

B3.B. ABDOMINAL SURGERY: NEW PERIPHERAL NERVE BLOCKS, FROM NERVE TO PLANE

BARBARA FYNTANIDOU

Anesthesiologist, University Department of Anesthesiology & Intensive Care Medicine,

AHEPA University Hospital, Thessaloniki, Greece

Abdominal wall blocks are not novel blocks, since they were first described and used in daily clinical practice 40yrs ago. However, they have evolved significantly during the last decades. At first these blocks were performed based on landmark techniques without the use of ultrasound (US) and primarily they were used for anesthesia and analgesia in the pediatric population. The most commonly performed truncal blockades have been transverse abdominis plane, rectus sheath, ilioinguinal/iliohypogastric, intercostal and paravertebral blockades. The use of US enabled development of those blocks and introduction of new techniques into daily clinical practice. Recently, in 2007, Dr Blanco, has described a new block of the posterior abdominal wall as a variant of the transverse abdominis plane blockade, which was named quadratus lumborum block. Overall, there is a growing interest in the literature and in the anesthesia community for abdominal wall blocks and several new techniques are emerging as novel promising blockades.

Transversus Abdominis Plane Block [TAP]

The original first description of TAP block was made in the early 21 century and it was performed based on a landmark technique at the triangle of Petit. Since then, TAP blocks have evolved substantially and the use of US has resulted in several variations of TAP blocks, such as lateral, anterior, mid-axillary, intercostal/subcostal and posterior TAP blocks. There is still controversy in the literature concerning nomenclature and precise definition of each one of those variations. Many studies have evaluated the effect of different approaches and their impact on quality of analgesia and patient outcome. Further research is needed to clarify which approach is most suitable for which procedure and for which patient. Another parameter of great importance is the variable duration of TAP blocks, which is in some cases, seems to be a limitation of their use. Recent data suggest that liposomal bupivacaine might provide a reasonable solution for this issue.

Rectus Sheath Block [RSB]

RSB is an anterior abdominal wall blockade indicated for midline incisions, which was first described in 1899. Overall, there is lack of well designed RCTs for RSB in adults. Based on the available data it seems that there is a place for RSB in the adult population. RSB may provide adequate analgesia for laparoscopic surgery and/or laparotomy and US guidance has allowed for enhanced efficacy and safety of this technique.

Ilioinguinal/Iliohypogastric Block [IL/IH]

IL/IH blocks are among the most commonly performed regional blocks for intra- and postoperative analgesia for lower abdominal and inguinal surgery. For several years, IL/IH blocks have been performed based on landmark techniques. It has been clarified that the use of US is associated with improved success rates. It should be noted that IL/IH blocks could be used as a sole anesthetic technique for inguinal hernia repair, but since they do not provide visceral anesthesia, the peritoneal sac should be infiltrated by the surgeon with local anesthetic (LA) intraoperatively.

Quadratus Lumborum Block [QLB]

QLB is a block of the posterior abdominal wall and was first described by Blanco in 2007 as an alternative posterior approach to the TAP block. QLB was developed further within the next years by several investigators and today several types of the QLB are being performed. Generally, QLB is a block, which allows LA to spread around the quadratus muscle. In type 1 QLB or lateral QLB, LA is injected into the anterolateral border of the QL muscle, in type 2 QLB or posterior QLB, LA is injected on the posterior side of the QL muscle, in type 3 QLB or anterior/transmuscular QLB, LA is injected at the front of the QL muscle and finally in type 4 QLB, LA is injected into the muscle itself. Based on the available data QLB seems to be an effective block providing analgesia for several abdominal, gynecological, obstetric procedures and orthopedic interventions on hips. There is a need for well designed RCTs to determine the efficacy and safety of this block.

Paravertebral Block [PVB]

PVB was first described as early as in 1905, but was neglected until late 1970s, when it regained popularity again. PVB is actually a unilateral block of the spinal nerve and provides long-lasting unilateral anesthesia and analgesia for several thoracic and abdominal surgical procedures. PVBs have been more extensively investigated for thoracic, breast and cardiac surgery and were mainly compared to epidural or intercostal blockades. Despite the fact that they are also “anatomically” indicated for abdominal surgery they were sparingly used for that purpose.

During the last years there has been ongoing interest in the use of abdominal wall blocks with a specific focus on performing them using US guidance. In most of the cases these blocks are simple blocks, which can provide effective intra- and/or postoperative analgesia and in some cases also intraoperative anesthesia. Undoubtedly, they have a place in the multimodal analgesic approach in patients undergoing several abdominal surgical procedures. However, there should be vigilance among physicians to detect any signs of LA systemic toxicity due to the fact that abdominal wall and generally truncal blockades usually involve injection of high doses of LA.

REFERENCES

1. Krediet AC, Moayeri N, van Geffen GJ, et al. *Different approaches to ultrasound-guided thoracic paravertebral block: an illustrated review. Anesthesiology* 2015; 123: 459-474

2. *Abrahams M, Derby R, Horn JL. Update on ultrasound for truncal blocks: a review of the evidence. Reg Anesth Pain Med 2016; 41: 275-288*
3. *Baeriswyl M, Kirkham KR, Kern C, Albrecht E. The analgesic efficacy after abdominis plane block in adult patients: a meta-analysis. Anesth Analg 2015; 121: 1640-1654*
4. *Yarwood J, Berrill A. Nerve blocks of the anterior abdominal wall. Continuing Education in Anaesthesia Critical Care & Pain, Volume 10, Issue 6, 1 December 2010, Pages 182–186*
5. *Lissauer J, Mancuso K, Merritt C, et al. Evolution of the transversus abdominis plane block and its role in postoperative analgesia. Best Pract Res Clin Anaesthesiol 2014; 28(2): 117-126*
6. *Blanco R. Optimal point of injection: the quadratus lumborum type I and II blocks. Anesthesia 2012; 68: 4*