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CLINICAL INFORMATION

Continuous quadratus lumborum type 3 block provides effective postoperative analgesia for hip surgery: case report



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KEYWORDS

Quadratus lumborum block;
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Abstract

Introduction: Hip surgery is a major surgery that causes severe postoperative pain. Although pain during rest is usually considerably reduced mobilization is important in terms of thromboembolic complications. The quadratus lumborum block is a regional analgesic technique that blocks T6-L3 nerve branches. This block may provide adequate analgesia and reduce opioid consumption after hip surgery.

Case report: We performed continuous quadratus lumborum type 3 block in two patients who underwent hip arthroplasty. Postoperative 24-h pain scores, local anesthetic consumptions on patient-controlled analgesia and additional analgesic requirement were recorded. In two patients, postoperative pain scores were less than 6 during rest and physiotherapy. Patient was mobilized in the early postoperative period without additional opioid analgesic requirement and without muscle weakness.

Discussion: Continuous quadratus lumborum block may be used to relieve postoperative acute pain in hip surgery because it provides one-sided anesthesia without muscle weakness.

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PALAVRAS-CHAVE

Bloqueio do quadrado lombar;
Cirurgia de quadril;
Analgésia pós-operatória

O bloqueio contínuo do quadrado lombar tipo 3 fornece analgesia pós-operatória efetiva para cirurgia do quadril: relato de caso

Resumo

Introdução: A cirurgia de quadril é uma cirurgia de grande porte que causa dor intensa no pós-operatório. Embora a dor durante o repouso seja consideravelmente reduzida, a

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mobilização é importante em termos de complicações tromboembólicas. O bloqueio do quadrado lombar é uma técnica analgésica regional que bloqueia os ramos nervosos de T6-L3. Esse bloqueio pode fornecer analgesia adequada e reduzir o consumo de opioides após cirurgias de quadril.

Relato de caso: Realizamos o bloqueio contínuo do quadrado lombar tipo 3 em dois pacientes submetidos à artroplastia de quadril. Durante as 24 hs de pós-operatório foram registrados os escores de dor, o consumo de anestésicos locais em analgesia controlada pelo paciente e a necessidade de analgésicos adicionais. Em dois pacientes, os escores de dor pós-operatória foram <6 durante o repouso e fisioterapia. O paciente foi mobilizado no período pós-operatório imediato, sem precisar de analgésico opioide adicional e sem fraqueza muscular.

Discussão: O bloqueio contínuo do quadrado lombar pode ser usado para aliviar a dor aguda no pós-operatório de cirurgia de quadril porque fornece anestesia unilateral sem fraqueza muscular.

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Introduction

Hip arthroplasty has become a common orthopedic surgery with the aging of society. It is a major surgery with extensive and severe tissue dissection in muscle, bone, and vascular structures. Therefore this leads to severe postoperative pain.¹ Pain during rest is usually considerably reduced, however mobilization is important in terms of thromboembolic complications. Patient-controlled analgesia with opioids, various regional anesthesia methods, such as epidural and spinal analgesia, peripheral nerve blocks and local anesthetic infiltration have been applied to control hip surgery pain.²

Quadratus lumborum block (QLB), defined as a variant of TAP block, is widely used for postoperative analgesia in abdominal surgery.³ This technique involves the process of injecting a local anesthetic into the fascial plane between the quadratus lumborum and psoas muscles. The quadratus lumborum muscle originates from the iliac crest and inserts on the 12th rib and the transverse processes of vertebrae L1–L5. The local anesthetics spread along the muscles and provide T6-L3 sensory block. Therefore this has been used in pelvic and hip surgeries as reported by some cases.⁴

Case report

We present two cases of hip arthroplasty performing the continuous QLB in this report. A written consent form was obtained from the patients.

Case 1

A 67-year-old male patient was taken to the operating room for hip arthroplasty. Standard monitoring was performed. One mg midazolam and 50 mcg fentanyl were administered for sedation and then the patient was placed in the lateral position with the fractured side on the top. Spinal anesthesia was performed with 7.5 mg isobaric bupivacaine for surgical anesthesia. After surgery, the patient was in the lateral decubitus position—the area to be treated and the convex USG probe was sterilized. The probe was placed in the axial plane on the patient's iliac crest (Fig. 1A). Transverse process of vertebra L4, quadratus lumborum, psoas, and erector spinae muscles was visualized. The intervention was performed by using an in-plane technique with an 18G 100 mm Tuohy needle. The quadratus lumborum muscle was passed as transmuscular. Entering among the fascia of the psoas

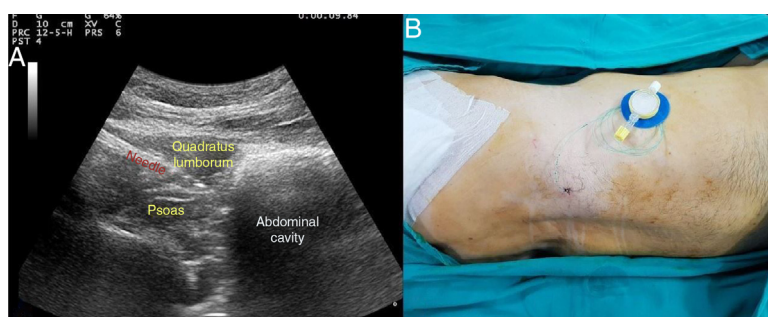


Figure 1 (A) Ultrasound image of quadratus lumborum block. (B) Quadratus lumborum block catheter position.

and the quadratus lumborum muscles, the block was applied with 20 mL of 0.25% bupivacaine. And then 20G catheter was placed 4 cm inside the space created by the local anesthetic injectate (Fig. 1B). The catheter infusion was connected to a PCA device that administered bupivacaine 0.1% at 5 mL.h⁻¹ with a 5 mL bolus and 20 min lockout. Thirty minutes before the end of the operation 400 mg IV ibuprofen were given and this was repeated twice a day. Postoperative 24-h rest VAS scores were 0, and VAS scores were between 2 and 4 during physiotherapy. The patient was mobilized in the 8th hour; 24 h total bupivacaine consumption was 140 mg and did not require any additional opioid analgesic.

Case 2

A 75-year-old female patient with intracranial meningioma history was scheduled for a hip arthroplasty. The patient was taken to the operating room, standard monitoring was performed. Induction of general anesthesia was performed with propofol, fentanyl, and rocuronium, intraoperative analgesia was achieved with remifentanyl. After surgery, continuous QLB was applied using the same technique and same volume as described in the first case and connected to a PCA device (bupivacaine 0.1% at 5 mL.h⁻¹ with a 5 mL bolus and 20 min lockout). Postoperative 24 h VAS scores were between 0 and 2 at rest, and between 0 and 4 during physiotherapy. Patient without additional opioid analgesic requirement and without muscle weakness was mobilized in the sixth hour. Total of 24 h of bupivacaine consumption was 170 mg and 10 times PCA bolus was used.

Discussion

Hip fractures are usually seen in the older age and these patients usually have comorbidities such as diabetes, hypertension, and cardiac instability. Management of anesthesia and postoperative analgesia should be planned considering these comorbidities. Neuraxial blocks are widely used for postoperative analgesia in hip surgery. In the studies, the opioids and the local anesthetics were used for epidural analgesia and the efficacy was shown. The side effects, as well as the efficacy of the epidural block, should be considered. It can cause serious complications in elderly patients. Sympathetic block-related cardiac complications, respiratory depression, pulmonary hypertension, pruritus, and urinary retention are some of these.

Peripheral nerve blocks are another option for pain management in hip arthroplasty. Femoral block, sciatic block, and lumbar plexus block have been proved to be very effec-

tive at controlling pain and reducing narcotic requirements. Peripheral nerve blocks have the fewer risk of complications such as hypotension, urinary retention, and respiratory depression when compared to epidural block. The disadvantages of nerve blocks are possibilities of injury associated muscle weakness on the postoperative period. There were a few reports of incidence of quadriceps muscle weakness after QLB and the sustained mechanism of muscle weakness of QLB is spread of local anesthetics to epidural or paravertebral space of lumbar region but this hypothesis is unclear.⁵ Volume and concentration of local anesthetic may be an important factor for lower-extremity muscle weakness after QLB. Moreover cadaveric and MRI studies are needed to validate the block's potential anatomic spread.

Postoperative mobilization of the patient in hip surgery is very important in terms of preventing morbidity and mortality, therefore effective and continuous analgesia is essential. In these cases report, continuous QLB has been provided for superior analgesia in hip arthroplasty. There was no muscle weakness due to QLB in patients and they were mobilized early postoperative period.

Continuous QLB can be used in place of other regional anesthetic techniques to relieve postoperative acute pain in hip surgery because of it being less invasive, causes less muscle weakness, and provides one-sided anesthesia.

Conflicts of interest

The authors declare no conflicts of interest.

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