‘‘COMPARISON OF EFFICACY OF POST OPERATIVE ANALGESIA BY ULTRASOUND GUIDED ERECTOR SPINAE BLOCK AND QUADRATUS LUMBORUM BLOCK IN TOTAL ABDOMINAL HYSTERECTOMY’’

BY

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DISSERTATION SUBMITTED TO SRI DEVARAJ URS ACADEMY OF HIGHER EDUCATION AND RESEARCH, TAMAKA, KOLAR, KARNATAKA

In partial fulfilment of the requirements for the degree of

M.D. (ANAESTHESIOLOGY)

Under the Guidance of

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ABSTRACT:

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Comparison of efficacy of post operative analgesia by ultrasound guided erector spinae block and quadratus lumborum block in total abdominal hysterectomy ABSTRACT: BACKGROUND : Post-operative pain management can be a significant challenge for medical and nursing staff in everyday clinical practice. The erector spinae plane (ESP) block at the T5 thoracic level for the relief of neuropathic pain. This blocks both the posterior and anterior rami as well as the sympathetic ganglia in the thoracic paravertebral region. The quadratus lumborum block, also known as a "interfascial plane block," is a posterior abdominal wall block. There are very few comparative studies on efficacy of postoperative analgesia of ESB and QL block with many limitations. Hence, our study is meant to examine the efficacy of postoperative analgesic ultrasonography guided erector spinae block and quadratus lumborum block in lower abdominal procedures. METHODOLOGY: present study is a randomised control trail where 66 patients with ASA grading I and II are included. Patients are divided into 2 groups. GROUP A – These patients will receive ultra sound guided erector spinae plane block at T 9 level bilaterally with 20 ml of 0.25% bupivacaine with 4mg of dexamethasone on each side. GROUP B- These patients will receive ultra sound guided posterior quadrates lumborum block bilaterally at T9 level with 20ml of 0.25% bupivacaine with 4 mg of dexamethasone on each side . Both the groups are checked for HR, MABP, duration of action of block , amount of rescue analgesia, no. of times rescue analgesia is given and total amount of drug administered, , VAS at rest at 2nd, 6th, 12th, 14th hrs and VAS at movement at 2nd, 6th, 12th, 14th and patient satisfaction score. RESULTS: There is no statistically significant difference in demographic and hemodynamic parameters between both groups. VAS scores of Group A (ESPB group) are lesser than Group B (QLB group). indicates Group A (ESPB group) had higher duration of analgesia than Group B (QLB group). In group ESPB total amount of drug used is less than of group QLB. Conclusion : the present study concludes that duration of block is more in Erector Spinae block more than that of quadratus lumborum block . Erector spinae block is more efficient than Quadratus lumborum block. KEY WORDS: ERECTOR SPINAE BLOCK, QUADRATUS LUMBORUM BLOCK ,RESCUE ANALGESIA Introduction : Medical and nursing professionals often face the formidable task of post-operative pain management in their daily clinical practice. In addition to facilitating rehabilitation and hastening the healing process following surgery, effective pain management lowers post-operative morbidity. Furthermore, it has been demonstrated that inadequate pain management modifies the body's metabolic response, which may cause a delayed healing process, a longer hospital stay, higher morbidity, and the

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I am grateful for the path you've paved for me, which allowed me to follow and fulfil my dreams.

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ABBREVIATIONS:

NSAID	Nonsteroidal anti-inflammatory drugs
i.e.,	That is
ESPB	Erector spinae block
et al	And associates
TLF	thoracolumbar fascia
PM	Psoas major
ES	Erector spinae
QL	quadratus lumborum
TAP	transabdominal plane block
QLB	quadratus lumborum block
T4	Thoracic vertebrae 4
T 12	Thoracic vertebrae 12
L1	Lumbar vertebrae -1
LSCS	lower segment caesarean sections
TESPB	thoracic erector spinae plane block
TQLB	trans muscular quadratus lumborum block
NRS	Numerical Rating Scale
IV	Intravenous
PACU	post-anaesthesia care unit
ASA	American Society of Anaesthesiologists
MOPS	Modified Objective Pain Score
CENTRAL	Cochrane Central Register of Controlled Trials
GRADE	Grading of Recommendation, Assessment, Development, and Evaluation
CBD	common bile duct

VAS	visual analogue pain score
NPRS	Numerical Pain Rating Scale
p	Probability value
ESA	erector spinae aponeurosis
ESM	erector spinae muscle
LA	Local anaesthesia
USG	Ultrasonography
TLF	thoracolumbar fascia
LIFT	lumbar interfascial triangle
EO	external oblique muscle
IO	internal oblique muscle
IASP	International Association for the Study of Pain
VRS	verbal rating scale
VAPRS	The visual analogue pain relief scale
VAPSS	The visual analogue pain severity scale
HR	Heart rate

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Group B (QLB group). indicates Group A (ESPB group) had higher duration of analgesia than Group B (QLB group). In group ESPB total amount of drug used is less than of group QLB.

Conclusion :

The present study concludes that duration of block is more in Erector Spinae block more than that of quadratus lumborum block . Erector spinae block is more efficient than Quadratus lumborum block.

KEY WORDS: ERECTOR SPINAE BLOCK, QUADRATUS LUMBORUM BLOCK, RESCUE ANALGESIA, ULTRA SOUND

INTRODUCTION

INTRODUCTION :

Medical and nursing professionals often face the formidable task of post-operative pain management in their daily clinical practice. In addition to facilitating rehabilitation and hastening the healing process following surgery, effective pain management lowers post-operative morbidity. Furthermore, it has been demonstrated that inadequate pain management modifies the body's metabolic response, which may cause a delayed healing process, a longer hospital stay, higher morbidity, and the emergence of a chronic pain condition. [1]

Regional anaesthesia reduces postoperative pain and opioid use, making it an essential component of the multimodal analgesia strategy.[2] Medications that alleviate pain after surgery often include opioids, paracetamol, and nonsteroidal anti-inflammatory drugs (NSAIDs). Insomnia, breathing difficulties, constipation, and delayed movement of patients are some of the opioid side effects that anaesthetists are under pressure to ameliorate.[3]

To do a paraspinal fascial plane block, or ESPB block, a local anaesthetic is administered by a needle inserted between the erector spinae and thoracic transverse processes. The two branches of the spinal nerves, which originate in the back of the neck and abdomen, are then blocked.[4]

It was Forero and colleagues who were the pioneers in the field of erector spinae plane (ESP) block, which is a technique that is used to treat pain. In the paravertebral space of the chest, this restricts not only the anterior and posterior rami but also the sympathetic ganglia. At the appropriate transverse process level and one or two levels nearby in both cranial and caudal directions, the spread to paravertebral space is very apparent.[5]

Since postoperative coagulopathy is a big issue, ESP blocks may be better than other invasive blocks such as paravertebral or thoracic epidural analgesia because of their reasonably safe profile, which includes the lack of important blood arteries and neural structures. [6]

Ultrasound is the only tool necessary for the placement of the quadratus lumborum block, also known as the interfascial plane block, in the posterior abdominal wall. An intramuscular injection of a local anesthetic into the thoracolumbar fascia (TLF) is what gives this method its name: an interfascial plane block. The TLF extends from the fascia of the abdomen wall and overlies the back muscles, PM, and ES nerves, as well as the quadratus lumborum (QL). [7]

It was characterized by anaesthesiologist Dr. Rafael Blanco in 2007 as an adaptation of the TAP block. Under the alias QLB, he went into great length explaining the block method much later on.[8] One kind of abdominal trunk block is the QL block. There are three distinct approaches to performing a QL block: lateral, posterior, and anterior. The analgesia in the upper and lower abdomen is widespread (from T4 to T12 or L1) and long-lasting (lasting up to 48 hours) when the posterior or anterior QL block is used.[9]

A number of procedures have seen an increase in the use of the QL block for postoperative analgesia, including caesarean section, laparoscopic ovarian surgery, hip arthroplasty, and laparoscopic hepatectomy. The local anaesthetics analgesic effect is due to its diffusion and numbing of the thoracolumbar nerves in the thoracic paravertebral region, which occurs after injection between the transversalis fascia and the quadratus lumborum muscle.[10]

In addition to streamlining nerve blocks and interfascial blocks, the use of ultrasonographic technologies in regional anaesthetic treatment has resulted in the invention and deployment of several novel interfascial blocks[11]. The extensive use of peripheral nerve blocks for various surgical operations is a direct result of the advancements in ultrasonography technologies.

Originally devised in 2007, the ultrasound-guided quadratus lumborum block successfully reduces postoperative discomfort after abdominal surgeries. Blocking the intermuscular nerves and delivering the local anaesthetic across the quadratus lumborum muscle is the strategy used here. The ultrasonography-guided erector spinae plane block successfully

eliminates visceral and somatic pain when local anaesthesia is applied to the paravertebral region and the ventral and dorsal rami of spinal neurons are blocked. This technique was first described in 2016.[2]

There are very few comparative studies on efficacy of postoperative analgesia of ESB and QL block with many limitations. Therefore, the purpose of our research is to evaluate the effectiveness of two postoperative analgesic techniques in lower abdominal procedures: the quadratus lumborum block and the ultrasonography-guided erector spinae block.

OBJECTIVES

OBJECTIVES:

Objectives:

1. To study the duration of post-operative analgesia following erector spinae block and quadratus lumborum block in patients of total abdominal hysterectomy.
2. The total amount of analgesics consumed in 24 hours

REVIEW OF LITERATURE

REVIEW OF LITERATURE:

Bakshi A et al [12] found that lower segment caesarean sections (LSCS) performed under subarachnoid anaesthesia were more effectively pain-free when administered using a thoracic erector spinae plane block (TESPB) rather than an ultrasound-guided transmuscular quadratus lumborum block (TQLB). Two equal groups, group E (n = 30) and group Q (n = 30), were randomly allocated out of 60 patients scheduled for LSCS under spinal anaesthesia. Postoperatively, patients were randomly assigned to one of two groups: group Q received US-guided bilateral TQLB and group E had TESPB. Both groups were administered 20 cc of 0.375% ropivacaine and 4 mg of dexamethasone per side. The evaluations were conducted at 2, 4, 6, 8, 10, 12, and 24 hours. The main intension was to compare the time it took to administer analgesia, from the initial request to the rescue dose. The secondary objectives included comparing pain scores (NRS), total tramadol consumption, nausea and vomiting incidence, satisfaction level of patient, and other adversative effects within the first day after surgery. When combined with one another, TESPB and TQLB provide the same level of postoperative analgesia after Lscs, according to the study's findings.

Kang R et al [6] examined the total opioid intake in hepatocellular cancer patients having laparoscopic liver surgery in both the erector spinae plane (ESP) and quadratus lumborum (QL) blocks. Eighty-eight patients were selected at random to either have a posterior QL block with bilateral single injections and intravenous (IV) fentanyl patient-controlled analgesia or a single injection of an ESP block at T8 (the ESP group). In the first twenty-four hours, the total quantity of opioids consumed, expressed as IV morphine equivalents, was the main finding. Additional measures were pain ratings, duration till first flatus, concentrations of ropivacaine in plasma measured serially, and Quality of Recovery-15 ratings. Researchers

found that ESP and QL blocks were equally efficient in decreasing postoperative pain in individuals who underwent laparoscopic liver resection.

Ralte et al. [13] reported that the analgesic efficacy of two blocks in paediatric patients undergoing open pyeloplasty: the erector spinae block (ESP) and the ultrasound-guided transmuscular quadratus lumborum block (QL-3). The investigation took place in several areas of the tertiary care hospital, including the operating theatres, paediatric surgical ward, post-anaesthesia care unit (PACU), and PACU. A randomized, controlled experiment with double-blind participants was conducted. Sixty children receiving elective open pyeloplasty with an ASA status of I or II were considered in the research. The kids were between the ages of one and six. Group II (ESP) and group I (QL block-3) were the two groups that patients were randomly assigned to. After administering general anaesthesia, both blocks were conducted under USG guidance with 0.5 ml/kg of 0.25% ropivacaine. After the operation, records were made of the following: Modified Objective Pain Score (MOPS), hemodynamic parameters from the beginning of the procedure, total rescue analgesia, the duration of the first analgesic, and the frequency of problems. During the first twenty-four hours after open pyeloplasty surgery, the obtained data demonstrated that both the QL block with 0.5 ml/kg of 0.25% ropivacaine and the ultrasound-guided ESP block offered sufficient analgesia. The first twenty-four hours after surgery also did not need as much fentanyl.

Aygun et al. [14] looked at eighty patients (ASA I-II) who had laparoscopic cholecystectomy to determine the postoperative analgesic effects of ESPB and QLB-II. Each patient was randomly assigned to one of two groups: ESW and QLB-II. Every single patient is accounted for in the study. All groups were administered the same multimodal analgesic. Although there

was no statistically noteworthy difference between ESPB and QLB-II when conducted under ultrasound guidance, the findings demonstrated that both procedures improved the quality of analgesia for patients with LC.

Zhang X et al. [2] researched the effectiveness of blocks to the erector spinae plane and the quadratus lumborum, guided by ultrasonography, in alleviating postoperative pain associated with abdominal surgeries. PubMed, EMBASE, Web of Science, and the Cochrane Central Register of Controlled Trials (CENTRAL) were the four databases that were searched. Clinical studies comparing the analgesic efficacy of erector spinae plane block with ultrasound-guided quadratus lumborum block for the treatment of postoperative pain in adults were discovered. A 24-hour period after surgery and the time it takes to obtain analgesics are the primary objectives. The incidence of adversative events and the degree of postoperative discomfort were considered secondary outcomes. Statistical and data analysis may be done with the help of the RevMan V.5.3 software. For this purpose, we shall evaluate the results according to the GRADE Grading of Recommendation, Assessment, Development, and Evaluation framework.

Fakhry D. et al. [15] investigated whether patients having laparoscopic resection for colorectal cancer had less postoperative pain after receiving a transmuscular quadratus lumborum block (TMBLB) or an ultrasound-guided erector spinae plane block (ESPB). This randomized, prospective study followed sixty individuals who had colon cancer removed laparoscopically. Thirty patients where two groups were randomly selected and classified. (e.g., ESPB and TQLB). Twenty millilitres of 0.25% bupivacaine was administered to each side of the ESPB group for transmuscular quadratus lumborum and erector spinae plane blocks that were

guided by ultrasonography, while the TQLB group got the same dosage. Time to rescue analgesia and opioid consumption in the first 24 hours after surgery were factors in the analgesic efficacy. Researchers tracked the first-time analgesic was rescued, the total quantity of rescue analgesia consumed in that time, and any related side effects. After much deliberation, they decided that ESPB was the superior option.

Hetta et al. [16] investigated the effects on analgesic intake during common bile duct exploration (CBD) using bilateral quadratus lumborum block (QLB) and bilateral erector spinae plane block (ESPB). Patients' ages varied from eighteen to sixty. Each patient was assigned to one of three parallel groups: Twenty millilitres of 0.25 percent bupivacaine were administered into each side of the patient in the ESWB group during bilateral ultrasound-guided ESP blocks at T7. The (QL) group got the identical dose of a bilateral QL block directed by ultrasonography. Nobody in group C got any blocks. Secondary objectives include the timing of the initial analgesic necessity and the visual analogue pain score (VAS) on the first day after operation, whereas the primary purpose was to calculate the total quantity of opioids ingested. Patients undergoing CBD exploration had a shorter period of postoperative analgesics, lower resting and dynamic pain ratings, and less fentanyl intake when bilateral ultrasound guided erector spinae plane block was used instead of quadratus lumborum block.

Ellatif et al. [17] reviewed the literature on open nephrectomy pain management and found that ESPB and QLB III were effective. We randomly divided 75 patients who were scheduled for open nephrectomy into three groups of 25, with 25 patients in each group. Instantly after unilateral nephrectomy (QLBIII or ESPB), patients in the QLB and ESPB groups,

respectively, were administered 0.3-0.4 ml/kg of 0.25% bupivacaine for general anaesthesia. All members in group (C) were sedated for the operation. Primarily, it was the aggregate morphine dosage given 24 hours after surgery. Temporal coverage of sensory blocks, postoperative pain score, method execution time, and initial rescue analgesic time were the secondary objectives of the project. Although QLB III requires more technical expertise and time than ESPB, it has comparable success in reducing opioid use after surgery and alleviating pain. Consequently, ESPB seems to be a very good substitute for QLB III in the management of pain after an open nephrectomy.

Zanfini BA[18] assessed the efficacy of bilateral posterior QLB (pQLB) and bilateral thoracic ESPB in alleviating postoperative pain after a Caesarean section that did not need spinal anaesthesia. Specifically, how much morphine was taken in the first twenty-four hours. Secondary outcomes were the time to first opioid request, important indicators, adverse events, and the Numerical Pain Rating Scale (NPRS) at 0, 2, 6, 12, and 24 hours. There were fifty-two women in all. The total cumulative dose of morphine did not vary meaningfully ($p = 0.897$) between the two patient groups. There was no noteworthy difference between the two groups in terms of time to start morphine administration, hemodynamic parameters, or NPRS levels. The NPRS values meaningfully increased during all time periods that were taken into account ($p < 0.001$). Less morphine doses were needed for rescue in the ESPB group related to the pQLB group (hazard ratio = 0.51, 95% CI = 0.27 to 0.95, $p = 0.030$). There were no adverse consequences found. When it comes to alleviating discomfort after a C-section, it seems that ESPB and pQLB are on par.

ANATOMY OF ERECTOR SPINAE:

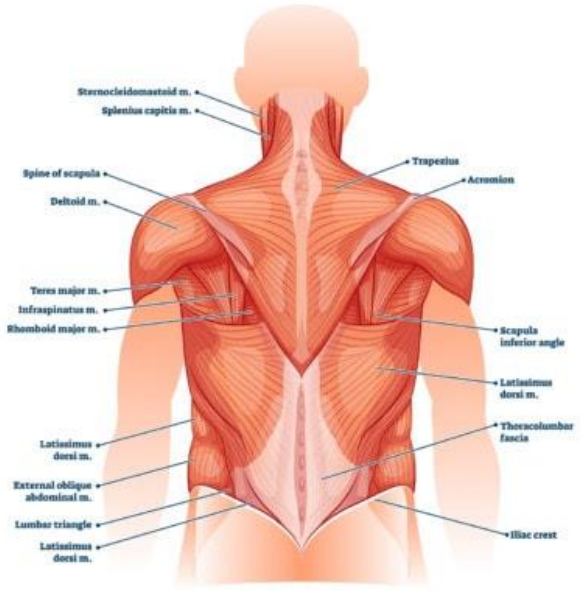

Fig 1: Trunk muscles

The back is composed of three muscular groups. The muscles that connect to the spinal column are known as the deep or intrinsic muscles. The outer layer of muscles that stabilize the neck and shoulders makes up the second set. The last set of muscles are the intermediate ones; they help the thoracic cage move. The term true back muscles is reserved only for the intrinsic muscles.[19]

The splenius cervicis and splenius capitis are the two muscles found in the superficial layer. They facilitate neck and shoulder mobility. The muscles in between are called erector spinae. The longissimus, iliocostalis, and spinalis muscles compose them. The tendinous origins of these muscles serve as a dividing line along which they are attached. The thoracic cage, upper back, and skull may all bend more easily with their help.

The intrinsic/deep muscles, which run from the base of the head to the sacrum, are fully formed. Fascia encircles these deep muscles. The erector spinae is situated posterior to the

deep back muscles. These are the little muscles that join the vertebrae's transverse and spinous processes.[20]

Fig 2 : Erector spinae muscle

An intricate network of muscles and tendons forms the erector spinae, a powerful spinal stabilizer that stretches from the hips and sacrum all the way to the base of the skull. The sacrospinalis muscle group is another name for them. On each side of the spinous processes of the spinal column are these muscles that extend throughout the lumbar, thoracic, and cervical regions. Thoracolumbar fascia and nuchal ligament both provide cervical and lumbar support to the erector spinae, respectively.[20]

The longissimus thoracis and iliocostalis lumborum muscles of the erector spinae are responsible for transmitting force over the lumbar spine. There is a clear distinction between the lumbar erector spinae muscles' thoracic and lumbar portions. The lumbar and thoracic sections' rostral attachments are situated at the corresponding levels. The thoracic fascicles' long caudal tendons produce the erector spinae aponeurosis (ESA). It connects caudally to the iliac crest and sacrum and covers the erector spinae dorsally in the lumbar region.[21]

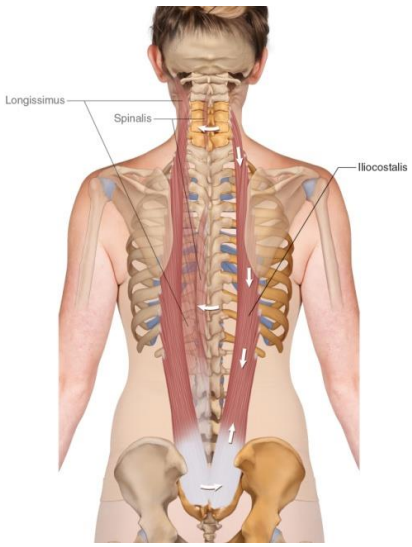

Fig 3 : Iliocostalis Lumborum & Longissimus Thoracis Muscles

Surrounding the ESA on its ventral side and the thoracic fascicles on its caudal side are the lumbar fascicles. According to Bustami, the longissimus thoracis is the defining characteristic of all erector spinae lumbar fascicles. The top four lumbar vertebrae's transverse and auxiliary processes form four laminae, which he identifies. Although the fourth lamina (located at the base of the spine) attaches directly to the iliac crest via muscles, the iliac crest is connected to the iliac crest by means of the extraspinal ligament (ESSA). The lumbar fascicles, according to Bogduk and Macintosh, are separated into the iliocostalis lumborum and the longissimus thoracis. [22,23]

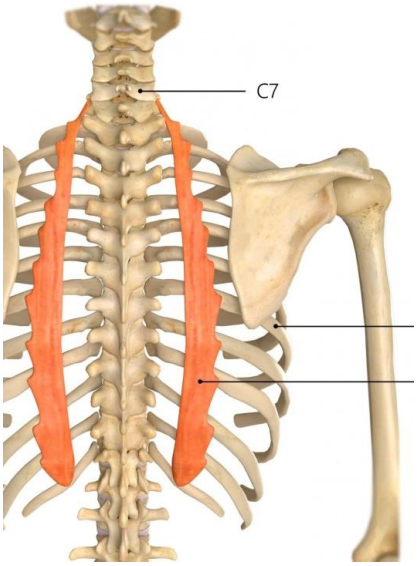

Fig 4 : Iliocostalis thoracis

The iliocostalis lumborum and the longissimus thoracis are the corresponding muscles in the lumbar fascicles, however Bogduk and Macintosh argue that they should be divided into two separate pieces. Findings indicate that the iliocostalis lumborum attaches to the lateral quarter of the transverse processes and the thoracolumbar fascia, whereas the longissimus thoracis links to the accessory processes and the medial three-quarters of the lumbar vertebrae. Every caudal connection was explained as existing independently of the ESA. [23]

Finding out whether the lumbar portion of the erector spinae has strong caudal attachments to the ESA (Bustami's description) or no attachments (Bogduk and Macintosh's description) is functionally crucial. The two methods' divergent recommendations for the pathways of muscular force action lead to divergent understandings of how back extensor contractions generate torque and how the spine is loaded.

Forero described the Erector spinae plane (ESP) block as an interfascial blocker in 2016.[5] The fascial plane, which links the erector spinae muscles to the tip of the transverse vertebral process, is an injection site for the local anaesthetic used during the surgery.

A local anaesthetic (LA) is injected into the fascial plane, which is situated below the ESM at the tip of the vertebral transverse process, to perform the ESP block. A dermatome distributes LA throughout the cranio-caudal fascial plane at a rate of 3.4 ml/injected volume. Laterally, it spreads to many levels, including the intercostal space, the paravertebral and epidural areas, and the intercostal space itself.[24]

A spinal cord's ventral and dorsal rami are both affected by the LA. A pair of branches, one on each side, make up the intercostal nerve, which is known as the ventral ramus. A network of sensory nerves runs the length of the anterior lateral wall via its terminal branches.

A person's erector spinae muscles attach to their upper back, neck, and chest from their origins in the lower back and lower thoracic areas. A dorsal ramus that splits into two terminal branches innervates the posterior wall. Paravertebral LA diffusion via the costotransverse foramina and the intertransverse complex (levators, rotators, intercostal muscles, and costotransverse ligaments) also provides visceral and somatic analgesia. [25] The spine's spinous processes in the lumbar region, the eleventh and twelfth thoracic vertebrae, the sacrum's lateral crests, the rear of the iliac crests, the supraspinous ligament, and the posterior sacroiliac and sacrofacial ligaments are all structures that the erector spinae is attached to. A number of fibres align parallel to the fibres that make up the gluteus maximus.[31]

In the upper lumbar area, a huge mass of muscle fibers divides into three sections: the spinalis, the iliocostalis, and the longissimus.

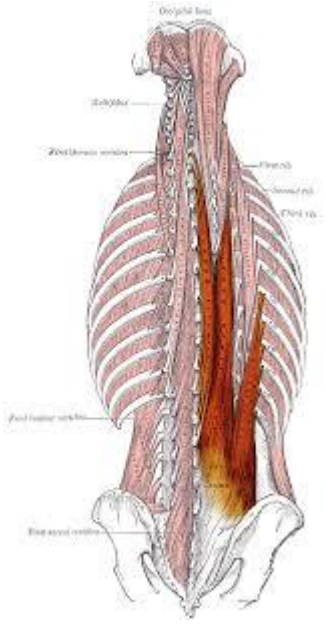

Fig 5 : spinalis, iliocostalis, longissimus muscles

Iliocostalis

The iliocostalis originates from the sacrum, the erector spinae aponeurosis, and the iliac crest. Depending on where it inserts, the iliocostalis is divided into three sections: The insertion of the iliocostalis lumborum is located between the 12th and 7th ribs. The iliocostalis thoracis inserts into the ribs from the first to the final set of six. The iliocostalis cervicis begins from the first set of six ribs and continues all the way to the posterior tubercle of C6–C4.[20,26]

Longissimus

The largest and intermediate muscle among the three columns is the longissimus. Each of its three parts originates from a different place and attaches to a different structure; for example, the transverse processes of the lumbar vertebrae, the sacrum, and the erector spinae aponeurosis all attach to the longissimus thoracis. A person's longissimus thoracis muscle begins its beginning at the transverse processes of their lumbar vertebrae. [20,26]

In order to enter into the transverse processes of C7-C2, the longissimus cervicis originates from the transverse processes of T6-T1. The longissimus capitis originates in the transverse processes of T3 and T1, travels along C7 and C3, and eventually inserts into the mastoid process of the temporal bone. [20,26]

Spinalis: The most medial and smallest muscle in the body is the spinalis. The document is organized into three parts: The spinalis thoracis originates from the spinous process of L3-T10 and inserts into the spinous process of T8-T2. From its origins in the spinous process of T2-C6, the spinalis cervicis travels to the spinous process of C4-C2. The spinalis capitis is a

constant-fibre muscle. comes from the upper thoracic and cervical regions and ends at the external occipital protuberance. [20,26]

Eight adult cadavers that had been embalmed were used in a study by Bustami F. et al. to examine the lumbar erector spinae muscle through gross dissection. Two masses of muscle tissue connected to the posterior surface of the erector spinae aponeurosis at its rostral and lateral margins were discovered when the dorsal layer of the thoracolumbar fascia was removed.

From a gross perspective, both masses seemed to be one muscle, but upon dissection, they were composed of several slips that extended laterally and rostrally to their insertions. The caudal region of the two masses was made up of eight slips that were inserted, approximately at their angles, into the lower borders of the lower eight ribs using thin, flattened tendons. [23]

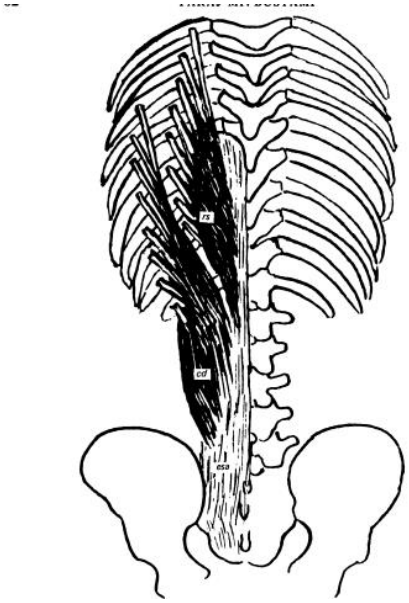

Fig 6 : Dissective anatomy of erector spinosusm

Of these slips, the most medial one had the longest tendon, reached the highest level rostrally, and penetrated into the fifth rib. The most lateral slip was located in the twelfth rib and had the shortest tendon. The lumbar erector spinae has a rounded lateral shape because of the

convex curve generated by the lateral fibres of the slip. The larger rostral slips partially obscured the two caudal slips. Immediately medial to the most caudal slip is where the deep segment of the erector spinae originates.[23]

Muscle fibres were directed medially and rostrally into the lumbar vertebrae in deep slips, which were larger than superficial slips. The superficial slips were positioned in the lower ribs laterally and rostrally. Eight slips running rostrally and laterally between the two muscle masses inserted into the third through tenth ribs. The iliocostalis thoracis muscle's bottom half is situated close to the caudal mass tendons. Near the insertions of the rostral mass tendons, the top part was superficial. The deep part of the muscle is visible upon lateral reflection of the erector spinae aponeurosis. This portion of the erector spinae originates from the anterior (deep) surface of the aponeurosis in the lumbar and thoracic regions, with the exception of its most caudal fibres.[23]

ERECTOR SPINAE BLOCK:

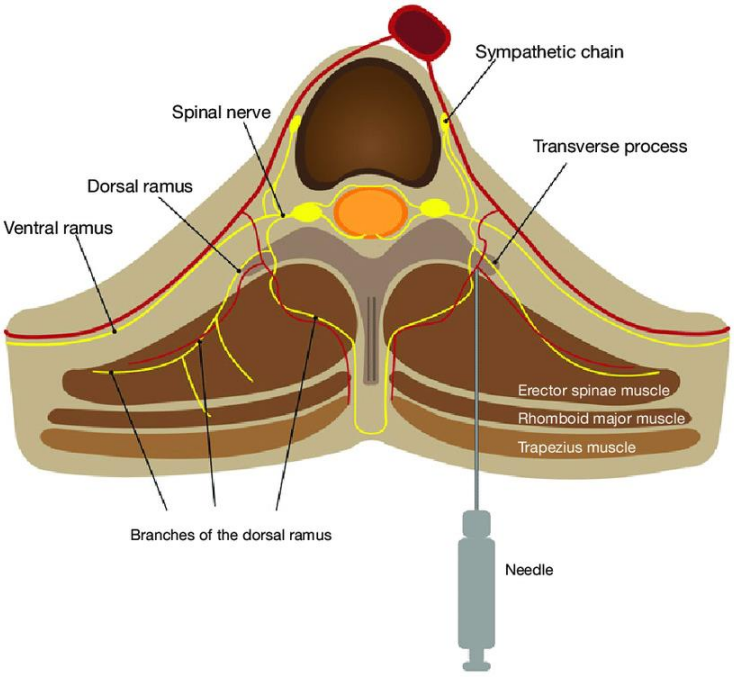

Fig 7 : erector spinae block

There has been a lot of buzz around fascial plane blocks since the 2016 description of the erector spinae plane (ESP) block. The fundamental ESP block approach involves injecting a generous amount of local anesthetic (0.3-0.5 mLkg-1) into the fascial plane that connects the erector spinae muscle to the vertebral transverse processes, all while using ultrasound guidance.

The craniocaudal direction of the local anesthetic spreads across three to six levels of the spinal column. In most cases, the erector spinae muscle's medial-lateral distribution is limited to the region immediately around its attachment to the rib angle and the thoracolumbar fascia.

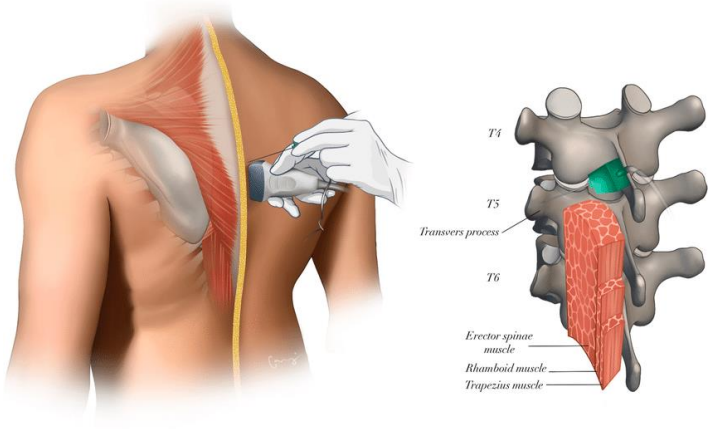

Fig 8 : schematic illustration of erector spinae block USG placement

Radiological imaging of actual patients shows radiocontrast diffusion into the paravertebral and even epidural regions at several levels; this is one of the proposed mechanisms by which the ESP block works. Radiocontrast is distributed at different levels across the paravertebral and epidural spaces in living individuals, according to radiological imaging results. Perforations in the posterior thoracolumbar fascia and the intertransverse connective tissue complex—which consists of muscles, ligaments, and other connective tissues—are the most common ways that local anesthetic enter the paravertebral area. These tubes might only

permit a slow seepage of local anesthetic rather than a quick bulk flow. This is demonstrated by the fact that during the clinically successful ESP block injection, there was no apparent distribution into the paravertebral region.[27]

The erector spinae muscle (ESM) is a complex constructed from the longissimus thoracis, iliocostalis, and spinalis muscles; it is orientated vertically. Placing a local anesthetic (LA) into the fascial plane—a location deeper than the ESM and at the transverse process tip of the vertebra—creates the ESP block. As a result, on the cranio-caudal fascial plane using LA, one dermatome is distributed for every 3.4 milliliters of injection volume. It disseminates to the intercostal space laterally, then to the paravertebral and epidural areas anteriorly by many degrees of diffusion.

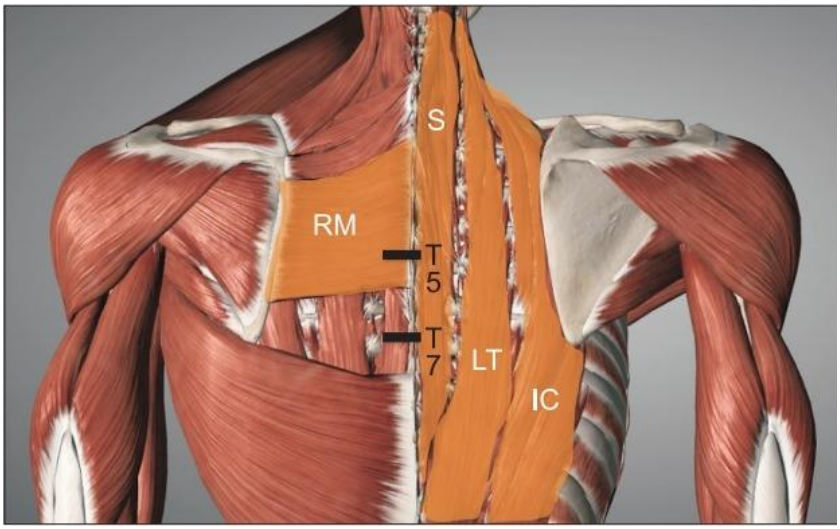

Fig 9: Anatomy of the erector spinae muscle. RM: Rhomboid major muscle; Erector spinae muscle (spinalis [S], longissimus thoracis [LT], and iliocostalis [IC]), T7: Thoracic vertebral 7, T5: Thoracic vertebral 5.

The LA presses on the spinal nerve's dorsal and ventral rami. Subsequent to its origin in the intercostal nerve (ventral ramus), the nerve divides into anterior and lateral branches. Its terminal branches innervate the anterolateral wall with sensory signals. From the dorsal ramus, two branches divide, and one of them innervates the posterior wall. By travelling via the intertransverse complex and costotransverse foramina, Los Angeles is able to access the paravertebral area, alleviating pain on the inside and the outside of the spine. Anatomical studies focusing on 2–5 levels of the spinal column around the injection site have shown this movement into the neural foramina and epidural region.[28]

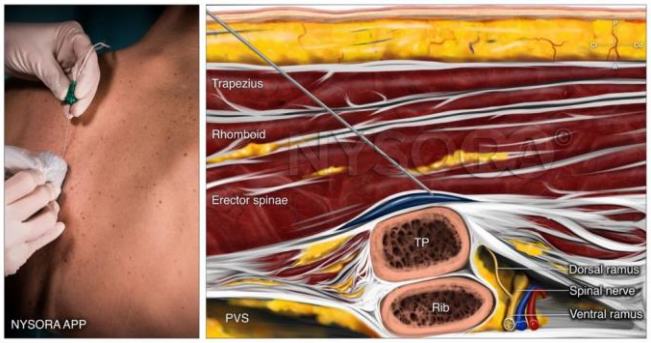

Fig 10: Ultrasound anatomy of an ESPB with needle insertion in plane from a cranial to caudad direction

Considering the results of the block, the patient may be asked to sit, lie flat, or even do the procedure while in motion. The patient is either conscious or under general anaesthesia while the procedure is carried out. It is important to provide general anaesthesia to a paediatric child prior to surgery. Ultrasonography is a common tool for guiding the surgery. For the lumbar level, a convex transducer is used, while a high-frequency linear transducer is used for the thoracic level. The transverse orientation of the probe is used to identify the spinous process.

Fig 11 : Sonoanatomy of the ESP block at T5 level. TP: transverse process, T: trapezius, RM: Rhomboid major, ESP: erector spinae, Pl: Pleura. *Needle tip place

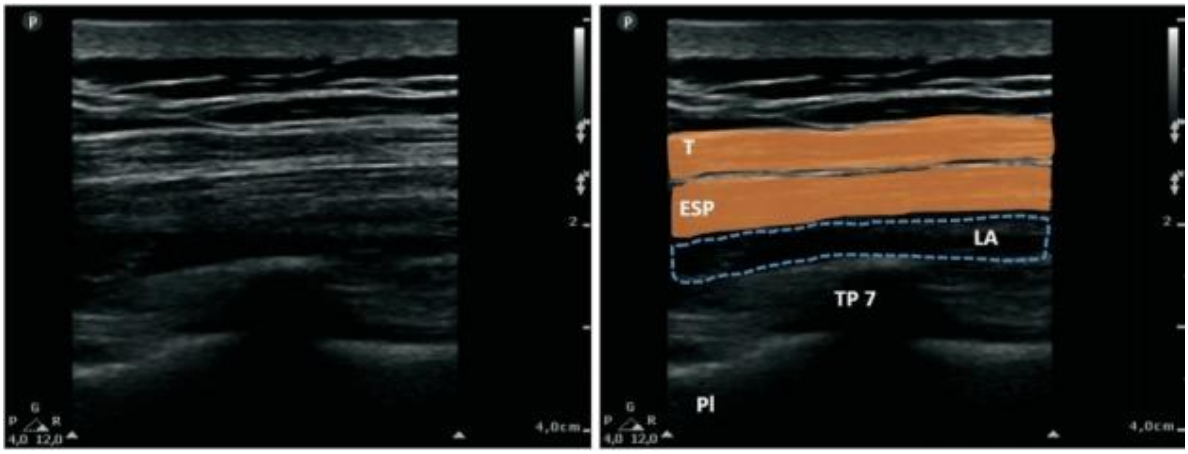

Fig 12: Sonoanatomy of ESP block at T7 level with LA diffusion shown in the dashed area. T: trepezius, ESP: erector spinae, LA: local anesthetic, TP: transverse process, Pl: pleura.

Once the level has been established, the probe is moved laterally by 3 cm from the midline until the transverse process is located. The next step, after turning the transverse process 90 degrees, is to place the probe in the parasagittal plane. A hyperechoic transverse process shadow may help identify the rhomboid major, erector spinae, and trapezius muscles as superficial. At the seventh thoracic vertebra, which is absent in lower blocks, the rhomboid

major muscle is shown, along with the other three muscles, at the fifth thoracic vertebra, the typical position for a thoracic block.

A hole is pierced through the plane by the needle. Symptoms and treatment site dictate the needle's orientation, which could be cranio-caudally or in the opposite direction. It is possible to inject the block into the transverse process all at once or use a catheter for continuous infusion; either way, it is designed to have its intended effect. Furthermore, it is recommended to do a saline solution hydro dissection and provide the local anaesthetic in the fascial plane, just below the ESM at the transverse process of the vertebral tip.[27]

QUADRATUS LUMBORUM ANATOMY:

Muscles: Muscles that attach to the lumbar spine (the first four vertebrae) and the twelfth rib (the medial border) originate on the iliac crest and are collectively known as the quadratus lumborum. The quadratus lumborum is a free border that spans the body from the craniomedial to the caudolateral angles. Both the medial and lateral arcuate ligaments of the diaphragm are located behind the quadratus lumborum and psoas major muscles, respectively. Positioned below the erector spinae group of muscles—which also includes the multifidus, longissimus, and iliocostalis muscles—is the quadratus lumborum.

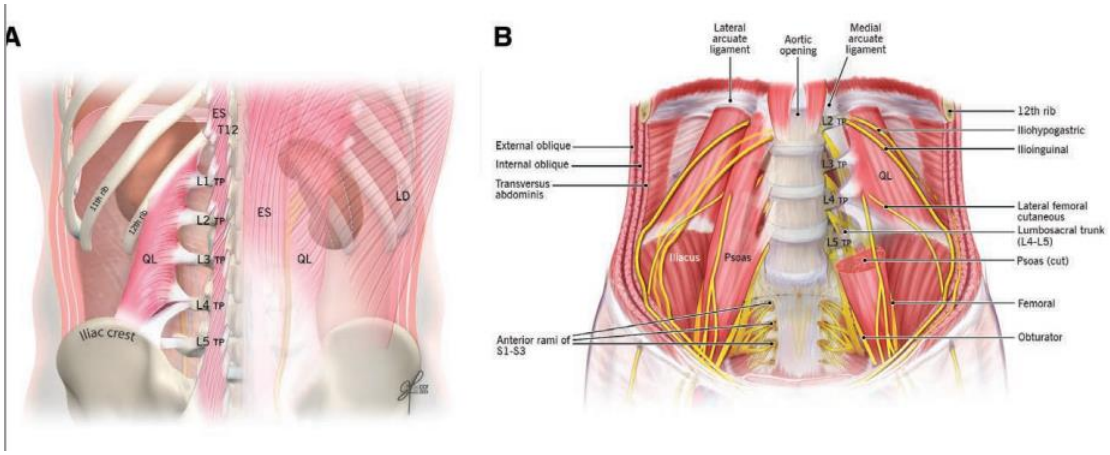

Fig12 : Musculature of the posterior abdominal wall

Fascia: Thoracolumbar fascia is a fascial and fibrous tissue that surrounds the quadratus lumborum muscle. The thoracolumbar fascia, a myofascial girdle that encircles the lower torso, plays a crucial role in postural control, weight transfer, and lumbar spine stabilization. Two distinct varieties of aponeuroses and multilayered fascia comprise the thoracolumbar fascia. The model is made up of two layers: one that surrounds the quadratus lumborum and erector spinae muscles, and another that lays between them. In the two-layer paradigm, the transversalis fascia—which is distinct from the thoracolumbar fascia embryologically—makes up the anterior quadratus lumborum ligament.

Transversalis fascia covers the peritoneal side of the transversus abdominis muscle, the anterior section of the investing fascia (epimysium) of the quadratus lumborum and psoas muscles, and more.

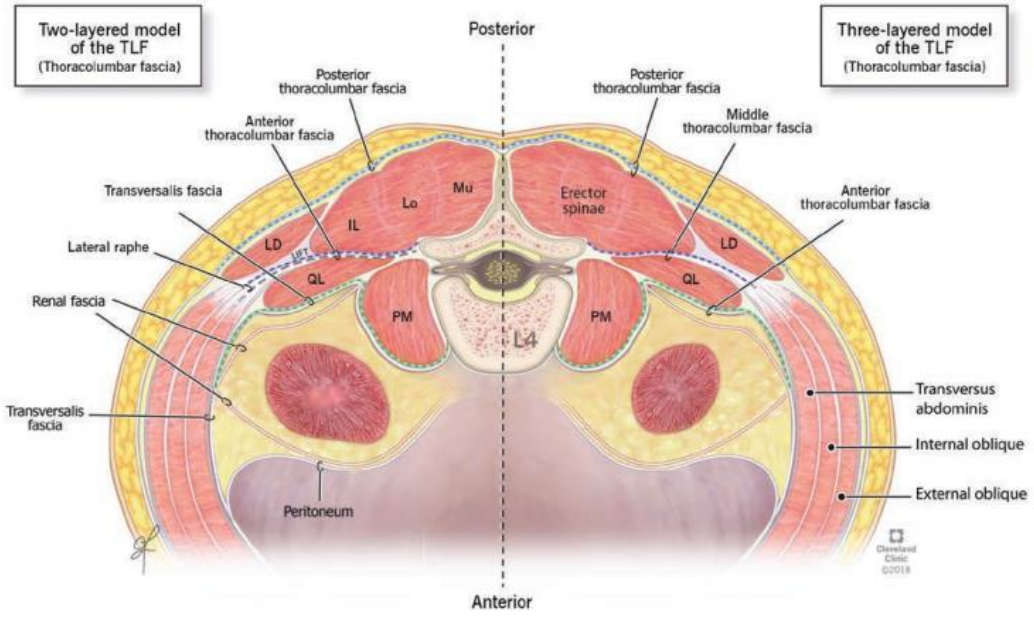

Fig 13 : Cross-section at L4 level showing the quadratus lumborum muscle with the different layers of the thoracolumbar fascia.

In this three-layer model, the posterior thoracolumbar fascia layer covers the erector spinae muscles, the middle layer connects the quadratus lumborum and psoas muscles, and the anterior layer covers the erector spinae muscles. In its two-layer configuration, the thoracolumbar fascia—also known as the transversalis fascia—consists of two layers. At the arcuate ligaments, one-layer merges with the diaphragm, while the first layer remains continuous with the endothoracic fascia in the thorax. With this layer of fascia, the fascia iliaca is joined.[29]

Vascular Structures:

The quadratus lumborum receives blood supply from the lumbar arteries that originate in the abdominal aorta and branch out laterally and posteriorly. Alternatively, the quadratus lumborum might be positioned anterior to the fourth lumbar artery.[29]

Neural Structures:

The ventral ramus of L1, with occasional inputs from T12, L2, and L3, as well as the iliohypogastric and ilioinguinal nerves, which leave the psoas major muscle, pass across the quadratus lumborum on the ventral side. At the psoas major muscle, the lateral femoral cutaneous, obturator, and femoral nerves all begin their descent to the caudal region. Neurones from the spine enter the erector spinae muscles via the medial aspect of the middle thoracolumbar fascia and the quadratus lumborum.[29]

It is innervated not only by the short branches of the lumbar plexus but also by the subcostal, iliohypogastric, and ilioinguinal nerves. In a forward direction, the quadratus lumborum carries the ilioinguinal, subcostal, and iliohypogastric nerves. [30]

Function: Unilateral contraction permits lateral flexion of the spine due to the muscle's position and flattened, quadrilateral shape, whereas bilateral contraction promotes extension movement and stabilizes the lumbar spine. Additionally, the quadratus lumborum offers an auxiliary expiratory action due to its insertion into rib XII. According to research by Hsu et al., the rectus abdominis muscle is antagonistic to the erector spinae, multifidus, and quadratus lumborum muscles. As we go from standing to walking, the quadratus lumborum and gluteus medius collaborate to stabilize the pelvis and protect us from slouching. As we walk, our quadratus lumborum smooths down the iliac ala's trajectory toward the thorax, allowing us to shift our limbs more easily and safer from ground impact. [31]

The local anaesthetic is dispersed throughout the transversus abdominis plane by the quadratus lumborum block. It is appropriate for use as a supplementary analgesic during surgery as well as thereafter, with the latter serving as the primary element of multimodal analgesia after abdominal surgery.

QUADRATUS LUMBORUM (QL) BLOCK

The quadratus lumborum (QL) block was introduced by Blanco. Currently, all age groups undergoing abdominal surgery—children, adults, and pregnant women—can benefit from the QL block as a perioperative pain management strategy. But because the processes causing the effects are unclear and the nomenclature is complicated, there is still debate over the best way to distribute the block.[32]

Ultrasound Identification of QL:

The three layers of abdominal wall muscles are located by following the transversus abdominis as it extends posteriorly until it meets the transversus aponeurosis. Hidden behind

the peritoneum, which often bends posteriorly away from the muscles, is the retroperitoneal fat, which is close to the transversalis fascia. The thickness and thickness of the retroperitoneal fat might vary throughout the iliac crest. The retroperitoneal fat and the narrowing transversus aponeurosis may be easier to notice if the probe is angled slightly lower into the pelvis. When looking medially toward the transversus abdominis muscle, you will often see QL close to its aponeurosis. [33]

Quadratus lumborum block nomenclature and anatomical considerations [32,34] :

Four such methods are described in the QL block study now underway. Situated deep within the transversus abdominis aponeurosis is the QL1 block. Injecting the drug posterior to the QL muscle blocks QL2. The process of injecting local anaesthetic anteriorly between the QL and psoas major (PM) muscles is known as a transmuscular QL block, according to Børglum et al. (2011). The last step is to do an intramuscular QL block injection of the local anaesthetic directly into the QL muscle.

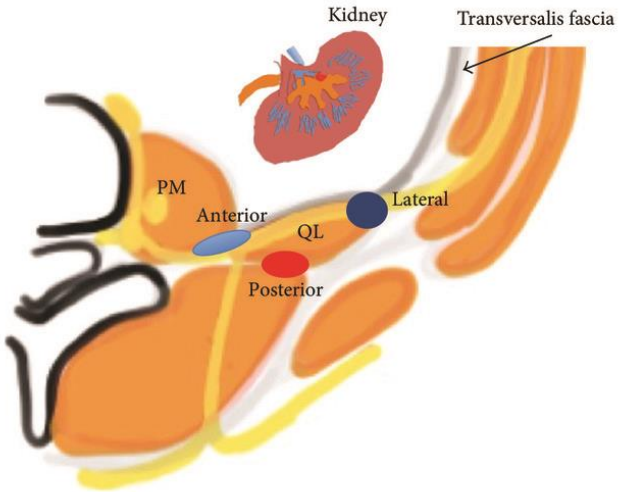

Fig 14 : Anatomic view of quadratus lumborum (QL) block (anterior, lateral, and posterior).

The lateral QL block is used to inject the local anaesthetic into the QL muscle. A local anaesthetic is injected into the posterior QL block, which is located behind the QL muscle. An example was the anterior QL block where an anaesthetic was inserted between the pm and QL muscles. In this diagram, structures involved include; psoas major muscle (PM), quadratus lumborum (QL), and transversalis fasciae (GRE).

The TL forms a circuit around the back muscles in three superimposed layers; it is an aponeurosis derived from thoracolumbar fascia starting from the thoracic spine up to the lumbar spine level The QL muscle might be seen in front of the anterior layer. The middle is designed to separate ESP from QL muscle. Nevertheless the QL muscle is not enveloped by erector spinae specifically it is enveloped by the "posterior layer of the thoracolumbar fascia".

Furthermore, the anterior layer does not only connect with the psoas major muscle's PM fascia medially, but also with the transversalis fascia laterally. It is possible for an injection to spread cranially from the anterior layer to the QL, into the lower thoracic paravertebral region below the endothoracic fascia, and beneath the lateral arcuate ligament towards the endothoracic fascia. Research has shown that the lumbar interfascial triangle (LIFT), a triangle on the side of the erector spinae, is the best spot to inject the QL2 block.

Because of its dense network of sympathetic fibres and mechanoreceptors, TLF was thought to have an important role in the effects of QL block in addition to being a conduit for the distribution of local anaesthetic throughout the thoracic paravertebral area.

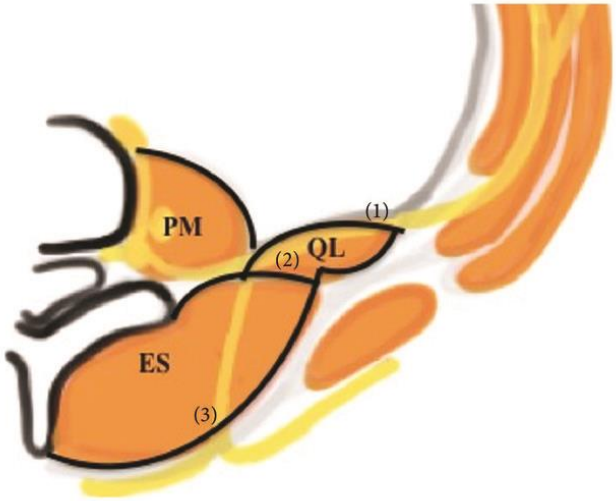

Fig 15: Anatomic view of the thoracolumbar fascia (TLF). The TLF is divided into 3 layers (anterior (1), middle (2), and posterior (3)). QL: quadratus lumborum, ES: erector spinae, LD: latissimus dorsi, and PM: psoas major

An technique that is more logical and communicative than using publication order or needle trajectory to designate QL blocks is based on the position of the needle tip relative to QL. The QL 1 block is also known as the lateral QL block because it follows a pattern similar to the transversalis fascia plane block, which entails distributing local anaesthetic lateral to the QL muscle at the intersection of the QL and transversalis fascia. The posterior QL block is an alternative term for the QL 2 block. A transmuscular QL block is sometimes called an anterior QL block since the local anaesthetic is administered into the anterior part of the QL muscle. We finally call this kind of QL block the intramuscular QL block.[34]

Techniques of QL Block

A lateral position was used for the patient. Above the iliac crest, a low-frequency convex probe was vertically connected, and the plane was entered via the QL's posterior boundary by

means of an anteromedial needle. The local anaesthetic was administered by inserting the needle into the fascial plane, with the point between the posterior (PM) and posterior (QL) muscles. The local anaesthetic seems to be pressing down on the PM, as seen by the ultrasound imaging.

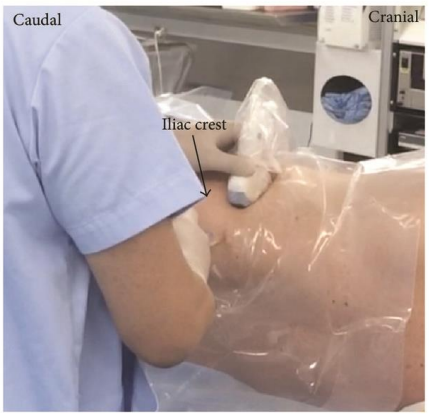

Fig 16 : Probe position for anterior QLB. The convex probe was vertically attached above the iliac crest

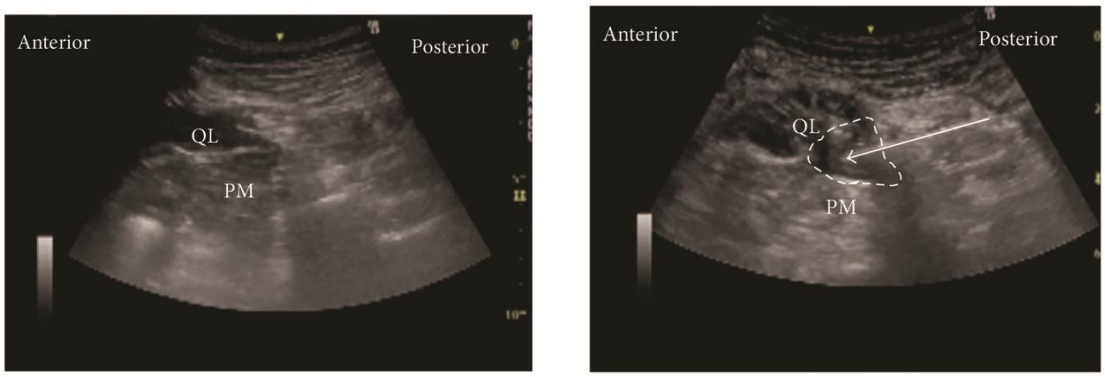

Fig 17 : Ultrasound images of anterior QLB. (a) Preinjection and (b) postinjection. QL: quadratus lumborum, PM: psoas muscle, white arrow: needle trajectory, and white dotted line: spread of local anaesthetic.

Approaching the subcostal QL block from a paramedian sagittal oblique angle is similar to other types of anterior QL blocks. The patient was placed in a lateral posture. Three

centimetres laterally to a low-frequency convex probe is the L2 spinous process. Inserting the needle in a straight line from the transducer's medial side and moving laterally into the space between the quadratus lumborum and psoas major muscles is the next step. To prevent needles from accidentally penetrating the peritoneal cavity, the psoas major muscle acts as a better barrier than the transversalis fascial layer when this technique is used.

Fig 18: Probe position for subcostal QL block. A low-frequency convex probe is placed with a transverse, oblique, and paramedian orientation approximately 3 cm lateral to the L2 spinous process.

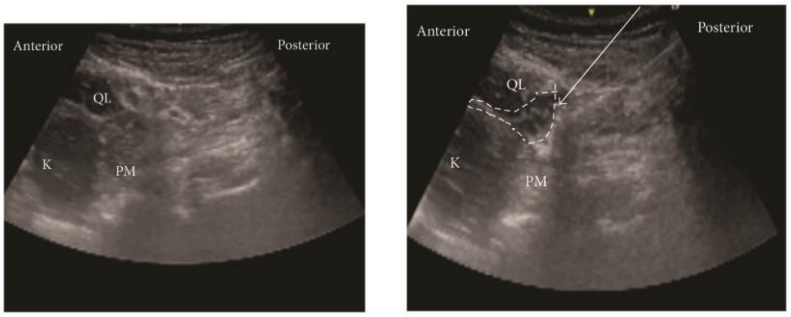

Fig 19: Ultrasound images of subcostal QL block. (a) Preinjection and (b) postinjection. QL: quadratus lumborum, PM: psoas muscle, white arrow: needle trajectory, and white dotted line: spread of local anaesthetic.

Lateral QL Block:

The individual was lying face down. The Petit triangle area had a high-frequency linear probe attached to it until the QL could be confirmed. After administering a local anaesthetic, the needle was inserted into the anterior border of the quadriceps, at its intersection with the transversalis fascia. Ultrasound imaging verified that the local anaesthetic penetrates deep into the transversus abdominis aponeurosis.

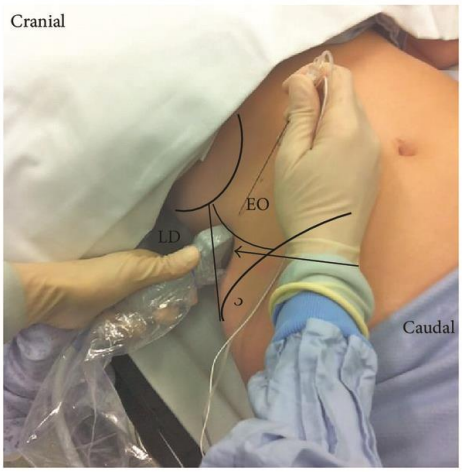

Fig 20: Lateral QL block. A high-frequency linear probe was attached in the area of the triangle of Petit. EO: external abdominal oblique; LD: latissimus dorsi; black arrow: the triangle of Petit

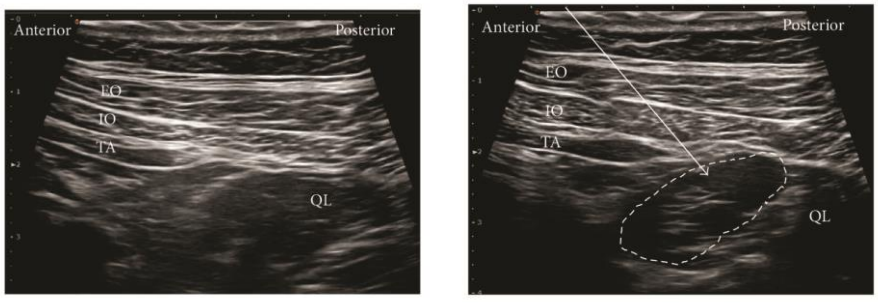

Fig 21 : Ultrasound images of lateral QLB. (a) Preinjection and (b) postinjection. EO: external oblique muscle, IO: internal oblique muscle, TA: transversus abdominis, QL: quadratus lumborum, white arrow: needle trajectory, and white dotted line: spread of local anaesthetic

Posterior QL Block: The lateral QL block allowed the patient to remain in a supine posture. The patient was supported on a cushion at regular intervals so that a low-frequency convex probe could glide freely under his back. When the back part of the quadriceps muscle was found, the tip of the needle was entered. Following this, the local anaesthetic was injected into the LIFT, which is situated behind the QL muscle.

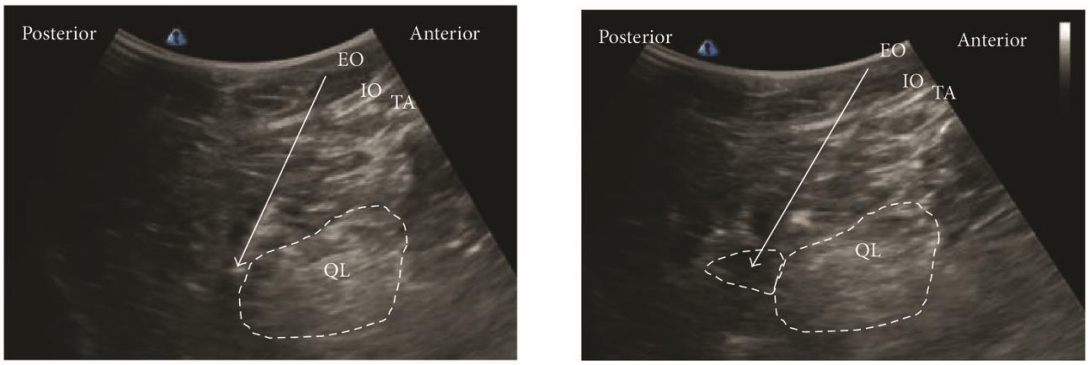

Fig 22: Ultrasound images of posterior QLB. (a) Preinjection and (b) postinjection. EO: external oblique muscle, IO: internal oblique muscle, TA: transversus abdominis, QL: quadratus lumborum, white arrow: needle trajectory, and white dotted line: spread of local anaesthetic.

Intramuscular QL Block

Consistent with the lateral QL block, the patient remained supine as the high-frequency linear probe gently moved the iliac crest to the left. As it neared the fascia and QL muscle, the needle's tip was advanced. Before injecting the local anaesthetic into the whole QL muscle, a test injection was given to ensure its penetration. To attain a effective block, the local anaesthetic must eventually reach some area between the muscle and the fascia.

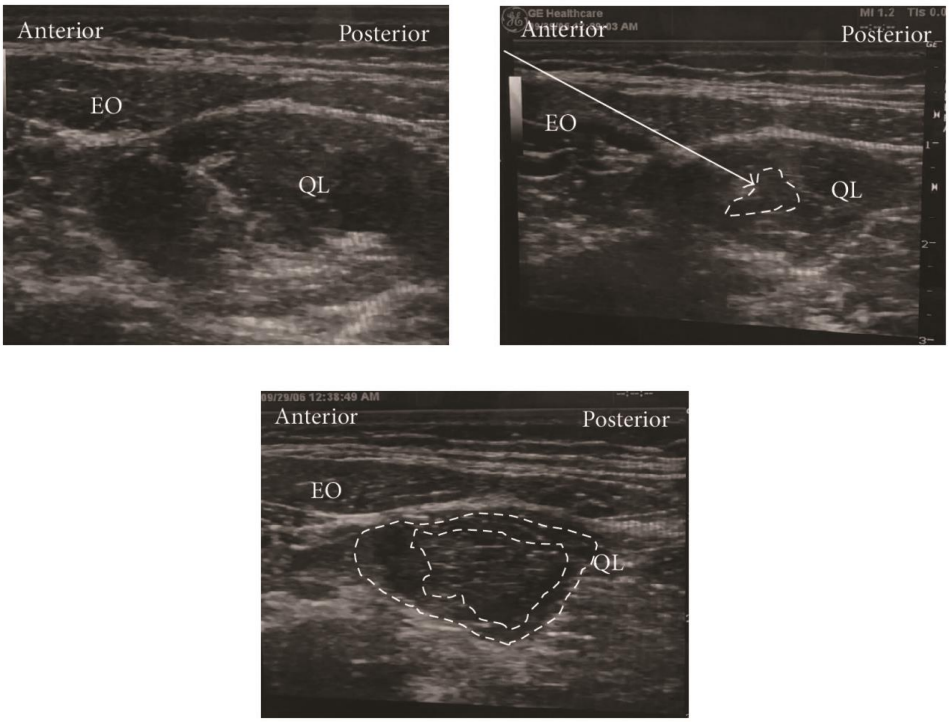

Fig 23: Ultrasound images of intramuscular QLB. (a) Preinjection, (b) test injection, and (c) postinjection. EO: external oblique muscle, QL: quadratus lumborum, white arrow: needle trajectory, and white dotted line: spread of local anaesthetic within (b) or in between (c).

Lin JA [35] advised utilizing pressure monitors to prevent intrafascicular spread while administering these blocks. For anterior and lateral QL blocks, this is especially crucial since the needle tip will be positioned anterior to the QL. Another reason to save local anaesthetic and reduce the risk of LAST is the addition of the half-the-air pressure monitor. This is especially useful in situations where the block site is deep and richly vascularized, necessitating a test injection to confirm proper interfascial plane spread, like the deep anterior QL block involving the thoracolumbar fascia, through which paravertebral space vessels exit.

THE ANATOMY AND PHYSIOLOGY OF PAIN [36-42]

There are two parts to the subjective experience of pain: first, a localized sensation in a specific area of the body; and second, an unpleasant quality of varying severity that is often associated with behaviours aimed at stopping or alleviating the pain. As a whole, perception, modulation, transmission, and transduction make up the whole process. The process by which stimuli that cause damage to tissues activate nerve terminals is called transduction. One of the brain's relay functions, transmission carries signals from the site of tissue injury to the regions responsible for perception. A relatively new brain mechanism that decreases transmission system activity is modulation. Perception requires the integration of disparate sensory data into a coherent and meaningful whole, and it is this integration that brings about the subjective awareness that is called perception. A multitude of processes, including anticipation, interpretation, and attention, come together to form perception.[36]

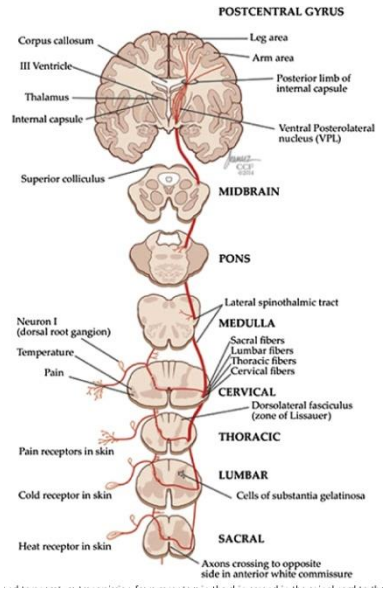

Fig 24 : Anatomy and physiology of pain pathways

The three-neuron circuits are responsible for transporting harmful impulses from the periphery to the cerebral cortex, where they are processed as pain.

First-Order Neurons:

The dorsal (sensory) spinal root is the entry point for many axons from first-order neurons in the cervical, thoracic, and sacral levels into the spinal cord. After entering the dorsal horn, axons from neurons of the first order may communicate with neurons of the sympathetic nervous system, the ventral horn's motor neurons, interneurons, and neurons of a higher level.

Second-Order Neurons:

a) There are two sizes of afferent fibres that enter the spinal cord: big axons that have been myelinated and tiny fibres that have not been. All afferent neuronal activity is received by the first six laminae of the dorsal horn, which is also the primary location for pain regulation via ascending and descending neural pathways.

b) ***"The Spinothalamic Tract:***

c) ***Alternate Pain Pathways:*** Similar to epicritic sensation, pain fibres ascend ipsilaterally and contralaterally with difficulty; hence, people may persist in experiencing pain even after ablation of the contralateral spinothalamic tract. One potential function for the spino mesencephalic tract in activating anti-nociceptive descending pathways is its projection to the periaqueductal grey.

d) ***Integration with the sympathetic and motor systems:*** There is full integration between the skeletal motor and sympathetic systems and the somatic and visceral afferents in the spinal cord, brainstem, and higher centres".

Third-Order Neurons:

The parietal cortex's postcentral gyrus and the superior wall of the sylvian fissure are the two primary destinations for fibres sent by third-order neurons in the thalamus.

GATE CONTROL THEORY OF PAIN [43]

"Ronald Melzack and Charles Patrick (Pat) Wall revolutionized pain research with their 1965 Gate Control Theory of Pain. Nociceptors, or pain fibres, and touch fibres synapse in two distinct regions of the dorsal horn of the spinal cord, according to Melzack and Wall: the substantia gelatinosa and transmission cells. When primary afferent skin stimulation occurs, signals are received by three areas of the spinal cord: the substantia gelatinosa, the dorsal column, and a group of cells called transmission cells. They contended that the dorsal horn's substantia gelatinosa acts as a gate in the spinal cord, regulating the passage of sensory information from main afferent neurons to transmission cells".

The actions of the large and tiny fibers control this gating mechanism. Activity in the big fibers blocks the gate, but activity in the tiny fibers opens it. Possible influences on this gate come from descending fiber activity that originates supraspinally and extends to the dorsal horn. When nociceptive input exceeds the inhibition that is created, it opens the gate and activates the pathways that lead to pain sensation and actions associated with pain.

METHODS OF PAIN MEASUREMENT [44:] The definition of pain, according to Merskey of the International Association for the Study of Pain (IASP), is the sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage.

Unidimensional Pain Assessment Tools Visual analogue scales (VAS), categorical verbal rating scales (VRS), and categorical numerical rating scales (NRS) are three forms of

unidimensional pain measuring instruments that were taken into consideration. These techniques are all frequently employed to gauge the degree of discomfort.

Multidimensional Pain Measurement Devices The McGill Pain Questionnaire, the Brief Pain Inventory, and the Memorial Pain Assessment Card were the three multidimensional scales that were taken into consideration. To accurately evaluate the subjective nature of pain, we must rely on the patient's expression because it is impossible to ascertain the exact amount of nociception that arises in response to tissue injury for each particular patient. A thorough model was put forth by the multimodal pain center's loser at the University of Washington. Suffering causes pain, and pain causes painful behaviours, which can be seen as –

- "Withdrawing
- Grimacing
- Crying
- Asking for analgesics

Thus, based on the patient's report of pain, one can measure pain intensity and response to analgesic medications.

Introspective Method:

Patient or trained attender attempts to assess pain".

Behavioural Method

Certain physiological markers that alter when pain is present, such tachycardia, tachypnoea, and high blood pressure, can be assessed objectively and connected to pain severity.

Visual Analogue Scale (VAS): In 1966, Attken wrote about what is now the most popular method: the visual analogue scale (VAS). A 10 centimetre horizontal or vertical line is drawn, with the words no pain at one end and the worst pain one can imagine at the other. The subject's level of pain is indicated by the mark's location on the line.

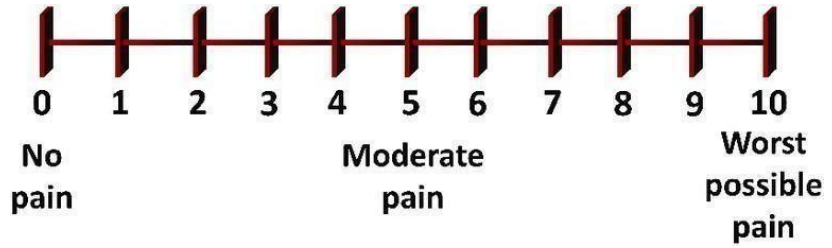

Fig 25 : Visual analogue scale

Precise assessment of pain is essential for evaluating patient progress and therapy effectiveness. A dependable and consistent method for determining the intensity of pain is the visual analogue scale (VAS). A common interpretation of the VAS is that it measures pain linearly. The VAS measures the degree or reduction of pain in order to evaluate analgesic therapy. Although it has been suggested, it is not often noticed that both can be measured simultaneously.[45]

The "Visual Analogue Scale (VAS) has been used to measure intangible values such as concern, pain, and quality of life since the 1920s. In terms of pain, it consists of a line, typically 100 mm long, with anchor descriptions like no pain and worst pain imaginable. A mark representing the patient's perception is made, and the millimetre's between the mark and the left endpoint are measured. The VAS was first used in psychology to assess mood disorders, but starting in the middle of the 1960s, it was also used to assess pain .The scale could be vertical or horizontal. The Verbal Rating Scale (VRS), which employs intermediate adjectives (such as mild, moderate, and severe), is an alternative to the VAS".[46]

Millimetre's are measured, and the "result is translated into pain, from the left end of the scale to the patient's marks. The findings can be used to track a patient's pain development or to assess how much pain a patient is experiencing in relation to other patients who may have comparable conditions. The scale was used to evaluate ambulation, mood, hunger, asthma, dyspepsia, and pain in addition to other conditions. Despite conflicting evidence about the advantages of the VAS over alternative pain measurement techniques, it remains a commonly used tool in both professional and domestic contexts".[47]

As EHRs become more commonplace, moving patient data from paper to digital format for VAS testing becomes easier in terms of both collection and analysis. A digital VAS platform may be easily linked with the electronic medical record to improve patient care and pain management. This allows for faster, more widespread access to test findings and does away with the need to manually scan paper VAS scores. To report VAS values, however, the paper and digital versions could not be equal due to differences in scale size between the two platforms. [47]

The visual analogue pain relief scale (VAPRS):

Complete relief is at the lowest end of the comparative scale, which is based on pain reduction, while no relief is at the highest. Patients mark the degree to which their pain has diminished after therapy by drawing a line connecting two points. To determine how much pain alleviation there is, one may use either the mark's distance from the top of the scale or a linear graded scale with 20 equal portions, numbered from 1 to 20. When asked how much pain alleviation the patient felt, enter the number that matched their mark.

There are two main advantages of the VAPRS. Since all patients start at the same level of pain, the amplitude of reaction is independent of the initial pain severity. It's also not necessary to assume a linear scale. But the drawbacks of this scale far outweigh the advantages. Patients are unable to indicate increases in pain on the pain relief scale, which creates a bias in favour of therapy. The pain alleviation scale ignores individual differences and gives the erroneous impression that all patients experience the same amount of pain. Initial pain severity can be recorded to facilitate patient comparisons.

The visual analogue pain severity scale (VAPSS)

According to the degree of suffering, the absolute scale establishes its extreme bounds. No pain is at the bottom of the scale, while extreme pain, unbearable pain, or worst pain ever are at the top. The scale's stated purpose is contradicted by the fact that the highest level of agony is not correctly described by the word severe pain. Patients are asked to draw the line between extremes on the VAPSS to indicate their level of pain, both before and after treatment. Similar to pain alleviation ratings, ratings of pain severity are also collected; however, a 20-point scale is used to evaluate the difference between the patient's mark and the lower end of the scale.

Compared to the VAPRS, the VAPSS has a number of advantages. Unlike the pain relief scale, this approach has two advantages over others in that it lets patients indicate a rise or fall in pain and it doesn't rely just on patients' memories of suffering. One disadvantage is that there is a double measurement error when estimating pain change. The initial severity score and pain change are invariably correlated. A noteworthy discrepancy in pain change may arise from an imbalance in the initial evaluations of pain intensity between two patient groups. [46]

MATERIALS & METHODS

MATERIALS AND METHODS

Between October "2022 and July 2024, 66 patients had complete abdominal hysterectomy procedures performed at R. L. Jalappa Hospital and Research Centre in Tamaka, Kolar.

- Study Design: Randomised control study.
- Sample Size: 2 Groups of 33 subjects each.
- Duration of study: From September 2022 to February 2024.
- Sampling Method: Computerized random sampling.

METHOD OF COLLECTION OF DATA:

Patients undergoing total abdominal hysterectomy are randomly selected. Informed consent taken from the patients prior to surgery. Observation values will be recorded using a Proforma.

INCLUSION CRITERIA:

- A patients posted for total abdominal hysterectomy under general anaesthesia
- Age: 25 -70 years.
- ASA physical status 1 or 2.

EXCLUSION CRITERIA

- Severe respiratory or cardiac disorders, hepatic or renal insufficiency, coagulopathy.
- Local infection at injection site.
- Allergy to any of the study drug (Test dose to be given).
- Pregnancy or breast feeding.
- Severe obesity (BMI > 35kg/m2) and psychiatric diseases".

SAMPLING PROCEDURE

With the approval of the institutional ethics committee and the patients' informed consent, this research went forward. Prior research by Kang R. Lee et al. compared the effectiveness of two postoperative analgesic techniques after a complete abdominal hysterectomy: an ultrasound-guided erector spine block and a quadratus lumborum block. This study served as the basis for the determination of the sample size. With 33 patients in each group, a total of 66 patients will be chosen.

METHODOLOGY

Prior to the day of surgery, patients have a pre-anaesthetic examination, and after being briefed about the research, their agreement is obtained. The recommended oral intervals for solids are 8 hours and for clear fluids are 2 hours. We will verify all regular investigations. Thread an 18G intravenous cannula onto the non-operating hand and link it to the IV fluids. Once the patient was transferred to the operating room, the monitors were linked. Pulse oximeter, 5 – lead ECG, basal heart rate monitored. Basal blood pressure monitored by tying BP cuff of appropriate size to the arm.

- GROUP A – "A 20 ml mixture of 0.25% bupivacaine and 4 mg of dexamethasone was administered to each patient for a bilateral ultrasonic guided erector spinae plane block at the T 9 level.

- GROUP B- A posterior quadratus lumborum block with 20 ml of 0.25% bupivacaine and 4 mg of dexamethasone was administered to each patient bilaterally at the T9 level using ultrasound guidance".

Using ultrasound as a guide “Placing the patient in a sitting posture, we do the erector spinae plane block with careful aseptic measures. Across the T9 transverse process, a linear transducer probe with a frequency range of 5-10 Hz is positioned in the paramedian sagittal plane. An in-plane approach in a cephalad to caudal orientation was employed to conduct the ultrasound guided block using a 23 G spinal needle.

Ultrasound guided posterior quadratus lumborum block will be performed in lateral position using a curvilinear probe and drug injected using a 23 g spinal needle. The group to which the patient belongs is decided in the preoperative period by computerised random sampling. The block performed preoperatively.

For three minutes, the member was preoxygenated with 100% oxygen. The patient was administered 0.2 mg of glycopyrrolate and 2 micrograms per kilogram of fentanyl intravenously as a prep for the procedure. The induction process begins with 2-2.5 mg/kg of propofol, followed by check breathing. For muscular relaxation, 0.08-0.1 mg/kg of intravenous vecuronium is administered. The patient is intubated with a suitable-sized endotracheal tube after being ventilated for three minutes with 1% isoflurane. Anaesthesia was upheld with o2, n2o, isoflurane, and boluses of vecuronium upon confirmation of endotracheal tube installation”.

The intraoperative hemodynamic status of each patient was recorded every fifteen minutes. Neostigmine 0.05 mg/kg and intravenous glycopyrrolate 0.01 mg/kg had the desired effect on the patient .Using a visual analogue scale (VAS), patients monitored their pain levels at rest and while moving about the surgical site in the time after surgery. Mild discomfort is defined

as any score higher than 3. A rescue analgesic, such as intravenous tramadol 50 mg or diclofenac 75 mg, is given every eight hours or as needed, depending on the intensity of the pain. Patient assessed for postoperative pain and overall satisfaction regarding post operative analgesia for 24 hrs.

SAMPLE SIZE:

- Sample size has been calculated on 50% proportion (p) who undergoing lower abdominal surgeries as per Kang re et al, [8] reference article. P was taken 50% , alpha error was 5% and power of the test was 90% as well as allowable error (l) was 12%.
- Sample size $= Z^2 * p (100-p) / l^2$

  $= (1.96)^2 * 50*50 /(12)^2$

  $= 66.99 = 66$
- Total 66 patients will be selected and participants will be randomized by computer randomization method.

STATISTICAL ANALYSIS: A database in Excel will be created from the collected data when it has been coded. (Mean +/- SD) and confidence intervals will be used to display all quantitative measurements. Qualitative indicators, such as gender and ASA, will also be included. Health status, by percentages and confidence intervals, etc. In order to understand the findings, we will use the following tests: independent samples t-test, Mann-Whitney U-test, and chi-square test/Fisher's exact test. Statistical importance will be determined if the P value is less than 0.05.

RESULTS

RESULTS

The “66 patients who were randomly allocated to one of two groups had complete abdominal hysterectomy for this research. The erector spinae plane and posterior quadratus lumborum muscles were targeted with ultrasound-guided blocks in Group A and Group B, respectively. In order to determine the block's effectiveness, these two groups were compared.

Table 1: Distribution of characteristics of the study participants.

Parameters	Frequency	Percentage
Age		
≤45	40	60.6
≥45	26	39.4
Group		
ESPB	33	50
QLB	33	50
ASA Grading		
I	34	51.5
II	32	48.5

Table 1, shows the comparison of distribution of characteristics, patients under 45 years are 40 (60.6%) and patients above 45 are 26 (39.4%). Patients under ASA I are 34 (51.5%) and patients under ASAII are 32 (48.5%) .

Figure 1, Pie chart showing according to ASA grading

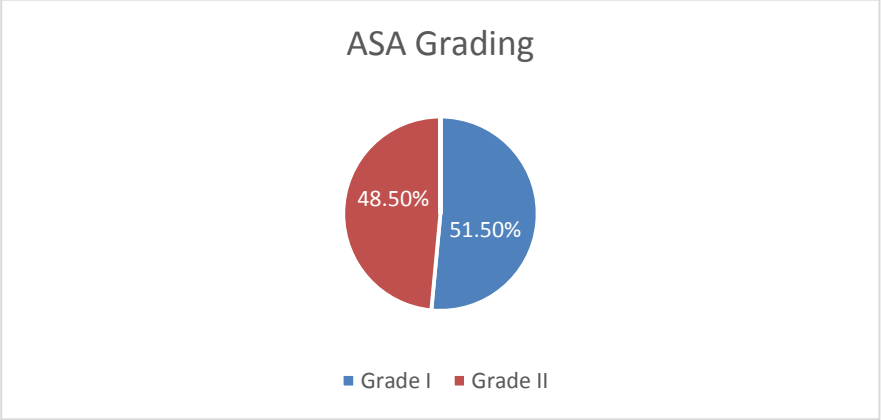

Table 2: Showing characteristics in the Erector Spinae Plane (ESPB) and Quadratus Lumborum (QLB) Block group

Parameter	ESPB (n=33)	QLB (n=33)	P value
Age	44.33 ± 5.29	44.96 ± 6.09	0.655
Duration of surgery	133 ± 14.02	140.61 ± 4.6	**0.004***
Rescue analgesic time	6.30 ± 0.951	5.03 ± 0.72	**<0.001***

Table 2 shows comparison of demographic and hemodynamic parameters, there is no noteworthy difference found. In group A, Mean +/- SD of age is 44.33 ± 5.29 whereas in group B it is 44.96 ± 6.09 and p value is 0.655 which is statistically not noteworthy. Mean +/- SD of Duration of surgery in group A is 133 ± 14.02 whereas that in Group B is 140.61 ± 4.6 with a p value of 0.004*stating the difference of HR in 2 groups is statistically noteworthy. Mean +/- SD of Rescue analgesic time in group A is 6.30 ± 0.951 whereas that in Group B is 5.03 ± 0.72 with a p value of <0.001* stating the difference of HR in 2 groups is statistically noteworthy and rescue analgesic time is less in QLB group than ESBP.

Table 3 : Haemodynamic characteristics in the Erector Spinae Plane (ESPB) and Quadratus Lumborum (QLB) Block group

Haemodynamic parameters	Mean +/- SD		p value
	ESPB (n=33)	QLB (n=33)	
HR	79 ± 4.2	80.4 ± 3.1	0.128
MABP	79± 3.9	78.3 ± 4.5	0.501

Table 3 , shows haemodynamic characteristics in ESPB and QL group, Mean +/- SD of Heart Rate in group A is 79 ± 4.2 whereas that in Group B is 80.4 ± 3.1 with a p value of 0.128 stating the difference of HR in 2 groups is statistically insignificant. Mean +/- SD of MABP in group A is 79± 3.9 whereas that in Group B is 78.3 ± 4.5with a p value of 0.501stating the difference of HR in 2 groups is statistically insignificant

Table 4: Characteristic of rescue analgesia in the Erector Spinae Plane (ESPB) and Quadratus Lumborum (QLB) Block group

Rescue analgesia	Mean +/- SD	
	ESPB (n=33)	QLB (n=33)
Duration till rescue analgesia	6.30 ± 0.951	5.03 ± 0.72
No of rescue analgesia is given	2.18+/- 0.72	2.42+/- 0.75
Total amount of dose	165.90+/-55.48	179+/- 59.11

Table 4, shows Mean +/- SD of duration of rescue analgesia in ESPB group is 6.30 ± 0.951, whereas that of QLB group is 5.03 ± 0.72. Mean +/- SD of No of rescue analgesia is given in ESPB group is 2.18+/- 0.72, whereas that of QLB group is 2.42+/- 0.75. Mean +/- SD of Total amount of dose in ESPB group is 165.90+/-55.48, whereas that of QLB group is 179+/- 59.11

Groups A and B are compared with respect to VAS in Table 5. There is a statistically noteworthy difference between Group A and Group B at the 6-hour rest VAS of 3.03 + 0.81 and 4.03 + 0.76, respectively, with a p-value of less than 0.001*. Statistically noteworthy differences are shown by VAS in rest at the 12th hour, with Group A having 4+0.612 and Group B having 4.4+0.55, respectively (p = 0.006*). Group A's VAS during 24 hours of rest is 4+0.467, whereas Group B's is 4.4+0.50; a p value of 0.001* indicates a statistically noteworthy difference.

Table 5: Showing Mean and SD of VAS at rest and VAS at movement

Parameter	ESPB (n=33)	QLB (n=33)	P value
VAS at rest			
2nd Hour	0	0	
6th Hour	3.03 ± 0.81	4.03±0.76	**<0.001***
12th Hour	4±0.612	4.4± 0.55	**0.006***
24th Hour	4± 0.467	4.4±0.50	**0.001***
VAS at movement			
2nd Hour	2.52±0.508	3.5± 0.56	**<0.001***
6th Hour	4.12±0.60	4.7±0.69	**0.005***
12th Hour	4.97±0.684	5.0± 0.707	0.861
24th Hour	4.39±0.827	4.63±0.69	0.205

There is a statistically noteworthy difference between Group A and Group B during the 2nd hour, as shown in Table 5, with a VAS of 2.52+0.508 and 3.5+0.56 respectively. The p value is less than 0.001, showing this difference. At the sixth hour, the VAS in mobility for Group A is 4.12+0.60, whereas for Group B it is 4.7+0.69. The p-value for this difference is 0.005*, which means that it is statistically noteworthy. Group A's VAS in movement at the 12th hour

is 4.97+0.684, whereas Group B's is 5.0+0.707; a p value of 0.861 indicates that there is not much of a statistically noteworthy difference. There isn't much of a statistical difference between Group A and Group B at the 24-hour mark, with a VAS of 4.39+0.827 and 4.63+0.69, respectively, and a p-value of 0.205.

Table 6: showing Association of Patient satisfaction score between ESP and QLB groups

Parameter	ESPB (n=33)	QLB (n=33)	Chi-square	P value
Patient satisfaction score				
Satisfactory	18(54.5)	25(75.8)	3.27	**0.06***
Good	15(45.5)	8(24.2)		
Total	33(100)	33(100)		

Figure 2 Histogram showing Patient satisfactory score in relation with groups

In Table 6, we can see that “there is a statistically noteworthy difference between Group A and Group B in terms of patient satisfaction. Specifically, 54.5% of patients in Group A and 75.8% in Group B reported satisfactory scores, while 45.5% of patients in Group A and 24.2% in Group B reported good scores”.

DISCUSSION

DISCUSSION

It is common practice to use "truncal blocks as part of a multimodal analgesic strategy after LSCS surgery because of the substantial postoperative pain that patients experience (Bakshi A et al.). Although the transversus abdominis plane (TAP) block was first employed, additional truncal blocks like QLB and ESPB were inserted as a result of inadequate treatment of visceral pain". From 2 to 24 hours, TQLB successfully decreased resting pain levels (median 1.5-3) and movement pain scores (median 1.5-4).[12] QLB has the potential to be an effective analgesic after LSCS. The QLB's efficiency was evident even when contrasted with that of the TAP block.[10]

Alshaimaa et al. found in 2020 that patients who had bilateral ESP blocks following abdominal hysterectomy reported significantly decreased pain after 30 minutes, 2 hours, 16 hours, and 24 hours post-op. [48]

One novel approach uses three separate methods to block the thoracoabdominal nerves; this is called the quadratus lumborum block. A sensory blockage of both somatic and visceral fibres between Th7-8 and Th12-L1 is achieved in QLB-II by injecting LA in the interfascial plane between the quadratus lumborum and latissimus dorsi/erector spinae muscles.[31]

As it travels down the thoracolumbar fascia, the Transmuscular Quadratus Lumborum Block (TQLB) obstructs several neural pathways, including those of the lower thoracic levels, the sympathetic trunk, the lumbar plexus, and sympathetic nerve fibres originating in the upper back. Reducing opioid use within 24 hours after a caesarean section is one area where this innovative method has shown promise.[9]

Excellent postoperative analgesia is provided by QL block for paediatric patients after various surgeries. Hussein et al.[49] examined 54 adolescents having elective lower abdominal surgery and found that QL-3 was superior than intramuscular QL block in a randomized controlled trial. One study by Sato et al.50 looked at 47 children with vesicoureteral reflux and found that an ultrasound-guided QL block and caudal epidural using 1 ml/kg of 0.2% ropivacaine with 0.03 mg/kg of morphine was effective. Although the QL group has studied the posterior QL block before, their opioid needs in the first day after surgery were much lower.

According to clinical experience with ESP blocks, it takes a lot of staff and rises the risk of falls, particularly with drugged patients, to move the patient's posture from supine to lateral for the block operation. The QL block, on the other hand, may be performed while the patient is prone. While taking ultrasound pictures of obese patients might be challenging, a little cushion under the patient's hip or a lateral tilt can help get better results. [6]

Therefore, the QL block might be more useful and efficient than the ESP block. Local anesthetic systemic toxicity due to absorption is the main risk associated with the fascial plane block. So far, there have been very few cases of systemic toxicity due to local anesthetics after the ESP block. [6]

In 2018, a research was carried out by Naglaa Khalil Yousef that compared the use of bilateral quadratus lumborum (QL) blocks to bilateral transverse abdominis plane (TAP) blocks in female patients after complete abdominal hysterectomy. While the TAP group had shorter analgesia duration, the results demonstrated that the QL group had much lower postoperative pain scores and morphine needs.[51]

For an elective spinal cord stimulation (CS) procedure, a recent study randomly assigned 60 patients to receive either thoracic ESPB or transmuscular QLB with 20 mL of 0.375% ropivacaine and 4 mg of dexamethasone each side. When comparing the two groups, the authors could not find any noteworthy differences in pain levels, analgesic duration, or rescue analgesic usage.[12]

Another randomized controlled trial (RCT) found comparable results when comparing the analgesic effectiveness, complication rate, and recovery quality of two groups of 52 patients, 26 from each group, who had either ultrasound-guided QLB type-II or ESPB performed at the conclusion of spinal anaesthesia for CS. Actually, the authors did not observe any changes in the trend of NPRS at rest and with movement, or in the 24-hour cumulative fentanyl ingestion, between the two groups throughout time.

The concentration of the local anesthetic after the intramuscular QL block was evaluated by Murouchi et al. For a single area, you could require at least 20 milliliters of local anesthetic. In order to prevent LAST, it is crucial to guarantee the block's safety because to the massive volume. When comparing the two blocks for laparoscopic surgery, Murouchi et al. looked at the intramuscular QL block and the lateral TAP block. The QL block, in contrast to the TAP block, provided a more extensive and prolonged analgesic effect after laparoscopic ovarian surgery.[52]

Spinal anaesthesia alone was compared to spinal anaesthesia coupled with an anterior or posterior QL block for caesarean sections by Blanco et al. After a caesarean section, the QL block was effective and provided adequate pain relief when used in conjunction with the

usual postoperative pain medication regimen. When Blanco et al. compared the TAP block to the posterior QL block, they discovered that the former was better in reducing morphine usage and demands for at least 48 hours after surgery. [10]

The present study compares ESBP and QLB. Study consists of 66 patients undergoing total abdominal hysterectomy are randomly divided into 2 groups. Group A received ultra sound guided erector spinae plane block and Group B received ultra sound guided posterior quadratus lumborum block. These two groups were compared to assess the efficacy of the block.

There is no statistically noteworthy difference between the groups when comparing demographics in this research. Group A's mean +/- standard deviation heart rate was 79 + 4.2 while Group B's was 80.4 + 3.1; a p value of 0.128 indicated that the difference in HR between the two groups was not statistically noteworthy, indicating that the current study's focus on haemodynamic features in the ESPB and QL groups is valid. Group B's mean +/- SD MABP is 78.3 + 4.5, whereas Group A's is 79+3.9; a p value of 0.501 indicates that the difference in HR between the two groups is not statistically noteworthy. Ralte et al. found that the HR attained statistical significance at20,30,40,80, and 120 minutes, which contradicts our findings. There was a statistically noteworthy change in mean HR at 12- and 24-hours post-op.[13]

In the present study, p value at VAS in rest at 6^{th} hour, at 12^{th} Hour, at 24^{th} Hour is <0.001,0.006,0.001 respectively indicating statistically noteworthy difference. In the present study, p value at VAS on movement at 2^{nd} Hour ,at 6^{th} hour, at 12^{th} Hour, and 24^{th} Hour were

<0.001,0.005,0.861, 0.205 respectively indicating statistically noteworthy difference indicating that VAS is less in Group A i.e., ESBP group than OLB group.

In the present study, Mean +/- SD of duration of rescue analgesia in ESPB group is 6.30 ± 0.951, whereas that of QLB group is 5.03 ± 0.72. Mean +/- SD of no of rescue analgesia is given in ESPB group is 2.18+/- 0.72, whereas that of QLB group is 2.42+/- 0.75. Mean +/- SD of Total amount of dose in ESPB group is 165.90+/-55.48, whereas that of QLB group is 179+/- 59.11. Rescue analgesic time in group A is 6.30 ± 0.951 whereas that in Group B is 5.03 ± 0.72 with a p value of <0.001 stating the difference of HR in 2 groups is statistically noteworthy and rescue analgesic time is less in QLB group than ESBP.

Ralte et al. found that the QL group used somewhat more total rescue analgesia throughout the perioperative period, which was consistent with the current research but did not reach statistical significance. The ESPB had a longer time to onset of rescue analgesia, while QLB had a time of 6.32 ± 12.57 minutes and ESPB had a duration of 16.67 ± 31.25 minutes. This, however, did not reach a statistically noteworthy level.[13]

A p value of 0.06 indicates a statistically noteworthy difference between Group A and Group B when it comes to patient satisfaction scores. In Group A, 54.5% of patients had satisfactory scores, while in Group B, 75.8% had good scores. In contrast, 45.5% of patients in Group A had good scores, and 24.2% of patients in Group B had good scores.

Research by Kang et al. confirmed our findings: patients having laparoscopic liver resection had higher cumulative opioid consumption over 24 hours with bilateral single-injection ESP blocks than with bilateral single-injection QL blocks. If ESP or QL blocks help patients recover after liver surgery, further studies are required to confirm this.[6]

Choi et al.[53] found that bilateral ESPB decreased opioid requirements and postoperative pain in laparoscopic colorectal cancer patients during anaesthesia induction, which is consistent with our findings. In comparison to oblique subcostal TAPB, ESPB is a more effective regional block approach for relieving postoperative pain in elderly patients following laparoscopic colorectal cancer surgery (CRC), as reported by Qi-hong et al. [54].

Contrary to our findings, other investigations have shown that a posterior QL block with 20 mL of 0.375% ropivacaine may extend from T4 to T12 or L1 and be effective for up to 48 hours after surgery, far surpassing the duration of a single-injection ESP block (5-12 hours). [10]

In the first twenty-four hours after surgery, Sato et al. discovered that the QL group required far less opioids. Ralte et al. found that after pyeloplasty surgery, patients had less discomfort and less need for perioperative analgesia when using either the QL-3 or ESP block. It is especially important to manage postoperative pain in children, and both the QL and ESP blocks are safe and easy to use.

There was a statistically noteworthy difference in the groups' VAS ratings at rest at1,3, and 12 hours after surgery, as reported by Fakhry DM et al. [15], which is consistent with our findings. Low VAS values were seen in the ESPB group compared to the TQLB. Lower VAS ratings during mobility were seen in the ESPB group compared to the TQLB group at 24 hours after surgery. The initial call for rescue analgesics was also delayed by the ESPB group compared to the TQLB group.

Consistent with our findings, Aksu et al. found that, like QLB, ESPB may alleviate postoperative pain in children undergoing lower abdominal surgery. The study's authors claim that ESPB is a less risky and more straightforward method.[55]

Our findings are consistent with those of Zanfini BA et al., who also found that compared to the pQLB group, the ESPB group needed fewer rescue doses. Twenty patients (or 77% of the total) in the ESPB group and twenty-five (96% of the total) in the pQLB group needed morphine rescue doses at the 24-hour mark because the analgesic effects were insufficient.[18]

Abd Ellatif [19] found that ESPB required much less time to complete than QLB. This might be because ESPB does not include any potentially harmful structures and uses the transverse process as a security measure.

SUMMARY

SUMMARY:

Patients receiving complete abdominal hysterectomy at R. L. Jalappa Hospital and Research Centre, Tamaka, Kolar, between the ages of 25 and 70 with an ASA physical status of 1 or 2 were included in the current research, which ran from October 2022 to July 2024.

This research is a randomized controlled trial. Two groups were formed from the total of sixty-six patients. Patients in Group A had bilateral erector spinae plane blocks using 20 cc of 0.25% bupivacaine and 4 mg of dexamethasone, as guided by ultrasound. Group B included 33 patients who had an ultrasound-guided posterior quadratus lumborum block at the T9 level on both sides with 20 cc of 0.25% bupivacaine and 4 mg of dexamethasone.

Every 15 minutes, the surgeons recorded any changes in the patients' hemodynamic status that were detected throughout the operation. The patient's level of discomfort at rest and when moving about the surgical site was evaluated in the post-operative period using a visual analogue scale (VAS). A pain level greater than 3 was deemed modest. Depending on the intensity of the pain, a rescue analgesic was given by intravenous injection of 50 mg of tramadol with or without 75 mg of diclofenac every eight hours. After 24 hours, the patient's level of satisfaction with the postoperative analgesia and pain management were evaluated. We measured all parameters and ran the statistics.

The following are the outcomes that were achieved. 40 patients, or 60.6% of the total, are under the age of 45, while 26 patients, or 39.4%, are above the age of 46, according to the distribution of characteristics. There are 34 patients (51.5%) classified as ASA I and 32 patients (48.5%) classified as ASA II.

On comparison of demographic, in group A, Mean +/- SD of age is 44.33 ± 5.29 whereas in group B it is 44.96 ± 6.09 and p value is 0.655 which is statistically not noteworthy. On comparing, haemodynamic characteristics in ESPB and QL group, Mean +/- SD of Heart Rate in group A is 79 ± 4.2 whereas that in Group B is 80.4 ± 3.1 with a p value of 0.128 stating the difference of HR in 2 groups is statistically insignificant. Mean +/- SD of MABP in group A is 79± 3.9 whereas that in Group B is 78.3 ± 4.5with a p value of 0.501stating the difference of HR in 2 groups is statistically insignificant.

Mean +/- SD of Rescue analgesic time in group A is 6.30 ± 0.951 whereas that in Group B is 5.03 ± 0.72 with a p value of <0.001* stating the difference of HR in 2 groups is statistically noteworthy and rescue analgesic time is less in QLB group than ESBP. There is a statistically noteworthy difference between ESPB and QLB. Mean +/- SD of Rescue analgesic time in group A is 6.30 ± 0.951 whereas that in Group B is 5.03 ± 0.72 with a p value of <0.001* .

In the present study, VAS is compared between Group A and Group B. VAS in rest at 6th hour , 12th Hour , at 24th Hour with a p value of **<0.001*** , **0.006*** , **0.001*** respectively. VAS in movement at 2nd Hour and 6th hour had p values of **<0.001,0.005** respectively indicating statistically noteworthy difference. VAS in movement at 12th Hour, at 24th Hour had p values of 0.861, 0.205 indicating statistically not much noteworthy difference is noticed.

In the present study, comparing the patient satisfaction score between group A and Group B, satisfactory score is seen in 54.5% in Group A and 75.8 % in Group B whereas good score is seen in 45.5% patients in group A and 24.2 % in group B with a p value of 0.06* indicating a statistically noteworthy difference.

CONCLUSION

CONCLUSION :

From the present study, the following conclusions are drawn

1. There is no statistically note worthy difference between the demographic and hemodynamic parameters between the two groups.
2. There is statistically noteworthy difference noted, between VAS scores at rest i.e Group A (ESPB group) were lesser than Group B (QLB group).
3. There is statistically noteworthy difference noted ,between VAS scores at movement i.e. VAS scores of Group A (ESPB group) were lesser than Group B (QLB group).
4. There is statistical noteworthy difference noted in comparison to rescue analgesic time, indicating Group A (ESPB group) had higher rescue analgesic time than Group B (QLB group) which in term indicates Group A (ESPB group) had higher duration of analgesia than Group B (QLB group).
5. The patient satisfaction score in Group A (ESPB group) had higher patients under good score and Group B (QLB group) had higher patients in satisfactory score , statistically noteworthy difference was noticed.
6. In group ESPB total amount of drug used is less than of group QLB.

LIMITATIONS OF PRESENT STUDY:

Initially, the lack of a control group administering either a placebo or systemic analgesia would have further limited the advantage that ESP or QL blocks might provide. The fact that we did not evaluate block success by assessing dermatomal sensory loss using a cold alcohol swab or pinprick test could have contributed to the reported outcomes. There could be a larger sample size. It should also be noted that considerable clinical variability between studies may exist related to the type of surgery, length, and placement of the incision .The patients were not monitored for longer than twenty-four hours after surgery.

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ANNEXURE

ANNEXURE

PROFORMA

TITLE: "COMPARISON OF POST OPERATIVE ANALGESIC EFFICACY OF ERECTOR SPINAE BLOCK AND QUADRATUS LUMBORUM BLOCK IN LOWER ABDOMINAL SURGERIES."

Investigators: Dr KOTLO RUKMINISESHADRI / Dr Sujatha M P

NAME:	SEX:	AGE:
HEIGHT:	WEIGHT: BMI:	ASA:
GROUP:	SURGERY STARTED:	DURATION OF SURGERY:
UHID:	DIAGNOSIS:	PROCEDURE:

INTRA OPERATIVE HAEMODYNAMICS:

TIME	**Heart Rate**	**Mean Arterial Pressure**	**SPO2**
0 min			
5 min			
10 min			
15 min			
30 min			
45 min			
60 min			
75 min			
90 min			
105 min			
120 min			
135 min			

150 min			
165 min			
180 min			
195 min			
210 min			
225 min			
240 min			

Post-operative VAS Score -

Time (after surgery)	**VAS Score (at rest)**	**VAS Score (on movement)**	Rescue analgesic
0 hrs			
1 hr			
2 hr			
4 hr			
6 hr			
12 hr			
24 hr			

3. **Time for first rescue analgesic – (from block given time)**

4. **Total amount of Tramadol or Diclofenac - given in first 24hrs**

5. **Patient Satisfaction score –** Very Good/Good/Satisfactory/Poor

6. **Complications -** Hypotension / Bradycardia / Delirium / Residual Neuromuscular Blockade

INFORMED CONSENT FORM

7.

8. "COMPARISON OF POST OPERATIVE ANALGESIC EFFICACY OF ERECTOR SPINAE

9. BLOCK AND QUADRATUS LUMBORUM BLOCK IN LOWER ABDOMINAL SURGERIES."

10. DATE:

11. I,_____aged__,after being explained in my own vernacular language about the purpose of the study and the risks and complications of the procedure, hereby give my valid written informed consent without any force or prejudice for performing Erector Spinae Block. The nature and risks involved have been explained to me to my satisfaction. I have been explained in detail about the study being conducted. I have read the patient information sheet and I have had the opportunity to ask any question. Any question that I have asked, have been answered to my satisfaction. I consent voluntarily to participate as a participant in this research. I hereby

12. give consent to provide my history, undergo physical examination, undergo the procedure, undergo investigations and provide its results and documents etc., to the doctor / institute etc., For academic and scientific purpose the operation / procedure etc., may be video graphed or photographed. All the data may be published or used for any academic purpose. I will not hold the doctors / institute etc., responsible for any untoward consequences during the procedure / study.

13. A copy of this Informed Consent Form and Patient Information Sheet has been provided to the participant.

14. _____

15. _____

16. (Signature & Name of Pt. Attendant) (Signature/Thumb impression & Name of Patient/Guardian) (Relation with patient)

17. Witness 1:

18. Witness 2:

19. _____

20. (Signature & Name of Research person /doctor)

21.

22.

ಮಾಹಿತಿ ಒಪ್ಪಿಗೆ ನಮೂನೆ

ಅಧ್ಯಯನ ಶೀರ್ಷಿಕೆ: "ಕೆಳಭಾಗದ ಹೊಟ್ಟೆಯ ಶಸ್ತ್ರಚಿಕಿತ್ಸೆಗಳಲ್ಲಿ ಎರೆಕ್ಟರ್ ಸ್ಪೈನ್ ಬ್ಲಾಕ್ ಮತ್ತು ಕ್ವಾಡ್ರ್ಯಾಟಸ್ ಲುಂಬೋರಮ್ ಬ್ಲಾಕ್‌ನ ನೋವು ನಿವಾರಕ ಪರಿಣಾಮಕಾರಿತ್ವದ ಕಾರ್ಯಾಚರಣೆಯ ನಂತರದ ಹೋಲಿಕೆ"

ನಾನು, _____ ವಯಸ್ಸು_____, ಅಧ್ಯಯನದ ಉದ್ದೇಶ ಮತ್ತು ಕಾರ್ಯವಿಧಾನದ ಅಪಾಯಗಳು ಮತ್ತು ತೊಡಕುಗಳ ಬಗ್ಗೆ ನನ್ನ ಸ್ವಂತ ಸ್ಥಳೀಯ ಭಾಷೆಯಲ್ಲಿ ವಿವರಿಸಿದ ನಂತರ, ಈ ಮೂಲಕ ಎರೆಕ್ಟರ್ ಸ್ಪೈನೇ ಬ್ಲಾಕ್ ಅನ್ನು ನಿರ್ವಹಿಸಲು ಯಾವುದೇ ಬಲ ಅಥವಾ ಪೂರ್ವಾಗ್ರಹವಿಲ್ಲದೆ ನನ್ನ ಮಾನ್ಯ ಲಿಖಿತ ತಿಳುವಳಿಕೆಯನ್ನು ನೀಡುತ್ತೇನೆ. ಒಳಗೊಂಡಿರುವ ಸ್ವಭಾವ ಮತ್ತು ಅಪಾಯಗಳನ್ನು ನನಗೆ ತೃಪ್ತಿಪಡಿಸಲು ವಿವರಿಸಲಾಗಿದೆ. ನಡೆಸುತ್ತಿರುವ ಅಧ್ಯಯನದ ಬಗ್ಗೆ ನನಗೆ ವಿವರವಾಗಿ ವಿವರಿಸಲಾಗಿದೆ. ನಾನು ರೋಗಿಯ ಮಾಹಿತಿ ಹಾಳೆಯನ್ನು ಓದಿದ್ದೇನೆ ಮತ್ತು ಯಾವುದೇ ಪ್ರಶ್ನೆಯನ್ನು ಕೇಳಲು ನನಗೆ ಅವಕಾಶವಿದೆ. ನಾನು ಕೇಳಿದ ಯಾವುದೇ ಪ್ರಶ್ನೆಗೆ ನನ್ನ ತೃಪ್ತಿಗೆ ಉತ್ತರಿಸಲಾಗಿದೆ. ಈ ಸಂಶೋಧನೆಯಲ್ಲಿ ಪಾಲ್ಗೊಳ್ಳುವವನಾಗಿ ಭಾಗವಹಿಸಲು ನಾನು ಸ್ವಯಂಪ್ರೇರಣೆಯಿಂದ ಸಮ್ಮತಿಸುತ್ತೇನೆ. ನನ್ನ ಇತಿಹಾಸವನ್ನು ಒದಗಿಸಲು, ದೈಹಿಕ ಪರೀಕ್ಷೆಗೆ ಒಳಗಾಗಲು, ಕಾರ್ಯವಿಧಾನಕ್ಕೆ ಒಳಗಾಗಲು, ತನಿಖೆಗೆ ಒಳಗಾಗಲು ಮತ್ತು ಅದರ ಫಲಿತಾಂಶಗಳು ಮತ್ತು ದಾಖಲೆಗಳನ್ನು ಇತ್ಯಾದಿಗಳನ್ನು ವೈದ್ಯರು / ಸಂಸ್ಥೆ ಇತ್ಯಾದಿಗಳಿಗೆ ಒದಗಿಸಲು ನಾನು ಈ ಮೂಲಕ ಒಪ್ಪಿಗೆ ನೀಡುತ್ತೇನೆ, ಶೈಕ್ಷಣಿಕ ಮತ್ತು ವೈಜ್ಞಾನಿಕ ಉದ್ದೇಶಕ್ಕಾಗಿ ಕಾರ್ಯಾಚರಣೆ / ಕಾರ್ಯವಿಧಾನ ಇತ್ಯಾದಿ. ವೀಡಿಯೊ ಗ್ರಾಫ್ ಅಥವಾ ಛಾಯಾಚಿತ್ರ. ಎಲ್ಲಾ ಡೇಟಾವನ್ನು ಪ್ರಕಟಿಸಬಹುದು ಅಥವಾ ಯಾವುದೇ ಶೈಕ್ಷಣಿಕ ಉದ್ದೇಶಕ್ಕಾಗಿ ಬಳಸಬಹುದು. ಕಾರ್ಯವಿಧಾನ / ಅಧ್ಯಯನದ ಸಮಯದಲ್ಲಿ ಯಾವುದೇ ಅಹಿತಕರ ಪರಿಣಾಮಗಳಿಗೆ ನಾನು ವೈದ್ಯರು / ಸಂಸ್ಥೆ ಇತ್ಯಾದಿಗಳನ್ನು ಹೊಣೆಗಾರರನ್ನಾಗಿ ಮಾಡುವುದಿಲ್ಲ.

ಈ ತಿಳುವಳಿಕೆಯುಳ್ಳ ಒಪ್ಪಿಗೆ ನಮೂನೆಯ ಪ್ರತಿಯನ್ನು ಮತ್ತು ರೋಗಿಯ ಮಾಹಿತಿ ಹಾಳೆಯನ್ನು ಭಾಗವಹಿಸುವವರಿಗೆ ಒದಗಿಸಲಾಗಿದೆ.

(ರೋಗಿಯ ಹೆಸರು ಮತ್ತು ಸಹಿ)

ಸಾಕ್ಷಿ 1:

ಸಾಕ್ಷಿ 2:

_____

(ಸಂಶೋಧನಾ ವ್ಯಕ್ತಿ/ವೈದ್ಯರ ಸಹಿ ಮತ್ತು ಹೆಸರು)

PATIENT INFORMATION SHEET

TITLE: "COMPARISON OF POST OPERATIVE ANALGESIC EFFICACY OF ERECTOR SPINAE

BLOCK AND QUADRATUS LUMBORUM BLOCK IN LOWER ABDOMINAL SURGERIES."

Investigators: Dr KOTLO RUKMINISESHADRI / Dr Sujatha M P

Study Location : R L Jalappa Hospital and Research Centre attached to Sri Devaraj Urs Medical College, Tamaka , Kolar.

Details - All Patients posted for Abdominal surgeries under general anaesthesia will be included in this study. Patients with co morbid conditions will be excluded from the study.

This study aims to compare the post operative efficacy of erector spinae block and quadratus lumborum block.Patient and the attenders will be completely explained about the procedure being done i.e., Erector Spinae Block.

Erector Spinae Block will be avoided in the patient with Spine deformities, Severe respiratory or cardiac disorders, hepatic or renal insufficiency, coagulopathy, uncontrolled hypertension, uncontrolled blood sugars and psychiatric diseases.

Please read the information and discuss with your family members. You can ask any question regarding the study. If you agree to participate in the study we will collect information. Relevant history will be taken. This information collected will be used only for dissertation and publication.

All information collected from you will be kept confidential and will not be disclosed to any outsider. Your identity will not be revealed. There is no compulsion to agree to this study. The care you will get will not change if you don't wish to participate. You are required to sign/ provide thumb impression only if you voluntarily agree to participate in this study.

For any further clarification you are free to contact,

Dr. Sujatha M P

(Professor in

Anaesthesiology)

Mobile

no:9448854349.

ರೋಗಿಯ ಮಾಹಿತಿ ಹಾಳೆ

ಅಧ್ಯಯನ ಶೀರ್ಷಿಕೆ: "ಕೆಳಭಾಗದ ಹೊಟ್ಟೆಯ ಶಸ್ತ್ರಚಿಕಿತ್ಸೆಗಳಲ್ಲಿ ಎರೆಕ್ಟರ್ ಸ್ಪೈನ್ ಬ್ಲಾಕ್ ಮತ್ತು ಕ್ವಾಡ್ರ್ಯಾಟಸ್ ಲುಂಬೋರಮ್ ಬ್ಲಾಕ್‌ನ ನೋವು ನಿವಾರಕ ಪರಿಣಾಮಕಾರಿತ್ವದ ಕಾರ್ಯಾಚರಣೆಯ ನಂತರದ ಹೋಲಿಕೆ"

ತನಿಖಾಧಿಕಾರಿಗಳು: ಡಾ ಕೋಟ್ಲೋ ರುಕ್ಮಿಣಿಶೇಷಾದ್ರಿ /

ಅಧ್ಯಯನದ ಸ್ಥಳ: ಆರ್ . ಎಲ್ . ಜಾಲಪ್ಪ ಆಸ್ಪತ್ರೆ ಮತ್ತು ಸಂಶೋಧನಾ ಕೇಂದ್ರವನ್ನು ಶ್ರೀ ದೇವರಾಜ್ ಅರಸ್ ವೈದ್ಯಕೀಯ ಕಾಲೇಜು, ಕೋಲಾರಕ್ಕೆ ಸೇರಿಸಲಾಗಿದೆ.

ಸಾಮಾನ್ಯ ಅರಿವಳಿಕೆ ಅಡಿಯಲ್ಲಿ ಹೊಟ್ಟೆ ಶಸ್ತ್ರಚಿಕಿತ್ಸೆಗೆ ಒಳಗಾದ ಎಲ್ಲ ರೋಗಿಗಳನ್ನು ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಸೇರಿಸಿಕೊಳ್ಳಲಾಗುವುದು. ಕಾಯಿಲೆಯನ್ನು ಹೊಂದಿರುವ ರೋಗಿಗಳನ್ನು ಅಧ್ಯಯನದಿಂದ ಹೊರಗಿಡಲಾಗುತ್ತದೆ.

ಈ ಅಧ್ಯಯನವು ವೆಕ್ಟರ್ ಸ್ಪಿನಾಬ್ ಬ್ಲಾಕ್ ಮತ್ತು ಕ್ವಾಡ್ರಟಸ್ ಲುಂಬೋರಮ್ ಬ್ಲಾಕ್ ನ ನಂತರದ ಪರಿಣಾಮಕಾರಿತ್ವವನ್ನು ಹೋಲಿಸುವ ಗುರಿಯನ್ನು ಹೊಂದಿದೆ. ಈ ಪೈಕಿ ಒಂದನ್ನು ಶಸ್ತ್ರಚಿಕಿತ್ಸೆಯ ಬೆಳಿಗ್ಗೆ ಆಯ್ಕೆ ಮಾಡಲಾಗುವುದು. ಈ ಬ್ಲಾಕ್ ಅನ್ನು ಸಾಮಾನ್ಯ ಅರಿವಳಿಕೆ ಅಡಿಯಲ್ಲಿ ಅಲ್ಟ್ರಾಸೌಂಡ್ ಮಾರ್ಗದರ್ಶನದಲ್ಲಿ ನೀಡಲಾಗುವುದು. ಈ ಖಂಡದ ಪ್ರಯೋಜನವೆಂದರೆ ಅದು ಶಸ್ತ್ರಚಿಕಿತ್ಸೆಯ ನಂತರ ನೋವು ಪರಿಹಾರ ನೀಡುತ್ತದೆ. ಈ ಎರಡೂ ತಂತ್ರಗಳಲ್ಲಿ ಶಸ್ತ್ರಚಿಕಿತ್ಸೆಯ ನೋವಿನ ಪರಿಹಾರದ ಅವಧಿಯನ್ನು ಹೋಲಿಸಲು ನಾವು ಬಯಸುತ್ತೇವೆ. ಇದು ಒಂದು fascial ಸಮತಲವಾಗಿರುವ ಕಾರಣ, ತೊಡಕುಗಳು ಬಹಳ ಸೀಮಿತವಾಗಿರುತ್ತವೆ. ಔಷಧವನ್ನು ಬಳಸುವ ಮೊದಲು ಟೆಸ್ಟ್ ಡೋಸ್ ನೀಡುವ ಮೂಲಕ ಪರೀಕ್ಷಿಸಲ್ಪಡುವ ಔಷಧಕ್ಕೆ ಅಲರ್ಜಿ ಪ್ರಮುಖ ಪರಿಣಾಮವಾಗಿದೆ

ವಿವರ - ಕಿಬ್ಬೊಟ್ಟೆಯ ಶಸ್ತ್ರಚಿಕಿತ್ಸೆಗಾಗಿ ಜನರಲ್ ಅರಿವಳಿಕೆ ಅಡಿಯಲ್ಲಿ ನೇಮಿಸಲಾದ ಎಲ್ಲಾ ರೋಗಿಗಳನ್ನು ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಸೇರಿಸಿಕೊಳ್ಳಲಾಗುವುದು. ಕಾಯಿಲೆಯನ್ನು ಹೊಂದಿರುವ ರೋಗಿಗಳನ್ನು ಅಧ್ಯಯನದಿಂದ ಹೊರಗಿಡಲಾಗುತ್ತದೆ.

ಈ ಅಧ್ಯಯನವು ಎರೆಕ್ಟರ್ ಸ್ಪಿನಾ ಬ್ಲಾಕ್ ಮತ್ತು ಕ್ವಾಡ್ರಟಸ್ ಲುಂಬೊರುಮ್ ಬ್ಲಾಕ್ ನ ನಂತರದ ಪರಿಣಾಮಕಾರಿತ್ವವನ್ನು ಹೋಲಿಸುವ ಗುರಿಯನ್ನು ಹೊಂದಿದೆ.

ಬೆನ್ನುಮೂಳೆಯ ವಿಕೃತಿಗಳು, ತೀವ್ರ ಉಸಿರಾಟದ ಅಥವಾ ಹೃದಯ ಅಸ್ವಸ್ಥತೆಗಳು, ಹೆಪಾಟಿಕ್ ಅಥವಾ ರೆನಲ್ ಸ ನಾಮಾಂಕನ, ಕೂಗಾಲೋಪತಿ, ಅನಿಯಂತ್ರಿತ ಅಧಿಕ ರಕ್ತದೊತ್ತಡ, ಅನಿಯಂತ್ರಿತ ರಕ್ತ ಸಕ್ಕರೆ ಮತ್ತು ಮನೋವೈದ್ಯಕೀಯ ಕಾಯಿಲೆಗಳೊಂದಿಗೆ ರೋಗಿಗೆ ಚಿಕಿತ್ಸೆ ನೀಡುವುದು.

ದಯವಿಟ್ಟು ಮಾಹಿತಿಯನ್ನು ಓದಿ ಮತ್ತು ನಿಮ್ಮ ಕುಟುಂಬ ಸದಸ್ಯರೊಂದಿಗೆ ಚರ್ಚಿಸಿ. ಅಧ್ಯಯನಕ್ಕೆ ಸಂಬಂಧಿಸಿದಂತೆ ನೀವು ಯಾವುದೇ ಪ್ರಶ್ನೆಯನ್ನು ಕೇಳಬಹುದು. ನೀವು ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸಲು ಒಪ್ಪಿದರೆ ನಾವು ಮಾಹಿತಿಯನ್ನು ಸಂಗ್ರಹಿಸುತ್ತೇವೆ. ಸಂಬಂಧಿತ ಇತಿಹಾಸವನ್ನು ತೆಗೆದುಕೊಳ್ಳಲಾಗುವುದು. ಸಂಗ್ರಹಿಸಿದ ಈ ಮಾಹಿತಿಯನ್ನು ಪ್ರಬಂಧ ಮತ್ತು ಪ್ರಕಟಣೆಗೆ ಮಾತ್ರ ಬಳಸಲಾಗುತ್ತದೆ.

ನಿಮ್ಮಿಂದ ಸಂಗ್ರಹಿಸಲಾದ ಎಲ್ಲಾ ಮಾಹಿತಿಯನ್ನು ಗೌಪ್ಯವಾಗಿ ಇರಿಸಲಾಗುತ್ತದೆ ಮತ್ತು ಯಾವುದೇ ಹೊರಗಿನವರಿಗೆ ಬಹಿರಂಗಪಡಿಸಲಾಗುವುದಿಲ್ಲ. ನಿಮ್ಮ ಗುರುತನ್ನು ಬಹಿರಂಗಪಡಿಸಲಾಗುವುದಿಲ್ಲ. ಈ ಅಧ್ಯಯನವನ್ನು ಒಪ್ಪಿಕೊಳ್ಳಲು ಯಾವುದೇ ಒತ್ತಾಯವಿಲ್ಲ. ನೀವು ಭಾಗವಹಿಸಲು ಬಯಸದಿದ್ದರೆ ನೀವು ಪಡೆಯುವ ಕಾಳಜಿಯು ಬದಲಾಗುವುದಿಲ್ಲ. ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸಲು ನೀವು ಸ್ವಯಂಪ್ರೇರಣೆಯಿಂದ ಸಮ್ಮತಿಸಿದರೆ ಮಾತ್ರ ನೀವು ಸಹಿ/ಹೆಬ್ಬೆರಳಿನ ಗುರುತನ್ನು ಒದಗಿಸಬೇಕಾಗುತ್ತದೆ.

ಯಾವುದೇ ಹೆಚ್ಚಿನ ಸ್ಪಷ್ಟೀಕರಣಕ್ಕಾಗಿ ನೀವು ಸಂಪರ್ಕಿಸಲು ಮುಕ್ತರಾಗಿದ್ದೀರಿ.

ಡಾ. ಕೊಟ್ಲೋ ರುಕ್ಮಿಣಿ ಶೇಷಾದ್ರಿ
(ಅರಿವಳಿಕೆ ಶಾಸ್ತ್ರದ ಪ್ರಾಧ್ಯಾಪಕರು)
ಮೊಬೈಲ್ ಸಂಖ್ಯೆ:9008310364.

MASTER CHART

KEYS TO MASTER CHART

ASA GRADING	**:**	**American society of anaesthesiologists**
HR	**:**	**Heart rate**
MAP	**:**	**Mean arterial pressure**
hr	**:**	**Hours**
VAS	**:**	**Visual analogue scale**
ESPB	**:**	**Erector spinae block**
QLB	**:**	**Quadratus lumborum block**
DICLO	**:**	**Diclofenac sodium**

								VAS at rest						VAS at movement										
sl no	age	sex	group	ASA GRADING	HR	MABP	duration of surgery	0 hr	1st hr	2nd hr	6th hr	12hr	24hr	0 hr	1st hr	2nd hr	6th hr	12hr	24hr	Rescue analgesic time	rescue analgesic	total doses	patient satisfaction score	complications		total amountof rescue analgesia
1	42	female	ESPB	1	78	82	165 minutes	0	0	0	2	4	4	0	0	3	4	6	4	6 hours	diclo 75mg	2	satisfactory	nil		150mg
2	48	female	ESPB	2	84	70	140minutes	0	0	0	2	4	4	0	0	2	4	6	5	8hours	diclo 75mg	2	satisfactory	nil		150mg
3	38	female	ESPB	2	86	80	140minutes	0	0	0	4	4	5	0	0	3	4	6	4	8hours	diclo 75mg	3	good	nil		225mg
4	42	female	espb	2	84	72	120minutes	0	0	0	2	5	5	0	0	2	3	6	3	6hours	diclo 75mg	2	satisfactory	nil		150mg
5	52	female	ESPB	1	86	70	155minutes	0	0	0	2	3	4	0	0	2	4	5	5	8hours	diclo 75mg	3	good	nil		225mg
6	45	female	ESPB	1	82	80	135minutes	0	0	0	3	4	4	0	0	2	5	5	5	5hours	diclo 75mg	1	satisfactory	nil		75mg
7	43	female	ESPB	2	84	74	120minutes	0	0	0	3	5	5	0	0	3	3	5	3	5hours	diclo 75mg	3	good	nil		225mg
8	40	female	espb	2	76	80	120minutes	0	0	0	4	4	4	0	0	2	5	5	5	7hours	diclo 75mg	2	satisfactory	nil		225mg
9	48	female	ESPB	2	80	76	135minutes	0	0	0	2	4	4	0	0	2	4	5	5	6hours	diclo 75mg	1	satisfactory	nil		75mg
10	38	female	ESPB	2	82	80	120minutes	0	0	0	4	4	5	0	0	2	5	4	5	8hours	diclo 75mg	2	satisfactory	nil		150mg
11	60	female	espb	2	84	78	135minutes	0	0	0	4	4	4	0	0	3	4	5	3	6hours	diclo 75mg	3	satisfactory	nil		225mg
12	52	female	ESPB	1	74	78	120minutes	0	0	0	4	4	5	0	0	3	4	4	5	5hours	diclo 75mg	2	good	nill		150mg
13	42	female	ESPB	2	80	82	140minutes	0	0	0	3	4	4	0	0	2	4	5	4	6 hours	diclo 75mg	1	good	nil		75mg
14	43	female	ESPB	2	74	80	120minutes	0	0	0	3	4	4	0	0	3	4	5	5	8hours	diclo 75mg	3	good	nil		225mg
15	40	female	ESPB	1	72	84	90minutes	0	0	0	4	3	4	0	0	3	4	5	5	7hours	diclo 75mg	2	good	nil		150mg
16	42	female	ESPB	2	72	80	135minutes	0	0	0	2	5	4	0	0	3	4	5	5	6hours	diclo 75mg	1	satisfactory	nil		75mg
17	45	female	ESPB	1	74	82	135minutes	0	0	0	3	4	5	0	0	2	5	6	5	6hours	diclo 75mg	3	satisfactory	nil		225mg
18	50	female	ESPB	2	84	76	120minutes	0	0	0	3	4	4	0	0	3	4	5	4	6hours	diclo 75mg	2	good	nil		150mg
19	42	female	ESPB	1	78	80	140minutes	0	0	0	4	5	5	0	0	2	5	4	5	7hours	diclo 75mg	1	satisfactory	nil		75mg
20	42	female	ESPB	1	76	82	140minutes	0	0	0	2	3	4	0	0	3	4	4	3	6 hours	diclo 75mg	2	good	nil		150mg
21	41	female	ESPB	2	80	78	135minutes	0	0	0	3	4	4	0	0	3	4	5	5	6hours	diclo 75mg	2	good	nil		150mg
22	38	female	ESPB	1	76	82	140minutes	0	0	0	2	3	4	0	0	2	4	4	4	6 hours	diclo 75mg	3	satisfactory	nil		225mg
23	42	female	ESPB	2	78	84	120minutes	0	0	0	4	4	4	0	0	3	4	5	3	5hours	diclo 75mg	2	satisfactory	nil		150mg
24	39	female	ESPB	1	80	80	135minutes	0	0	0	3	4	4	0	0	2	5	5	4	6hours	diclo 75mg	2	good	nil		150mg
25	51	female	ESPB	1	74	82	140minutes	0	0	0	2	3	5	0	0	3	4	6	5	7hours	diclo 75mg	3	satisfactory	nil		225mg
26	40	female	ESPB	2	72	84	155minutes	0	0	0	4	5	4	0	0	2	3	5	4	5hours	diclo 75mg	1	good	nil		75mg
27	48	female	ESPB	1	76	86	120minutes	0	0	0	3	4	5	0	0	3	4	6	5	6 hours	diclo 75mg	3	satisfactory	nil		225mg
28	49	female	ESPB	2	78	78	135minutes	0	0	0	2	3	4	0	0	2	5	4	4	7hours	diclo 75mg	3	satisfactory	nil		225mg
29	36	female	ESPB	1	80	74	120minutes	0	0	0	3	4	4	0	0	3	3	5	3	6 hours	diclo 75mg	2	good	nil		150mg
30	40	female	ESPB	2	82	76	135minutes	0	0	0	4	5	4	0	0	2	4	5	4	6 hours	diclo 75mg	3	satisfactory	nil		225mg
31	49	female	ESPB	1	76	82	140minutes	0	0	0	3	4	4	0	0	3	5	4	6	6 hours	diclo 75mg	2	good	nil		150mg
32	48	female	ESPB	1	82	80	150minutes	0	0	0	3	4	5	0	0	2	4	4	5	5hours	diclo 75mg	3	satisfactory	nil		225mg
33	48	female	ESPB	1	84	78	140minutes	0	0	0	4	4	4	0	0	3	4	5	5	7hours	diclo 75mg	2	good	nil		150mg
1	48	female	QLB	1	80	84	135minutes	0	0	0	3	4	4	0	0	3	4	6	4	6hours	diclo75mg	3	satisfactory	nil		225mg
2	38	female	QLB	2	84	82	140minutes	0	0	0	3	5	5	0	0	4	5	5	4	5hours	diclo75mg	3	satisfactory	nil		225mg
3	37	female	QLB	1	82	78	150minutes	0	0	0	4	3	4	0	0	3	4	4	5	6hours	diclo75mg	2	good	nil		150mg
4	44	female	QLB	2	78	78	135minutes	0	0	0	4	4	4	0	0	3	5	5	4	5hours	diclo75mg	3	satisfactory	nil		225mg
5	38	female	QLB	1	80	74	140minutes	0	0	0	5	5	5	0	0	4	6	4	5	6hours	diclo75mg	1	good	nil		75mg
6	48	female	QLB	2	76	84	145minutes	0	0	0	3	4	5	0	0	2	6	5	5	5hours	diclo75mg	3	satisfactory	nil		225mg
7	43	female	QLB	1	78	78	135minutes	0	0	0	4	5	4	0	0	3	5	6	3	4hours	diclo75mg	3	satisfactory	nil		225mg
8	43	female	QLB	1	80	78	140minutes	0	0	0	3	4	5	0	0	4	5	4	4	5hours	diclo75mg	2	satisfactory	nil		150mg
9	38	female	QLB	2	76	80	145minutes	0	0	0	3	5	5	0	0	4	6	5	4	6hours	diclo75mg	1	good	nil		75mg
10	45	female	QLB	2	74	84	150minutes	0	0	0	4	4	4	0	0	4	5	6	5	5hours	diclo75mg	3	satisfactory	nil		225mg
11	40	female	QLB	1	82	80	135minutes	0	0	0	5	5	4	0	0	4	6	4	5	4hours	diclo75mg	3	satisfactory	nil		225mg
12	34	female	QLB	2	84	84	140minutes	0	0	0	5	4	4	0	0	3	4	4	4	5hours	diclo75mg	1	good	nil		75mg
13	37	female	QLB	1	80	80	135minutes	0	0	0	4	5	5	0	0	4	5	4	5	6hours	diclo75mg	2	satisfactory	nil		150mg
14	42	female	QLB	2	82	82	140minutes	0	0	0	5	4	4	0	0	4	5	5	6	5hours	diclo75mg	3	satisfactory	nil		225mg
15	48	female	QLB	1	80	76	135minutes	0	0	0	4	5	5	0	0	4	5	5	5	6hours	diclo75mg	1	good	nil		75mg
16	41	female	QLB	2	78	74	140minutes	0	0	0	5	4	4	0	0	3	4	6	6	5hours	diclo75mg	3	satisfactory	nil		225mg
17	54	female	QLB	1	82	84	145minutes	0	0	0	4	5	5	0	0	4	5	6	4	4hours	diclo75mg	3	satisfactory	nil		225mg
18	42	female	QLB	2	84	82	150minutes	0	0	0	5	4	4	0	0	3	6	4	5	5hours	diclo75mg	3	satisfactory	nil		225mg
19	41	female	QLB	1	86	86	140minutes	0	0	0	5	5	5	0	0	4	4	5	5	6hours	diclo75mg	2	good	nil		150mg
20	61	female	QLB	2	84	84	140minutes	0	0	0	4	4	4	0	0	4	5	6	5	5hours	diclo75mg	2	satisfactory	nil		150mg
21	48	female	QLB	1	82	76	145minutes	0	0	0	5	5	5	0	0	3	4	4	4	4hours	diclo75mg	2	satisfactory	nil		150mg
22	43	female	QLB	2	82	70	135minutes	0	0	0	4	4	4	0	0	4	5	5	4	5hours	diclo75mg	3	satisfactory	nil		225mg
23	55	female	QLB	1	84	72	140minutes	0	0	0	5	5	5	0	0	3	4	5	5	4hours	diclo75mg	3	satisfactory	nil		225mg
24	48	female	QLB	2	86	74	145minutes	0	0	0	4	4	4	0	0	4	5	5	4	5hours	diclo75mg	3	satisfactory	nil		225mg

25	45	female	QLB	1	76	72	140minutes	0	0	0	4	4	5	0	0	3	4	5	5	4hours	diclo75mg	3	satisfactory	nil		225mg
26	38	female	QLB	1	78	78	140minutes	0	0	0	3	5	4	0	0	4	4		5	6hours	diclo75mg	1	good	nil		75mg
27	50	female	QLB	1	80	70	135minutes	0	0	0	3		5	0	0	3	5	6	4	5hours	diclo75mg	3	satisfactory	nil		75mg
28	48	female	QLB	2	84	72	140minutes	0	0	0	4	4	4	0	0	4	5	5	5	4hours	diclo75mg	2	satisfactory	nil		225mg
29	45	female	QLB	1	82	74	145minutes	0	0	0	4	4	5	0	0	4	4	5	6	6hours	diclo75mg	2	good	nil		150mg
30	50	female	QLB	2	80	76	135minutes	0	0	0	3	5	4	0	0	3	5	5	5	5hours	diclo75mg	3	satisfactory	nil		225mg
31	54	female	QLB	1	78	78	140minutes	0	0	0	5	4	5	0	0	4	4	6	4	4hours	diclo75mg	3	satisfactory	nil		225mg
32	48	female	QLB	2	76	80	145minutes	0	0	0	4	5	4	0	0	4	5	5	5	5hours	diclo75mg	2	satisfactory	nil		150mg
33	50	female	QLB	1	78	82	140minutes	0	0	0	3	4	5	0	0	3	4	5	4	5hours	diclo75mg	3	satisfactory	nil		225mg