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Case Report

Subcutaneous effusion resulting from an epidural catheter fragment

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The breakage of an epidural catheter within a patient is uncommon, but troublesome, complication of epidural block, and its cause is rarely discovered. In this case report, our aim was to present an effusion between s.c. tissue and fascia in the lumbar region because of a broken fragment of epidural catheter which was unnoticed during its removal.

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Breakage of an epidural catheter within a patient is an uncommon, but troublesome, complication of an epidural block. A study on Arrow catheters suggested that there is an inherent weakness in the distal segment because of a reduced metal density.[1] In addition, Collier[2] demonstrated that it was possible to break or severely damage an epidural catheter by heavy contact between the tip of the epidural needle and bone, if a length of the catheter was protruding from the tip. Finally, Dounas and colleagues[3] reported that catheter damage is often related to excessive insertion into the epidural space. We present a case in which an effusion between the s.c. tissue and fascia in the lumbar region resulted from a fragment of an epidural catheter that was not noticed during its removal.

Case report

A 25-yr-old, 72 kg, 174 cm healthy man was scheduled for open reduction and internal fixation of a right tibial plateau fracture. A lidocaine 1% skin wheal was placed, and an 18 gauge Portex Tuohy needle was inserted at L3–L4. Loss of resistance was apparent on the first attempt. The catheter (18 gauge closed-end multiport; Portex® Nylon Catheter, Portex, UK) was threaded without difficulty. The catheter was secured to the skin at approximately the 10 cm mark; the distance from the skin to the epidural space was 6 cm, and the length of the catheter remaining within the epidural space was 4 cm. The catheter was not pulled back through the needle, and the patient had no paraesthesia during the procedure. For analgesia, 1–2 mg kg^{-1} tramadol in 10 ml of physiologic saline was given on demand by bolus during the first postoperative day.

On the third postoperative day, the epidural catheter was removed in the Orthopaedics and Traumatology Department by a person untrained in epidural catheter removal without an anaesthesiology consultation, and the patient was discharged on the seventh postoperative day with no problems. Two days later, the patient was admitted with swelling of his lumbar region (Fig. 1A). On clinical examination, an effusion of approximately 15×8 cm was observed in the lumbar region. On ultrasonography, a hollow object, 5 cm in length, moving in the fluid and appearing to be a catheter was detected between the s.c. tissue and fascia (Fig. 1B). We concluded that the epidural catheter had broken during removal, causing sterile fluid to collect in the lumbar region.

We decided to remove the broken part of the catheter surgically. At surgery, we found that the fragment was the end of the epidural catheter that had become red in colour and was organized with body fluids (blood and a transudate).

Discussion

Breakage of epidural catheters is associated with poor technique during insertion or withdrawal, faulty design, partial shearing, kinking or knotting at the time of insertion, and entrapment of the catheter by the supraspinous and intraspinous ligaments. We could not find any information regarding the size of the catheter used. The vertebral arches

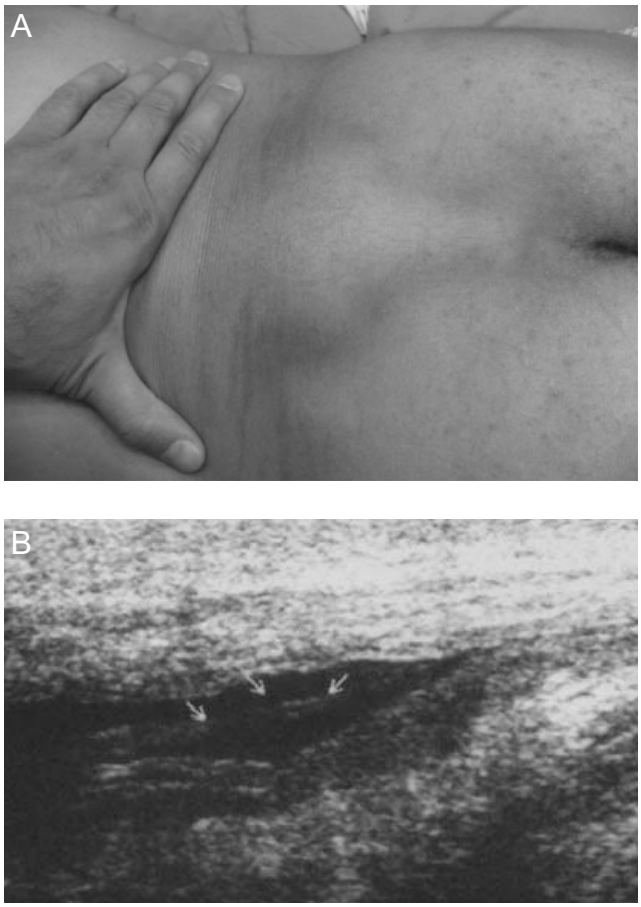

Fig 1 (A) Effusion in the lumbar region of the patient. (B) A hollow object is seen on ultrasonographic examination.

and processes, lumbar fascia, ligamentum flavum, posterior vertebral joints and lumbar nerve roots have all been implicated as sites where a catheter can catch on withdrawal.[4] A few case reports describe difficulties associated with an epidural catheter.[5 6] Some authors have reported kinking, knotting and entrapping of catheters,[7 8] which have subsequently led to difficulty during extraction. Other authors suggest ways to approach extracting a catheter that has met with significant resistance on removal attempts.[7 9 10]

In our case, the fragment broke off while being pulled back between the fascia and s.c. tissue, where it caused an effusion and penetrated into the soft tissues. The effusion was likely a foreign body-type reaction, rather than a collection of fluid that had been infused before the catheter was removed, because the region of effusion was aspirated using a plastic syringe before surgery, and the fluid recollected within a few days.

In the event of a difficult catheter removal, it has been suggested that the efforts at removal be discontinued for 15–30 min, allowing tissue relaxation, or that a tongue depressor be tied to the distal end in the hope that this will provide gentle traction.[11] Morris and colleagues[12] reported that the position of the patient during catheter insertion is the most important factor in determining the patient's position during extraction, although a flexed lateral decubitus position is reported to be more effective than the sitting position, with withdrawal forces being as much as 2.5 times greater in the sitting position. If the broken fragment is symptomatic, it should be removed as soon as possible. Small catheter fragments that are hard to detect and not causing any symptoms, the patient should be informed, but the fragment may be safely left in place.

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