بسم الله الرحمن الرحيم

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تم رفع هذه الرسالة بواسطة / مني مغربي أحمد

بقسم التوثيق الإلكتروني بمركز الشبكات وتكنولوجيا المعلومات دون أدنى مسئولية عن محتوى هذه الرسالة.

ملاحظات: لا يوجد

Ultrasound Guided Quadratus Lumborum Block Compared to Caudal Bupivacaine/ Neostigmine in Pediatric Lower Abdominal Surgeries, a Randomized Controlled Trial

Thesis

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List of Abbreviations

Abb.	Full term
ASA	*American Society of Anesthesiologists*
BP	*Blood pressure*
CB	*Caudal block*
CNS	*Central nervous system*
ECG	*Electrocardiogram*
ETCO2	*End tidal CO2*
FLACC	*Pain assessment scale for pediatrics (Faces, legs, Activity, cry, consolability).*
GABA	*Gaba-amino-butyric acid*
HR	*Heart rate*
IU	*International unit*
IV	*Intravenous*
LAS	*Local anesthetics*
MAP	*Mean arterial blood pressure*
NMDA	*N-methyl-D-aspartate*
PACU	*Post anesthesia care unit*
pKa	*Ionization constant*
QL	*Quadratus lumborum*
QLB	*Quadratus lumborum block*
S	*Sacral nerve*
SCL	*Sacrococcygeal ligament*
SD	*Standard deviation*
SPO2	*Oxygen saturation*
SPSS	*Statistical package for social sciences*
TLF	*Thoracolumbar fascia*

INTRODUCTION

Pain relief after surgery continues to be a major medical challenge despite a significant improvement over the last decade in understanding acute pain mechanism. Peri-operative pain relief in children can be established either by using various analgesics or opioids during a conventional general anesthesia or by applying various regional nerve block techniques ***(Polaner et al., 2012).***

Postoperative analgesia options in children undergoing this type of surgery include regional anesthesia, such as a lumbar epidural catheter, caudal block, or a peripheral nerve block as quadratus lumborum block ***(Polaner et al., 2012).*** With recent advancements in ultrasound technology, nerve block procedures have become easier and their accuracy improved. ***(Tsuchiya, 2013).***

Regional anesthesia, in combination with general anesthesia, is frequently used for children undergoing surgical procedures. The goal of this technique is a smoother intraoperative course and minimal requirements of general anesthetics, causing a faster, smoother wake up, decreased stress response and excellent pain relief in the postoperative period. ***(Bosenberg, 2011)***

Quadratus lumborum block (QLB) is an emerging technique for peripheral nerve blockade, which generates an analgesic effect by bi-laterally blocking spinal nerves from T6–T9 to L1-L3, considering its wide block range ***(Zhu et al., 2019).***

Caudal block (CB) is a widely used popular technique for postoperative analgesia but it has potential side effects and duration of analgesia is short ***(Sato et al., 2019).***

CB is recommended for most surgical procedures of the lower part of the body, specifically below the umbilicus, including inguinal hernia repair, urinary and digestive tract surgery and orthopedic procedures on the pelvic girdle and lower extremities ***(Miller and Fleisher, 2010).***

AIM OF THE WORK

This prospective randomized double-blinded study was conducted to compare the postoperative pain control in pediatric patients undergoing lower abdominal surgeries receiving ultrasound guided QL block with those receiving ultrasound guided caudal bupivacaine/ neostigmine.

ANATOMICAL AND PHYSIOLOGICAL CONSIDERATIONS

Quadratus lumborum (QL) muscle:

QL muscle originates from the posterior border of the iliac crest and inserts into the medial edge of the twelfth rib and the transverse processes of L2-L5. The QL muscle is surrounded by the thoracolumbar fascia (TLF), which is made up of the anterior, middle, and posterior layers. The layers of the TLF extend to the aponeurosis of the transversus abdominis and internal oblique muscles. The posterior layer of the TLF surrounds the erector spinea muscles, the middle layer divides the QL and erector spinea muscles, and the anterior layer is anterior to the QL muscle ***(Blanco et al., 2015).***

The anterior layer of the TLF connects to the transversalis fascia. This space includes the iliohypogastric, ilioinguinal, and subcostal nerves. Placing local anesthetic into this space, therefore, results in a T12-L2 sensory block. Tranmuscular QLB reliably spreads to L1-L3 nerve roots ***(Dam et al., 2017)*** **(figure 1 and figure 2).**

The iliohypogastric nerve pierces the transverse abdomi-nal muscle and provides branches that pierce theexternal oblique aponeurosis, while the ilioinguinal nerve courses between the second and third layers of abdominal muscles before traversing the inguinal canal ***(Moore and Agur, 2002).***

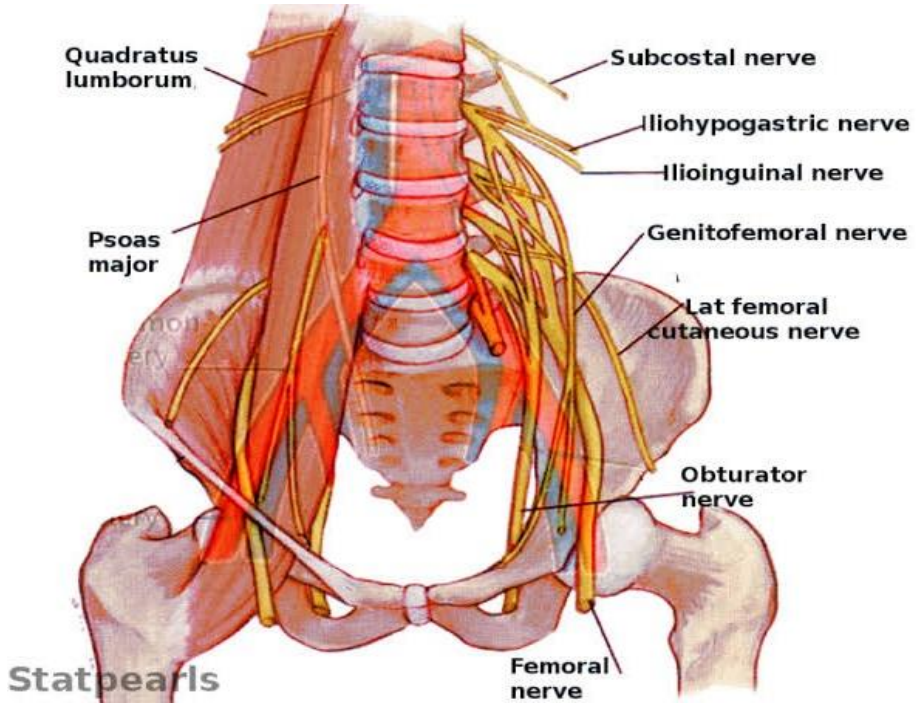

Figure 1: This figure shows QL muscle and its nerve supply ***(Elsharkaw et al., 2019).***

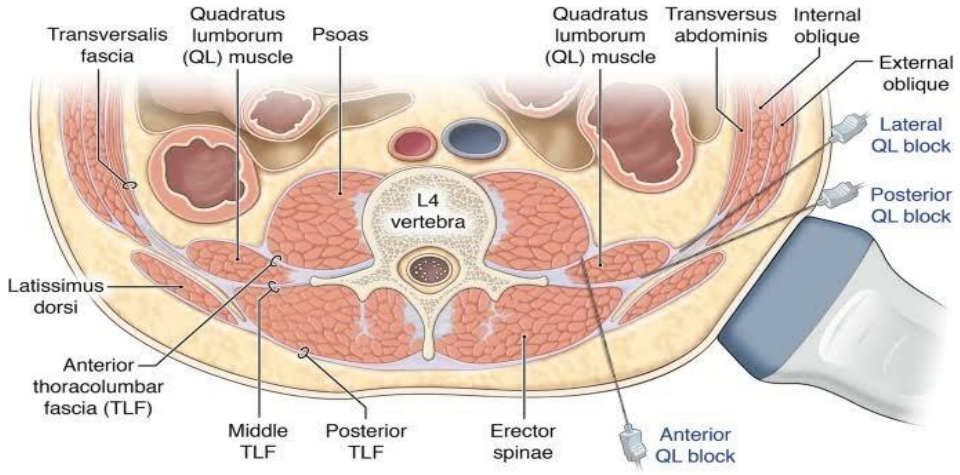

Figure 2: Ultrasound guided QL relations and QLB ***(Elsharkawy et al., 2019).***

Anatomy of the sacrum:

The sacrum which has a pyramidal shape consists of five embryonic fused vertebrae. It is convex dorsally. The coccyx consists of three to five rudimentary vertebral bones and it is triangular, with the base being attached to the sacrum. At the apex of sacrum, the V-shaped gap covered by the sacrococcygeal ligament, which is marked dorsally in the midline, is called sacral hiatus. The sacral hiatus is bordered by the sacral cornu laterally. This space is a natural defect in the union of the dorsal midline of the S5 vertebra, where it meets the S4 vertebra (partial defect). Its floor is the vertebral body of S5. It contains the coccygeal nerve and the filum terminale. The sacrum has two sets of foramen – the four posterior sacral foramina and the four anterior sacral foramina. The lateral attachment of the sacrum is the sacroiliac joint, while superiorly, it is attached to the superior articular facet of the L5-S1 facet joints bilaterally, as well as to the L5-S1 disc **(figure 3)** ***(Nagar, 2004).***