Continuous trans-muscular quadratus lumborum block for patient with postscoliosis correction undergoing open adrenalectomy – A case report

To the Editor,

A 19-year-old male weighing 60 kg was posted for left open adrenalectomy. Previously, he underwent scoliosis repair with fixation/instrumentation of the lumbar spine 3 years back. He was investigated with routine laboratory tests along with pulmonary function test (mild restrictive changes) and plasma metanephrines of 229 pg/mL (normal value- less than 196 pg/mL). Serum cortisol value was 29 μg/dL (3.09–16.66 μg/dL). Thereafter, he was started on alpha-blocker (prazosin 2.5 mg twice daily) and beta-blocker (metoprolol extended-release 50 mg once daily) for optimization of blood pressure and heart rate. The patient was also treated at a pain clinic for abdominal pain. The pain was well controlled with morphine 5 mg four times a day with a total morphine requirement of 30 mg for 24 h till the day of surgery.

In view of the big-sized tumor (12 × 15 cm) and previous spine instrumentation, a difficult regional anesthesia technique was anticipated [Figure 1a and b]. Thoracic epidural and paravertebral block were ruled out owing to previous instrumentation and distorted anatomy. We planned for a left-sided ultrasound (US)-guided trans-muscular quadratus lumborum block (TMQLB) with an indwelling catheter for continuous infusion for perioperative analgesia. Written consent was taken for the procedure under general anesthesia and continuous TMQLB. After confirming 6 h nil by mouth status and securing an appropriate intravenous (IV) line, general anesthesia was induced with 2 mg midazolam, 100 μg fentanyl, and 150 mg propofol. Neuromuscular blockade was achieved with 40 mg atracuruim, trachea intubation was done with an 8.0-sized cuffed endotracheal tube, and mechanical ventilation was continued on volume-controlled ventilation with isoflurane at minimum alveolar concentration (MAC) 1 to maintain general anesthesia. Intraoperatively, lidocaine infusion at 1.5 mg/kg/h was continued till the end of surgery, and a total 250 μg fentanyl was used based on hemodynamic response. The surgery was uneventful with no hypertensive crisis. The large mass was removed from the left subcostal incision, with a blood loss of 2000 mL.

Postprocedure US-guided TMQLB was performed with the patient in the right lateral position using a curvilinear probe (8 to 5 MHz (Sonosite. Inc, USA)) in left paramedian transverse view and using an 18-G Tuohy needle. The needle was inserted lateral side of the probe at the L3 level and inline approach traversing anterio-medially and piercing the fascia between the quadratus lumborum muscle (QL) and the psoas major muscle (PMm) [Figure 1c]. Hydro-dissection was done to confirm the correct myofascial plane with saline. Thereafter, 20 mL of 0.125% bupivacaine was injected followed by epidural catheter placement (18 G) with the Huber tip of a touhy needle turned cranially. Infusion of 0.125% bupivacaine was started at 8 mL/h for 48 h [Figure 1d]. The patient was extubated after 4 h in the surgical intensive care unit with vasopressor support of noradrenaline and vasopressin infusions. Postoperatively, the analgesia orders were IV morphine 3 mg for a pain score more than 4 and IV paracetamol injection 1 gm thrice daily. The first morphine was given 5 h after shifting to SICU, and the total morphine consumption was 12 mg in the postoperative period of 48 h.

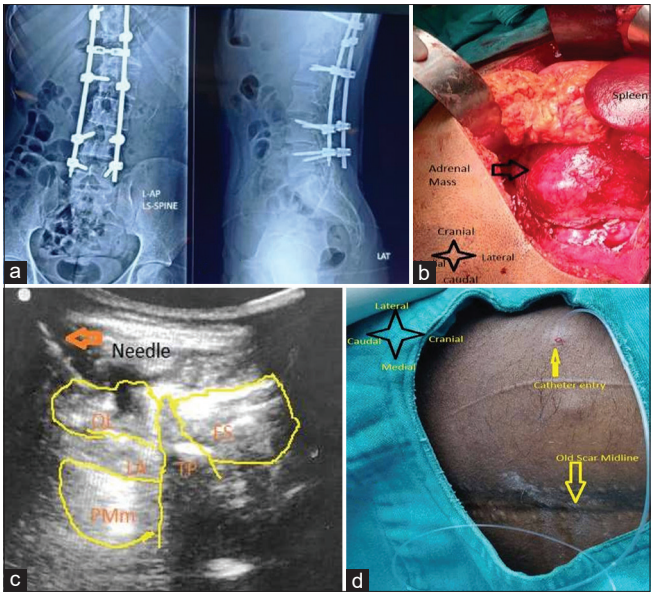

Figure 1: (a) Figure showing preoperative spine radiograph (anteroposterior view) and lateral view of scoliotic correction. (b) Intraoperative image showing large left adrenal mass. (c) Ultrasound image with needle direction and spread of local anesthetic (LA) anterior to the quadratus lumborum muscle (QL). TP-Transverse process of the L3 vertebra, ES- Erector spinae muscle, PMm- Psoas major muscle. (d) Figure showing catheter entry point and old scar of the scoliosis surgery

The patient had weakness of the left leg on examination with a power of 0/5 on postoperative day 1. TMQLB infusion was stopped and complete recovery of power was achieved after 6 h. Infusion of bupivacaine was restarted with 0.0625% at 8 mL/h. There was no further weakness of the left leg on regular monitoring. The TMQLB catheter was removed after 60 h with adequate time interval with anticoagulants as per American Society of Regional Anesthesia (ASRA) guidelines. The patient was able to perform incentive spirometry up to 2500 mL in the postoperative period with no pulmonary complication.

Quadratus lumborum block (QLB) is an interfascial plane block of the posterior abdominal wall. Several variants of QLB have been described in the literature.[1] In our institute, we prefer TMQLB as described above in the case description. Single-injection QLB has been found to be effective in patients undergoing cesarean sections and renal and hip surgeries.[2] We decided to perform TMQLB because of the understanding that previous spine instrumentation would still preserve integrity and sonoanatomy of relevant structures such as QLM and PMm.[3] To the best of our knowledge, there are no case reports describing the use of QLB in patients with previous spine instrumentation. Contrast studies have demonstrated the spread of injectate after QLB to paravertebral space and anterior epidural space, which is possibly responsible for the analgesia provided.[4] Earlier Wikner *et al.* had described a report in which a patient undergoing laparoscopic excision of endometriosis had motor weakness following QLB.[5] On examination, there was L2 dermatomal sensory loss and hip flexion weakness possibly due to the spread of local anesthetic to the L2 paravertebral space or to the lumbar plexus. Motor blockade of the lower limb in our case could be due to an increased spread to epidural space due to previous scoliotic surgery.

To conclude, US-guided TMQLB can be considered as an effective regional anesthesia technique in patients with previous spine instrumentation as a part of multimodal analgesia. We recommend reviewing relevant images and also performing a scout scan preoperatively to anticipate difficulties and plan accordingly.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patients has given his consent for hi images and other clinical information to be reported in the journal. The patient understands that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

Srinivas Shyam Prasad Mantha, Abhijit S. Nair, Praveen K. Kodisharapu, Basanth K. Rayani

Department of Anaesthesiology, Basavatarakam Indo-American Cancer Hospital and Research Institute, Hyderabad, Telangana, India

Address for correspondence:
Dr. Srinivas Shyam Prasad Mantha,
Department of Anaesthesiology, Basavatarakam Indo-American Cancer Hospital and Research Institute, Hyderabad - 500 034, Telangana, India.
E-mail: msspmbbs@gmail.com

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