



## CASE REPORT

# Quadratus Lumborum block as primary anesthetic technique for colostomy procedure: a case report

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### KEYWORDS

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**Abstract** An elderly patient was admitted to the hospital due to an enterovesical fistula and a terminal colostomy was proposed. The patient had a high anesthetic risk and thus a quadratus lumborum block was chosen as the sole anesthetic technique. This block has been described to provide both somatic and visceral analgesia to the abdomen. In fact, it yielded good anesthetic conditions to perform the procedure and allowed the patient to be hemodynamically stable and comfortable throughout the case. The postoperative period was uneventful.

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## Introduction

The quadratus lumborum (QL) muscle is located in the posterior abdominal wall, laterally to psoas major muscle. Quadratus lumborum block (QLB) was first described in 2007 by Rafael Blanco as a modified approach to transversus abdominis plane (TAP) block. Since then, QLB has been shown to provide effective analgesia for several types of surgery, including cesarean section, renal, abdominal and orthopedic surgeries.<sup>1</sup>

The authors present a case report of a terminal colostomy successfully performed using a type 1 QLB as the sole anes-

thetic technique in a patient to whom general anesthesia posed substantial risk.

The patient gave her consent for anesthesia and to publication of the case in an anonymous form. The CARE checklist was followed to write the present report.

## Case report

A 93-years-old female patient presented to the emergency department with symptoms suggestive of an enterovesical fistula. She was independent for daily activities but had several co-morbidities such as stage 3 chronic kidney disease, coronary artery disease with a previous myocardial infarction, chronic anemia, hypertension, and type 2 diabetes mellitus. Additionally, she had been recently admitted for aspiration pneumonitis, four months before this event. She had a chronic urinary catheter due to obstructive uropathy.

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Surgical background included several urinary incontinence correction surgeries, a total hysterectomy due to uterine neoplasia, and an aorto-femoral bypass. She weighed 58 kilograms.

Computed tomography imaging evidenced two fistulous paths from the colon to the bladder and the patient was admitted for conservative treatment. On the 6<sup>th</sup> day after admission, she developed acute pulmonary edema that resolved with diuretics and isosorbide dinitrate infusion. During the 8<sup>th</sup> day, the patient underwent a sigmoidoscopy for identification of the fistulous path. After the procedure, a new onset of acute pulmonary edema with signs of malperfusion ensued, with an additional analogous episode repeated at the 11<sup>th</sup> day. Comparably to the first event, these also resolved with medical therapy. Due to the small dimensions of the fistulous aperture, an endoscopic prosthesis could not be placed, and a terminal colostomy was proposed to the patient.

During the anesthetic preoperative visit, the patient and her family were informed about the procedure risks and informed consent was obtained.

In the operating room, the patient was monitored, and an epidural catheter was placed at L1-L2 level has a rescue option. Prophylactic anticoagulation was stopped 12 hours before the technique which was uneventful, and no drugs were administered through this route. The patient was then positioned in the right lateral decubitus to perform an ultrasound guided type 1 QLB, under sterile technique. An in-plane block was performed at the level of L3 in the midaxillary line using 0,35 mL.kg<sup>-1</sup> of local anesthetic, namely 20 ml of 1,33% Mepivacaine. The anesthetic was seen to distribute through the anterior surface of QL muscle and posteriorly to the anterior layer of the thoracolumbar fascia. Loss of cold sensation was observed from T8 to L1, after which the procedure was initiated.

Four milligrams of intravenous dexamethasone and fractionated boluses of intravenous fentanyl to a total of 75 µg were administered during the procedure. A circular skin area of approximately 2,5 cm of diameter was excised in the left lower quadrant of the abdomen, at the level of T10 and T11 dermatomes, and the terminal colostomy was performed. The patient remained conscious and hemodynamically stable throughout the procedure that lasted 50 minutes.

During her stay in the postanesthesia care unit, she did not require rescue analgesic or antiemetic medication and was discharged to the ward 1 hour after admission. No analgesic medication was needed in the postoperative period and the patient was discharged home in the 27<sup>th</sup> day after admission, with no further complications registered.

She returned for scheduled appointments at 2 weeks and 3 months after hospital discharge and presented on both visits with a functioning colostomy, good general condition, clean urine and a high-level of satisfaction for the period she was admitted.

## Discussion

Enterovesical fistulas have a greater prevalence in men between the 5<sup>th</sup> and 8<sup>th</sup> decades and surgical intervention is typically the treatment of choice, given the high risk of infection and malnutrition. Nevertheless, conserva-

tive treatment can be an option for minimally symptomatic patients or in those for whom surgery is not possible or is hazardous. The type of surgery depends on the position of the fistulous path, although most of the times it consists in a colonic resection with primary anastomosis.

In the present case, a conservative approach was attempted but no resolution of symptoms was achieved. Also, due to the small fistulous aperture, an endoscopic prosthesis could not be placed. The anesthetic technique chosen had to provide good surgical conditions for both the surgeon and the patient whilst not eliciting another episode of cardiac decompensation that seemed to ensue at the minimal stressful event. Thus, the authors decided to refrain from a general anesthesia and preferred a regional technique.

To perform a terminal colostomy, visceral analgesia of the descendent colon is required, as well as analgesia from T7 to L1 dermatomes of the skin. Innervation to the descendent colon derives from the inferior mesenteric plexus that arise from L1 to L3 lumbar roots. Therefore, the chosen technique should provide analgesia from T7 to L3 to be able to cover the intervention area.

There are several regional techniques that could be employed to achieve these levels, namely a neuraxial technique. However, to provide such a high level of analgesia, hypotension was possible and the fluid therapy and vasopressors that would be necessary to maintain arterial blood pressure were a concern that precluded it to be our first choice. Still, the authors decided to place an epidural catheter in case a rescue technique was needed, since its combination with the QLB would diminish the dose of anesthetic required and enhance its safety.

TAP block is commonly used for analgesia in abdominal surgeries as it can provide analgesia of the abdominal wall from T7 to T12, depending on the chosen approach. However, it does not provide visceral analgesia.

Erector spinae plane (ESP) block could also be used to provide analgesia to the abdominal wall. ESP muscles anatomy provides a pathway for the local anesthetic to spread along the thoracolumbar fascia. Chin and collaborators<sup>2</sup> found that it can provide visceral analgesia if performed at T7 level, through the spread of local anesthetic to the paravertebral space. However, these results are not consistent and are still poorly defined. In fact, ESP block has been found to reliably provide analgesia to the posterior chest wall, while abdominal and visceral analgesia fail to be regularly achieved.<sup>3</sup>

QLB mechanism of action is not yet clearly defined but studies in cadavers show that it probably relies on the diffusion through the thoracolumbar fascia.<sup>4</sup> The local anesthetic is thought to spread through the fascia to the paravertebral space, causing parietal and visceral analgesia.<sup>5</sup> There is reason to believe that different approaches have different mechanisms of action, and that the level of analgesia provided can go from T4 to L4, with subcostal, iliohipogastric and ilioinguinal nerves being consistently blocked, regardless of the chosen block type.<sup>4,5</sup> However, there is still insufficient evidence to recommend one approach over the other.<sup>4</sup> In fact, successful use of QLB has been described with all the three approaches.

In conclusion, this case illustrates the possibility to perform minor abdominal surgeries in high anesthetic risk

patients using regional anesthesia, with minimal sedation and complementary analgesia, thus minimizing iatrogenic injury and maintaining hemodynamic stability.

### Conflicts of interest

The authors declare no conflicts of interest.

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