



Ultrasound-Guided Bilateral Subcostal Tap Block for Epigastric Hernia Repair- Case Series

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KEYWORDS

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ABSTRACT:

Epigastric hernias are a prevalent type of abdominal wall defect that typically necessitates surgical intervention. However, traditional anesthesia techniques, such as general anesthesia, come with associated risks, leading to the exploration of regional anesthesia options. Ultrasound-guided bilateral subcostal tap block is an emerging alternative that provides effective pain relief while minimizing systemic side effects. This case series highlights five cases where this technique was used for epigastric hernia repair, demonstrating its feasibility and efficacy across a diverse patient population. The cases presented in this series showcase the use of ultrasound-guided bilateral subcostal tap block as the sole anesthesia method for epigastric hernia repair.

Introduction:

Epigastric hernias are a prevalent type of abdominal wall defect that typically necessitates surgical intervention. However, traditional anesthesia techniques, such as general anesthesia, come with associated risks, leading to the exploration of regional anesthesia options. Ultrasound-guided bilateral subcostal tap block is an emerging alternative that provides effective pain relief while minimizing systemic side effects. This case series highlights five cases where this technique was used for epigastric hernia repair, demonstrating its feasibility and efficacy across a diverse patient population. The cases presented in this series showcase the use of ultrasound-guided bilateral subcostal tap block as the sole anesthesia method for epigastric hernia repair.

CASE DESCRIPTION

Case 1: A 63-year-old male patient with a symptomatic epigastric hernia was evaluated for preoperative assessment, which revealed no contraindications to regional anaesthesia. The patient expressed a preference for avoiding general anaesthesia. After obtaining informed consent, the patient underwent an ultrasound-guided bilateral subcostal tap block. Under sterile conditions and ultrasound guidance, the subcostal spaces were identified bilaterally, and 20 mL of 0.25% ropivacaine was injected around the neurovascular bundles. The patient remained conscious and comfortable throughout the procedure, which proceeded uneventfully. Postoperative pain was managed with oral



analgesics, and the patient was discharged on the same day.

Key Points: Ultrasound-guided bilateral subcostal tap block is an effective and preferred technique for providing analgesia during epigastric hernia repair surgery. This method offers several advantages, including minimizing the need for systemic opioids and reducing the risk of postoperative nausea, sedation, and respiratory depression associated with general anesthesia. Furthermore, this approach allows for early ambulation and quick recovery, which can lead to a shorter hospital stay and lower healthcare costs.

Case 2: An 80-year-old woman with a symptomatic epigastric hernia underwent an ultrasound-guided bilateral subcostal tap block to avoid general anesthesia due to her age and medical history, which included hypertension and diabetes mellitus. With informed consent obtained, the patient received a 0.25% ropivacaine injection under sterile conditions. The procedure was well-tolerated, and the patient remained comfortable throughout surgery. Postoperative pain was controlled with oral analgesics, and the patient was discharged from the hospital on the same day without any complications.

Key Points: The use of ultrasound-guided regional anesthesia techniques in geriatric patients undergoing hernia repair can lead to significant benefits. These techniques, such as the subcostal tap block, offer several advantages, including a lower risk of cognitive impairment, delirium, and postoperative complications associated with general anesthesia. By providing effective pain relief while maintaining hemodynamic stability, these methods enable early mobilization, which is essential in promoting recovery in elderly patients. It is important to note that these perioperative considerations are crucial when caring for vulnerable elderly patients.

Case 3: Ultrasound-Guided Bilateral Subcostal Tap Block in a Patient with Opioid Sensitivity A 45-year-old male with a symptomatic epigastric hernia and documented opioid sensitivity was scheduled for surgical repair. Given the need to avoid systemic opioids, alternative pain management strategies were explored.

After obtaining informed consent, the decision was made to perform an ultrasound-guided bilateral subcostal tap block as the primary anaesthesia technique. Utilizing sterile conditions and ultrasound guidance, 0.25% ropivacaine was administered to target the subcostal nerves bilaterally, resulting in effective intraoperative analgesia. Following the surgery, the patient experienced minimal pain, which was managed with non-opioid analgesics, and he was discharged on the same day without any complications. **Key Points:** Avoided systemic opioids, minimal pain postoperatively, discharged without complications

Discussion: Patients who have an allergy to opioids pose challenges when it comes to perioperative pain management. Regional anesthesia techniques, including the subcostal tap block, offer a safe and effective alternative that provides targeted pain relief without the risk of allergic reactions or systemic side effects associated with opioids. Additionally, ultrasound guidance improves the accuracy and effectiveness of nerve blockade, allowing for optimal pain control in patients with specific contraindications to systemic opioids.

Case 4: A 68-year-old man with a symptomatic epigastric hernia sought surgical repair. He had a history of severe chronic obstructive pulmonary disease (COPD) with recurrent exacerbations and was at high risk for respiratory complications during the procedure. After obtaining informed consent and carefully considering the options, an ultrasound-guided bilateral subcostal tap block was chosen as the primary anesthesia technique. The subcostal nerves were targeted bilaterally using 0.25% ropivacaine under sterile conditions and ultrasound guidance, providing effective pain relief during the operation without impairing the patient's respiratory function. The patient experienced minimal pain after surgery, which was managed with non-opioid pain relievers, and he was discharged from the hospital on the same day without any respiratory complications.

Key Points: Patients suffering from severe chronic obstructive pulmonary disease (COPD) pose challenges for perioperative anesthesia management due to the risk of respiratory depression and exacerbation of symptoms. However, regional anesthesia techniques, for instance,



subcostal tap block, offer a safe and effective alternative by providing targeted analgesia while minimizing the need for systemic opioids and the associated risk of respiratory depression. The use of ultrasound guidance enhances the accuracy and safety of nerve blockade, enabling optimal pain control without impairing respiratory function in patients with severe COPD.

Case 5: A 70-year-old male patient with a symptomatic epigastric hernia sought surgical repair. The individual had CKD stage 3, which indicated increased risk for perioperative complications. After assessing the situation and getting informed consent, an ultrasound-guided bilateral subcostal tap block was chosen as the primary anaesthesia technique for the patient. Utilizing sterile conditions and ultrasound guidance, the subcostal nerves were targeted bilaterally with 0.25% ropivacaine, resulting in effective intraoperative analgesia without affecting renal function. Postoperatively, the patient experienced minimal pain, which was managed with non-steroidal anti-inflammatory drugs (NSAIDs) and acetaminophen, and their renal function remained stable.

Key Points: Maintained renal function, minimal postoperative pain, stable discharge.

Discussion: Patients suffering from chronic kidney disease (CKD) pose challenges in the management of perioperative anesthesia due to the risks of fluid overload, electrolyte imbalances, and nephrotoxicity. Regional anesthesia techniques, such as the subcostal tap block, provide a safe and effective alternative that offers targeted analgesia while minimizing the need for systemic opioids and the associated risk of renal injury. The use of ultrasound guidance enhances the precision and safety of nerve blockade, enabling optimal pain control without compromising renal function in patients with CKD.

Conclusion:

The results of this case series illustrate the feasibility and efficacy of employing ultrasound-guided bilateral subcostal tap block as the primary anesthesia technique for epigastric hernia repair. This technique offers substantial pain relief without the associated systemic

side effects, making it a suitable choice for patients from various backgrounds and clinical contexts.

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