

## Ultrasound-guided bilateral continuous pecto-intercostal fascial block for post-sternotomy pain management

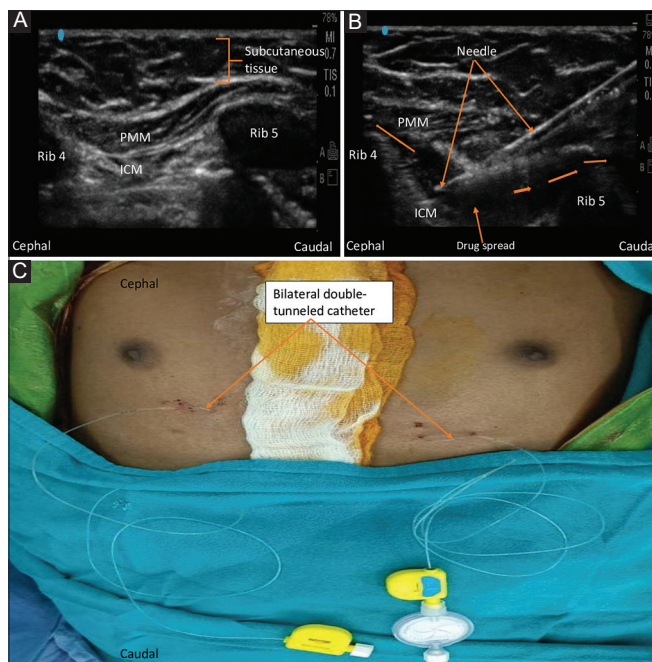
Dear Editor,

Poorly controlled median sternotomy and chest drain entry site pain can increase postoperative morbidity after cardiac surgery.<sup>[1]</sup> We report the use of ultrasound (US)-guided bilateral continuous pecto-intercostal fascial block (cPIFB) for postoperative analgesia in a 15-year-old male weighing 47 kg who underwent pericardiectomy via median sternotomy approach. The PIFB targets the T2–T6 anterior cutaneous nerve, emerging at the lateral sternal border at multiple levels using fascial spread of local anesthetic.

The child was a known case of constrictive pericarditis-induced cardiac cirrhosis. The patient had gross ascites and umbilical hernia. Investigation revealed normal liver enzymes with raised

total bilirubin. After the parental consent, general anesthesia was induced with fentanyl 2 µg/kg, etomidate 0.3 mg/kg, and atracurium 0.5 mg/kg. The airway was secured with a 7.5 mm (ID) endotracheal tube.

At the end of the surgery, ultrasound-guided PIFB was given bilaterally at level of T4–T5 anterior intercostal space. A high-frequency (6–12 MHz) linear probe (M-Turbo, Fujifilm Sonosite, Inc, Bothell, WA, USA) was placed in a para sagittal plane 3 cm lateral from the mid sternum in the T4-5 rib space. The intercostal muscle, pectoralis major muscle, and anterior ribs (cartilago costalis) were identified [Figure 1, Panel A]. An 18-G epidural Tuohy needle was inserted in-plane in a caudal to cephalad direction and the needle tip positioned between the intercostal muscle and pectoralis major muscle. After confirming the needle tip position by hydro-dissection, 20 ml of 0.125% bupivacaine was injected between the muscles [Figure 1, Panel B]. The procedure was repeated on the other side. A 20-G epidural catheter was threaded on both sides. The catheter was double tunneled to secure it [Figure 1, Panel C]. The patient was electively ventilated for 48 hours in view of his poor comorbid



**Figure 1:** Panel A) Sonoanatomy of pecto-intercostal fascial plane block; Panel B) Longitudinal approach to PIFB by in-plane technique; Panel C) Double-tunneled catheter fixation method; PMM - pectoralis major muscle, ICM - intercostal muscle

condition. Ten ml of 0.125% bupivacaine was administered 8-hourly bilaterally. Pain of the patient was assessed 1 hour after extubation, and thereafter at 24 and 48 hours. The numerical rating scale (NRS) was 0/10, 0/10, and 0/10 at rest, and 1/10, 2/10, and 1/10 at coughing. The pain in the epigastric area caused by the mediastinal drain tubes was also relieved. The catheter was removed on the 4<sup>th</sup> postoperative day. There was no requirement for any additional analgesics till the catheter was *in situ*.

Single-shot PIFB has been used to provide analgesia and decreased opioid consumption in median sternotomy.<sup>[2-5]</sup> Advantages of this block over neuraxial blockade include it being devoid of complications like hemodynamic stability, dura puncture, and epidural hematoma formation. This block is technically easy, less invasive, and close to the incision line.<sup>[3]</sup> It also does not require specific patient positioning, as required in erector spinae plane block. There are some risks associated with cPIFB like pneumothorax, infection, catheter shredding, and pericardial injury which can be avoided by the right technique. US-guided bilateral cPIFB is an effective and easy approach to provide extended duration of postoperative analgesia after median sternotomy.

### Consent

Taken from the parents.

### Financial support and sponsorship

Nil.

### Conflicts of interest

There are no conflicts of interest.

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