Ultrasound-guided modified thoracoabdominal nerves block through perichondrial approach for subcostal incision in a pediatric patient

Postoperative pain management for major abdominal surgeries can reduce postoperative respiratory dysfunction and promote early mobilization. Various interfascial plane blocks for abdominal surgery have been described as opioid-sparing techniques for postoperative analgesia. Here we have described a modified thoracoabdominal nerves block via perichondrial approach (M-TAPA) in a 10-year-old female child posted for splenectomy via a subcostal incision. By this technique, we can block the thoracoabdominal nerves at T5 in the cephalic direction and down to T12 in the caudal direction. Thus it may be an effective analgesic for major abdominal surgeries. Written and informed consent for publication was taken from the parent. After shifting the patient to the operating room, an intravenous line was secured, and baseline vitals were taken. Induction of general anesthesia was done with fentanyl (2 µg/kg), propofol (2 mg/kg), and atracurium 0.5 mg/kg. The patient’s trachea was intubated with an endotracheal tube size 6 mm internal diameter. Maintenance of anesthesia was done by isoflurane and oxygen. M-TAPA block was given on the left side with the patient in the supine position at the level of 9th costal cartilage. A high-frequency linear ultrasound probe was used, and the probe was placed on the left costochondral angle in the sagittal plane. The angle of the probe was deepened to view the lower aspect of the chondrium in the midline. A 22-G, 5 cm echogenic needle was inserted in-plane to the probe into the lower aspect of the chondrium. After confirming the injection point by hydro-dissection with normal saline, 20 ml 0.25% bupivacaine was injected. The spread of local anesthetic was seen between transversus abdominis and internal oblique muscles [Figure 1].
An increase in heart rate by 20% during the intraoperative period was treated with fentanyl 1 µg/kg body weight. The surgery was completed uneventfully. In the postoperative period, the patient received 15 mg/kg IV paracetamol in the 6th hour. The patient was assessed at 1 hour, 6 hours, and 24 hours postoperatively, with a numerical rating scale being 2/10, 2/10, and 3/10 at rest.

Several regional analgesia techniques are used for the anterolateral part of the upper abdomen, such as oblique subcostal transversus abdominis plane block and other posterior blocks like quadratus lumborum block. At T6–T10 levels, intercostal nerves run beneath the chondrium and connect the origin of the transversus abdominis muscle to the cartilage. Tulgar et al. first described the m-TAPA block for postoperative analgesia of abdominal surgeries. Local anesthetic injected at the level of the 9th and 10th cartilages and deep to the origin of the transversus abdominis muscle to the cartilage. Tulgar et al. compared TAPA block with m-TAPA block to assess postoperative pain relief following laparoscopic cholecystectomy. They found that lateral cutaneous branches of the intercostal nerves were blocked in TAPA block, which resulted in more effective postoperative analgesia. However, there was no difference in total and rescue analgesic consumption during the follow-up of the patients. In our case, we have successfully used m-TAPA block as a part of a multimodal analgesic regimen in a pediatric patient undergoing subcostal incision.

Consent
Taken from the parents

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References
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