Inspiring Use of Novel Blocks in Chronic Pain Management: Quadro-iliac Plane Block a Promising Step Toward the Future—A Case Report

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Quadro-iliac plane block (QIPB) is a novel regional anesthesia technique that provides analgesia in the abdominal, lumbar, and hip regions. Case reports about the efficacy of this block in the literature are limited. In this report, we would like to share our successful QIPB experience with a patient with chronic myofascial low back pain. (A&A Practice. 2024;18:e01886.)

Low back pain is one of the most prevalent health issues, affecting people of all ages and lifestyles.[1] It can arise suddenly due to injury or develop over time from factors such as poor posture, sedentary habits, or degenerative conditions. The pain often originates in the muscles, leading to discomfort ranging from mild soreness to severe, disabling pain. Low back pain can become chronic, impacting daily activities and quality of life in many cases. Seventy percent of the causes of chronic low back pain are idiopathic, and low back pain significantly affects the quality of life of the patients.[1,2] Myofascial pain syndrome is a chronic pain condition caused by the development of trigger points—tight, sensitive areas in the muscles, and surrounding fascia. Treatment typically focuses on relieving pain and addressing the underlying muscle tension. Some treatment approaches include physical therapy, where stretching and strengthening exercises help reduce muscle strain and improve posture. Trigger point injections or dry needling may be used to release tension in specific areas. Additionally, medications like nonsteroidal anti-inflammatory drugs, muscle relaxants, or antidepressants can alleviate pain and reduce inflammation.[3] However, in some patients, all these methods may be ineffective. Multimodal management of chronic pain is very important.[2] In recent years, thanks to the use of ultrasound, interfascial plane blocks have been used effectively in the treatment of chronic pain. Interfascial plane blocks play an important role in patients in whom trigger point injections and physical therapy sessions are not effective.[4–6]

Quadro-iliac plane block (QIPB) is a newly defined technique and is performed at the level of iliac crest, where the quadratus lumborum muscle (QLM) is attached distally (Figure 1).[7] The QLM reaches its largest volume at this level and creates a large potential fascial space in this area. In their cadaver study, the authors reported a wide distribution of methylene blue, including the lumbar plexus branches and the lumbar plexus. According to the distribution pattern, it was reported that QIPB can be used in acute and chronic pain conditions of the lumbar, hip, and lower abdominal regions.[7]

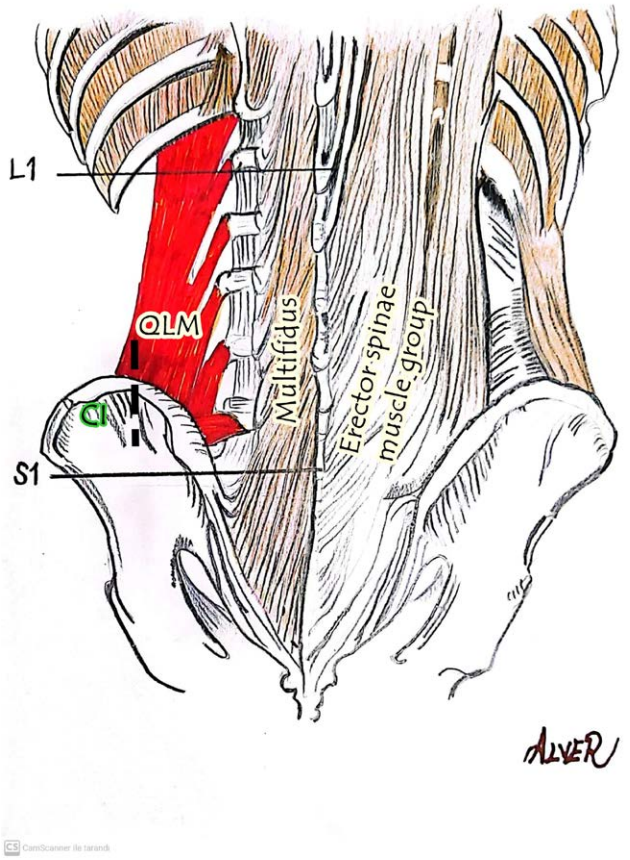

Figure 1. Anatomical representation of the deep lumbar muscles and the QLM. The intermittent black thick line drawn sagittaly on the iliac crest indicates the probe position. CI indicates iliac crest; QLM, quadratus lumborum muscle.

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We performed QIPB on our patient who had low back pain for 3 months and received 10 sessions of physical therapy and did not benefit from drug therapy. Here, we describe the successful management of chronic low back pain using the QIPB. Written and verbal informed consent were obtained from the patient for the block procedure and future publishing.

CASE DESCRIPTION

A 38-year-old male patient with an American Society of Anesthesiologists physical status I (there is no significant past medical history), 171 cm height and 78 kg height, with no known drug use or allergies, was referred to our pain medicine department with low back pain for 3 months. He had no lesions or degenerations in the lumbar region and intervertebral discs on magnetic resonance images. The patient used medications such as nonsteroid anti-inflammatory drugs (diclofenac 50 mg 2 pills for a day) and myorelaxants (thiocolchicoside 8 mg 2 capsules for a day) for low back pain. Trigger point injection (2 times) and 10 sessions of physical therapy were performed. Trigger point injections were performed using the classical method by manually detecting trigger points without using ultrasound. It was targeted to the superficial muscles of the lumbar region, the latissimus dorsi muscle. In both sessions, there was only short-term relief of 2 days per session. Normal saline was used for trigger point injections. However, the patient did not benefit from the treatment. The numerical rating score of the patient was 9/10. We performed the Oswestry Disability Index (ODI) on the patient before the block procedure. The Oswestry test is a scale used to evaluate lumbar pain:[8]

0% to 20%—minimal disability: low back pain does not pose a significant problem in the patient's life.
20% to 40%—moderate disability: low back pain slightly limits the patient's daily life.
40% to 60%—severe disability: low back pain severely limits the patient's daily life.
60% to 80%—are crippled: the patient's daily life is completely restricted due to back pain.
80% to 100%—bedbound or exaggerating symptoms.

The patient's ODI was 56%. We decided to perform QIPB on the patient. The patient's pain was only on the left, so we performed a unilateral block on the left. The block procedure was performed with the patient in the prone position. A low-frequency convex transducer (B-Braun, Philips, Xperius) and a 100-mm block needle (Stimuplex Ultra 360, B-Braun) were used. After the lumbar region and ultrasound probe were sterilized, the transducer was placed parasagittally at the distal attachment of the QLM to the iliac crest. The iliac crest and the QLM were visualized. The erector spinae muscle (ESM) was visualized above the QLM, and the psoas major muscle was visualized below the QLM. Using the in plane technique, the needle was directed towards the iliac crest. At this level, 5 mL of isotonic saline sodium chloride was administered to the interfascial area between the ESM and QLM for confirmation (Figure 2). After confirming the block region, 40 mL of local anesthetic solution containing 0.25% bupivacaine +4 mg dexamethasone was injected with intermittent aspirations. The patient's pain score decreased to 1 after 10 minutes of the block. We performed a dermatome evaluation with a cold test 1 hour later. There was dermatomal coverage between T12 and L5 (Figure 3). There was no motor weakness. We prescribed dexketoprofen 25 mg 2 pills for 1 day to the patient and discharged him with recommendations. The patient's pain score was 3 and the Oswestry scale was 16% when he came for a follow-up 2 weeks later. We performed QIPB on the patient again (30 mL 0.25% bupivacaine +4 mg dexamethasone). We

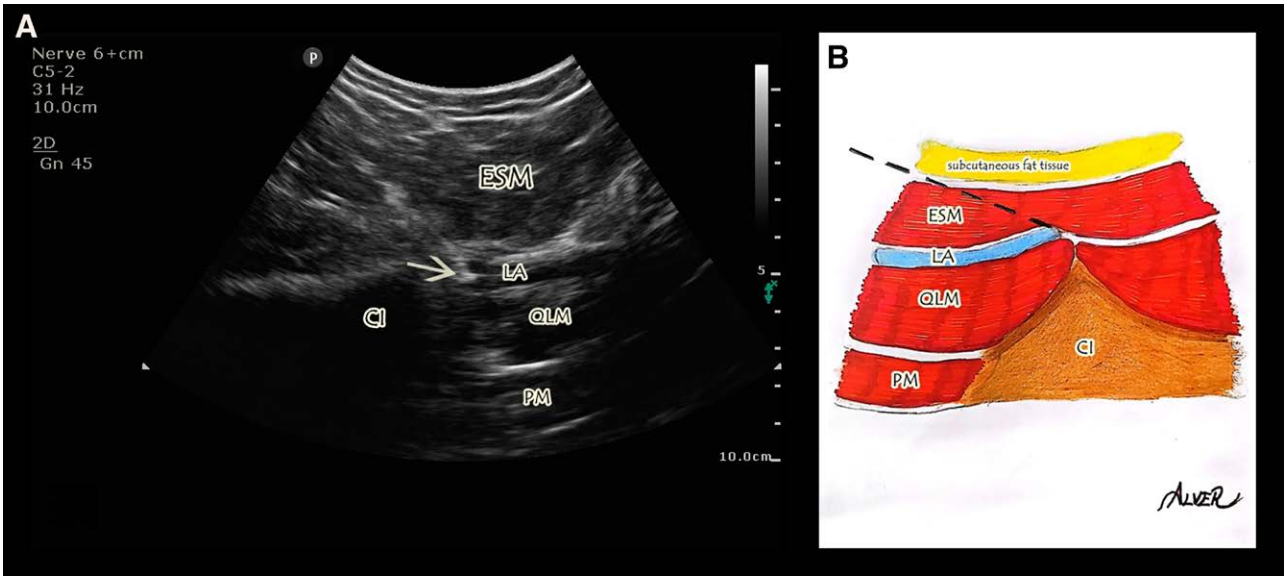

Figure 2. Sonoanatomy and corresponding anatomical illustration of Quadro-iliac plane block. A, Local anesthetic spread during block. The white arrow indicates the needle tip. B, Anatomical representation of sonographic visualization. CI indicates iliac crest; ESM, erector spinae muscle; LA, local anesthetic; PM, psoas muscle; QLM, quadratus lumborum muscle.

Figure 3. Dermatome analysis of the patient. Dermatomal coverage between T12 and L5 is seen.

performed QIPB prophylactically in the second session, to prevent the chronic pain from recurring. We discharged the patient with a pain score of 1 after the block with recommendations and called him for a control 3 weeks later. The patient's pain score was 2 and the Oswestry scale was 5% in the follow-up examination 3 weeks later. The patient did not experience any problems during the follow-ups, and no other procedure was performed. The patient's pain scores, block volume, and Oswestry scale are shown in the Table.

DISCUSSION

This case is the first report in the literature that demonstrates QIPB for chronic low back pain relief. QLM is attached to the 12th rib proximally and to the iliac crest distally. The types of quadratus lumborum block (QLB) defined so far have been described in the transverse plane proximal to the muscle. QIPB is applied to the point where QLM is attached to the iliac crest from the inside at the distal end. Since QLM reaches its largest volume at this level, this area is a large and potential interfascial space. QIPB allows passage to both the anterior and posterior parts of QLM, and the area covered by these 2 blocks can be reached with a single injection.[7] Since QLB is a deep block, its application may be difficult, and complications may occur. This application difficulty and the possibility of complications can be prevented with QIPB. Tulgar and colleagues injected 40 mL of methylene blue in their cadaver study of QIPB and reported a widespread. They reported intense staining in the anterior and posterior of the QLM, on the surface of the ESM, in the retroperitoneal fat tissue, in the ilioinguinal-iliohypogastric nerves, in the genitofemoral nerve, and in the lumbar plexus. According to this distribution pattern, QIPB may have similar effects to the transversalis fascia plane block.[7] According to this distribution area, QIPB can be used effectively for pain relief in the lower abdominal, hip, and lumbar regions. The analgesic efficacy of fascial plane blocks varies depending on the volume. As the volume increases, the area is filled more, and therefore the analgesic effectiveness increases. We applied 40 mL and 30 mL volumes to our patient. If we had administrated less volume, it may not have been effective. Or, in more painful cases, it may be necessary to apply QIPB in volumes >40 mL for postoperative pain management in major hip or lower abdomen surgeries. Since the area where the block is performed has a vascular-rich anatomy, frequent aspirations during the block are very important to prevent vascular injury. Especially in this area, there are anastomoses of important vascular structures such as the iliac vessels and paravertebral vessels.

Chronic pain affects many people today. The treatment of chronic pain, which causes a decrease in the quality of life and a limitation of daily activities, is very important. Various methods can be used in the management of chronic pain, such as drug therapy, physical therapy, and trigger point injection.[2] These methods may not always be successful in patients. In recent years, the use of interfascial plane blocks in chronic pain has become widespread, and there are articles in the literature reporting that they are effective in chronic pain management. The mechanism of action of plane blocks in chronic pain is both macroscopic and microscopic. The fascial system has an important role in the development of chronic pain. Since they involve several mechano and chemoreceptors, the interfascial planes participate in regulation of force transmission and sensory functions.[9] The administration of local anesthetic into the fascial planes may affect free nerve endings, and loading the fascial planes with fluid opens the adhesions, causing relief of chronic pain.[10] The opening of the fascial plane with local anesthetic would support the spread of the solution due to the disruption of the adhesions and connective septa. In chronic pain, there are many fascial changes and adhesions in the fascial planes; therefore, the fascia may be an important target in the management of chronic pain.[4–6]

Table. The Patient's Pain Scores, Block Volume, Dermatome Level, and Oswestry Scale

Block, scala, score, dermatome Session	QIPB	Oswestry	NRS	Dermatome
First session	40 mL 0.25% bupivacaine + 4 mg dexamethasone	56%	9 → 1	T12– L5
Second session (2 wk after first session)	30 mL 0.25% bupivacaine + 4 mg dexamethasone	16%	3 → 1	N/A
Third session (3 wk after second session)	No block	5%	2	N/A

Abbreviations: N/A, not applicable; NRS, Numerical Rating Scala; QIPB, Quadro-iliac plane block.

Our case report has some limitations. There was only a 3-week follow-up after the second block. QIBP is a possible treatment option for chronic pain and duration of relief is an important measure. A short follow-up time is a limitation for this report. Piraccini et al[5] followed up the patients 3 months after the erector spinae plane block in myofascial pain syndrome, and they reported that there was no need for any other analgesics or physical therapy.There are case reports in the literature that QIPB provides effective analgesia in lumbar and abdominal surgery.[11,12] Our case is the first case report on the effective use of QIPB in chronic pain. QIPB can be used as an effective and reliable method in lumbar myofascial pain syndrome. However, clinical studies are needed to better understand the effectiveness of QIPB, and radiological imaging studies are needed to understand its spread.

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