median nerve injury, younger, muscular male patients appeared to be at an increased risk for this complication.² These patients all had arterial lines; however in some patients the injury occurred in the hand without the arterial line. Symptoms were typical of median nerve injury, with paresthesias and/or sensory loss present in the thumb, index and middle fingers and thenar eminence. There was weakness of thumb abduction and opposition. Sensory-motor function in the ulnar and radial nerve distributions was grossly intact. No EMG or nerve conduction studies were performed. Eight of the patients recovered spontaneously and completely within two weeks of injury, two suffered residual sensory loss over partial distributions of the median nerve.

This complication is an unavoidable potential consequence of prolonged surgery with large *iv* fluid administration. The median nerve's location just below the volar carpal ligament in the carpal tunnel makes it more susceptible to injury from compression in the wrist than the radial or ulnar nerves. Extensive, prolonged surgical procedures requiring large amounts of fluid infusion result in extensive leakage of fluid into the extracellular compartment, causing edema of the forearm and hands, which can result in such a compression of the median nerve, compromising its blood supply and causing symptoms similar to those of carpal tunnel syndrome. Because anesthesia-associated nerve injuries are a significant source of patient morbidity and anesthesiologist liability,⁴ patients should be advised of the risk of median nerve injury prior to surgery and it should be included in the informed consent as a possible complication. Intraoperatively, anesthesiologists should observe the patient's extremities for edema, and avoid dependency of arms if possible. Postoperatively, the extremities should be elevated and administration of diuretics should be considered if excessive edema is observed.

Christopher Jack MD
Duraiyah Thangathurai MD
Peter Roffey MD
Maggy Riad MD
Neil Butani MD
Mariana Mogos MD
USC/Norris Comprehensive Cancer Center and
Hospital, Los Angeles, USA
E-mail: thangath@usc.edu

References

- 1 Melli G, Chaudhry V, Dorman T, Cornblath DR. Perioperative bilateral median neuropathy. *Anesthesiology* 2002; 97: 1632–4.
- 2 Warner M. Perioperative neuropathies. *Mayo Clin Proc* 1998; 73: 567–74.
- 3 Chowet A, Lopez JR, Brock-Utne JG, Jaffe RA. Wrist hyperextension leads to median nerve conduction block: implications for intra-arterial catheter placement. *Anesthesiology* 2004; 100: 287–91.
- 4 Cheney FW, Domino KB, Caplan RA, Posner KL. Nerve injury associated with anesthesia: a closed claims analysis. *Anesthesiology* 1999; 90: 1062–9.

Accidental puncture of the pleural cavity: more questions

To the Editor:

I read with great interest the case report by Paternmann *et al.* reporting the unfortunate event of the intrathoracic migration of an epidural catheter inserted for thoracoabdominal surgery.¹ In their description of the case the authors do not provide information about the epidural catheter that was used.

It is relevant to know the catheter's diameter and to be more specific about the material, i.e., whether the catheter had a soft or rigid tip, a soft or rigid body, and whether it was armoured or equipped with a stylet. It would also be relevant to know if air or saline was used for the loss-of-resistance technique and, in case saline was used, what volume was injected to expand the epidural space. Although the authors claim that identification of the epidural space (presumably using a Tuohy needle) was easy and uneventful, it remains unclear if the actual threading of the catheter caused any pain or coughing, and if a test dose of local anesthetic was administered through this catheter followed by proper assessment, and documentation of the spread of sensory block.

Considering the relative depth of the epidural space at 7 cm, the patient's weight and body mass index should be given. Furthermore, it would be helpful to know if the patient was taking steroids or cytotoxic agents, or was suffering from any medical condition such as respiratory, inflammatory or infectious disease which could have facilitated the catheter's pleural perforation.

Thomas Schrickler MD PhD
Royal Victoria Hospital, McGill University,
Montreal, Canada
E-mail: thomas.schricker@mcgill.ca

Reference

- 1 Paternmann B, Lynch J, Schneider P, Weigand C, Kampe S. Intrathoracic positioning of a thoracic epidural catheter inserted via the median approach (Letter). *Can J Anesth* 2005; 52: 443.