

Yet another PECS usage: A continuous PECS block for anterior shoulder surgery

Madam,

Though often used in shoulder surgery, interscalene nerve blockade (INB) carries a high risk of transient complications, due to phrenic nerve block with homolateral diaphragmatic paralysis,^[1] and also long-term complications such as permanent neurological deficit and brachial plexus palsy.^[2]

Borgeat *et al.*^[3] reported a 13% incidence of neurological complications, whereas Urmey *et al.*^[4] reported a 100% incidence of hemidiaphragmatic paralysis after INB, as well as a 27% decrease in forced vital capacity and forced expiratory volume at 1 second. Although INB can be well tolerated in young healthy patients, it may be deleterious for frail patients with lung disease.

Recent research for less potentially dangerous analgesic techniques has identified the suprascapular nerve block^[5] (SSB) as safe and easy to perform under ultrasound guidance during arthroscopic procedures or surgical access to the posterior aspect of the shoulder. Even more recently, Blanco^[6] described the PECS block principally used to provide analgesia for procedures involving the anterolateral chest wall.

Since the anterosuperior part of the shoulder is innervated by the articular branch of the lateral pectoral nerve^[7] that runs parallel to the thoraco-acromial artery on the undersurface of the upper portion of the pectoralis major muscle, this can be easily reached with a PECS block.

In our search for a continuous, easy-to-perform block that can provide postoperative analgesia and facilitate early mobilization, we recently used a PECS continuous block in a heavy smoker with severe chronic obstructive pulmonary disease (COPD) who underwent open shoulder surgery for proximal humeral fracture.

A 74-year-old woman heavy smoker (BMI 31 kg/m,^[2] ASA-PS III) suffered a right humeral head fracture [Figure 1] was scheduled for open surgery reduction. The past medical history included severe COPD, metabolic syndrome, and anxiety. At current presentation, the functional status was 3 MET and the baseline peripheral oxygen saturation was between 88% and 95% on 2 L/min O₂ with nasal cannula.



Figure 1: X-ray showing right proximal humeral fracture

Anesthetic options were discussed with the patient and the risks/benefit explained. To minimize potential issues with hemidiaphragmatic paralysis, we decided not to perform an INB but rather general anesthesia plus a single-shot SSB with PECS continuous block as postoperative analgesia. On the day of surgery, a single-shot ultrasound-guided SSB (ropivacaine 0.25% 10 mL) was administered, then general anesthesia induced and maintained with desflurane and remifentanyl. On completion of surgery, sonographic evaluation of the right subclavicular region was performed; the two pectoralis major and minor muscles identified along with the pectoral branch of the thoraco-acromial artery that runs between them. Once identified, with maximum barrier precautions, a 19-gauge 10-cm Tuohy needle was advanced from medial to lateral using an in-plane approach under ultrasound guidance until the needle tip was close to the neurovascular bundle, where 20 mL of ropivacaine 0.25% were injected. Hydrodissection between the two pectoralis muscles was obtained, a catheter was inserted and secured [Figure 2] and connected to an elastomeric pump infusing 7 mL/h of ropivacaine 0.25%. General anesthesia was discontinued; the patient was fully cooperative and able to perform gentle movements with the operated limb without pain. The postoperative analgesic regimen was paracetamol 1 g every 8 h plus ketoprofen as a rescue dose for pain if the numerical rating scale (NRS) score was 1–3, or 5 mg *i. v.* morphine if the NRS score was ≥ 4 .

Continuous infusion was maintained for 48 h, two rescue doses (ketoprofen 160 mg) were requested during the first 24-h postoperative; opioids were not required. She was discharged from hospital 72 h after surgery and was able to start physical therapy without major functional limitations and without exacerbation of baseline COPD.



Figure 2: *In-situ* PECS catheter and dressing using a Pajunk™ SonoLong Sono catheter secured with a Stat-Lock™ securement device (Stat-Lock, Salt Lake City, UT, USA)

Traditional techniques for postoperative analgesia in shoulder surgery rely on INB and SSB with noted side effects; classical regional anesthesia technique could have increased the risk of potential respiratory decompensation in this patient, especially because of the diminished vital capacity. Furthermore, INB and SSB catheter placement for continuous postoperative analgesia are cumbersome to perform, with risk of catheter displacement during mobilization.

PECS is a relatively novel, simple, and easy-to-perform interfascial plane block. When surgery is limited to the anterior aspect of the shoulder, we believe that it could be considered a potentially useful technique for achieving analgesia, especially in patients with impaired pulmonary function. Although promising, further studies are needed to support our findings.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand 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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Conflicts of interest

There are no conflicts of interest.

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References

1. Robaux S, Bouaziz H, Boisseau N, Raucoles-Aimé M, Laxenaire MC; S.O.S. Regional Hot Line Service, *et al*. Persistent phrenic nerve paralysis following interscalene brachial plexus block. *Anesthesiology* 2001;95:1519-21.
2. Walton JS, Folk JW, Friedman RJ, Dorman BH. Complete brachial plexus palsy after total shoulder arthroplasty done with interscalene block anesthesia. *Reg Anesth Pain Med* 2000;25:318-21.
3. Borgeat A, Dullenkopf A, Ekatodramis G, Nagy L. Evaluation of the lateral modified approach for continuous interscalene block after shoulder surgery. *Anesthesiology* 2003;99:436-42.
4. Urmey WF, Talts KH, Sharrock NE. One hundred percent incidence of hemidiaphragmatic paresis associated with interscalene brachial plexus anesthesia as diagnosed by ultrasonography. *Anesth Analg* 1991;72:498-503.
5. Raj PP. Suprascapular nerve block. In: Waldman SD, editor. *Pain Management*. Philadelphia: W.B. Saunders; 2007. p. 1239-42.
6. Blanco R. The 'pecs block': A novel technique for providing analgesia after breast surgery. *Anaesthesia* 2011;66:847-8.
7. Nam YS, Panchal K, Kim IB, Ji JH, Park MG, Park SR, *et al*. Anatomical study of the articular branch of the lateral pectoral nerve to the shoulder joint. *Knee Surg Sports Traumatol Arthrosc* 2016;24:3820-7.

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