

Erector spinae plane block for Sprengel deformity correction surgery: A case report

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SUMMARY

Congenital high scapula, also referred to as Sprengel deformity, is a rare malformation that results in a superiorly positioned scapula. The corrective surgery involves extensive soft tissue manipulation and is a successful technique for correcting this deformity. The Erector Spinae Plane (ESP) block is a novel, recently described technique for providing analgesia in the thoracic region. In this report, we describe the successful use of the ESP block for a patient with Sprengel deformity undergoing the Modified Green procedure.

Keywords: Analgesia; anesthesia; regional; orthopedic surgery.

Introduction

Congenital high scapula, also referred to as Sprengel deformity, is a rare malformation caused by the inadequate caudal migration of the scapula during fetal development, which results in a caudally positioned scapula. This condition is accompanied by the presence of an omovertebral bone in 16–55% of the cases, which restricts the movement of the scapula even further. The Modified Green procedure, which includes clavicle osteotomy and extensive release and reattachments of the periscapular muscles (Levator scapulae, rhomboids, subscapularis), is a successful technique for the correction of this deformity.^[1]

Erector spinae plane (ESP) block is a novel, recently described technique for providing analgesia in the thoracic region.^[2] Although this technique was originally used for neuropathic pain, it has gained popularity for postoperative pain management for both adult and pediatric patients.^[3] The local anesthetic spread has been shown to extend to C7 to T8 for ESP block.^[2] In this case report, we describe a successful

use of the ESP block for a patient with Sprengel deformity undergoing the Modified Green procedure together with omovertebral bone resection.

Case Report

Written informed consent from the parents was obtained. A 6-year-old, 18 kg female patient with an ASA physical status 2 and congenital high scapula was scheduled to undergo a Modified Green procedure with omovertebral bone resection. Midazolam 1 mg iv was administered for pre-operative sedation. General anesthesia was induced using propofol 2 mg/kg iv and fentanyl 1 mcg/kg iv. Muscle relaxation was achieved with rocuronium 0.6 mg/kg iv. The patient was intubated, and then the ESP block was performed in the prone position under ultrasound guidance (4.2–13 MHz) with a linear probe (Ge Logic P9, Gyeonggi-do, Republic of Korea) using a 22-G 50 mm needle (BBraun ultra-360, Melsungen, Germany). Ten mL of bupivacaine 0.25% was used for the block. The local anesthetic was injected in the interfascial plane deep to the erector spinae muscle at the level of the T5 transverse process. The cranio-

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caudal fascial extension of the local anesthetic was identified. Following the application of the block, the patient was placed supine for the clavicle osteotomy and then placed prone for the scapular reconstruction. Propofol and remifentanyl infusions were used to maintain anesthesia. As part of our multimodal analgesia protocol, 180 mg of ibuprofen and 270 mg of paracetamol were administered at the end of the procedure. The surgery took 8 hours and was completed uneventfully. Routine 250 mg paracetamol and 180 mg of ibuprofen were administered 3 times a day to provide postoperative analgesia.

During the first 24 hours, the patient did not express any discomfort and was rather pain-free (VAS 0). During the effective period of the ESP block, the patient did not have any motor weakness. After the block wore off at around 24 hours postoperatively, the patient reported severe pain. Tramadol 18 mg iv was used to alleviate the postoperative pain; however, it could not provide the same comfort (VAS 8) that was provided by the ESP block for the patient.

Discussion

The ESP block is a recently described regional anesthesia technique that has been shown to be an effective modality for providing analgesia in the thoracic region. We used the ESP block because it has been shown to provide analgesic coverage for C7-T8 dermatomes, which includes the region well below the scapula and would render sufficient analgesia for this extensive soft tissue surgery.

In this case, the patient was pain-free during the first 24 hours, although she did feel severe pain after the resolution of the block. This could imply the need for placing an ESP block catheter. We decided not to place a catheter due to the proximity to the surgical site.

Among the alternatives for this procedure could be epidural anesthesia and thoracic paravertebral (TPV) block. Epidural anesthesia was not preferred due to its potential side effects related to central neuraxial blocks.^[4] Additionally, compared to TPV block, ESP is a more superficial and safer analgesia technique.^[5]

To the best of our knowledge, this is the first report describing the application of regional anesthesia in a patient with Sprengel deformity undergoing corrective surgery. We think that the ESP block should be considered an important component for providing analgesia for the Modified Green procedure in the pediatric population.

Ethics Committee Approval: This is a single case report, and therefore ethics committee approval was not required in accordance with institutional policies.

Informed Consent: Written informed consent from the parents was obtained.

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