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Erector Spinae Plane Block for Peri-operative Analgesia for Spine Instrumentation Surgery in a Paediatric Patient

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Dear Editor,

Spine surgeries are commonly associated with significant pain. Children are amongst the most affected group of patients carrying the burden of inadequate analgesia. Traditionally, systemic drugs were used for analgesia in children. Management of perioperative pain in children is evolving with focus on regional anaesthesia. Herein, we report the successful use of erector spinae plane (ESP) block in a child for spine instrumentation surgery.

A child aged 5 years, presented with a complaint of lower limb weakness. Computed tomography scan showed a lytic lesion destroying thoracic 5th-7th vertebral bodies. She was scheduled for thoracic 5th-6th corpectomy with cage placement and thoracic 3rd-4th and 7th-8th vertebral body fixation with rods and screws. Anticipating the need for large opioid dose to attenuate nociceptive response, we planned for general anaesthesia with a bilateral ESP block under ultrasound guidance for perioperative analgesia. A 20G spinal needle was used to approach thoracic 7th vertebral transverse process in the caudal-to-cranial direction. A solution containing 12 mL of 0.125% bupivacaine and 0.75 mg of morphine was administered below the erector spinae muscle (ESM) on each side. There was no significant change in the haemodynamic parameters and surgical pleth index throughout the 9-hour procedure, and no additional opioids were administered. In view of prolonged surgery and anticipated significant post-operative pain, bilateral ESP block was repeated at thoracic 9th vertebral level at the end of surgery. Postoperatively, the child received paracetamol of 250 mg every 8 hours. Post-operative pain was assessed using the numerical rating scale (NRS). Maximum NRS reported at rest was 1 and 3 at movement in the first 48 hours. Postoperatively, no rescue analgesia was needed. Patient was ambulated within 48 hours and was discharged after 1 week of surgery.

Severe post-operative pain is common after spinal surgery interfering with rehabilitation. Inadequate analgesia can also cause psychosocial consequences such as irritability, depression or reduced feeding necessitating meticulous pain management. Common modalities of analgesia include systemic drugs and epidural analgesia. Systemic opioids are frequently associated with nausea, vomiting and respiratory depression. NSAIDs have an detrimental effect on bone formation and healing in the post-operative period.[1] Ketamine failed to show significant reduction in pain and opioids consumption after pediatric spine surgeries.[2] Epidural anaesthesia has been promising but it has drawbacks, including failure, vascular injury and risk of infection.[3] Paravertebral block witnessed success in thoracic surgeries but potential risks of vascular and pleural injury limited its use.

ESP block is a fascial plane block where local anaesthetic is injected below ESM just above the transverse process. Multi-level spread of drug in the fascial plane causes multidermatomal blockade. Another advantage of multi-level spread is the ability to perform injection at a level different from the surgical site. Recently, it was successfully used in paediatric thoracic and abdominal surgeries.[4,5] However, its application in paediatric spine surgeries has not been demonstrated. We report the successful use of the ESP block for peri-operative analgesia in spine instrumentation surgery. It also demonstrated the intra-operative haemodynamic stability during nociceptive stimuli and significant

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reduction in post-operative pain at both rest and movement along with the reduction in demand for rescue analgesia and facilitation of early physiotherapy and rehabilitation.

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