A Case of Intraperitoneal Fracture of a Double-Cuff Tenckhoff Catheter

KEY WORDS: Tenckhoff catheter; fracture.

Editor:

Although peritoneal catheter malfunction is usually caused by catheter migration or kinking, malposition of the catheter tip, fibrin deposition, omental wrapping, or intraperitoneal adhesions in patients on continuous ambulatory peritoneal dialysis (CAPD), peritoneal catheter fracture in the abdominal cavity should be considered in patients on CAPD with a dialysate outflow problem. Here, we present the first case report of fracture of a double-cuff Tenckhoff catheter in the abdominal cavity.

A 50-year-old man with end-stage renal disease secondary to diabetic nephropathy had been on CAPD therapy since December 2008. He was admitted to hospital on 20 August 2012 with a third episode of an outflow problem caused by Tenckhoff catheter migration with kinking (Figure 1). Unlike the previous two episodes of peritoneal catheter migration with kinking in June and early August 2012, the new episode did not respond to enema and forced flushing of the catheter. After admission, the catheter was repositioned in the pelvic cavity by laparoscopic management. However, a fourth episode of outflow difficulty occurred 1 week after discharge.

Abdominal radiography showed that the Tenckhoff catheter was broken in two (Figure 2). The broken peritoneal catheter was laparoscopically removed and found to be fully fractured at the distal edge of the distal cuff (Figure 3). Throughout the entire episode, the patient denied any history of trauma to his abdomen.

To our knowledge, there is one case report of Tenckhoff catheter fracture proximal to the single cuff, and two cases of a catheter break near the proximal cuff (1,2). Our report is the first case of Tenckhoff catheter fracture at the distal edge of the distal cuff.

Before our patient's first episode of catheter migration in June 2012, the catheter was in place and functioning

Figure 1 — Abdominal radiography shows the migrated Tenckhoff catheter with kinking (arrow).

Figure 2 — The Tenckhoff catheter is broken in two. The radiopaque line of the Tenckhoff catheter appears disconnected (arrowhead) on abdominal radiography. The distal part of the Tenckhoff catheter fell into the pelvic cavity (arrow).

Figure 3 — (A) The fractured catheter compared with a new Tenckhoff catheter. The fracture site is located at the distal edge of the distal cuff (arrow). (B) The thickness of the catheter wall at the fracture site is even. The brown soft tissue and the unabsorbed blue suture material adhere to the first cuff. A part of the cuff material (arrow) adhering to the distal part of the Tenckhoff catheter may indicate that the catheter began to break from the opposite side of the radiopaque line (arrowhead).

without problem. There was also no past evidence of peritonitis or dialysate leakage from the exit site. The causes of catheter fracture proximal to a single cuff or of catheter breakage near the exit site—such as silicone degradation because of sterilizing materials (iodine or alcohol) applied during routine exit-site care, or frequent peritonitis as mentioned in previous reports (1,2)—may therefore not have contributed to the full fracture that occurred at the distal edge of the distal cuff in our case. On the other hand, a typical catheter made of silicone rubber can be expected to last at least 10 years (3). Our patient has used his catheter for only 4 years. The thickness of the catheter wall at the fracture site was even (Figure 3). The catheter fracture in this patient might therefore be a result of the repeated catheter migration

with kinking, which might have caused damage to the catheter at the start, with the damage being worsened during each dialysate exchange and the repeated migration with kinking. The eventual result was full fracture of catheter (Figure 3).

We conclude that Tenckhoff catheter fracture is a rare cause of catheter malfunction, but that catheter fracture should be considered in the differential diagnosis of catheter malfunction.

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REFERENCES

1. Closkey GM, Zappacosta AR. CAPD drainage failure due to Tenckhoff catheter fracture: a case report. *Perit Dial Int* 1992; 12:266–7.
2. Tsuchida K, Takemoto Y, Nakamura T, Yamagami S. Unexpected complication resulting from peritoneal dialysis catheter break. *Perit Dial Int* 1998; 18:444–5.
3. Zappacosta A, Perra S. Continuous ambulatory peritoneal dialysis. Philadelphia, PA: Lippincott; 1984: 110.
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