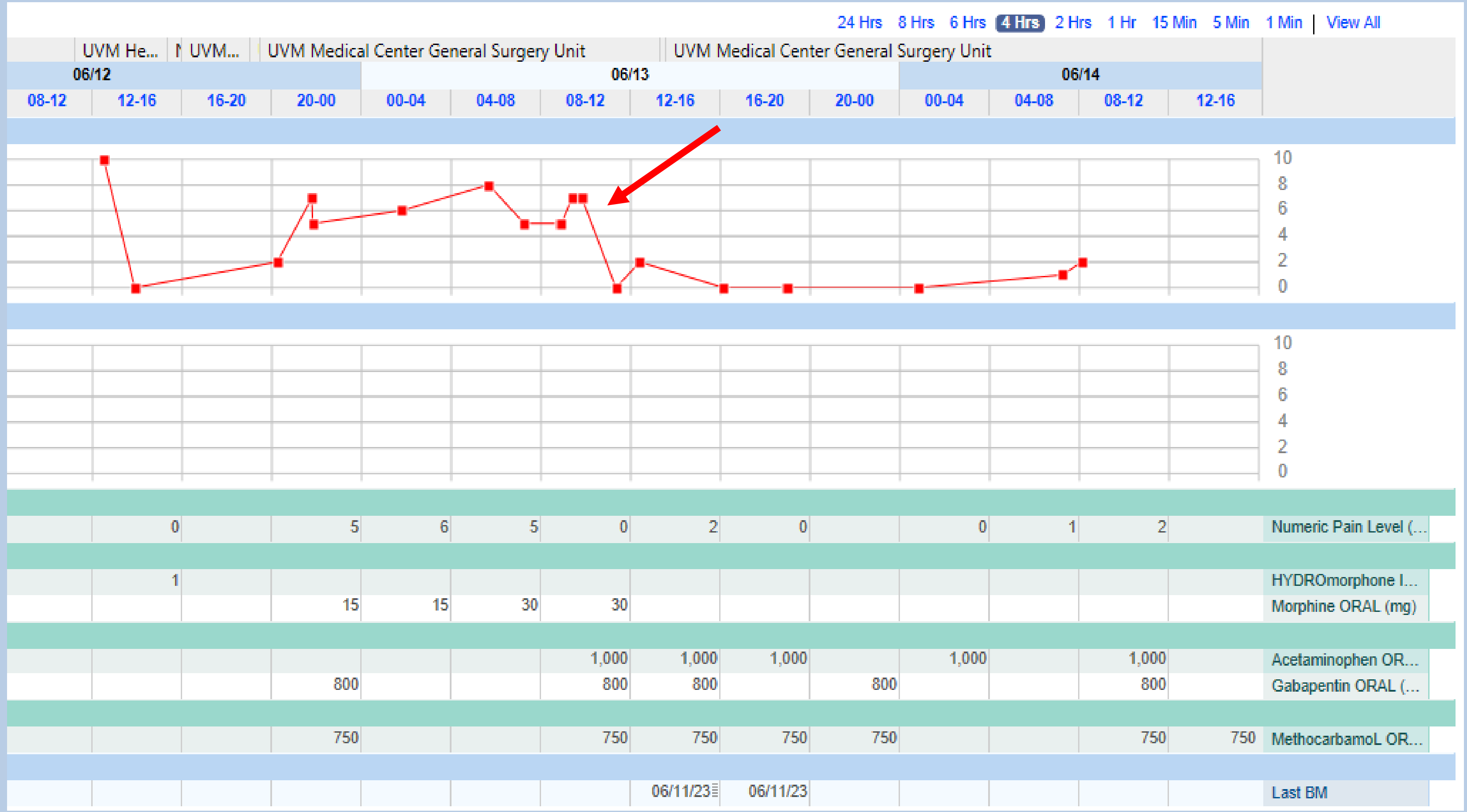


Figure 1 Point of Care Ultrasound image of retrolaminar block placement with lamina, needle, and local anesthetic labeled.

Figure 2: Electronic medical record data demonstrating improved subjective pain scores (1-10) both graphically over time as well as numerically pre and post intervention. Time of block placement demonstrated with red arrow. Additional rows demonstrating administration of scheduled and as needed multimodal pain regimen.

RESULTS

- Patient reported significant pain relief with pain scores dropping to 0.
- Improvement in oxygen saturation from 96% on 2 LPM of oxygen to 100% on room air, increased incentive spirometer volumes from 1200 mL at time of consult, to 1500 mL on the morning after retrolaminar performed.
- Decrease in morphine use from 90 mg PO over the 12 hours prior to the block, to no morphine required at all in the first 24 hours post. Pain scores began to increase at 31 hours after retrolaminar block was performed, and the first additional morphine dose was administered at 39 hours post procedure.

DISCUSSION

Careful assessment of injury burden, coagulation status and patient factors deemed retrolaminar block the most suitable option, and this patient demonstrated significant clinical improvement in pain scores and pulmonary function as a result. The retrolaminar block has previously been shown to be effective in cases of multiple rib fractures [3]. Retrolaminar block is also associated with lower complication rates including, but not limited to, hypotension and pneumothorax [4] when compared to paravertebral and epidural. Additionally, retrolaminar remains an option in thrombocytopenia.

The ultrasound guided retrolaminar block is fast, effective, easy, and safe and should be considered for patients presenting with rib fractures; particularly those in which other regional approaches may not be appropriate.

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