

Rectus Sheath Nerve Block for Analgesia & Incarcerated Hernia Reduction

in the Emergency Department

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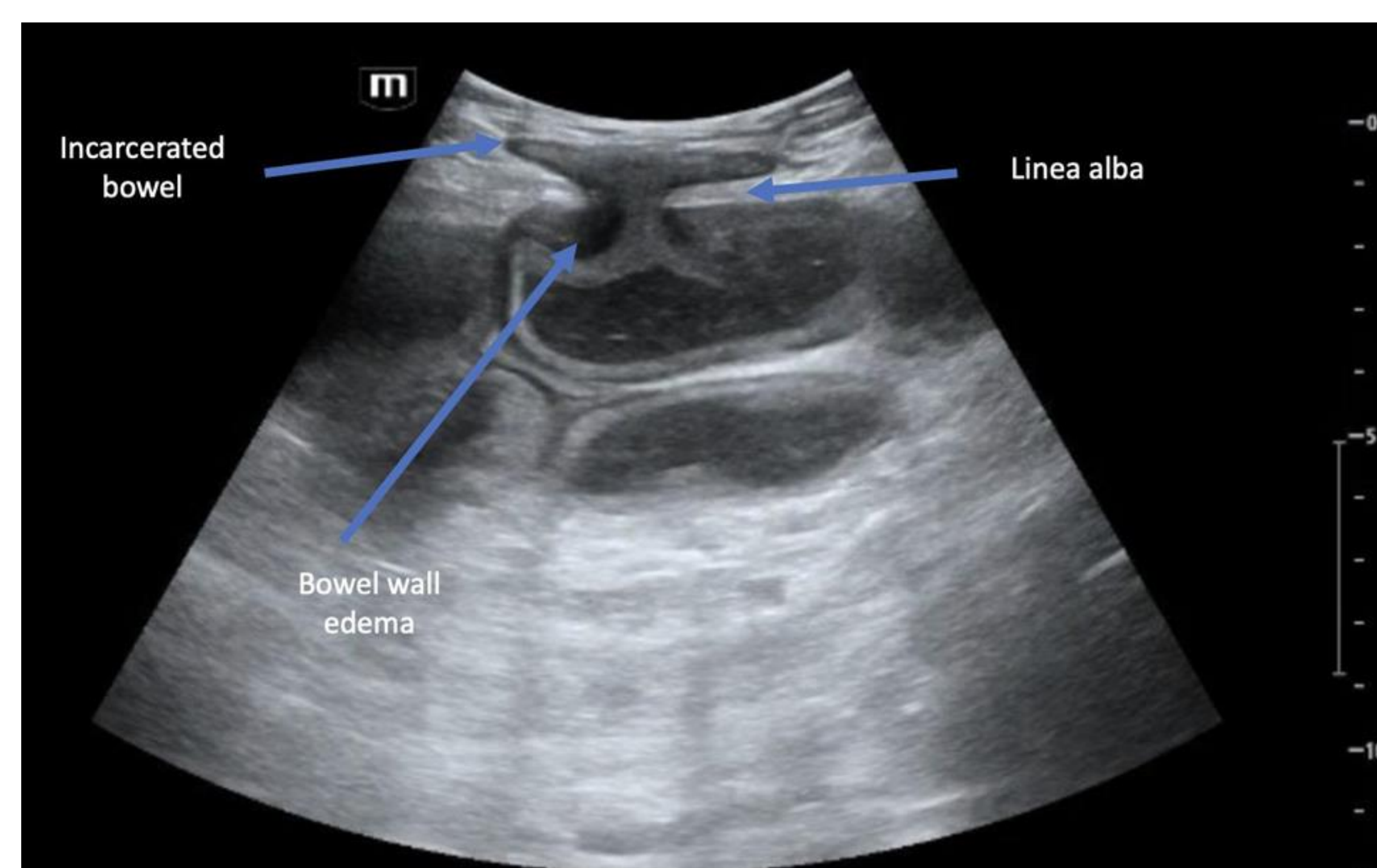
Introduction

- Abdominal hernias are a common cause of abdominal pain in the emergency department (ED).
- Approximately 5 to 13% of abdominal wall hernias require emergent surgical intervention due to irreducibly incarcerated bowel or strangulation.
- Successful reduction precludes emergent repair, which may benefit high-risk surgical candidates and offers better conditions at the time of repair.
- Regional anesthesia of the rectus sheath block, has not been previously well-described for the management of incarcerated hernias.
- Rectus sheath blocks are employed to relax abdominal wall musculature and provide anesthesia to the cutaneous branches of lower thoracic spinal nerves, specifically T9-T11.
- These nerves correspond anatomically to the anteromedial abdominal wall and periumbilical region.
- Ultrasound allows for direct nerve and target visualization, thereby improving success and reducing complications of regional anesthesia.

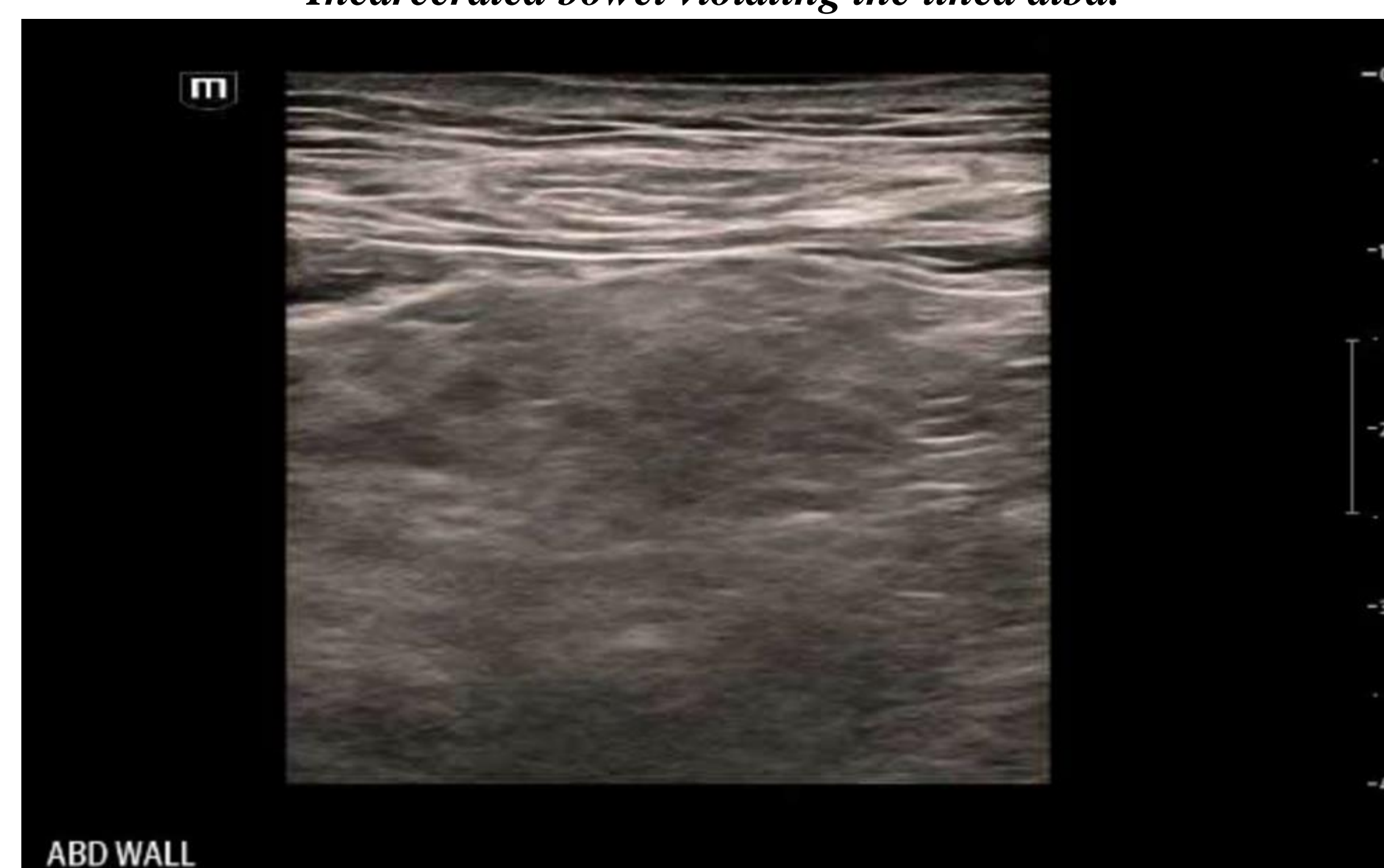
Case Report

- 94-year-old male with a history of a reducible ventral wall hernia presented with three days of worsening abdominal pain, nausea, and vomiting. Reported a bowel movement earlier that morning and was still having flatulence.
- Palpation revealed an indurated, tender ventral abdominal mass superior to the umbilicus
- Bedside ultrasound showed a dilated loop of bowel without peristalsis and surrounding edema, violating the linea alba (peritoneal wall)
- Initial bedside reduction attempt was unsuccessful
- General surgery team administered sedation with lorazepam and attempted reduction, without success
- Surgery was scheduled but the patient was reluctant due to age and comorbidities (HTN, CHF, and chronic anemia)
- A rectus sheath block was performed by EM physicians with patient's consent
- The block was performed 2 cm superior to the umbilicus bilaterally with 20 mL lidocaine 1% (10 mL on each side)
- Patient reported pain relief and successful hernia reduction using probe manipulation and manual pressure
- Repeat ultrasound showed no abdominal wall defect and the patient was discharged
- Multiple attempts to contact the patient were unsuccessful, chart review showed no external documents pertaining to general surgery notes and no readmissions to the hospital

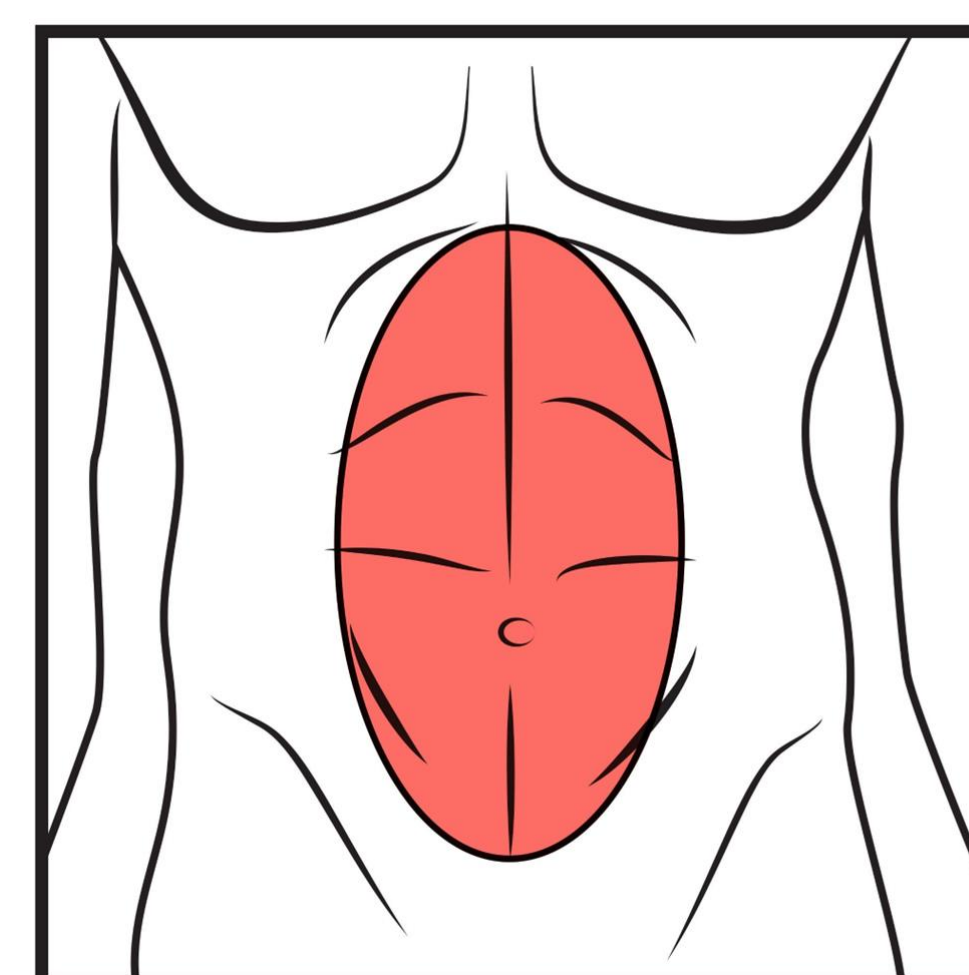
Ultrasound Images



Incarcerated bowel violating the linea alba.



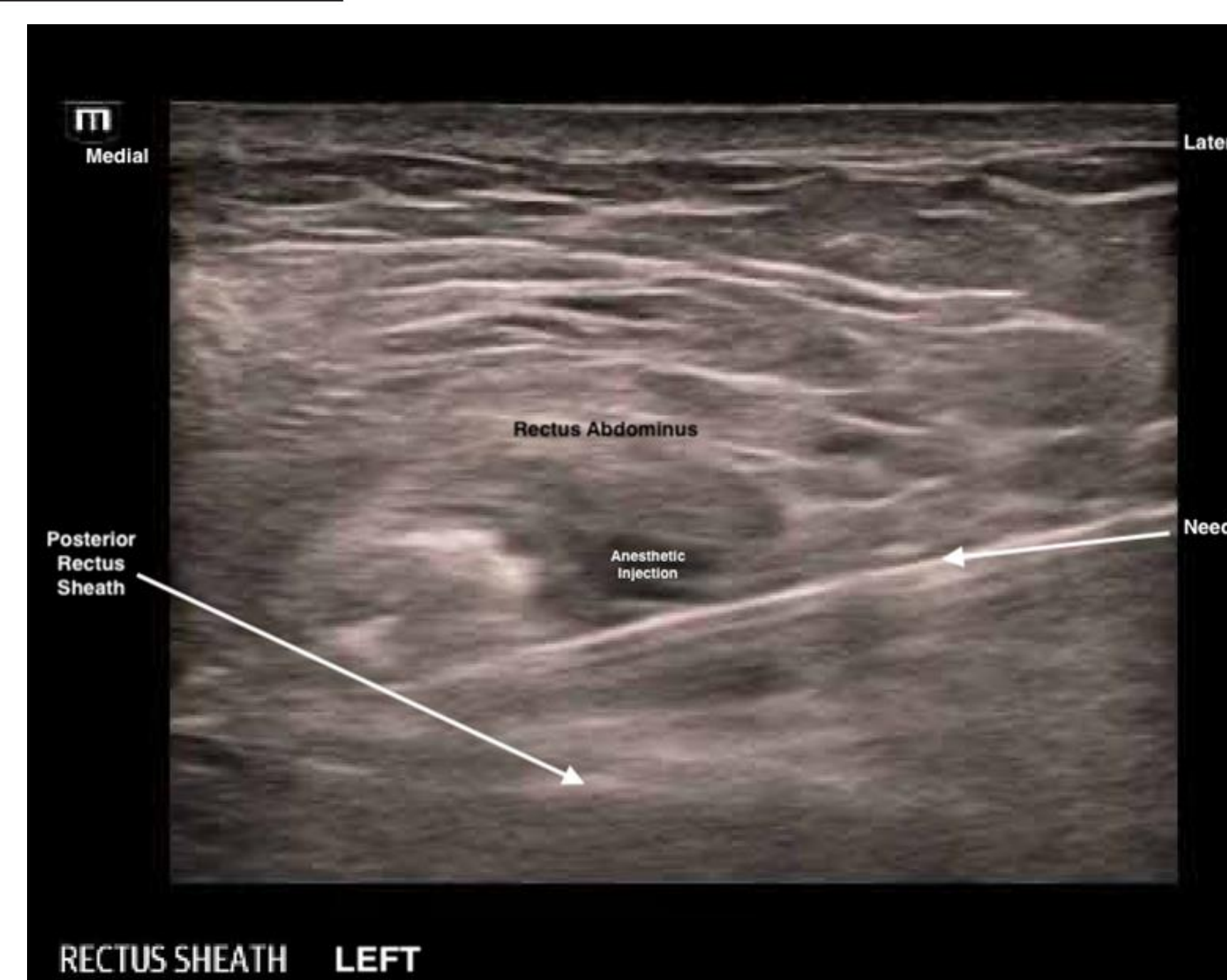
Post-reduction ultrasound shows no herniated bowel and an intact linea alba.



Area of sensory anesthesia provided by rectus sheath block. (Image courtesy of Anthony Casazza)



Bilateral Rectus Sheath block with needle for anesthetic injection



Discussion

- Abdominal wall hernias are a common cause of abdominal pain in the ED.
- Surgical costs and operative risks highlight the need for effective non-surgical interventions based on multimodal pain management.
- Point-of-care ultrasound and regional anesthesia are effective adjuncts for managing difficult-to-reduce incarcerated hernias.
- Rectus sheath block (RSB) can anesthetize the peritoneum and surrounding musculature, aiding hernia reduction.
- Ultrasound enables visualization of hernia contents, delivery of anesthetic, assessment of abdominal wall defects, and confirmation of reduction.
- Physicians experienced in needle-guided procedures can feasibly learn to perform RSB.
- RSB for hernia reduction could reduce in-hospital morbidity and mortality by decreasing the need for emergent surgery, allowing elective repairs.
- Caution is necessary to avoid reducing necrotic bowel, which requires emergent operation.
- Signs of bowel necrosis include skin changes, peritonitis, elevated inflammatory markers, and imaging findings like dilated bowel loops and free fluid.

Conclusion

- Implementation ultrasound-guided RSB for the management of incarcerated hernias in the ED can provide effective pain relief, facilitate non-surgical hernia reduction, and reduce the need for emergent surgical interventions, particularly in high-risk patient populations.
- This method is safe, uncomplicated, and within the emergency physician's scope of practice.

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