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Case Report

# Foreign body in the ureter: A particle of glue after transarterial embolization of a renal pseudoaneurysm during percutaneous nephrostomy

Wen-Jung Chen [a], Shao-Chuan Wang [a,b,*], Sung-Lang Chen [a,b], Yu-Lin Kao [a,b]

[a] *Department of Urology, Chung-Shan Medical University Hospital, Taichung, Taiwan, ROC*
[b] *Department of Urology, School of Medicine, Chung-Shan Medical University, Taichung, Taiwan, ROC*

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**Abstract**

Reports on foreign bodies within the ureter are extremely rare in the literature. Herein, we present a case of a foreign body in a ureter, specifically a particle of glue resulting from transarterial embolization of a renal pseudoaneurysm secondary to percutaneous nephrostomy. Emergent transarterial embolization was required due to life-threatening active bleeding of the pseudoaneurysm. However, the glue material subsequently fell into the ureter where it became a foreign body, resulting in obstructive uropathy. Several surgical interventions, including endoscopic and laparoscopic methods, were performed to retrieve the foreign body, but these attempts were unsuccessful. Finally, the glue material was spontaneously passed out by chance. To the best of our knowledge, this type of complication (a glue particle left over from an embolization procedure migrating into the urinary collecting system) has never been reported. We recommend close follow-up examinations after transarterial embolization for renal pseudoaneurysm in order to avoid possible obstructive uropathy caused by glue materials or coils.


*Keywords:* angiography; embolization; false aneurysm; foreign bodies; percutaneous nephrostomy

## 1. Introduction

Percutaneous renal procedures are commonly used to manage various renal pathologic lesions. The most serious complications are hemorrhage and vascular lesions such as arteriovenous fistula and pseudoaneurysm. Meanwhile, foreign bodies within the ureter are extremely rare. Iatrogenic foreign bodies in the ureter that have been reported in the literature are mostly fragmented ureteral stents and medical instruments.[1] Here, we report a patient who received transarterial embolization (TAE) therapy for active bleeding of a right renal pseudoaneurysm, a complication of previous percutaneous nephrostomy (PCN) procedure. However, part of the glue material detached and later turned out to be a ureteral foreign body, causing obstructive uropathy which was difficult to retrieve even by percutaneous nephroscopy, ureteroscopy, and open ureterotomy. Fortunately, the glue particle was spontaneously expelled.

## 2. Case report

A 61-year-old female patient was hospitalized at a local hospital and received PCN due to severe right-side hydronephrosis secondary to ureteral stricture. Gross hematuria occurred 2 weeks later, and pseudoaneurysm of the right kidney was diagnosed by angiography. The patient presented to our emergency department due to massive hematuria, low blood pressure (67/39 mmHg), and a decreased hemoglobin (8.4 g/dL). After resuscitation, including fluid challenge and blood transfusion, an abdominal computed tomography (CT) scan was arranged, revealing a pseudoaneurysm in the right renal artery near the renal pelvis with blood clots that were retained in the urinary collecting system and a large aneurysm in the right internal iliac artery (Fig. 1A and 1B). The obstruction level of the right ureter was just anterior to the

* Corresponding author. Dr. Shao-Chuan Wang, Department of Urology, Chung-Shan Medical University Hospital, 110, Section 1, Jianguo North Road, South District, Taichung 402, Taiwan, ROC.
*E-mail address:* mimic1024@gmail.com (S.-C. Wang).

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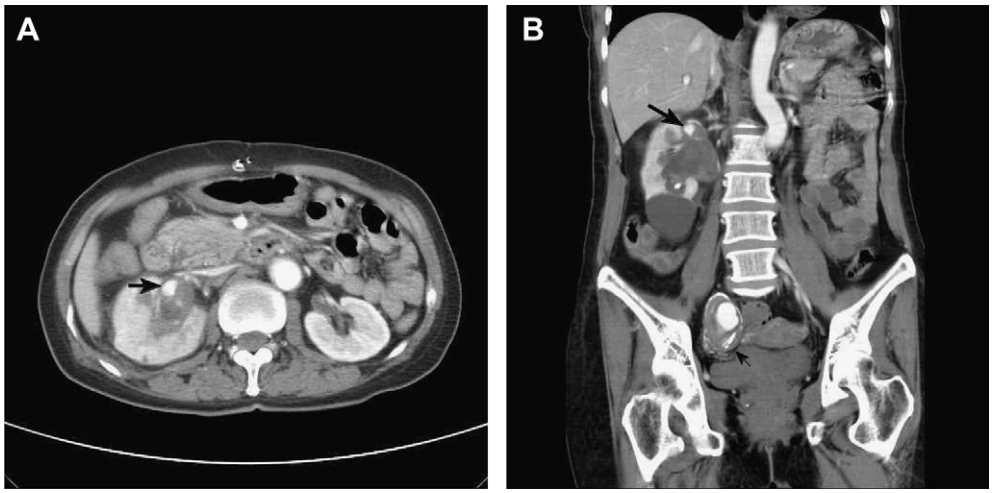


Fig. 1. Abdominal CT scan: (A) axial view; (B) coronal view. Pseudoaneurysm of the right renal artery near the renal pelvis (large arrow in A and B) is shown with blood clots retained in the collecting system and a large aneurysm at right internal iliac artery (small arrow in B).

right internal iliac artery aneurysm. Angiography was immediately performed after removal of the PCN drainage tube. Active bleeding from the pseudoaneurysm at a branch of the right renal artery with contrast extravasation into the renal pelvis was shown (Fig. 2A and 2B). Embolization with n-butyl cyanoacrylate (NBCA) (Ingenor, Minvasys, France) glue, which is an embolic agent with a radiopaque character on X-ray films, was mixed with Lipiodol in a 1:1 ratio. The bleeding was successfully stopped. However, right-side hydronephrosis still persisted 1 week after the TAE. Antegrade pyelography showed that part of the glue material had dislodged at the right ureteropelvic junction with obstructive uropathy (Fig. 3A, 3B, and 3C). At first, we intended to retrieve the foreign body via percutaneous nephroscopy, but this was impossible because the glue particle could not be found within the renal pelvis. We thought the particle had migrated into the ureter where it was unreachable due to the sharp angle of the insertion route of the nephroscope. Ureteroscopy was then attempted in order to remove the glue, but this failed due to the severe angulation of the middle-third ureter at the level of the right internal iliac artery aneurysm, which made advancing the ureteroscope impossible. Therefore, the PCN drainage tube was replaced. Five months later, follow-up antegrade pyelography showed that the glue particle was still retained in the right upper-third ureter with proximal hydronephrosis (Fig. 4A and 4B). Unfortunately, recurrent massive bleeding from the pseudoaneurysm took place 6 months after the first TAE. Another TAE was performed using coils instead, and hemostasis was successfully achieved. In the subsequent months, repeated urinary tract infections with hematuria related to the ureteral glue particle obstruction presented, and the patient had to undergo frequent PCN drainage and ureteral stent catheterization. Thus, we performed an open ureterotomy to remove the foreign body, but we failed to locate the glue material due to severe adhesion of the ureter and the right internal iliac artery aneurysm. Unexpectedly, the glue particle was spontaneously

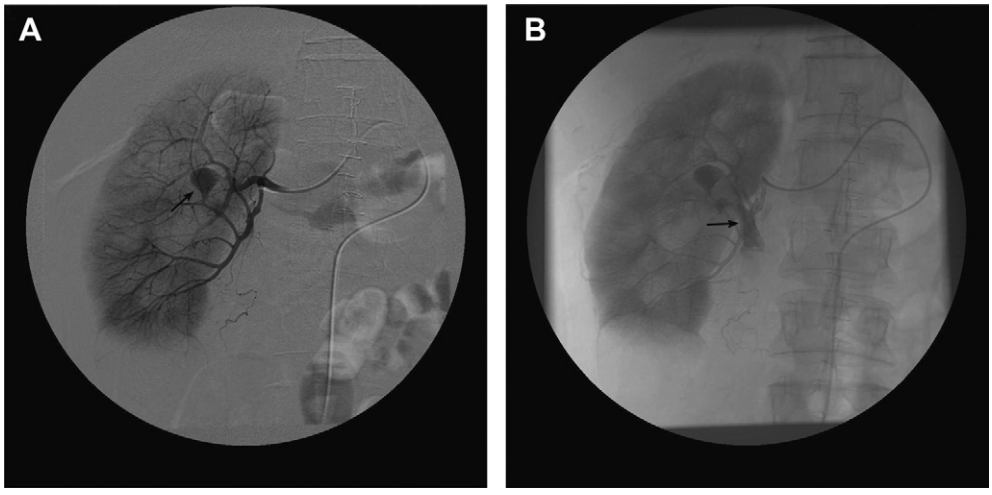


Fig. 2. Angiography demonstrating a pseudoaneurysm arising from a branch of the right renal artery (arrow in A) with contrast extravasation into the right renal pelvis (arrow in B).