

PD catheter malfunction due to incisional hernia entrapment

Jean Bertrand¹ , Inès Dufour¹ , Assma Ballout², Tom Darius³ and Eric Goffin¹

Abstract

A 69-year-old male with end-stage kidney disease secondary to ischemic cardiomyopathy and peripheral arterial disease presented with early peritoneal dialysis (PD) catheter dysfunction, 14 weeks after laparoscopic insertion of a Di Paolo catheter. The patient experienced slow and incomplete effluent drainage (800 mL out of 1000 mL instilled). Clinical examination revealed a reducible, non-painful right incisional hernia at the site of a prior aortofemoral vascular bypass. Abdominal imaging, including X-ray and CT scan, identified catheter malposition in the right iliac fossa, with the catheter tip trapped in the right incisional hernia sac containing small bowel. Laparoscopic exploration confirmed adhesions and catheter entrapment. After adhesiolysis and repositioning of the catheter into the pouch of Douglas, a functional peroperative test confirmed excellent catheter function. Hernia repair was performed on both sides, with prosthetic mesh on the right and Lichtenstein repair on the left to prevent contralateral hernia development. Postoperative recovery was uneventful, and PD resumed after 3 weeks. This case illustrates a rare cause of PD catheter malfunction due to hernia entrapment. The weight of the catheter may have contributed to its migration into the pre-existing hernia. Systematic screening for abdominal wall hernias in patients with prior vascular or abdominal surgery should be part of pre-PD evaluation to avoid such complications.

Keywords

Peritoneal dialysis, catheter malfunction, hernia, abdominal surgery

A 69-year-old man with kidney failure due to ischemic cardiomyopathy and peripheral arterial disease was referred for evaluation of early peritoneal dialysis (PD) catheter dysfunction. A self-locating Di Paolo catheter had been inserted laparoscopically in the left lower abdominal wall 14 weeks earlier,¹ and no drainage issue was reported at the time of catheter insertion. During the first weeks of PD training, drainage problems were observed: effluent drained slowly and incompletely (800 mL out of 1000 mL instilled).

Clinical examination revealed a soft abdomen and an easily reducible, not painful right incisional hernia at the site of a previous aortofemoral vascular bypass procedure at the inguinal level. An abdominal X-ray suggested catheter malposition in the right iliac fossa (Figure 1), and a subsequent CT scan confirmed that the distal tip of the catheter was trapped in a right incisional hernia sac containing small intestines (Figure 2). It also suspected a small asymptomatic left inguinal hernia that had not been seen during the initial laparoscopic catheter insertion.

The patient underwent laparoscopic exploration, which revealed intestinal adhesions between the right colon and the right abdominal wall, the catheter tip position within the right-sided incisional hernia sac and no evidence for an inguinal left inguinal hernia (Figure 3). An adhesiolysis at the right flank and catheter repositioning into the pouch of Douglas were performed.² A functional peroperative test demonstrated an excellent function of this catheter.

¹Department of Nephrology, Cliniques Universitaires Saint-Luc, Université Catholique de Louvain, Brussels, Belgium

²Department of Nephrology, Centre Hospitalier EpiCURA, Hornu, Belgium

³Department of Abdominal Surgery and Renal Transplantation, Cliniques Universitaires Saint-Luc, Université Catholique de Louvain, Brussels, Belgium

Corresponding author:

Jean Bertrand, Department of Nephrology, Cliniques Universitaires Saint-Luc, Université Catholique de Louvain, Brussels, Belgium.

Email: eric.goffin@saintluc.uclouvain.be



Figure 1. Abdominal X-ray showing malposition of the peritoneal dialysis catheter. The distal tip of the catheter is indicated by the arrow and is located in the right iliac fossa, corresponding to its entrapment in the incisional hernia sac.



Figure 2. Coronal CT scan showing the distal end of the peritoneal dialysis catheter (radiopaque tip, arrow) located within a right inguinal hernia sac, which also contains a bowel loop. Catheter dysfunction resulted from this malposition.

Therefore, the PD catheter was not replaced. An anterior incisional hernia repair with prosthesis (similar to a Lichtenstein repair) was performed on the right side. A classic Lichtenstein repair on the left side was performed in accordance with our center's policy to prevent contralateral hernia development.³ Postoperative recovery was uneventful, and PD was resumed uneventfully 3 weeks after this intervention.

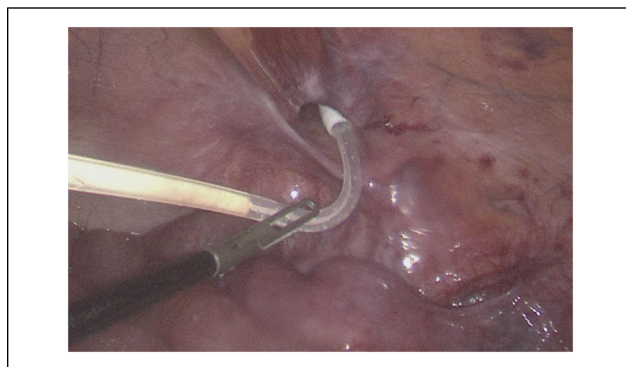


Figure 3. Intraoperative laparoscopic view showing the peritoneal dialysis catheter emerging into the right inguinal hernia sac.



Figure 4. Di Paolo weighted (self-locating) Tenckhoff catheter, Fresenius, SA2447. The distal end contains a tungsten weight (arrow).

This case highlights a rare cause of an early PD catheter dysfunction due to its entrapment within a hernia sac,⁴ a complication that has not been frequently reported.⁵ We hypothesize that the weight of the catheter may have contributed to its migration into the pre-existing hernia.

The weighted Tenckhoff catheter (Di Paolo type) is a swan-neck catheter with a tungsten weight at the distal tip (Figure 4), designed to reduce migration and malposition. Although some reports have shown reduced dysfunction compared to straight or coiled catheters,⁶ it is not the standard device in our center, where we routinely use a Swan Neck Curl Cath. In this case, the patient had been referred

from another hospital where such a catheter had been inserted.

Systematic screening for abdominal wall hernias, especially in patients with prior vascular or abdominal surgery, or with ADPKD, should be part of the pre-PD catheter placement to avoid such complications. In our center, systematic screening includes a careful physical examination for inguinal, umbilical, and incisional hernias. When there is diagnostic uncertainty, an abdominal ultrasound may be performed. Despite careful screening for hernias prior to starting PD, hidden hernias may only manifest clinically once the intra-abdominal pressure rises during dialysis. In centers where laparoscopic catheter placement is utilized, direct visualization allows for identification and simultaneous repair of such potential hernias, an approach that is not feasible with percutaneous catheter placement.

This case also underscores the importance of considering early mechanical complications such as hernia entrapment in patients presenting with immediate post-insertion PD failure. Additionally, it emphasizes the potential role of self-locating catheter weight in promoting migration into pre-existing or occult hernias, emphasizing the need for careful preoperative screening in high-risk individuals.

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Authorship

Jean Bertrand wrote the first draft of the manuscript. All authors reviewed and edited the manuscript and approved the final version of the manuscript.

Declaration of conflicting interests

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Ethical approval

Cliniques Universitaire Saint Luc does not require ethical approval for reporting individual cases or case series.

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Informed consent to participate

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ORCID iDs

Jean Bertrand  <https://orcid.org/0009-0007-6132-7006>

Inès Dufour  <https://orcid.org/0000-0002-2108-5280>

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