



REVISTA BRASILEIRA DE ANESTESIOLOGIA

Publicação Oficial da Sociedade Brasileira de Anestesiologia
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CLINICAL INFORMATION

Continuous lumbar erector spinae plane block for postoperative pain management in revision hip surgery: a case report



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Received 23 October 2018; accepted 10 December 2018

Available online 23 April 2019

KEYWORDS

Regional anesthesia;
Erector spinae plane
block;
Acute postoperative
pain;
Total hip arthroplasty

Abstract

The number of total hip arthroplasty cases performed each year continues to increase; accordingly, so does the number of revision total hip arthroplasty procedures. While our traditional method of analgesia for these patients has involved multimodal medications and a continuous lumbar plexus block, we report two cases of patients who received continuous lumbar erector spinae plane blocks. Both patients exhibited excellent pain control postoperatively and were able to discharge home on postoperative day one. This case report illustrates the possible utility of continuous erector spinae plane blocks for postoperative analgesia in the more frequently occurring revision total hip arthroplasty surgeries.

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PALAVRAS-CHAVE

Anestesia regional;
Bloqueio do plano do
erector da espinha;
Dor pós-operatória
aguda;
Artroplastia total de
quadril

Bloqueio contínuo do plano do erector da espinha lombar para o controle da dor pós-operatória em procedimento de revisão de cirurgia do quadril: relato de caso

Resumo

O número de artroplastias totais de quadril feitas a cada ano continua a aumentar; consequentemente, o mesmo acontece com o número de procedimentos de revisão de artroplastia total de quadril. Embora nosso método tradicional de analgesia para esses pacientes tenha envolvido medicações multimodais e um bloqueio contínuo do plexo lombar, relatamos dois casos de pacientes que receberam bloqueios contínuos do músculo erector da coluna lombar.

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Ambos apresentaram excelente controle da dor pós-operatória e obtiveram alta hospitalar no primeiro dia de pós-operatório. Este relato de caso ilustra a possível utilidade do bloqueio contínuo do plano do eretor da espinha para analgesia pós-operatória nas cirurgias, cada vez mais frequentes, de revisão de artroplastia total do quadril.

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Introduction

Total hip arthroplasty (THA) is one of the most common surgeries performed on adults and the number of THAs is expected to increase over the next few decades.^{1,2} The incidence of use of opioids for pain is higher in the cohort of patients undergoing revision THA,³ therefore, the intensity of post-surgical pain can be hard to manage. It usually requires intravenous or oral opioid pain medications in the acute postoperative period. Because of this, multimodal analgesia including peripheral nerve blocks may be utilized to help alleviate pain.

The Erector Spinae Plane (ESP) block was first reported to treat chronic thoracic pain in 2016.⁴ Since then, this block has been utilized not only for chronic pain, but also acute postoperative pain for thoracic and abdominal surgeries.⁵⁻⁷ Recently, there have been a few case reports describing an ESP Block for hip surgeries.^{8,9} Therefore, we report our clinical experiences with a continuous lumbar ESP block in two patients who underwent revision THA.

Written informed consent was obtained from the patients for this report.

Description of the cases

Case 1

A 44 year-old woman with a history of chronic hip pain due to rheumatoid arthritis presented for revision of left THA and abductor (gluteus medius) repair. Her other co-morbidities included morbid obesity (BMI 49), hypertension, diabetes, and obstructive sleep apnea with use of a CPAP device at night. Her home medications included hydrocodone-acetaminophen 10–325 every 6 h as needed and gabapentin 300 mg three times daily.

Our standard analgesic technique for revision THA is a nerve stimulator-guided continuous lumbar plexus block. Due to the patient's body habitus, a lumbar plexus block was expected to be extremely difficult to place, and therefore we elected to perform a continuous lumbar ESP block.

The patient was placed in the prone position, standard monitors were placed, and her back was prepped and draped in the sterile fashion. A curvilinear, low-frequency ultrasound transducer was placed 3–4 cm to the left of midline, parallel to spine. After visualization of the L3–4 transverse processes and overlying erector spinae muscles, the skin was anesthetized. An 18 gauge Touhy needle was inserted from

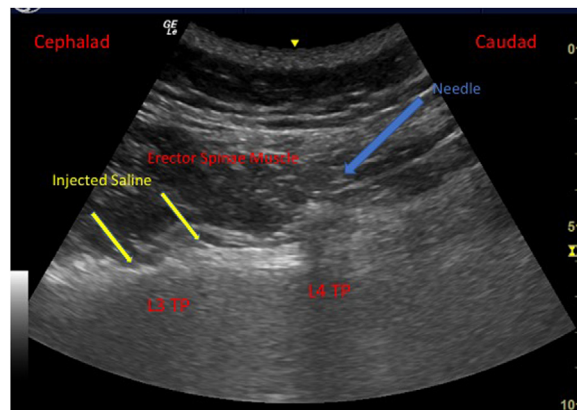


Figure 1 An ultrasound image of erector spinae plane block.

caudad to cephalad using an in-plane approach. After contacting the L3 transverse process, the needle was retracted slightly and 10 mL of normal saline was slowly injected to create a space between the L2–4 transverse processes and erector spinae muscle plane (Fig. 1). The catheter was then inserted 5 cm beyond the tip of the needle at the level of L3, and taped at the skin. A total of 20 mL of 0.2% ropivacaine was given through the catheter. Thirty minutes after the ropivacaine injected, a standard ice test was performed and decreased sensation was noted from T11 to L3 unilaterally. There was no change in strength in her legs.

This patient went on to receive general anesthesia with an endotracheal tube for her surgery and anesthesia was maintained with desflurane. During surgery, the patient received 100 mcg of fentanyl and 2 mg of hydromorphone. The patient was extubated in the OR and transferred to the PACU. In the PACU, her ESP catheter was set up with a programmed intermittent bolus of 5 mL of 0.2% ropivacaine every 30 min. After meeting the PACU discharge criteria, she was transferred to the ward. On the ward, as per protocol, the patient was placed on a multimodal analgesia regimen including oral acetaminophen around the clock, gabapentin 600 mg nightly, IV ketorolac 15 mg every 6 h with transition to celecoxib 200 mg twice daily, and oxycodone 5–10 mg every 4 h as needed. Patient did not require intravenous pain medications. The patient was able to rest comfortably overnight and she reported excellent analgesia next morning. The catheter was then removed without complication and the patient was discharged home later that day on postoperative day one.

Case 2

A 48 year-old female with a history of chronic hip pain and multiple hip surgeries due to congenital hip dysplasia presented for a revision THA. Due to an expected complex and lengthy surgery, the surgical team requested general anesthesia and a continuous peripheral nerve block for postoperative pain control. Preoperatively, a lumbar ESP catheter was placed in the same fashion described above in Case 1. Twenty minutes after the local anesthetic injection, her sensation was tested with ice and noted to be decreased from T11-L3 on the procedural side. The patient was taken to the OR and anesthesia was induced with propofol. Anesthesia was maintained using sevoflurane. During surgery, the patient received 2 mg of midazolam and 75 mcg of fentanyl. The patient was extubated in the OR and transferred to the PACU. In the PACU, her ESP catheter was connected to an infusion pump and began infusing at 8 mL.h⁻¹. The patient was admitted overnight and received multimodal analgesia regimen as described in Case 1. She did not require any intravenous or oral opioids. Her ESP catheter was removed on postoperative day one uneventfully, and she was discharged home that afternoon.

Discussion

In our cases, a lumbar ESP catheter provided excellent postoperative analgesia in patients who underwent revision THA. Tulgar et al.⁸ reported a single shot lumbar ESP block on an 86 year-old female who underwent THA. Subsequent case series published by the same group concluded that lumbar ESP blocks reduced postoperative analgesic requirements for THA and proximal femur surgeries.¹⁰ Darling et al.⁹ reported an ESP catheter that was utilized for postoperative analgesia in a pediatric patient for hip and proximal femur surgery. In that case, the catheter tip was placed at the T12 level and provided good pain relief. The ESP block is one of the newest described peripheral nerve blocks and is still rapidly evolving in research and clinical practice. Literature is mainly supported by anecdotal notes and case reports. The mechanism of action of ESP blocks is still not entirely clear. While an original cadaveric study⁴ showed that dye spread to both dorsal and ventral rami, a recent cadaveric study¹¹ showed that dye spread was noted only to the dorsal rami posterior to the costovertebral foramen, and not anteriorly to the paravertebral space where the ventral rami originate.

In summary, this is one of the first case reports describing the use of continuous ESP blocks for postoperative analgesia in revision THA. As part of multimodal pain regimen, these cases illustrate of the possibility of the continuous ESP block for postoperative analgesia for revision THA. As the evidence is still premature, randomized control trials and further investigations are needed to determine the safe and effective dose of local anesthetic in continuous lumbar ESP blocks.

Conflicts of interest

The authors declare no conflicts of interest.

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