Editorial

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Quick response code

The transversus abdominis plane block: Case for optimal tap

Among the various nerve blocks of the body that had been least glamorous for regional anaesthesiologists for a long period of time had been those related to the abdomen. The major reasons were the sparse, variable and less-reliable landmarks in this region for a routine 'blind' procedure and the need for multiple injections. Over the last decade, the advent of ultrasound (US) rekindled fresh interest followed by widespread use of the US-based techniques for abdominal blocks, especially for transversus abdominis plane (TAP) block. The anterior rami of the lower 6 thoracic (T7–T12) and the first lumbar (L1) nerves traversing and communicating widely as multiple mixed segmental nerves within the TAP produced perfect sono-landmarks for the US-guided TAP block.[1]

The TAP could be clearly defined in a cadaveric and volunteer study by McDonnell *et al*.[2] Real-time ultrasonography facilitates enhanced accuracy of placement of blocking needle as well as local anaesthetic (LA) deposition in TAP. Several clinical trials have demonstrated the analgesic utility of the technique.[3]

Hebbard *et al*. in 2007 described the US-guided posterior TAP block, where the LA was deposited posteriorly at the triangle of Petit.[4] A subsequent anatomical study on cadavers by Jankovic *et al*.[5] found that lumbar triangle of Petit was placed more posteriorly than the literature suggested. The nerves to be blocked had not entered the TAP in the specimens in that study at the point of the lumbar triangle of Petit posteriorly; but at the mid-axillary line, all the nerves were in the TAP.

A modified approach, the oblique subcostal approach, was later described for upper abdominal procedures.[6] In a study of open cholecystectomy under balanced general anaesthesia with multimodal analgesia with TAP block, Arghya and others[7] describe the administration of 15 ml of LA by multiple punctures by oblique subcostal approach along with single 5 ml injection at xiphoid process with satisfactory duration of post-operative analgesia.

Currently, majority of TAP blocks are performed at the mid-axillary line and are referred to as lateral TAP blocks. In a meta-analysis[3] covering 12 randomised controlled trials on human subjects, published between 2005 and 2012, Abdallah *et al*. found that the posterior approach to TAP block appeared to be associated with more prolonged analgesia compared to the lateral approach. They attributed this to retrograde LA spread to the paravertebral space in the posterior approach, potentially producing additional visceral block along the thoraco-lumbar sympathetic chain.

The lateral approach and oblique subcostal TAP block are more likely to produce reliable analgesia below the umbilicus and above the umbilicus, respectively.[3,8]

A different approach, with four-point, single-shot technique[9] combining the posterior and oblique subcostal techniques, has been found to provide wider bilateral analgesic coverage in patients undergoing major open or laparoscopic abdominal surgery under general anaesthesia, with early mobilisation from the post-anaesthesia care unit.

TAP blocks can be performed either at the beginning or at the end of surgery. The single-shot TAP blocks provide analgesia with reduction pain scores and opioid consumption during the initial 24–48 h postoperatively.[3]

The relatively short duration of analgesia and limited extent of spread of block are real concerns with TAP, and catheter insertion techniques into TAP have been described.[10]

'Bilateral' TAP block performed for surgeries involving incisions across the midline or bilateral surgeries such as inguinal hernia repairs need careful dosing of the LAs.[11,12]

There is insufficient evidence to support any particular LA agent or regimen for TAP block and volumes ranging from 8 ml to 30 ml have been used with mixed success.[13] Published in this issue of IJA is a study[14] comparing the relative analgesic efficacy of bupivacaine and ropivacaine for post-operative analgesia using US-guided TAP block in laparoscopic cholecystectomies; they conclude that though ropivacaine provided effective analgesia in the immediate post-operative period (up to 1 h) as compared to bupivacaine, both the drugs were similar in terms of 24 h cumulative analgesic requirement.

Additives to LAs have been tried (dexamethasone and dexmedetomidine) and they have been associated with prolongation of the duration of the block and decreased incidence of post-operative nausea and vomiting.[15,16] Hyaluronidase added to lignocaine in a bilateral subcostal TAP block for laparoscopic cholecystectomy was found to be associated with excellent analgesia throughout the post-operative period.[17] However, addition of clonidine to a TAP block with bupivacaine in women undergoing elective caesarean delivery did not produce significant change in pain scores.[18]

Complications related to TAP blocks are rare. Theoretically, femoral nerve block can occur as the LA can seep along the transversalis fascia to the fascia iliaca and further, the femoral nerve. Poor technique can potentially result in liver, spleen, kidney and intestinal injury.

TAP is also increasingly used in paediatric population.[19] A study of 10 neonates indicated low risk for toxicity when bupivacaine 0.125% at total volume of 1 ml/kg was used after TAP block.[20] Use of LA and neurolytic agents via TAP block is reported for a patient suffering from severe abdominal wall pain associated with carcinoma colon.[21]

The available evidence so far are in favour of US-guided TAP block as a simple and effective analgesic technique, especially for lower abdominal surgeries; the sono-anatomy makes the parietal pain more amenable for the block and the visceral pain has to be taken care of in a multimodal analgesia technique. The limitation in developing nations is the cost factor related to the US machine. The sheer numbers of submission of US-based TAP block research for publication to this journal in recent past, however, attests to its wider availability and use in India. The US-based TAP block has definitely opened new avenues for management of pain in abdominal surgeries.

Despite the immense literature available on TAP, the untapped components remain, concerning validation of the effects related to the LA agent of choice, the toxicity concerns and the analgesia benefit or lack of it in upper abdominal surgeries. Large-scale prospective controlled trials comparing the efficacy of different approaches of TAP block with other somatic blocks are required.

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Announcement

CALENDAR OF EVENTS OF ISA 2016

The cut off dates to receive applications / nominations for various Awards / competitions 2016 is as below. Hard copy with all supportive documents to be sent by Regd. Post with soft copy (Masking names etc.) of the same by E Mail to secretaryisanhq@gmail.com. The masked soft copy will be circulated among judges. Only ISA members are eligible to apply for any Awards / competitions. The details of Awards can be had from Hon. Secretary & also accessed from www.isaweb.in

Cut Off Date	Name of Award / Competition	Application to be sent to
30 June 2016	Bhopal Award for Academic Excellence	Hon. Secretary, ISA
30 June 2016	Late Prof. Dr. A. P. Singhal Life Time Achievement Award	Hon. Secretary, ISA
30 June 2016	Rukmini Pandit Award	Hon. Secretary, ISA
30 June 2016	Dr. Y. G. Bhoj Raj Award	Hon. Secretary, ISA
30 Sept. 2016	Kop's Award	Chairperson, Scientific Committee ISACON 2016 with Copy to Hon. Secretary, ISA
30 Sept. 2016	Prof. Dr. Venkat Rao Oration 2017	Hon. Secretary, ISA
30 Sept. 2016	Ish Narani Best poster Award	Chairperson, Scientific Committee ISACON 2016
30 Sept. 2016	ISA Goldcon Quiz	Chairperson, Scientific Committee ISACON 2016
10 Nov. 2016	Late Dr. T. N. Jha Memorial & Dr. K. P. Chansoriya Travel Grant	Hon. Secretary, ISA, copy to Chairperson Scientific Committee of ISACON 2016
20 Oct. 2016	Awards (01 Oct 2015 to 30 Sept 2016) 1. Best City Branch 2. Best Metro Branch 3. Best State Chapter 4. Public Awareness – Individual 5. Public Awareness – City / Metro 6. Public Awareness - State 7. Ether Day (WAD) 2016 City & State 8. Membership drive 9. Proficiency Awards	Hon. Secretary, ISA
20 Oct. 2016	ISACON 2018 Bidding	Hon. Secretary, ISA

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