Laparoscopic Intraperitonealization of Accidentally Misplaced Peritoneal Dialysis Catheter: A Salvage Procedure

Tenckhoff catheter placement is a well-established procedure to facilitate continuous ambulatory peritoneal dialysis (CAPD) in end-stage renal disease (ESRD) management. Catheter malposition is a possible cause of catheter malfunction. Options to deal with early malfunction are re-exploration, omentectomy, repositioning, or new catheter placement. Technical malpositioning can be dealt with early, with minimal morbidity and cost. Here we report a case of a CAPD catheter accidentally placed preperitoneally which was salvaged using videolaparoscopy.

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KEY WORDS: Tenckhoff catheter; dialysis; malposition; laparoscopy; renal.

Tenckhoff catheter placement is a well-established procedure to facilitate continuous ambulatory peritoneal dialysis (CAPD) in end-stage renal disease (ESRD) management. Early complications such as wound infection, catheter migration, and obstruction can prolong hospitalization days, require revision procedures, and subsequently affect patient morbidity. The removal of the catheter following malfunctioning adds to patient morbidity and to cost. A salvage procedure for catheter repositioning reduced the economic burden of inserting a new catheter (1).

CASE REPORT

A 54-year-old male patient, known diabetic and hypertensive, with end-stage renal disease (ESRD) had undergone Tenckhoff peritoneal dialysis (PD) catheter insertion by a nephrologist 1 month previously. Seldinger technique, using the peel away sheath and guidewire to insert the catheter percutaneously, had been used. The catheter had been inserted through a midline incision. Position and patency were ensured at the time by filling the cavity with 500 mL of saline as advised by a nephrology colleague. Within 3 weeks of catheter insertion, the patient presented with complaints of inability to perform CAPD. He was subsequently referred to us with a diagnosis of catheter malfunction. The patient underwent routine investigations. Blood urea was 167.7 mg/dL and creatinine was 7.05 mg/dL. The patient was optimized and prepared for diagnostic laparoscopy with or without omentectomy and/or catheter reposition/replacement.

After the creation of pneumoperitoneum using a closed technique with a Veress needle, 3 ports were placed as shown (Figure 1). On inserting the laparoscope, no catheter was seen (Figure 2). However, a bulge was seen from the entry site near

the umbilicus toward the pelvis. Using an index finger via a 12-mm working port, the catheter position was confirmed

Figure 1 — Port placement, 12 mm camera port, one 12 mm working port, another 5 mm working port.

Figure 2 — Steps used for the procedure, (a) Preperitoneally placed CAPD catheter bulge on parietal wall; (b) Peritoneal dissection started; (c) Further exposed CAPD catheter; (d) Completely intraperitonealized catheter. CAPD = continuous ambulatory peritoneal dialysis.

(Figure 2). Sharp and blunt dissection using forceps and an ultrasonic shear device was done without damaging the catheter. The catheter was intraperitonealized, as it was neither blocked nor kinked, and the tip was placed in the recto-vesical pouch. Hemostasis was achieved and the ports were closed in standard fashion. Catheter functioning was ensured by instilling 1 liter of PD fluid with free inflow and outflow. The patient was started on CAPD after 1 week of the procedure and it was functioning well at 6 weeks of follow-up.

DISCUSSION

Due to the high surgical risk of ESRD patients and the high cost of Tenckhoff CAPD catheters, placement of these catheters should be done by experienced persons, with a minimum chance of technical failure. Continuous ambulatory PD catheter malfunction is infrequently described in the literature. Immediate causes of malfunction can include technical fault, kinking, peritonitis, or, rarely, preperitoneal placement of the dialysis catheter. Long-term malfunction is mainly due to adhesion, omental wrapping, or peritonitis. Methods used to salvage non-functioning catheters include catheter repositioning, omentopexy, omentectomy, adhesiolysis, stiff-wire manipulation, and removal of the catheter. Yilmazlar *et al.* reported a patient with a preperitoneal catheter placement who needed catheter replacement. In contrast to their catheter replacement procedure, we report the present case of salvaging a preperitoneally-placed catheter, laparoscopically. This is the first time this technique is being reported to the best of our knowledge (1–3).

A diagnosis of catheter malfunction can be established by imaging. Laparoscopy is a good alternative that can act as both diagnostic and therapeutic modality for catheter salvage. While placing the catheter, our nephrologist colleague might have confused the peritoneal cavity with fascia transversalis and used a smaller amount of fluid for checking the position and patency of the PD catheter (4).

In our salvage procedure, we located the catheter carefully, inspected the peritoneal cavity for the position of the omentum. The catheter was found to be lying in the preperitoneal space without adhesions. We carefully detunneled the catheter, taking care not to damage it. Key points in instrument use is that Harmonic Ace (Ethicon, Sommerville, NJ, USA) should not be used too near to the catheter for fear of damaging it. One should also be careful not to pull the catheter inside to avoid allowing the colonized exterior part to enter into abdominal cavity. The port should be secured in a watertight fashion so that immediate PD can be started.

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