Intermediate cervical plexus block and neuraxial anesthesia: A unique approach to awake laparoscopy

Dear Editor,

Laparoscopy has revolutionized surgery with its advantages, although it has traditionally been performed under general anesthesia, even in patients with many comorbidities. Recently, regional anesthesia (RA) has emerged in selected cases as an alternative option for laparoscopy due to several benefits, as the prevention of airway manipulation, intraoperative spontaneous breathing, minimal nausea and vomiting, effective postoperative analgesia without opioids, early ambulation, and recovery.[1] However, RA can be associated with side effects such as the need for a high sensory level block, the risk of hypotension, and shoulder discomfort due to diaphragmatic irritation from carbon dioxide pneumoperitoneum. The incidence of shoulder-tip pain ranges from 25% to 43% and can be quite distressing, even in the postoperative period.[2] Here, we detail the case of a patient who underwent "awake" laparoscopy under neuraxial anesthesia with an intermediate cervical plexus

block (ICPB) to prevent shoulder-tip pain without reporting phrenic nerve palsy.

A 63-year-old patient, weighing 120 kg, height 165 cm (body mass index [BMI] 44 kg/m^2), with anemia and chronic obstructive pulmonary disease, ASA-PS III, was scheduled for laparoscopic correction of an extensive post-surgical hernia. With the patient's informed consent, to minimize the airway manipulation, the risk of postoperative respiratory complications, and opioid administration, we chose to perform surgery under spinal anesthesia together with ICPB to manage shoulder-tip pain from pneumoperitoneum and reduce the extent of the spinal block. Measures for a proper management of the airways in case of emergencies were planned. Vital signs were monitored. In asepsis, ultrasound-guided unilateral (right side) ICPB was placed with 0.2% ropivacaine, 10 ml. Subsequently, after the intravenous administration of 500 ml crystalloid, in asepsis, spinal anesthesia was performed at T9 level using a 22-G Sprotte needle, administering 4 ml of 0.28% ropivacaine plus dexmedetomidine 5 mcg. The surgery lasted 240 min without complications. Intravenous propofol infusion (2 mg/kg/min) was administered for the sedation, with the patient spontaneously breathing (oxygen 4 l/min through a nasal cannula). Ventilation was monitored by capnometry. Postoperatively, the patient did not experience hemodynamic or respiratory complications. There was no impairment of diaphragmatic function, monitored both clinically and via ultrasound for two days following the surgery. Mobilization was achieved the day after surgery, with no occurrence of nausea or vomiting. Analgesia (NRS score <4) was maintained without opioids, only with intravenous paracetamol, 1 g three a day.

First described in 2007, ICPB involves injection into the fascial plane between the sternocleidomastoid muscle and prevertebral fascia at C4 level.[3] Cervical plexus block have been used to facilitate procedures as carotid endarterectomy, auricular, clavicular, or thyroid surgery. Opperer *et al*.[4] showed that diaphragmatic dysfunction was most pronounced in the deep cervical plexus block, while an ICPB with 0.25% ropivacaine (0.2 ml/kg) proved to be not significant on the phrenic nerve, not causing hemi-diaphragmatic paresis during and after thyroidectomy.[5]

We hypothesized that ICPB could be useful even in "awake" laparoscopy under neuraxial anesthesia preventing shoulder-tip pain and limiting the need for a very high sensory spinal block. Our plan was that a more superficial (intermediate) cervical injection, along with lower anesthetic concentration, might create a differential block (mostly sensory) on the phrenic nerve, through the fascial plane spread of the injectate, without phrenic palsy.

An advantage of this technique could be that resolving shoulder-tip pain may allow for a spinal anesthesia with more limited extension, starting from a lower puncture level (T12–L1), without phrenic paresis. Potential limitations include the need for additional puncture, the difficulty in performing ICPB due to anatomical conditions, and reduced anesthetic coverage related to lower spinal punctures. It remains crucial to select the patient by evaluating risks and benefits on a case-by-case basis, along with the expertise of the anesthetist and the surgical team involved. Further studies are needed to better understand the potential of this approach.

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.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

Francesco Marrone, Pierfrancesco Fusco[1], Lorenzo Forasassi[2], Carmine Pullano[3]

ASL ROMA 1, UOC Anestesia e Rianimazione, Santo Spirito Hospital, Rome, [1]Unit of Anesthesia and Intensive Care, SS Filippo e Nicola Hospital, Avezzano, L'Aquila, [2]Unit of Anesthesia, Villa Donatello Clinic, Florence, [3]Unit of Anesthesia, Villa Pia Clinic, Rome, Italy

Address for correspondence:
Dr. Francesco Marrone,
ASL ROMA 1, UOC Anestesia e Rianimazione, Ospedale Santo Spirito, Lungotevere in Sassia 1 Rome, Italy.
E-mail: francesco.marrone@aslroma1.it

Submitted: 20-Jun-2024, **Revised:** 21-Jun-2024,
Accepted: 21-Jun-2024, **Published:** 01-Jan-2025

References

1. Bajwa SJ, Kulshrestha A. Anaesthesia for laparoscopic surgery: General vs regional anaesthesia. J Minim Access Surg 2016;12:4-9.
2. Tzovaras G, Fafoulakis F, Pratsas K, Georgopoulou S, Stamatiou G, Hatzitheofilou C. Laparoscopic cholecystectomy under spinal anaesthesia: A pilot study. Surg Endosc 2006;20:580-2.
3. Pandit JJ, Satya-Krishna R, Gration P. Superficial or deep cervical plexus block for carotid endarterectomy: A systematic review of complications.

Br J Anaesth 2007;99:159-69.
4. Opperer M, Kaufmann R, Meissnitzer M, Enzmann FK, Dinges C, Hitzl W, *et al*. Depth of cervical plexus block and phrenic nerve blockade: A randomized trial. Reg Anesth Pain Med 2022;47:205-11.
5. Kim HY, Soh EY, Lee J, Kwon SH, Hur M, Min SK, *et al*. Incidence of hemi-diaphragmatic paresis after ultrasound-guided intermediate cervical plexus block: A prospective observational study. J Anesth 2020;34:483-90.

Access this article online

Website: https://journals.lww.com/sjan

DOI: 10.4103/sja.sja_364_24

Quick Response Code

How to cite this article: Marrone F, Fusco P, Forasassi L, Pullano C. Intermediate cervical plexus block and neuraxial anesthesia: A unique approach to awake laparoscopy. Saudi J Anaesth 2025;19:158-60.