

## The use of four-point transversus abdominis plane block for liver resection

Sir,

Transversus abdominis plane (TAP) block is a safe and relatively easy block to perform for post-operative analgesia.<sup>[1]</sup> We describe the use of four TAP blocks and subsequent placement of two TAP catheters in a lady who underwent a combined anterior resection and liver resection for metastatic sigmoid cancer. Although epidurals have historically been a standard of practice for adjunct intra- and post-operative analgesia, TAP blocks have been introduced since 2001 by Rafi as a landmark technique and then in 2007 with ultrasound (US) guidance by Hebbard *et al.*<sup>[2]</sup>

Our patient was a 34-year-old lady who underwent a laparotomy with sigmoid resection as well as a hepatectomy for a recently diagnosed metastatic sigmoid cancer. She had no other co-morbidities and was to receive general anaesthesia for the surgery. She declined an epidural placement, which is the standard of care for analgesia in our institution for such cases, due to a history of lower back pain.

Her intra-operative course was remarkable only for persistent tachycardia with extensive resection;

however, blood loss was minimal and haemodynamic instability was well controlled. Postoperatively, while still under general anaesthesia, four TAP blocks were carried out using the US for guidance. We used a Hitachi Aloka® machine with a probe frequency of 13 MHz and a 50 mm Stimuplex® needle. Two were subcostal injections and two injections, just superior to the iliac crest along the anterior abdominal wall. The probe was placed in the midline of the abdomen 2 cm below the xiphisternum and moved right, laterally along the subcostal margin to the anterior axillary line. The transversus abdominis muscle was identified lying beneath and extending lateral to the rectus abdominis muscle. The block needle was then guided, in plane, to a point just inferior to the right costal margin at the anterior axillary line such that the tip lay between the transversus abdominis and internal oblique muscle within the neurovascular fascial plane. About 10 ml of 0.5% ropivacaine were deposited in each site. Following this, two TAP catheters were placed in the inferior sites using a similar technique but with a 18-gauge Tuohy needle through which an epidural catheter was inserted. The catheters were anchored at 9 and 10 cm at the skin, respectively and secured with a Tegaderm™ dressing. An infusion was subsequently started via a filter, with 0.1% ropivacaine via the 2 catheters at 5 ml/h.

This technique used for lower abdominal surgery before is scarcely described in literature for hepatic

resection. The TAP block has been shown to reduce peri-operative opioid use in elective abdominal surgery.<sup>[3]</sup> Postoperatively, the lady was comfortable and relatively pain-free. She was mobilised on post-operative day one and discharged from the Intensive Care Unit the next day.

The safety profile of four TAP blocks is good with a dose limit of 200 mg in total. The risk of inadvertent liver injury is also minimum using the US for guidance. The absolute contraindications to TAP blocks only include patient refusal and site infection. Her pain scores were satisfactory avoiding the risk profile related to epidural analgesia (EA). The recent prospect guidelines have suggested that there is a higher risk using EA for major laparotomies.<sup>[4]</sup> A recent article in IJA mentioned, that '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'.<sup>[5]</sup> Further trials are needed in a procedure specific manner to compare TAP blocks with EA and other analgesic regimes.

In summary, the present study provides further evidence that TAP block can produce effective analgesia for upper abdominal and hepatic surgery. Given the added complications of EA, TAP blocks used more abundantly for liver resection may be the way forward for providing reasonable and satisfactory analgesic techniques.<sup>[6-8]</sup>

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#### Conflicts of interest

There are no conflicts of interest.

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