Laparoscopic Rescue of Dysfunctional Tenckhoff Catheters in Continuous Ambulatory Peritoneal Dialysis Patients

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Dear Sir,

Among uremic patients on continuous ambulatory peritoneal dialysis (CAPD), mechanical dysfunction of Tenckhoff catheters can occur either as a result of inner chamber obstruction or omental entrapment [1]. Failure to recover the drainage function of the original catheter by intracatheter irrigation with fibrinolytic agents like streptokinase or urokinase should be followed by surgical reposition or replacement of the catheter; otherwise, abandon of the CAPD management can be the result [5,6]. We report a novel approach using a laparoscopic technique to rescue the dysfunctional Tenckhoff catheter in 2 patients on CAPD.

Two male uremic patients, aged 32 and 37, with a Tenckhoff catheter at the left paramedian site of the lower abdomen for CAPD, were found to have progressive drainage dysfunction of the catheter 1 and 2 months, respectively, after the catheter implantation. Repeated rescue attempts using a streptokinase solution (50,000 U/100 ml of normal saline. Streptase Behring Institute) to irrigate the catheters had been tried in vain for both patients before performance of laparoscopic procedures.

Laparoscopic procedures were performed under general anesthesia with endotracheal intubation for the 1st patient. For the 2nd patient, the procedures were performed only with local perfusion of a 2% xylocain solution around the sites for trocar insertion. To the 2nd patient, gas containing 60% oxygen was insufflated via ventilation mask during the operation. The laparoscopic procedures were initiated by introducing a gas-insufflation needle through the right pararectus site of the abdomen. After CO₂ gas

was insufflated into the peritoneal cavity of the patient and maintained at a pressure of 15 mm Hg, a 10-mm trocar port (AutoSuture Co, USA) and a 5-mm trocar port were introduced through the right pararectus area of the abdomen. There was a 15-cm distance spanned between the two ports. In this procedure, the 10-mm port was used for introducing the laparoscope, and the other port was used for introducing hand instruments.

In both patients, the Tenckhoff catheters were found to be almost completely wrapped by the greater omentum in the lower peritoneal cavity (fig. 1a). Some adhesive bands hooking the omentum to the parietal peritoneum were visible around the inlet site of the catheter. The catheter rescue was started by adhesiolysis and catheter mobilization which was performed with the aid of dissecting forceps (fig. 1b, c). Mobilization of the whole entrapped catheter

was achieved by stretching the catheter upward, in a direction against the trapping forces exerted from the enclosing omentum, and by progressive dissection along the catheter. During the dissection, impingement of the omental appendages in the side holes of the catheter was found. These impinged omental appendages were released by dissecting forceps. Hemostasis of bleeders was done by electric cautery. Completion of the mobilization of the catheter was accomplished in 15 min (fig. 1d). Irrigation of the endolumen of the catheter by dialysate revealed that the inner canal of the catheter was also obstructed with omentum debris and fibrin clots. The debris or clots were soon dislodged by milking the catheter with a forceps. Thereafter, complete patency of the catheter was obtained. Before withdrawing the lapa-

roscope, the catheter tip was put further into its ideal position in the pelvis. Following the withdrawal of the trocar ports, the penetration holes left in the abdominal wall were closed by deep sutures with 1-0 Nylon.

Both patients remained hemodynamically stable. The 2nd patient, who was not intubated for anesthesia, experienced mild shoulder pain in the midst of pneumoperitoneum. The pain was alleviated by lowering the CO₂ pressure from 15 to 10 mm Hg. Immediately after completion of the operation, 1 liter of dialysate was infused into the peritoneal cavity to check if there was a fluid leak. Thereafter, 1.5 liters of dialysate was retained in the peritoneal cavity before a further exchange program. The full-scaled CAPD program including 4 2-liter exchanges of 2.5% dextrose dialysate was resumed from the 6th postoperative day. The postoperative follow-up of up to 3 months was uneventful.

In summary, the laparoscopic technique, even after failure of streptokinase irrigation, can be used to rescue dysfunctional Tenckhoff catheters which are obstructed by omental wrapping and tamponing. This procedure can be performed under local anesthesia as well as general anesthesia. The reutilization of the original catheter shows the benefit in that it avoids the additional work needed to remove the old catheter and to reimplant a new catheter.

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Fig. 1. a Tenckhoff catheter seen by the laparoscope: proximal part hooked by adhesion bands, and entire distal part wrapped by omentum flap. No side holes of the catheter were visible. b Mobilization of the catheter carried out by stretching the proximal catheter upward against its entrapment by omentum at its distal part. c Impingement of omentum into side holes of the catheter released by forceps. d Entire catheter freed from the wrapping omentum.

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