

Moving beyond the Epidural: Successful Postoperative Analgesia in Patients with Rectus Sheath Catheters

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Introduction

Patients undergoing abdominal surgery with midline laparotomy incisions often experience significant postoperative pain. Poor pain control can impair mobilization, delay return of gastrointestinal function, and prolong hospital stay.^{1,2} Thoracic epidural analgesia has been the gold standard for postoperative analgesia after major abdominal surgery. However, its use may be limited due to:

- Anticoagulation
- Technical difficulty
- Hemodynamic effects

Alternative techniques like rectus sheath catheters (RSCs) may provide effective analgesia with fewer side effects. The objective of this case series is to evaluate the feasibility and analgesic effectiveness of bilateral rectus sheath catheters for postoperative pain control after midline laparotomy.

Method

Study design

Retrospective chart review

Population

- Adult patients undergoing major abdominal surgery
- Large midline incisions above the umbilicus
- Study period: June-October 2025

Technique

Bilateral RSCs were placed under ultrasound guidance with sterile technique

Catheter protocol:

- Catheter placed in posterior rectus sheath bilaterally
- Initial bolus: 20-30ml of 0.25% ropivacaine
- Infusion regimen:
 - Basal: 3 mL/hr
 - Bolus: 6-12 ml every 3 hours
 - Solution: 0.1% ropivacaine
- Infusions were initiated in the post-anesthesia care unit

Results

Patient	Age	Procedure	POD 0	POD1	POD2	POD3	POD4
1	89	Resection of left abdominal mass and open sigmoid colectomy	Intubated and sedated on fentanyl and dexmedetomidine infusions	Extubated; sleeping comfortably; pain well controlled by RSCs, no opioids used; out of bed	Pain well controlled with RSCs and acetaminophen	Pain well controlled; participated in PT without pain; able to transfer supine to sit, stand-pivot to chair	RSCs removed without complication; no opioids given until after catheter removal
2	64	Retroperitoneal leiomyosarcoma removal, colectomy, nephrectomy	IV hydromorphone 0.2-0.4mg q4h prn; scheduled acetaminophen	“No pain around large abdominal incisional area,” tender in lower left abdominal; Reported pain 6/10 during physical therapy; received 0.4 mg hydromorphone after PT (2 doses total in 24h)	Uneventful, required 0.4mg hydromorphone over 24h	No pain; no change in pain level with PT; ambulated with rolling walker; transitioned to PO oxycodone (none used)	No pain; tolerated PT without change in pain; no opioids used; removed without complications
3	61	Partial gastrectomy, open colectomy	Hydromorphone PCA (0.2mg q10min demand) Scheduled acetaminophen, ketorolac	Sleeping comfortably; pain is well controlled	PCA discontinued; pain well controlled; Pain during PT was 3/10, ambulated 30 feet, no pain increase after session	No pain; eager to ambulate; RSCs removed without complication	
4	56	Open liver segment resection, small bowel mass resection	Reports sharp upper abdominal pain 6/10. Hydromorphone PCA (0.2mg q10 min), scheduled ketorolac and acetaminophen	“Little pain at rest and mostly when he moves” Pain well controlled; minimal pain at rest, mild with movement; ambulated 75 feet	Intermittent incision pain, no additional PCA boluses; sat in chair	PCA discontinued; no pain; motivated to ambulate; RSCs removed without complication	

Key findings

Pain & Recovery

- Effective postoperative analgesia in all patients
- Minimal opioid requirements
- Early mobilization

Functional Recovery

- 3 out of 4 patients reported feeling comfortable sitting upright on POD 1
- Ambulated with physical therapy on POD 1
- Early return of bowel function
- Advanced to normal diet after POD 1

Safety

- No catheter-related complications
- No issues with placement or removal

Additional Observations

- High patient satisfaction with pain management
- Surgeons reported less postoperative hypotension
- Reduced need for large-volume fluid resuscitation

Discussion

This case series suggests that RSCs can provide reliable postoperative analgesia following midline laparotomies when epidural analgesia is contraindicated or not feasible.

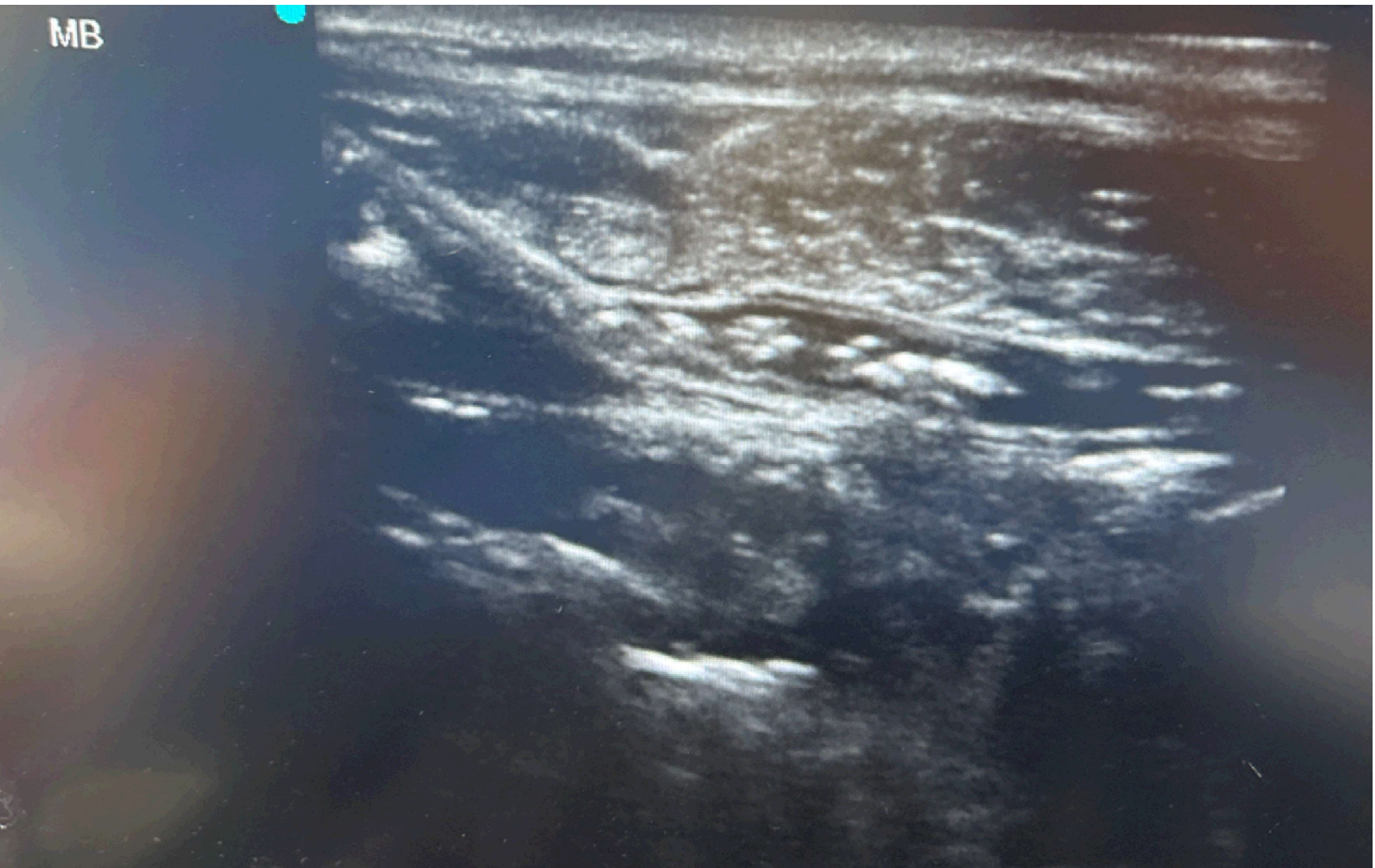
Potential Advantages

- Opioid sparing analgesia
- Improved bowel recovery
- Effective incisional pain control
- Technically straightforward placement
- Safe in anticoagulated patients

Limitations

- Coverage limited to somatic incisional pain
- Proper placement required for adequate local anesthetic spread
- Small sample size

At our institution, where pain management previously relied primarily on opioids and medical therapy with limited use of peripheral nerve catheters. The use of RSCs had a smooth integration into perioperative workflow. Increasing surgeon interest has led to greater utilization of peripheral nerve catheters for abdominal surgeries.



Ultrasound image of Rectus Sheath peripheral nerve block and catheter



Peripheral Nerve Catheter Kit setup

References

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