Quadratus Lumborum Blocks, Techniques, Pitfalls and Realistic Indications

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Faculty disclosure statement

I have no actual or potential conflict of interest in relation to this program/presentation.

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All images provided by Author unless specified
Objectives

Quadratus lumborum block

History
Sonoanatomy
Techniques
Indications
Comparisons with abdominal blocks, epidural
Recent evidence

QL History
Studies on the spread of local anaesthetic solution in transversus abdominis plane blocks, J. Carney

Carney et al, Anaesthesia, 2011, 66
Ultrasound-Guided Transmuscular Quadratus Lumborum Borglum et al

Compared:
- Transmuscular
- Original QL
- TPVB

QL muscle

- Lateral arcuate ligament
- Aortic opening
- Medial arcuate ligament
- 12th rib
- External oblique
- Internal oblique
- Transversus abdominis
- Psoas (cut)
Thoracolumbar fascia (TLF)

Path between the thoracic and lumbar paravertebral space

Sagittal section showing the fascial relations of the lower thoracic paravertebral space and the retroperitoneal space.

Børglum J.: Ultrasound-Guided Transmuscular Quadratus Lumbarum Blockade, British Journal of Anesthesia, out of blue letter the editor, 2013

Carney et al, Anaesthesia, 2011, 66

kidneys
Positioning and Equipment
QL 3 (trans-muscular)
Table 1. Table 1 summarizes the main features of QL blocks.1

<table>
<thead>
<tr>
<th>Clinical Indications</th>
<th>QL Type 1</th>
<th>QL Type 2</th>
<th>QL Type 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abdominal surgery either above or below the umbilicus (any type of operation that requires intra-abdominal visceral pain coverage and abdominal wall incisions as high as T6)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Dermatomes Covered</th>
<th>T6 to T12-L1; blocks the anterior and the lateral cutaneous branches of the nerves</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower Extremity Weakness</td>
<td>Not reported</td>
</tr>
<tr>
<td>Spread to Lumbar Plexus</td>
<td>Not reported</td>
</tr>
<tr>
<td>Needle Entry and Approach</td>
<td>Lateral abdomen near the posterior axillary line, below the coastal margin and above the iliac crest. Anterior approach: In plane from anteromedial to posterolateral</td>
</tr>
<tr>
<td>Potential Complications</td>
<td>Complications are related to the lack of anatomical understanding and needle expertise. It is possible to puncture intra-abdominal structures like kidney, liver and spleen. Bleeding</td>
</tr>
<tr>
<td>Catheter Stability</td>
<td>Stable</td>
</tr>
<tr>
<td>Injection Site</td>
<td>Potential space medial to the abdominal wall muscles and lateral to QL muscle, anterolateral border of the QL muscle, at the junction with the transversalis fascia, outside the anterior layer of the TLF and fascia transversalis</td>
</tr>
<tr>
<td></td>
<td>Posterior to the QL muscle, outside the middle layer of the TLF</td>
</tr>
<tr>
<td></td>
<td>Anterior to the QL muscle, between the QL and the psoas major muscles, outside the anterior layer of the TLF and fascia transversalis, close to the intervertebral foramen.</td>
</tr>
<tr>
<td>Level of Difficulty</td>
<td>Intermediate</td>
</tr>
<tr>
<td></td>
<td>Intermediate</td>
</tr>
<tr>
<td></td>
<td>Advanced</td>
</tr>
</tbody>
</table>
Dose and volume of Local Anesthetic

- Tissue plane block; large volume of LA.
- Volumes of 20 to 30 ml’s.
- Slower onset time (QL1,2) compared to the TPVB and QL3.

Indications

Abdominal wall incisions as high as T6 with visceral pain:
- Bowel resection, open/laparoscopic appendectomy, cholecystectomy
- CS, TAH
- Open prostatectomy, renal transplant, nephrectomy
- Abdominoplasty
- Iliac crest graft
- Ileostomy
Major colorectal surgeries, nephrectomy, kidney transplant, THA

QL catheters

QL 1 catheter
Complications

- Puncture intra-abdominal structures: kidney, liver and spleen
- Transient femoral nerve palsy
- Local anesthetic toxicity

QL Block in the Anticoagulated Patient

- Risks of bleeding are not known
- No specific recommendations
- ASRA guidelines should be implemented, due to the vascularity of the area
Advantages of the QL
Wider dermatomal coverage (up to T6)
Block subcostal (T12) and Iliohypogastric (L1) nerves
Visceral component
Analgesia laterally over the iliac crest

Disadvantages of (TFP)
Risk of peritoneal penetration
limited to (T12) and (L1) nerves
Advantages of QL
Wider dermatomal coverage (T6 to L1)
Coverage of the pelvic and abdominal visceral pain
Last longer duration

Disadvantages of TAP:
Variable effectiveness, Difficult above umbilicus
No visceral analgesia

QL Advantages
Unilateral analgesia
Preserve bladder and lower limb motor function
Avoid significant sympathectomy
Performed in sedated patients
Clinical Pearls

-Hip abducted, laterally flexed, muscle thicken
-Color; abdominal branches of lumbar arteries

-Fascial clicks depend on the approach angle
- LA spread directed medially
Is it considered a posterior approach to the TAP or is it a new block?

Carney et al, contrast did not extend into the TAP

Different block in different facial plane

MRI: LA administered at QL spread in an antero-lateral direction


Cadaveric study, QLB at L 2-3 with dye stained L1,L2 nerve roots, Spread towards PVS and to TAP

Posterior approach to the TAP

Recent evidence

Case reports shown that QL block is effective in pain relief after various abdominal operations and in chronic pain.


Bilateral QL catheters as an alternative to opioid analgesia in a patient who underwent colorectal surgery and experienced respiratory arrest

(Case report accepted for publication by Anesthesia and Analgesia case report).

Bilateral QL catheters performed for midline incisions, for nephrectomy and renal transplant, Total hip arthroplasty (unpublished data)

ASA 2105 Poster

QL vs. TAP with Liposomal Bupivacaine

ASA 2105 Poster
Conclusion

- Unilateral analgesia along lower thoracic and upper lumbar dermatomes
- Good analgesic modality for selected abdominal surgeries
- Potential to provide visceral analgesia
- Randomized controlled studies are needed!!

Thank You

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