

Parapelvic cyst causing ureteropelvic junction stricture: a case report

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Abstract: Parapelvic cyst is a special type of cystic lesion of the kidney. Due to the characteristics of its anatomical relationship, parapelvic cyst can compress the collecting system or the blood vessels at the pedicle of the kidney in the early stage of the disease. Compared with other cystic diseases of the kidney, aggressive treatment should be taken earlier. Here, we report a patient with hydronephrosis secondary to renal pelvis and parapelvic cyst compression at the ureteropelvic junction was admitted to our hospital. Laparoscopic left pyeloureteroplasty was performed after condications were ruled out. During the operation, a cystic mass was observed between the two renal pelvis. There was no stenosis or dilatation in the upper part of the left ureter. In conclusion, considering the long-term compression of cysts between the renal pelvis of the two branches of the UPJO system in the patient, laparoscopic parapelvic cysts of the left side were performed.

1. Introduction

Parapelvic cyst is a special type of cystic lesion located in the renal sinus, which often presents symptoms of renal blood vessel or collecting system compression in the early stage of the disease. In September 2022, a patient with hydronephrosis secondary to renal pelvis and parapelvic cyst compression at the ureteropelvic junction was admitted to our hospital. Combined with relevant literature, the author reports as follows.

2. Case presentation

A 63-year-old female patient was admitted to the hospital due to "physical examination found left hydronephrosis for one and a half years". Two months before admission, the patient began to have left renal region swelling and pain without obvious cause, 1-2 times a day, about 5 minutes each time, which could be relieved spontaneously. Urinary ultrasound showed moderate hydronephrosis of the left kidney with a dark area of 4.5cm in anteroposterior diameter and unclear ureter, but no abnormalities were found in the right kidney and ureter. Retrograde urography (IVP) showed that the left renal pelvis was bifurcated and ureteropelvic junction stenosis (UPJO) was possible (Figure 1).

Renal ECT showed that the GFR of the left kidney was about 18.8ml/min, and the excretion of renal calyceal and renal pelvis was not patent. The GFR of the right kidney was approximately 39.7ml/min, with transient retention of renal pelvic excretion. Urography (CTU) showed enlargement of the left kidney, thinning of the renal cortex, beak-like narrowing of the lumens at the ureteropelvic junction, obvious dilatation and hydronephrosis of the renal pelvis and calyceal, and a small amount of contrast medium was seen in the left renal pelvis during the secretory phase, but no contrast was observed in the lower part of the left ureter. There were scattered small cysts in both kidneys, less than 5mm in diameter. There were no obvious abnormalities in the right kidney or ureter (Figure 2). Urine routine indicated urine leukocyte 3+ (urine leukocyte quantity was 113/ μ l), liver and kidney function were normal, and blood routine was normal. Laparoscopic left pyeloureteroplasty was performed after condications were ruled out. During the operation, the posterior peritoneum of the left renal region was opened via the paracolic sulci. The exploration revealed that the left renal pelvis was connected with the ureter in the form of branches, one from the upper posterior and the other from the lower anterior, and a cystic mass with the size of 2*2*1.5cm was observed between the two, pressing on the junction of the two renal pelvis. There was no stenosis or dilatation in the upper part of the left ureter. In conclusion, considering the long-term compression of cysts between the renal pelvis of the two branches of the UPJO system in the patient, laparoscopic parapelvic cysts of the left side were performed. The cyst wall was cut open at the weak part of the cyst, and pale yellow fluid was found to flow out. The anesthesiologist was instructed to inject 20mg furosemide intravenously. No effusion was found on the cyst surface after observation for 15min. During this period, about 500ml of light yellow urine was drained out by catheter, and the pelvic negative pressure drainage tube was left in indent. From day 1 to day 11 after operation, 70-110ml light yellow clear liquid was drained out of the negative pressure drainage tube every day. On the 5th day after operation, the cyst walls (adjacent to the renal pelvis) was found (Figure 3). B-ultrasound examination showed that there was no effusion in the abdominal cavity and pelvis, and the left kidney had mild hydronephrosis, and the anteroposterior diameter of the dark area was about 1.1cm. On the 10th day after operation, the biochemical results of drainage fluid showed total protein 39.1g/L, albumin 29.2g/L, creatinine 64.3 μ mol/L, urea nitrogen 3.6mmol/L, and uric acid 196.2 μ mol/L, and the patient was discharged with a tube to continuously drain. One month after the operation, the pelvic drainage fluid was gradually reduced to 20ml/d. B-ultrasound examination showed no obvious effusion in the perirenal, abdominal cavity and pelvic cavity, and bilateral renal pelvis was not dilated, and the drainage tube was removed. During the follow-up, the patient had no special discomfort.

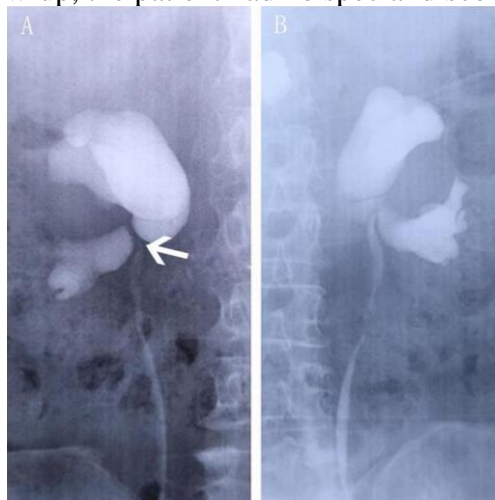


Figure 1: Anterior view (A) and posterior view (B) of the left retrograde urography; arrows indicate ureteropelvic junction stenosis.

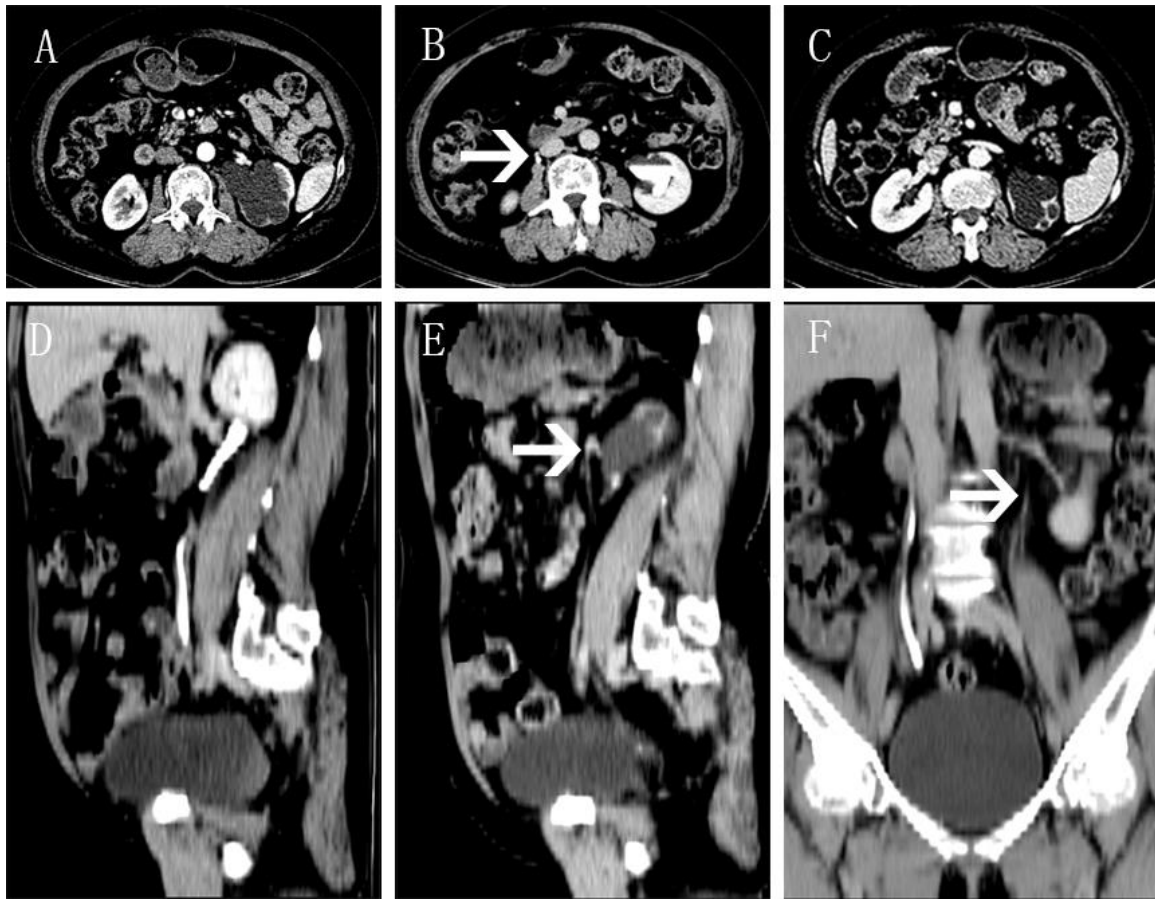


Figure 2: Urography: A. arterial phase; B, C. Secretory stage, arrow shows right ureter, left ureter is not developed; D. Right ureterography in secretory stage; E, F. No development was observed in the left renal ureter (lower segment) in secretory stage.

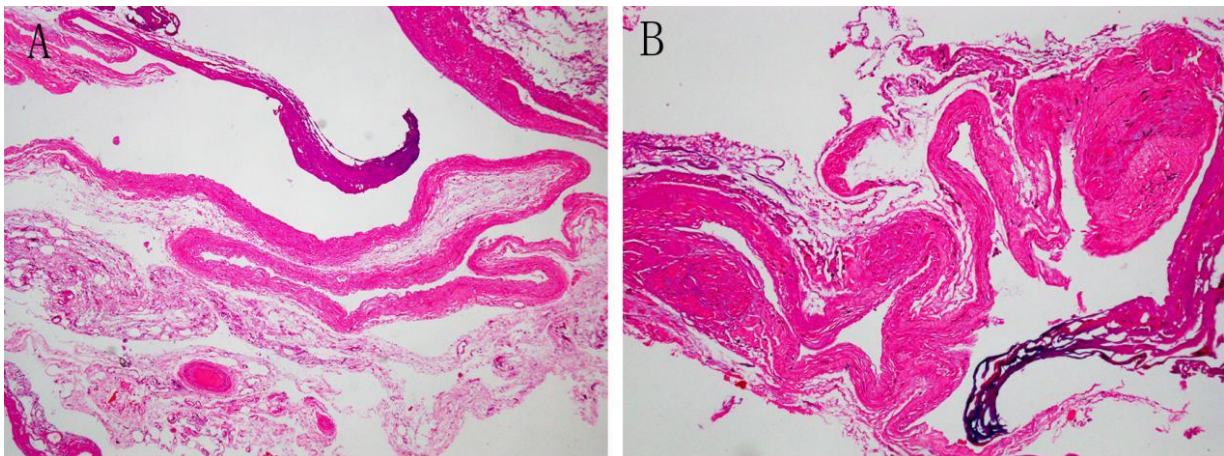


Figure 3: Pathological examination: Simple parapelvic cyst.

3. Discussion

The kidney is faba bean-shaped, with inner and outer two margins. The middle of the inner margin is more depressed, called the renal hilum, which is the portal of the renal pelvis, renal blood vessels, nerves, and lymphatic vessels. The structures in and out of the renal hilum are collectively called renal pedicles, which mainly include the renal vein, renal artery, and renal pelvis. The renal hilum

extends into the kidney and expands into an irregular cavity called renal sinus, containing renal pelvis, calices, renal blood vessels, nerves, lymphatic vessels and adipose tissue. At present, parapelvic cysts originating from the renal sinus and parapelvic cysts originating from the renal parenchyma and invading the renal sinus [1] are commonly referred to as parapelvic cysts in clinical practice [2], among which parapelvic cysts are generally considered to be congenital anomalies derived from lymphatic vessels [3]. Reports [4] show that parapelvic cysts account for about 1-2% of the total renal cysts, and are often misdiagnosed as hydronephrosis because of their proximity to the renal pelvis and renal sinus [5]. However, large parapelvic cysts often have secondary renal collecting system compression, resulting in corresponding clinical symptoms such as low back pain, hematuria, and hypertension in the early stage of the disease, requiring surgical treatment [1]. Notley reported 2 cases of secondary obstruction caused by parapelvic cyst compression on a single renal calyx [6], and the internal drainage of parapelvic cyst by holmium laser incision under ureteroscope showed a good effect.

In this case, we found that when the branched pelvis was associated with a parapelvic cyst, the branch site was easily deformed by compression, resulting in a narrowing of the ureteropelvic junction and subsequent hydronephrosis. Most importantly, we did not detect this before surgery, but rather during surgery. The above findings suggest that when hydronephrosis occurs in the branched pelvis, the doctor needs to identify the parapelvic cyst.

Acknowledgments

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