the feasibility of implementing and managing a regional anesthesia programme utilizing CPNI for postoperative management of lower extremity osteotomies for correction of congenital or acquired limb abnormalities in children. In this sample of patients, the use of CPNI for pain management appeared to be safe and well tolerated. There were no cases of compartment syndrome or irreversible sensory or motor loss in our patient population.

**Declaration of interest**

None declared.

W. Muhly1*

H. Gurnaney1

H. Hosalkar2

F. Kraemer1

R. Davidson1

A. Ganesh1

1 Philadelphia, USA

2 San Diego, USA

*E-mail: muhlyw@email.chop.edu


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### Table 1

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<th>Sex</th>
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<th>Weight (kg)</th>
<th>Approach</th>
<th>Block time (min)</th>
<th>Dermatome blocked</th>
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**Real-time thoracic paravertebral block using an ultrasound-guided positioning system**

Editor—Ultrasound-guided thoracic paravertebral block (TPVB) is well described.1 2 The depth of the paravertebral space, the probe position, and the acute angle of needle trajectory renders the tip and distal portion of the needle difficult to visualize while concurrently viewing the anatomical structures using conventional ultrasound techniques. Recently, we have had an opportunity to evaluate a novel ultrasound machine with an electromagnetic-based needle guidance system for the placement of TPVB. The SonicGPS™

needle guidance system (Ultrasonix, Richmond, BC, Canada) uses sensors in the needle and transducer to provide a real-time display of needle shaft and tip position relative to the ultrasound beam based on the needle trajectory.

After institutional ethics approval and written informed consent, a convenience sample of 10 ASA I–III patients undergoing percutaneous nephrolithotomy (PCNL) was recruited for lower TPVB. All TPVBs were placed under general anaesthesia (propofol, neuromuscular blocking agent, desflurane) with the patients prone, in keeping with our standard practice. The lower thoracic region was prepared, and the paravertebral spaces of T10, T11, and T12 were identified sonographically. Once the paravertebral spaces were identified, five patients received real-time in-plane TPVB at each level, and the other five patients received real-time out-of-plane TPVB using a 2–5 MHz convex transducer (Ultrasonix) and 8 cm 19 G SonicGPS™ needles (Ultrasonix). At each level, the transverse process, the paravertebral space, the lamina, and the superior costotransverse ligament were identified after scanning laterally to locate the ribs. The ultrasound probe was positioned parasagitally while the needle was directed via an in-plane (caudad to cephalad) or out-of-plane (lateral to medial) approach using the needle guidance system to the paravertebral space. Once the needle tip was in the paravertebral space, 5 ml of 0.5% ropivacaine was
injected at each level for postoperative analgesia. The quality of sensory block was assessed by bilateral application of ice over the lower thorax and abdomen at 30 min post-procedure once the patient was alert and oriented in the recovery room. Bilateral assessments were done to rule out epidural spread. Sensory level of analgesia was recorded and patient satisfaction with analgesia documented. Ten patients (Table 1) under- went real-time lower TPVB for analgesic block before PCNL. A real-time view of the extrapolated needle position advancing into the paravertebral space was obtained in eight out of 10 patients (three patients had in-plane blocks and five patients had out-of-plane blocks for a total of 24 PVB injections). Pleural displacement during local anaesthetic injection was visible in all cases. No complications such as vascular or pleural puncture occurred during the procedure in these cases. Postoperative assessment with ice confirmed successful sensory block in eight cases and there was no evidence of epidural spread in any patient. Time for block placement, extent of dermatome block, and block success or failure is summarized for each patient in Table 1. All eight patients with successful PVB were satisfied with the procedure and quality of analgesia. In one patient, the TPVB was abandoned because of hypoxaemia after turning the patient prone because of morbid obesity (Patient 9, Table 1). In Patient 7, the needle bent while puncturing the skin for the TPVB and irreparably damaged the needle sensor. These were included as failures on an ‘intention to treat’ basis.

In conclusion, with the ultrasound needle guidance positioning system, real-time TPVBs were performed accurately and without clinical complications such as pleural puncture using in-plane and out-of-plane approaches. This novel needle guidance technology provides an additional margin of certainty of needle and needle tip position during performance of TPVB.

Declaration of interest

R.T. has received equipment support and travel support for being a speaker at Canadian Anesthesia Society Meeting 2012, both from Ultrasonix. A.S. has received equipment and travel support from Ultrasonix.

B. Kaur
H. Vaghadia*
R. Tang
A. Sawka
Vancouver, Canada
*E-mail: himat.vaghadia@vch.ca

Use of cricothyroidotomy training video to improve equipment familiarity

Editor—The Fourth National Audit Project (NAP4) of the Royal College of Anaesthetists found that narrow-bore cannula cricothyroidotomy as a rescue technique in ‘can’t intubate can’t ventilate’ (CICV) scenarios had a failure rate of 63%. Reasons cited for the likelihood of failure of the technique include inadequate training and lack of familiarity with emergency equipment.

We recently evaluated the ability of anaesthetic trainees to perform cannula cricothyroidotomy in a simulated CICV scenario, using a cricothyroidotomy trainer (Pharmabiotics, UK) and the Cook ENK flow modulator (Cook Medical, USA). The scenario given was an out-of-hours anaesthetic induction which progresses into a CICV scenario. The use of rescue airway techniques is included in our Trust induction programme.

Of the 19 trainees evaluated, 58% (11 trainees) successfully inserted a cannula cricothyroidotomy which was judged by two trained observers to be adequate for oxygenation. The mean time to commence oxygen insufflation for this cohort was 2:06 min. Common reasons for failure included unfamiliarity with equipment and insufficient experience with the technique.

Interestingly, the more senior trainees were less likely to be successful at achieving an adequate cannula cricothyroidotomy, which might reflect the more recent airway training that the junior trainees had received. This exercise has emphasized for us the importance of ongoing training and familiarity with locally available cricothyroidotomy equipment.

In response to this, we have produced a 3 min video (http://www.youtube.com/watch?v=kDL1Y3XlFaQ) detailing the...