

## Letter to the Editor

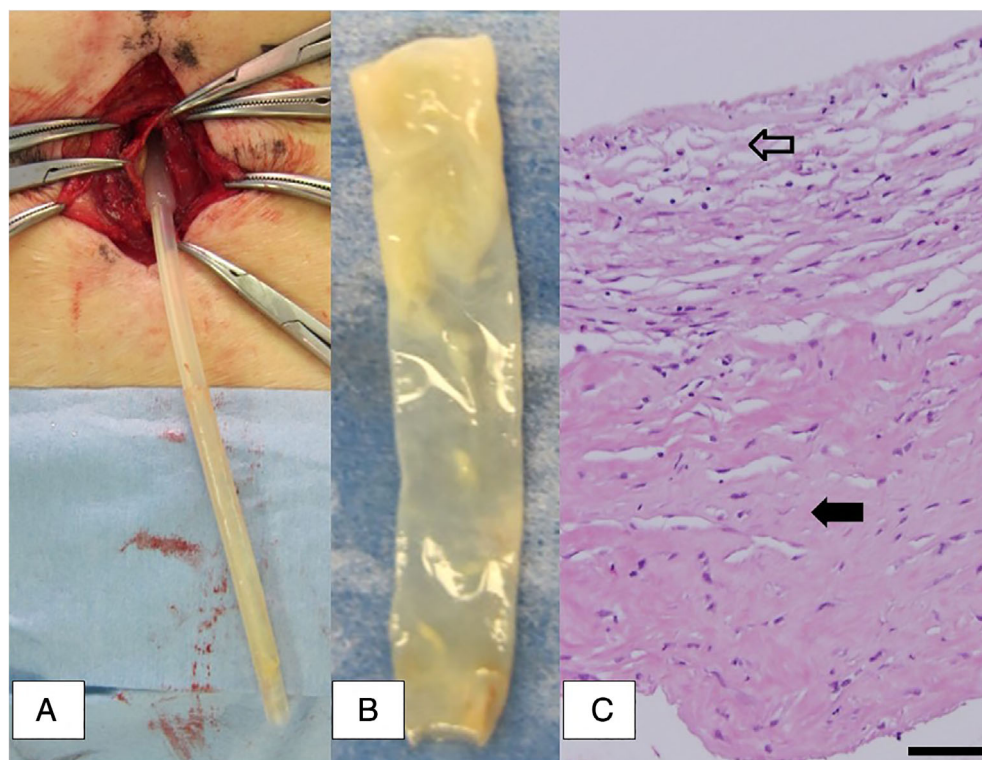
**Occlusion of a Peritoneal Dialysis  
Catheter by Fibrous Connective  
Tissue Covering the Intraperitoneal  
Catheter: A Case Report**

Dear Editor,

Occlusion of the peritoneal dialysis (PD) catheter is a serious complication that makes PD continuation difficult. The causes of PD catheter occlusion include fibrin and blood clots, and wrapping around of the catheter by omentum or oviductal fimbriae. We experienced a rare case in which the tip of an embedded PD catheter was occluded by fibrous connective tissue covering the intraperitoneal catheter.

An 84-year-old female with end-stage kidney disease (ESKD) due to hypertensive nephrosclerosis

had undergone PD catheter placement by the Moncrief–Popovich technique, in which the free end of the catheter is implanted in the subcutaneous tissue of the abdomen. Catheter insertion was performed uneventfully and accurate placement of the tip of catheter in the mid-pelvis was confirmed by postoperative abdominal X-ray imaging. Nine months later, her ESKD had progressed to the stage that necessitated the start of PD. However, when we tried to start PD after exteriorization of the PD catheter, it was not possible due to catheter inflow and outflow obstruction. Since total catheter occlusion was observed by fluoroscopic image, we decided to perform catheter repair by minilaparotomy. When the intraperitoneal PD catheter was taken out, it was seen to be surrounded with fibrous connective tissue, and the tissue had entered the distal end hole and the all side holes of the



**FIG. 1.** (A) The catheter was removed from the abdominal cavity. The peritoneal dialysis catheter was completely covered with fibrous connective tissue, and this tissue had entered the end hole and all the side holes of the catheter. (B) The fibrous connective tissue was removed from the catheter. (C) Histological photo of fibrous connective tissue with hematoxylin and eosin stain. The upper portion is the abdominal cavity side. The white arrow and black arrow indicate fibrosis and hyalinization. Bar = 100  $\mu$ m. [Color figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

catheter (Fig. 1). This tissue was pathologically diagnosed as fibrous connective tissue with hyalinization, mucus species, angiogenesis, infiltration of lymphocytes, and fibrin. After removal of this tissue, drainage could be satisfactorily achieved and she was able to start PD.

In 2004, Nakayama et al. reported that they created a vascular-like tubular tissue made of autologous tissue consisting of collagen-rich extracellular matrix (1). The tissue was created by burying foreign matter as a mold in the subcutaneous tissue of a rabbit for 1 month. Further Nakayama et al. reported that actual PD catheters embedded in human subcutaneous tissue were surrounded by collagen-rich tubular connective tissues (2). We believe that, in the present case, an encapsulation reaction has also occurred to the PD catheter placed in the peritoneal cavity, as well as the catheter embedded in the subcutaneous tissue. The histological differences of the encapsulating tissues between the present case and the case reported by Nakayama et al. might be accounted for by the differences in the surrounding environments involved in encapsulation reaction.

Singh et al. also report a patient whose catheter was completely covered with a fibrin sheath early after the start of PD (3). In cases with catheter flow obstruction due only to occlusion of the catheter lumen by fibrin, a cleaning brush under fluoroscopy guidance can be used to restore catheter patency (4). However, if there is no evidence before the

procedure that the cause of the obstruction is actually fibrin, and the actual cause is omental or fimbrial wrapping, cleaning with a brush might lead to intraperitoneal bleeding. Additionally, due to the extent of coverage by the fibrous connective tissue, it would likely have been difficult to completely release the occlusion in this case with a brush.

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