

LETTER TO THE EDITOR

Successful Anesthetic Management using Segmental Spinal and Erector Spinae Plane Block in a High-Risk Patient with Severe Cardiac and Pulmonary Comorbidities Undergoing PCNL

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Respected Editor,

We present a successful anesthetic management of a 75-year-old male patient with multiple severe comorbidities and highlight the utility of combined regional anaesthetic techniques for high-risk surgical candidates. This case highlights the importance of tailor-made anaesthetic approaches to optimise perioperative hemodynamic stability and respiratory function while avoiding the risks of general anaesthesia.

The patient presented with significant cardiac co-morbidities including permanent in situ pacemaker, bare metal coronary stent with a 20 percent left ventricular ejection fraction (LVEF) and a left bundle block (LBBB). (Figure1) In addition, he had chronic obstructive pulmonary disease (COPD), complicated by a recent pneumothorax and a bilateral wheezing. Other comorbidities included diabetes mellitus, impaired liver and kidney function tests, and positive tests for hepatitis C virus (HCV). He was scheduled

for a percutaneous right sided percutaneous nephrolithotomy (PCNL).

The patient was classified as American Society of Anaesthesiologists (ASA) Physical Status IV with a Revised Cardiac Risk Index (RCRI) score of 2, indicating significant perioperative cardiac risk. Given the severely compromised cardiopulmonary status, general anaesthesia (GA) was deemed prohibitively high risk due to concerns about respiratory depression, hemodynamic instability, and barotrauma in the setting of recent pneumothorax and advanced COPD.¹ Patient was counselled pre-operatively and all his concerns were addressed to relieve his anxiety.

Segmental spinal anesthesia was performed at the T10 vertebral level via 25 G quincke needle, using 1.2 ml of local anaesthetic solution (1 ml of 0.5% isobaric levobupivacaine with 0.2 ml fentanyl 20 mcg). This approach was supplemented with an ultrasound-guided erector spinae plane (ESP) block at T9 using 20 ml of mixed local anaesthetic (10 ml of 1%

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lignocaine and 10 ml of 0.25% bupivacaine).² (Figure 2)

Apart from standard ASA monitors, Intraoperative haemodynamic monitoring included monitoring of the central pressure (CVP) and monitoring of the invasive blood pressure (IBP) was done by left radial cannulation. Patient maintained stable haemodynamics throughout the procedure. Intravenous fluid (total 200 ml) of 0.9% normal saline was infused. The segmental approach provided adequate anesthesia while maintaining hemodynamic stability by reducing sympathetic blockade, which is critical in patients with coronary artery disease and low ejection fraction.³

Postoperative analgesia was effectively maintained with 0.0625% bupivacaine administered via an epidural catheter in ICU. The patient experienced excellent pain control with minimal opioid requirements, avoiding respiratory depression and additional strain on compromised hepatic and renal function.⁴ Post operative course was uneventful.

This case shows that segmental spinal anesthesia in combination with ESP block offers several advantages in high-risk patients. The segmental approach preserved preload, essential for patients with stenosed coronary arteries and severely reduced LVEF, while avoiding the respiratory complications inherent to GA. In patients with recent pneumothorax and severe COPD, regional techniques eliminate the risks of positive pressure ventilation, barotrauma, and postoperative respiratory failure.⁵

During the PCNL procedure, the ESP block significantly reduced the need for

systemic opioids and their side effects, such as hepatorenal toxicity and respiratory depression, while also providing excellent somatic pain relief. This is especially crucial for patients who already have renal and hepatic problems.⁶

We propose that segmental neuraxial anesthesia combined with fascial plane blocks should be considered first-line anaesthetic options for high-risk patients with coexisting severe cardiac and pulmonary compromise undergoing urological procedures. By avoiding the significant risks associated with general anesthesia in this susceptible population, this customized regional approach maximizes perioperative hemodynamic stability, respiratory function, and patient outcomes.

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