Percutaneous Internal Drainage in Symptomatic Renal Parapelvic Cyst Refractory to Sclerotherapy: A Case Report

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Percutaneous sclerotherapy is a safe and effective treatment for renal parapelvic cysts. However, if the cyst is in communication with the adjacent renal pelvocalyceal system, sclerotherapy is contraindicated and alternative treatment should be considered. Here, we report a case of a patient with a symptomatic renal parapelvic cyst that was treated using a novel technique involving percutaneous new tract formation between the cyst and renal pelvis.

INTRODUCTION

Renal parapelvic cysts require treatment for complications such as hydronephrosis, infection, or pain[(1)]. We report a patient with a parapelvic cyst treated with a novel method as percutaneous sclerotherapy was contraindicated due to communication between the cyst and renal pelvocalyces.

CASE REPORT

A 68-year-old man with left flank pain visited our medical center. The patient had a medical history of hypertension and cerebral infarction. Urinalysis results were normal. Computed tomography (CT) showed a 10-cm left renal parapelvic cyst and severe left hydronephrosis (**Figure 1**).

Transurethral double-J stent insertion was performed; however, the hydronephrosis remained unresolved. As the renal parapelvic cyst may have resulted in hydronephrosis, which in turn caused the flank pain, percutaneous sclerotherapy was then performed. An 8.5-Fr catheter (Sungwon Medical, Cheongju, Korea) was inserted into the cyst. Communication between the cyst and renal pelvocalyces was absent on fluoroscopy and cone-beam CT after injection of contrast media, immediately after aspiration of 300 mL of clear fluid (**Figure 2**). Sclerotherapy was performed using 30 mL of 99.9% ethanol as the sclerosant. After 60 min, the ethanol was completely aspirated, and the catheter was retained.

The amount of drainage through the catheter was higher than 2000 mL/day, which was maintained for 3 days. The creatinine level in the fluid was 37 mg/dL, suggesting the formation of a new communicating structure with the

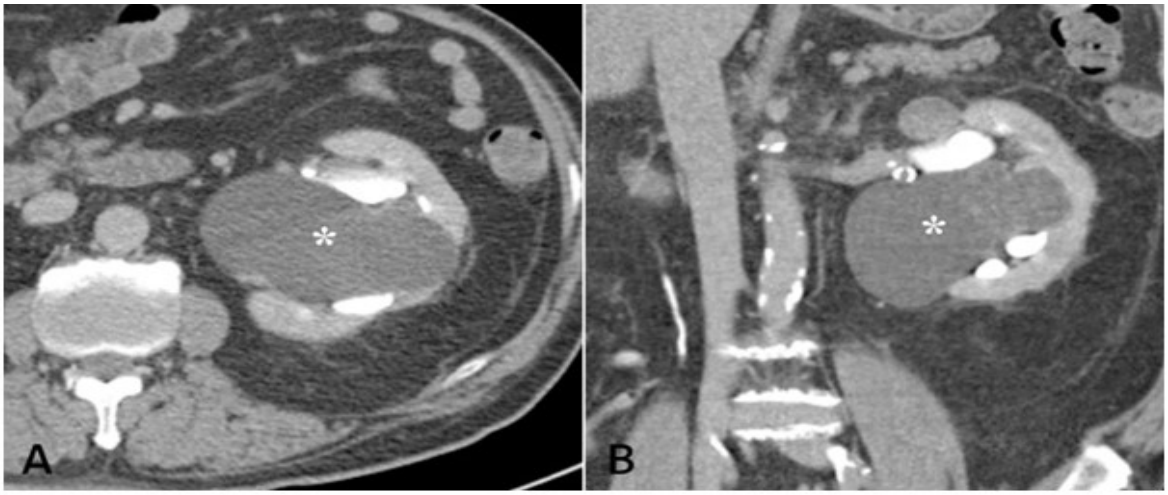

Figure 1. Contrast-enhanced axial **(a)** and coronal **(b)** CT images taken in the renal excretory phase show a large left parapelvic cyst (asterisk) and associated hydronephrosis.

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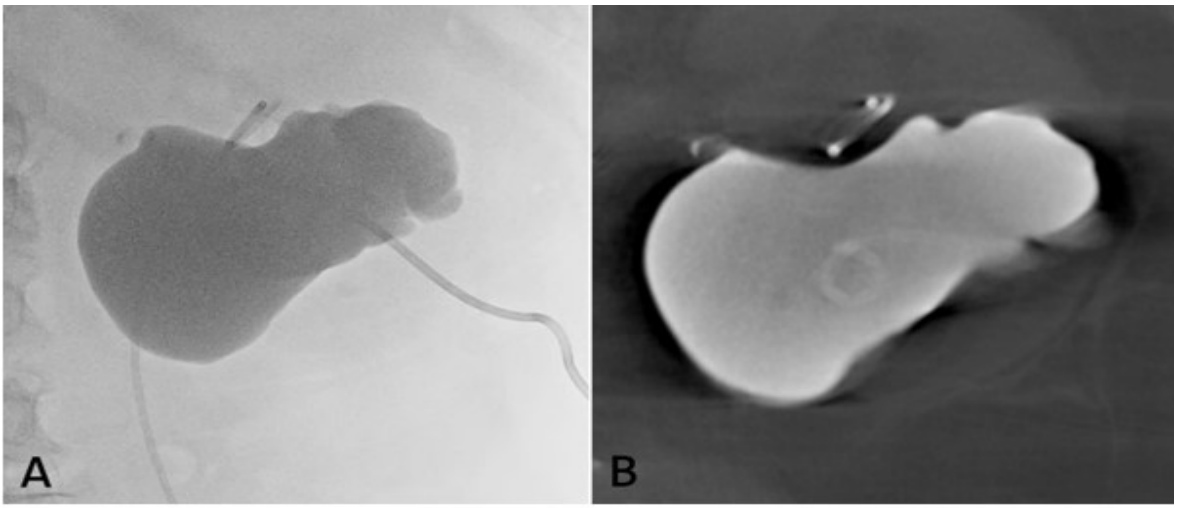

Figure 2. Fluoroscopy **(a)** and cone-beam CT **(b)** images taken during the first session of sclerotherapy show no contrast leakage out of the cyst.

urinary tract.

Tubography and cone-beam CT (**Figure 3**) indeed showed a communication between the cyst and renal calyx, which implied a contraindication for additional sclerotherapy. Alternatively, internal drainage of the cyst fluid into the renal pelvocalyx was planned. However, cannulation of the communicating tract was attempted, but failed. To overcome this issue, a new tract was created between the cyst and the renal pelvis. Ultrasonography- and fluoroscopy-guided puncture of the upper renal calyx was performed via the catheter route using a 21-gauge needle (**Figure 4a**). An 8.5-Fr catheter with additional sideholes was inserted through the tract with the tip in the renal pelvis (**Figure 5**). The catheter was maintained for 1 month to allow tract maturation and was removed after tract patency was confirmed. The cyst and subsequent hydronephrosis were resolved at the 2-month follow-up (**Figure 6a**). 1-year follow-up noncontrast CT scan (**Figure 6b**) showed no evidence of any relapsed parapelvic cyst. The flank pain remained absent at an outpatient follow-up 6 months after the last CT scan.

DISCUSSION

This report describes a novel percutaneous method for the internal drainage of a renal parapelvic cyst. Percutaneous sclerotherapy is a minimally invasive treatment with low recurrence rates for renal cysts[2,3]. However, if the cyst is in communication with the renal pelvocalyces, the use of a sclerosant may damage their endothelium, and alternative treatments should be considered. In our patient, sclerotherapy was performed with no evidence of communication between the cyst and pelvocalyces. However, communication between the cyst and the adjacent renal calyx subsequently appeared; thus, sclerotherapy could no longer be performed.

The concept of draining a cyst into the urinary tract has been introduced as a method involving direct incision

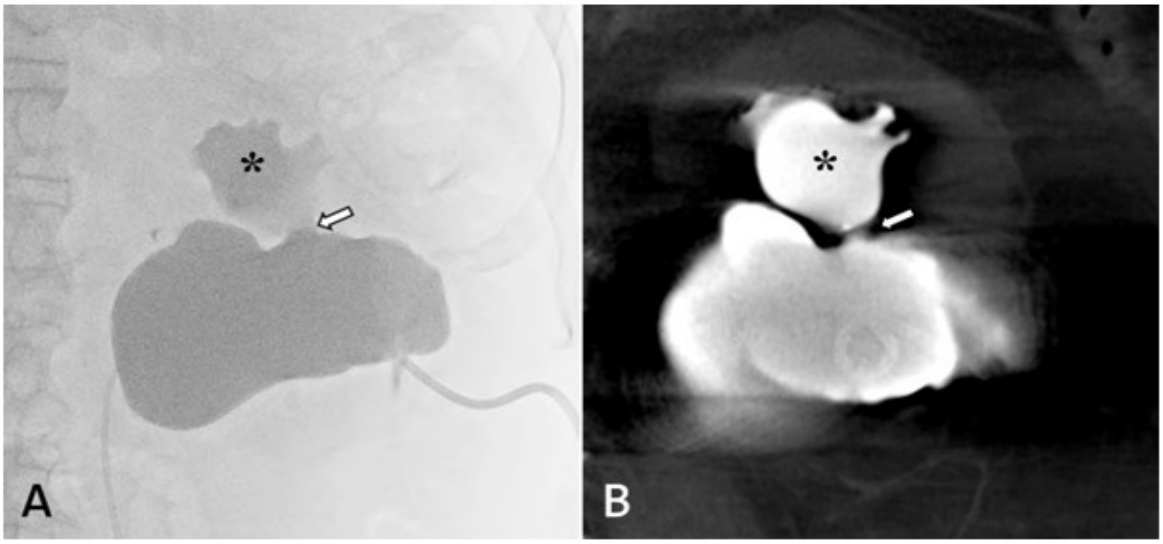

Figure 3. Both fluoroscopy **(a)** and cone-beam CT **(b)** images taken before the second session of sclerotherapy show communication (arrow) between the renal parapelvic cyst and adjacent renal upper polar calyx (asterisk).

Figure 4. (a) Direct puncture of renal upper polar calyx was performed through the parapelvic cyst, and the tract was dilated using a balloon catheter (b).

of the cyst wall through retrograde flexible ureteroscopy or antegrade nephroscopy[4-7]. To mitigate any risk, accurate information about the surrounding structures must be obtained during cyst wall incision. In this sense, ultrasonography- and fluoroscopy-guided percutaneous approaches have the advantage of allowing visual access to the surrounding tissues during surgery. We report a patient with a renal parapelvic cyst that was not eligible for additional sclerotherapy session and was successfully treated with a novel procedure involving a tract formation between the cyst and the renal pelvis. The procedure reported here could be considered as an effective alternative treatment option when percutaneous sclerotherapy is not indicated.

CONFLICT OF INTEREST

No potential conflict of interest was reported by the authors.

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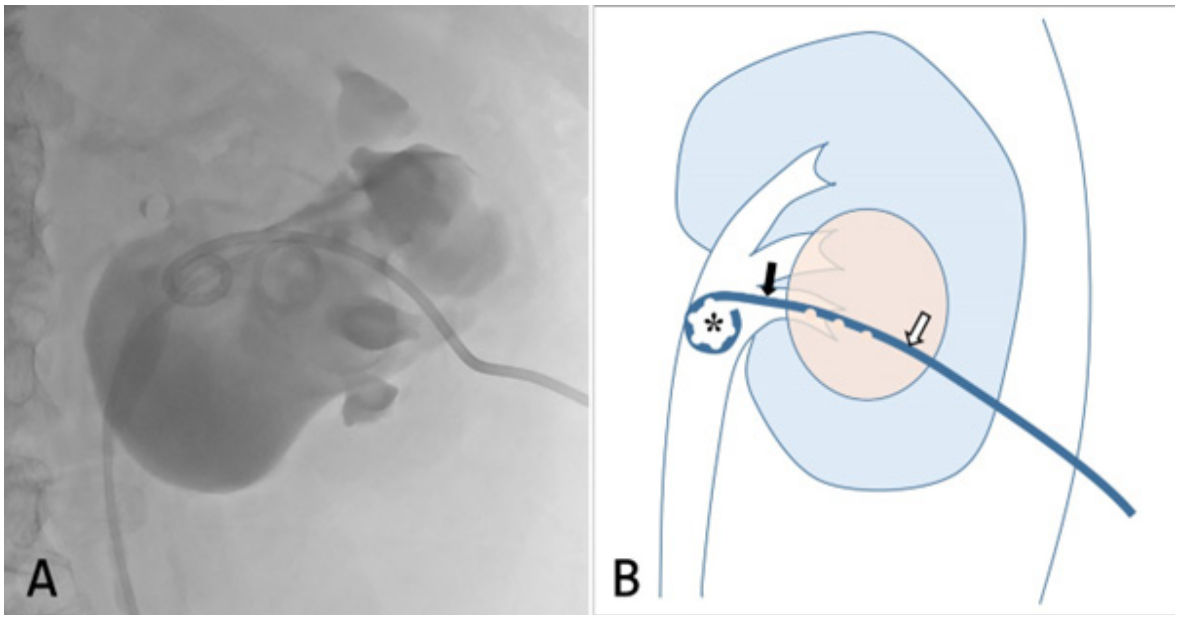

Figure 5. (a) A pigtail catheter with additional sideholes is placed through the newly formed tract with the tip inside the renal pelvis, to keep the tract patent. **(b)** Diagram shows percutaneous new tract formation and pigtail catheter placement. The catheter passes through the cyst (white arrow) and the renal pelvic wall (black arrow), and its end is located in the renal pelvis (asterisk). Sideholes are marked as semicircles in the pigtail catheter.

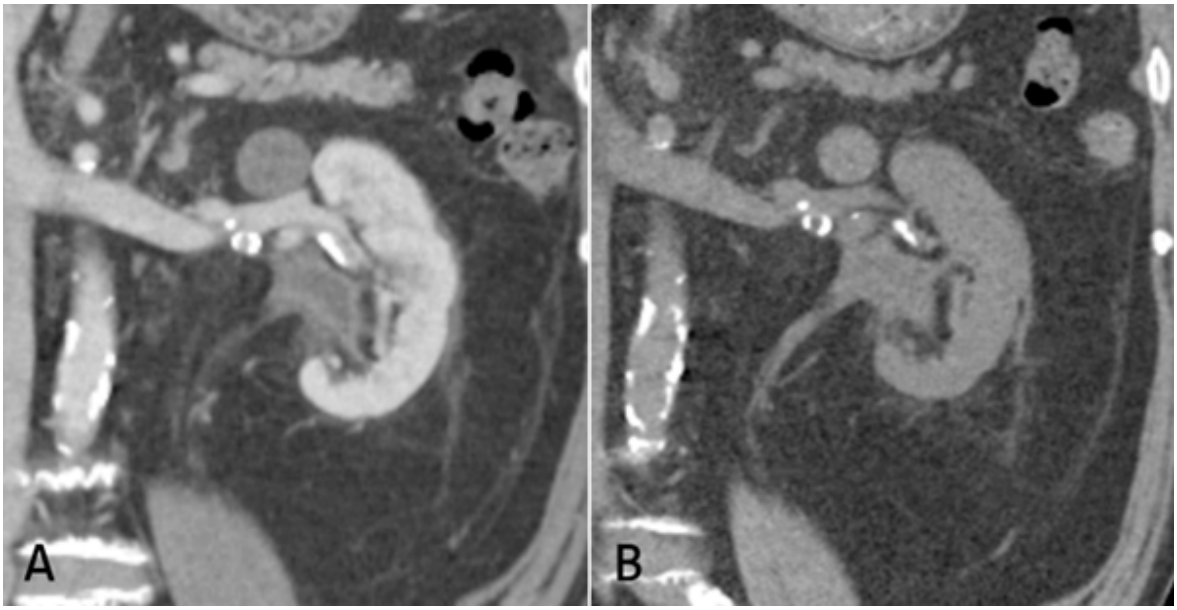

Figure 6. Both 2-month **(a)** and 14-month **(b)** follow-up coronal CT images show resolved parapelvic cyst and hydronephrosis.