roots with a stimulated needle placed at L2–3 level since L1–2 terminal rami are found into the substance of the psoas muscle below this level. Secondly, Mannion and colleagues, using MRI, have shown the cephalad spread of contrast media and involvement of L1–4 roots within the psoas muscle by expansion of the intrapsoas fascia after PCB performed as low as L4–5 level. Hanna and colleagues also demonstrated a spread to L1–4 roots in all cases after PCB at L2–3 level using a loss of resistance technique with only 10 ml of dye in cadavers. However, the limited number of experiments in anatomic and imaging studies may not reflect the features of the general population and caution is needed when they are translated to clinical practice.

Thirdly, clinical randomized trials in adults and children confirm the findings of anatomic and imaging studies. Imbelloni and colleagues reported L1–2 involvement in 92% of patients with analgesia lasting ~21 h after PCB with 40 ml of bupivacaine at L3–4 level. Kirchmair and colleagues reported effective anaesthesia and analgesia of the inguinal region in children after PCB with ropivacaine at L4–5 level. Ozkan and colleagues reported L1–2 involvement in 92% of patients after 5 ml of bupivacaine injected at L1 level. Pandin and colleagues reported 77% and 100% success in blocking L1 and L2 roots, respectively. Mannion and colleagues reported 70% of L1–2 block rate, but we could not find this information in the listed reference. Taken together, these data suggest that even classic PCB could extend to block L1–2 roots in an acceptable proportion of patients.

We cannot offer at the moment a large and consecutive series of patients, but in the past 3 yr, we have performed PCB in 20 patients. The mechanism for analgesia after L2–3 approach may be due both to the anaesthetic solution spreading to L1–2 roots into the psoas sheath and to the paravertebral space outside the fascia. We have had no cases of contralateral analgesia. Since the L3 transverse process is the longest, the chance for epidural or subarachnoid spread may be reduced, and also the occurrence of sympathetectomy or puncture of the inferior cava vein or aorta. Despite this advantage, psoas major is narrower at L2–3 level, requiring more accurate needle positioning. We did not measure injection pressure, but we usually inject the anaesthetic slowly. Infiltration of skin (T11/T12 contribution), spermatic cord, or peritoneum and sedation may be needed, but these same events may occur also during inguinal field block performed by surgeons. Finally, we have had two cases of transi-homolateral hypoaesthesia over the anterior thigh (lasting < 4 h).

In conclusion, we think that further research is needed to evaluate the optimal PCB technique in order to achieve L1–2 root block for hernia surgery. This level can be potentially reached in a good proportion of patients and may be useful in challenging anaesthetic situations.

Declaration of interest

None declared.

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Position is everything in life

Editor—The recent article by Mokini and colleagues1 deals with a psoas compartment block (PCB) for an inguinal hernia repair. The authors stated that the block is good for poor-risk patients and patients who are obese but did not mention the weight of patients requiring this anaesthesia method or how much of a poor-risk patients must be. Although surgeons like to use local anaesthetic drugs may reach toxic levels. Neuraxial anaesthesia has been administered for inguinal hernia repair, but could also lead to problems. Therefore, the authors’ technique works for them. However, the authors do admit that PCB may be associated with complications. They placed their patients in a modified lateral decubitus position to insert the needle. This may work in thin patients, but in obese patients, finding the L2–3 or L4–5 interspace can be difficult, especially in patients...
weighing more than 100–150 kg. While surface landmarks may identify proper needle entry point, the tip may vary greatly as it traverses longer distances, as in the case of obesity. We would like to encourage the authors to use a technique that minimizes repositioning while maintaining the patient in a supine position, namely ilioinguinal/iliohypogastric nerve block. This type of block is ideal for the obese and muscular patients that may be augmented with mild to moderate sedation.

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Cardiac arrest after liver transplantation in a patient with takotsubo cardiomyopathy

Editor—We report a patient, 52-yr-old male, with normal pretransplant cardiac workup who underwent orthotopic liver transplantation for end-stage liver disease due to haemochromatosis and alcohol use. The procedure was uncomplicated with a normal transoesophageal echocardiogram; however, the patient developed pulseless ventricular tachycardia after surgical closure. Cardiopulmonary resuscitation was performed with return of spontaneous circulation within 60 s. He was transferred to the intensive care unit (ICU) on amiodarone, norepinephrine, and vasopressin infusions. He was in sinus tachycardia 100–117 beats min⁻¹, with central venous pressure 14–16 cm H₂O, pulmonary artery systolic pressure 38–42 cm H₂O, and cardiac output 7–10 litre min⁻¹. Initial troponin level was 0.22 ng ml⁻¹ and electrocardiogram showed new anteroseptal Q waves with minimal ST elevation and lateral T wave inversions. Immediate bedside transthoracic echocardiogram exhibited mid-to-distal and apical akinesia. Basal segments exhibited preserved wall function, but overall ejection fraction remained 25%. Left heart catheterization was performed, which showed no arterial stenosis or occlusions. Takotsubo cardiomyopathy was diagnosed and vasopressors were changed to milrinone and phenylephrine. Troponin level peaked at 7.48 ng ml⁻¹ on postoperative day 1. The patient was extubated and weaned off milrinone and phenylephrine on postoperative day 5.

Echocardiogram was unchanged on postoperative day 6 but showed normal cardiac function when repeated on postoperative day 18 (Fig. 1A–D). Meanwhile, liver function tests continually improved from the day of surgery, and the transaminases were normal by postoperative day 9.

Takotsubo cardiomyopathy, also known as transient apical ballooning syndrome, stress-induced cardiomyopathy, or ‘broken heart syndrome,’ gets its name from the Japanese word for ‘fishing pot for trapping octopus,’ based on the pathological appearance of the left ventricle.¹ It was first described in Japan over 20 yr ago and since then has been described in a variety of clinical scenarios. The most common pathological finding is focal myocytolysis. The cardiomyopathy is distinctive because the apical wall of the left ventricle is affected, but the base is spared. Some have proposed that the apex is more vulnerable due to its limited elasticity reserve from not having a three layered myocardial configuration.² Moreover, the apex has a limited coronary circulation and its increased β-receptor density makes it more sensitive to adenylate stimulation. The most common characteristics are:

- predominant occurrence in elderly or post-menopausal women;
- ST elevation/depression or T wave changes;
- onset after an acute emotional stress or an acute medical condition;
- prolonged QT interval;
- akinesis of the apical and distal anterior wall and hypercontraction of the basal wall;
- mild increase in cardiac enzymes;
- complete resolution of apical wall motions abnormality and the depressed left ventricular systolic function.¹

Cases of takotsubo cardiomyopathy have been reported in the setting of liver transplantation,³ but this is the first description presenting as cardiac arrest immediately after transplantation. Awareness of the condition and early echocardiographic