

CASE REPORT

Combined Axillary Block with Spinal Block Anaesthesia

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ABSTRACT

Background: Patients undergoing upper limb trauma surgery have reported various benefits of regional anesthesia over general anesthesia, including better perioperative analgesia, less opiate use, less postoperative nausea and vomiting (PONV), and a shorter post-anesthesia care period.

Case Illustration: We reported an evaluation of 72 years old, 165 cm height and 60 kg weight male patient who was planned for open reduction and internal fixation surgery for neglected left radius ulna close fracture and left neglected tibia fibula close fracture that he was beneath follow-up for hypertension (HT), and was using antihypertensive drugs. Preoperative risk of the patient was assessed as with American Society of Anesthesiologists (ASA) with score 3. General anesthesia would be unsafe due to geriatric issue, cardiovascular problem and delayed surgery term, we chosed to utilize combine axillary block with spinal block. we utilized USG guided infusion procedure in arrange to diminish local anesthetic dosage, and minimize error. During surgical procedure there is no hypotension, bradycardia or decreased oxygen saturation. Surgical anesthesia occurred in left hand within 20 minutes after drug delivery and 10 minutes in lower extremity. Surgery complications was not reported particularly related to vascular puncture or adjacent anesthetic and nerve block applications. No complaint was detailed from the patient who was watched for 12 hours after the surgery.

Conclusion: Peripheral nerve block and neuraxial block, when utilized appropriately in combination, appear be able to supplant common anesthesia within the larger part of case.

Keywords: axillary block; spinal block; combined anesthesia



INTRODUCTION

Supraclavicular, infraclavicular, interscalene, and axillary approaches can be used to block brachial plexus. The approach to be utilized may shift depending on the surgery location, professional involvement, and patient's anatomy. Brachial plexus blockage may be a strategy utilized to supply intraoperative anesthesia and postoperative pain management within the surgery of hand and lower arm¹⁻³. Different procedures are applied in axillary plexus blockade. The utilize of peripheral nerve stimulation is named as 'blind technique' and isn't conceivable to imagine the target tissues with this procedure⁴⁻⁶. Blind procedure may have complications due to re-interventions^{7,8}.

Ultrasound usage in regional anesthesia is progressively ended up far reaching with the improvement of ultrasonographic (USG) innovation and expanded picture quality. In this manner, the utilize of ultrasound in peripheral nerve block gives us various focal points. Nerve blockade with ultrasonography diminishes complication hazard by coordinate visualization of the block needle and gives significant block success, lower-dose nearby anesthetic volume, decreased for rescue analgesia,

decreased procedural pain, and diminished chance of vascular and pleural puncture⁷.

Brachial plexus block is suitable technique for forearm surgery because it provides good intraoperative and prolong postoperative analgesia when long-acting anesthetics are used, and also a good alternative choice when general anesthesia would be unsafe due to geriatric issues, cardiovascular problems, less opiate use, less postoperative nausea and vomiting (PONV), and a shorter post-anesthesia care period^{9,10}.

Combine axillary block with Spinal blok of brachial plexus is seldom used since of the chance for systemic local anesthetic harmfulness. Hence, upper and lower extremity surgery favors the usage of general anesthesia. The utilize of ultrasound gives simple visualization of the nerve structure and vascularization, and may be accommodating in brachial plexus blockade¹¹.

We present our case report in encounter on combine axillary block with spinal block ansthesia that we connected in a patients planned for upper and lower extremity surgery.

CASE ILLUSTRATION

Evaluation of a 72 years old, 60 kg weight and 165 cm height male patient preoperatively who was planned for open reduction and internal fixation surgery for neglected left radius ulna close fracture and left neglected tibia fibula close fracture that he was beneath follow-up for hypertension (HT), and was using antihypertensive drugs. Preoperative risk of the patient was assessed as with American Society of Anesthesiologists (ASA) with score 3. General anesthesia would be hazardous due to geriatric issue and delayed surgery length of the patient, we chosen to utilize combine axillary block with spinal block.

The patients were instructed approximately that he will experience upper and lower nerve block, and change to general anesthesia may well be required on the off chance that the block isn't adequate. Standard patient observation was carried out with pulse oximetry, noninvasive blood pressure, and electrocardiography within the regional anesthesia application room. 18 G cannula used to obtain intravenous (IV) access from the right-hand region with 18 G cannula. Oxygen supplement was given.

Patient's head was turned inverse to the place of the block initiation in supine position. The arm which the nerve block occur was positioned, and taking after cleansing of the region with povidone iodine, a sterile USG with longitudinal probe test was embedded to the axillary region. 2 mL local anesthetic was conveyed with 20G nerve stimulation needle and when the spread was observed, the remaining local anesthetic was conveyed with intermittent aspiration. Local nerve block was observed to be isolated around the lateral, posterior, medial axillary artery, and musculocutaneous nerve. Total volume of 20 mL was managed for a single extremity with 20 ml of 0,75 % ropivacaine. The lower extremity with spinal block anesthesia begin with disinfect the skin with povidone iodine and alcohol 70% and evacuation of abundance spinal cut was performed within the lateral right side of the patient, by the medial line within the L3-L4 interspaces utilizing 26G Quincke needle. After cerebrospinal liquid (LCS) appear, 15 mg of 0.5% hyperbaric bupivacaine with 25mcg adjuvant fentanyl were administered.



Figure 1. Neglected left radius ulna close fracture and neglected left tibia fibula close fracture



Figure 2. Needle insertion for in-plane ultrasound-guided axillary brachial plexus block anesthesia. The patient was positioned.



Figure 3. USG Visualization of nerves around the axillary artery, radial nerve; ulnar nerve; median nerve; and musculocutaneous nerve



Figure 4. Post operative of open reduction and internal fixation surgery for neglected left radius ulna close fracture and neglected left tibia fibula close fracture that under axillary block combined with spinal block anesthesia

The patient was put in supine position to the beginning of surgery. Within the extremity to be worked, the level of sensory block (tried by pinprick) was watched in T10. During surgical procedure there is no hypotension, bradycardia or decreased oxygen saturation. Surgical anesthesia occurred in left hand within 20 minutes after drug delivery and 10 minutes in lower extremity. Surgery complications was not reported particularly related to adjacent anesthetic and nerve block applications or vascular puncture. Extra

local anesthetic infusion or sedation was not required amid the surgery. The surgery endured about 5 hours in the left hand and 4 hours in left limb without patient complaining any pain feeling and other issue. No pain complaint was reported from 12 hours postoperative observation of the patient.

DISCUSSION

Peripheral nerve blockade is an anesthetic strategy as a rule favored within the upper extremity surgery¹². The approach of brachial plexus blockage may be utilized to supply intraoperative anesthesia and postoperative pain management within the surgery of hand and lower arm. Supraclavicular, infraclavicular, interscalene and axillary approaches can be used to block brachial plexus¹⁻³. Depending on the operation location, professional's experience, and anatomy of the patient, The approach to be utilized may change. The combination with spinal block utilization is greatly uncommon in spite of the fact that brachial plexus blockage is generally utilized as one-sided approach, and as a rule in frame of case reports or exceptionally little arrangement¹⁻³. Anesthesiologist do not choose combine block applications since requires additional invasive intervention, time consuming, failure risk of low dose

administration, and high local anesthetic dose toxicity risk. Mangla et al., reported that they completed the surgery by performing bilateral brachial plexus block and no complications was reported³. Kim et al., also reported that bilateral brachial plexus block was successful without any complications for bilateral upper extremity surgery in a patient with cervical spinal cord injury¹³. In our case, General anesthesia would be unsafe due to geriatric issue and delayed surgery term, we decided to utilize combine axillary block with spinal block.

Peripheral nerve stimulation is named as "blind" procedure, since it is outlandish to imagine the needle and focused on tissues. A standard strategy using nerve stimulation with needle in blockage applications is used for approximately 30 years. In this strategy remove to the nerve can be evaluated concurring to muscle contractions innervated by the nerve⁴⁻⁶. USG gives a synchronous visualization of the needle, the dissemination of adjacent anesthetic amid the infusion, and structures that must be spared such as the vessels and pleura, and. Therefore, USG guided nerve block have been vastly used recently. In expansion, lower needle developments compared to the nerve

incitement quiet consolation and adequacy of the method^{6,14}. In our patient also we utilized USG guided infusion procedure both in arrange to diminish the dosage local anesthetic, and minimize failure.

CONCLUSION

Regional anesthesia many have more advantages compare to general anaesthesia in extremity operation. Peripheral nerve block and neuraxial block, when utilized appropriately in combination, appear be able to supplant common anesthesia within the larger part of case.

We think that axillary block can be securely connected as combined with spinal block, since the utilize of USG gives simple visualization of the vascular and nerve structures, and empowers noteworthy decrease of nearby anesthetic doses.

REFERENCE

1. Kaye AD, Allampalli V, Fisher P, et al. Supraclavicular vs. Infraclavicular brachial plexus nerve blocks: Clinical, pharmacological, and anatomical considerations. *Anesthesiol Pain Med*; 11. Epub ahead of print 2021. DOI: 10.5812/AAPM.120658.
2. Zadrazil M, Opfermann P, Marhofer P, et al. Brachial plexus block with ultrasound guidance for upper-limb trauma surgery in children: a retrospective cohort study of 565 cases. *Br J Anaesth* 2020; 125: 104–109.
3. Mangla C, Kamath HS, Yarmush J. Bilateral brachial plexus block using chloroprocaine for surgery of bilateral radial fractures [response to letter]. *Local Reg Anesth* 2019; 12: 125–126.
4. Wang ZX, Zhang DL, Liu XW, et al. Efficacy of ultrasound and nerve stimulation guidance in peripheral nerve block: A systematic review and meta-analysis. *IUBMB Life* 2017; 69: 720–734.
5. Alfred V, Srinivasan G, Zachariah M. Comparison of ultrasound with peripheral nerve stimulator guided technique for supraclavicular block in upper limb surgeries: A randomized controlled trial. *Anesth Essays Res* 2018; 12: 50.
6. Gadsden JC. The role of peripheral nerve stimulation in the era of ultrasound-guided regional. *Assoc Anaesth* 2021; 76: 65–73.

7. Honnannavar K, Mudakanagoudar M. Comparison between conventional and ultrasound-guided supraclavicular brachial plexus block in upper limb surgeries. *Anesth Essays Res* 2017; 11: 467.
8. Ponde VC, Chavan DN, Desai AP, et al. Avoidance of deep anesthesia and artificial airways in 1000 neonates and infants using regional anesthesia: A retrospective observational analysis. *J Anaesthesiol Clin Pharmacol* 2020; 36: 386.
9. Teunkens A, Vermeulen K, Belmans A, et al. Patient satisfaction with intravenous regional anaesthesia or an axillary block for minor ambulatory hand surgery: A randomised controlled study. *Eur J Anaesthesiol* 2020; 37: 847–856.
10. Matsumura N, Inoue S, Iwagami H, et al. Comparison of Patient Satisfaction between Brachial Plexus Block (Axillary Approach) and General Anesthesia for Surgical Treatment of Distal Radius Fractures: A Historical Cohort Study. *Open J Anesthesiol* 2020; 10: 422–434.
11. Luftig J, Mantuani D, Herring AA, et al. Ultrasound-guided retroclavicular approach infraclavicular brachial plexus block for upper extremity emergency procedures. *Am J Emerg Med* 2017; 35: 773–777.
12. Hamilton GM, Ramlogan R, Lui A, et al. Peripheral Nerve Blocks for Ambulatory Shoulder Surgery: A Population-based Cohort Study of Outcomes and Resource Utilization. *Anesthesiology* 2019; 131: 1254–1263.
13. Kim BG, Yang C, Lee K, et al. Bilateral brachial plexus block in a patient with cervical spinal cord injury: A case report. *Medicine (Baltimore)* 2020; 99: e21126.
14. Tarıkçı Kılıç E, Akdemir MS. Comparison of Supraclavicular, Infraclavicular, and Axillary Approaches for Ultrasound-Guided Brachial Plexus Block for Upper Limb Surgeries: A Retrospective Analysis of 182 Blocks. *Dubai Med J* 2018; 1: 33–37.