

Bowel Perforation During Peritoneal Dialysis Catheter Placement

Kenneth Abreo, MD, and Adrian Sequeira, MD

Interventional nephrologists and radiologists place peritoneal dialysis catheters using the percutaneous fluoroscopic technique in both the inpatient and outpatient setting. Nephrologists caring for such patients may have to diagnose and manage the complications resulting from these procedures. Abdominal pain can occur following peritoneal dialysis catheter placement when the local and systemic analgesia wears off. However, abdominal pain with hypotension is suggestive of a serious complication. Bleeding into the abdomen and perforation of the colon or bladder should be considered in the differential diagnosis. In the case reported here, the peritoneogram showed contrast in the bowel, and correct interpretation by the interventionist would have prevented this complication. The characteristic pattern of peritoneogram images in this case will guide interventionists to avoid this complication, and the discussion of the differential diagnosis and management will assist nephrologists in taking care of such patients.

Am J Kidney Dis. ■(■):■-■. © 2016 by the National Kidney Foundation, Inc.

INDEX WORDS: Bowel; perforation; peritoneogram images; fluoroscopic patterns; catheter; peritoneal dialysis (PD); catheter placement; complication.

INTRODUCTION

Peritoneal dialysis (PD) catheters are placed in the abdomen using fluoroscopy by interventional nephrologists and interventional radiologists. The procedure is straightforward, yet has the potential for complications. It is important to know how to prevent these complications, recognize them early, and manage them when they occur. The 3 major complications of the fluoroscopic method of PD catheter placement are bleeding, colon perforation, and bladder perforation. In this report, we describe the case of a patient who developed abdominal pain and hypotension following fluoroscopic placement of a PD catheter.

CASE REPORT

Clinical History and Initial Laboratory Data

A 69-year-old man with a long history of hypertension, type 2 diabetes mellitus, and end-stage renal disease was admitted for fluoroscopic percutaneous placement of a PD catheter. The patient had an immature left upper-extremity brachiocephalic arteriovenous fistula. He had nonischemic cardiomyopathy with ejection fraction of 5% to 10%. The arteriovenous fistula was ligated to minimize shunt volume and improve heart failure symptoms. He received hemodialysis through a right femoral vein tunneled dialysis catheter. He did not tolerate hemodialysis because of persistent hypotension. He was a poor surgical candidate because of his cardiac condition. Three months prior to presentation, he underwent a laparoscopic cholecystectomy that was complicated by bleeding and required a laparotomy. On abdominal examination, he had a well-healed right-upper-quadrant scar from the laparotomy. Body mass index was 25 kg/m². A decision to place a percutaneous PD catheter was therefore made.

Laboratory tests on the day of the procedure showed the following values: white blood cell count, $8.4 \times 10^3/\mu\text{L}$; hemoglobin, 12 g/dL; platelet count, $189 \times 10^3/\mu\text{L}$; prothrombin time, 16.2 (reference range, 11.3-15.2) seconds; international normalized ratio, 1.42; serum creatinine, 7.5 mg/dL, corresponding to an estimated glomerular filtration rate of 9 mL/min/1.73 m² (as

calculated by the 4-variable MDRD [Modification of Diet in Renal Disease] Study equation); serum urea nitrogen, 38 mg/dL; serum sodium, 137 mEq/L; serum potassium, 4.4 mEq/L; serum chloride, 99 mEq/L; serum bicarbonate, 28 mEq/L; serum glucose, 95 mg/dL; and serum albumin, 3 g/dL. X-ray of the abdomen showed a nonspecific nonobstructive bowel gas pattern, cholecystectomy clips over the right upper quadrant, and a right femoral venous catheter for hemodialysis.

One day prior to the procedure, the patient was given polyethylene glycol 3350 (17 g in 4 oz of water) for constipation. For procedural sedation, the patient received midazolam, 1 mg, intravenously, and fentanyl, 50 μg , intravenously. A blunt 18-gauge needle was used to gain entry into the peritoneal cavity using ultrasound and fluoroscopic guidance. The patient was asked to tense and lift his abdomen during needle entry. Contrast was injected through the needle and the pattern on the peritoneogram indicated that the needle tip was in the peritoneal cavity. A 150-cm glide wire was inserted into the peritoneal cavity and the PD catheter was inserted using the Seldinger technique. PD catheter placement was uneventful, with the pigtail tip of the catheter located in the pelvic cavity (Fig 1). One liter of normal saline solution was instilled in the abdominal cavity through the PD catheter, with brisk return of clear fluid. The patient did not report abdominal pain. Postprocedure, the patient was clinically stable and in no distress. Nine hours later, he developed nausea, vomiting, severe abdominal pain, and hypotension. There was diffuse abdominal tenderness on examination. The patient was transferred to the intensive care unit, where vasopressors and broad-spectrum antibiotics were administered. Complete blood cell count showed hemoglobin level of 12.4 g/dL, white blood cell count of

From the Division of Nephrology and Hypertension, LSU Health Shreveport School of Medicine, Shreveport, LA.

Received October 10, 2015. Accepted in revised form January 11, 2016.

Address correspondence to Kenneth Abreo, MD, Division of Nephrology and Hypertension, LSU Health Shreveport School of Medicine, 1501 Kings Hwy, Shreveport, LA 71130. E-mail: kabreo@lsuhsc.edu

© 2016 by the National Kidney Foundation, Inc.

0272-6386

<http://dx.doi.org/10.1053/j.ajkd.2016.01.010>

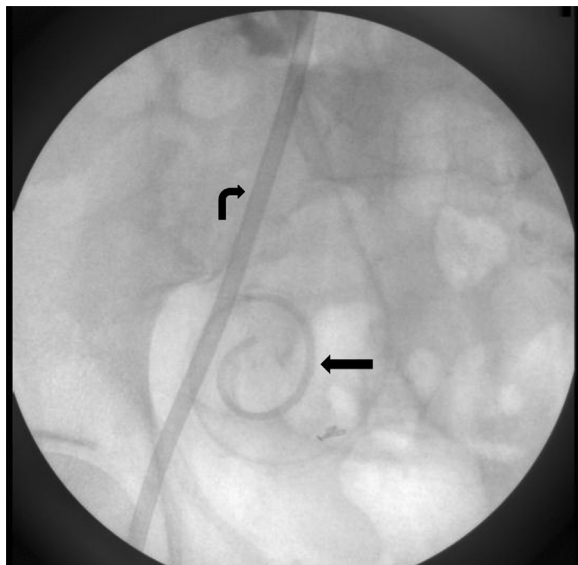


Figure 1. Fluoroscopic image shows the peritoneal dialysis catheter positioned appropriately within the pelvic cavity (straight arrow). The bent arrow points to the right femoral-tunneled dialysis catheter.

$8.35 \times 10^3/\mu\text{L}$, and platelet count of $190 \times 10^3/\mu\text{L}$. A surgical consultation was requested and a noncontrast computed tomographic scan of the abdomen was obtained.

Imaging Studies

The computed tomographic scan showed a large amount of free intraperitoneal gas post-catheter placement with additional foci of soft-tissue stranding. The catheter's coiled tip was located in the right lower abdominal quadrant, but appeared to traverse the inferior wall of the transverse colon (Fig 2). A moderate volume of fluid noted in the pelvic peritoneal cavity represented either blood or PD fluid. Due to these findings, the images taken during fluoroscopic placement of the catheter were reviewed, which showed a circular blob of contrast within the transverse colon (Fig 3B). The 18-gauge blunt needle had pierced the bowel wall, and injection of

contrast resulted in a circular collection of contrast within the bowel. The needle then pierced the bowel wall again, and injection of contrast showed it to outline the bowel wall. Thus, there was contrast within and outside the bowel.

Diagnosis

Through-and-through perforation of the transverse colon by the PD catheter.

Clinical Follow-up

A laparotomy was done, which found tangential transverse colon perforation with the PD catheter at 2 sites with minimal peritoneal contamination along with a large amount of bloody PD effluent. The PD catheter was removed and the 5-mm defects in the colon were repaired. No adhesions were noted. In the days following surgery, the patient developed septic shock and the family requested to stop all life-sustaining measures.

DISCUSSION

Hollow viscus perforation (bowel and bladder) is a recognized complication of PD catheter placement.^{1,2} The incidence of procedure-related bowel perforation is about 0.7% to 2.6%.^{1,3-5} Because this is a blind technique, perforation may not be recognized during the procedure.⁶

Prior to catheter placement, certain precautions have been advocated to minimize the risk for hollow viscus perforation. Specifically, the bladder is emptied with a Foley catheter (the day of the procedure) if there is suspicion of abnormal voiding and the bowel is evacuated the prior evening with laxatives.⁷ Bowel distention and the presence of abdominal wall adhesions are risk factors for bowel perforation, whereas incomplete bladder evacuation as a result of diabetic cystopathy or outlet obstruction are risk factors for bladder perforation. Some interventionalists do not recommend prophylactic laxatives, instead relying on ultrasound to guide and prevent bowel perforation.

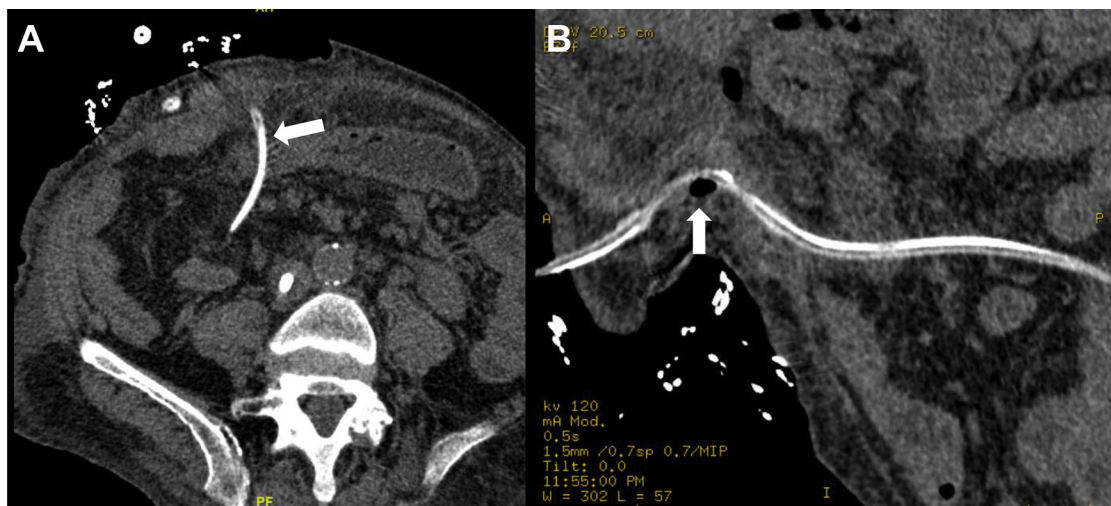


Figure 2. Computed tomographic images show the catheter perforating the wall of the transverse colon. (A) Coronal section: transcolonic passage of the catheter (arrow). (B) Sagittal section: catheter passing through the wall of the bowel (arrow).

Download English Version:

<https://daneshyari.com/en/article/3847364>

Download Persian Version:

<https://daneshyari.com/article/3847364>

[Daneshyari.com](https://daneshyari.com)