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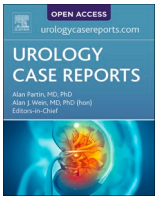

Trauma and reconstruction

Ureteropelvic junction obstruction secondary to parapelvic cyst encased ureter

Austin Hill *, Cameron Charchenko

University of North Dakota School of Medicine and Health Sciences, Grand Forks, ND, United States

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ABSTRACT

We present a 64-year-old male who presented with right-sided flank pain secondary to a parapelvic cyst impinging on the proximal ureter. However, intraoperative findings showed that the ureter was encased within the parapelvic cyst and secondarily obstructed at the UPJ rather than extrinsically compressed by the cyst. This specific anatomic variant is exceedingly rare as no published cases with similar anatomy could be identified.

1. Introduction

A parapelvic cyst compressing the ureter and resulting in obstruction is a rare clinical finding in its own right. However, no cases are described where the ureter traversed through the parapelvic cyst, resulting in obstruction along with more proximal obstruction at the ureteropelvic junction. Dual obstruction of the ureter was resolved with a right robotic cyst decortication and dismembered pyeloplasty.

2. Case presentation

We present a 64-year-old male who was admitted to the emergency department with right flank pain, nausea, and vomiting. Laboratory studies were significant for a creatinine of 1.48 (GFR 52), no leukocytosis, and a bland urinalysis. CT scan showed dilation of the right renal pelvis with cutoff at the ureteropelvic junction (UPJ), significant parapelvic stranding, bilateral parapelvic cysts, and a 15mm indeterminate right renal lesion. A right nephrostomy tube was placed to decompress the upper tract in preparation for a robotic pyeloplasty. A large parapelvic cyst was inadvertently accessed and opacified during the nephrostomy tube placement. A nephrostogram revealed a patent UPJ with obstruction 3cm below the UPJ and an opacified parapelvic cyst extending alongside the ureter (Fig. 1). MRI was obtained to further characterize the indeterminate right renal lesion. Radiology characterized the right renal lesion as Bosniak IIF and the parapelvic cyst was described as benign appearing. The patient underwent a right retrograde pyelogram, which showed obstruction immediately below the UPJ along with additional obstruction of the ureter 3cm below the UPJ consistent with his nephrostogram (Fig. 2). He was scheduled for a right robotic cyst decortication with partial nephrectomy.

Intraoperatively, his tissue planes were hostile secondary to previous urinary extravasation. The ureter could not be identified in the tail of Gerota due to severe fibrosis of the tissue; thus, the renal artery and vein were isolated and skeletonized. The parapelvic cyst was then thoroughly dissected anteriorly and posteriorly to its most inferior aspect. The ureter could be identified at the inferior aspect of the cyst and appeared to be inserted directly into the cyst. This finding was inconsistent with our interpretation of his imaging, as we expected the ureter to be obstructed extrinsically from the cyst. To ensure the identified cyst was not the renal pelvis, we administered 2 cc of ICG through his nephrostomy tube. There was no evidence of fluorescence within the cyst. The cyst was incised anteriorly, revealing the ureter traversing through it (Fig. 3). An additional proximal obstruction was noted secondary to twisting below the UPJ (Fig. 4). When correlated with his retrograde pyelogram, the ureter had dual obstruction at the point of insertion into the cyst as well as proximally just below the UPJ. The cyst wall was excised and returned negative for malignancy on frozen section. A dismembered pyeloplasty was performed in the standard fashion, followed by placing a 6 × 26 ureteral stent. A fat flap was raised from Gerota's fascia and sutured to the deepest aspect of the cyst base. This technique was utilized as it has been shown to be an effective method for decreasing cyst recurrence rate compared to simple unroofing.[1] Finally, partial nephrectomy was performed without complication, removing the 2cm Bosniak IIF renal cyst.

The ureteral stent was removed four weeks postoperatively. Pathology on the right renal cyst returned as a benign cortical cyst with chronic inflammation and focal thrombosis. The parapelvic cyst and UPJ showed chronic inflammation without malignancy.

* Corresponding author.
E-mail address: austin.hill.1@und.edu (A. Hill).

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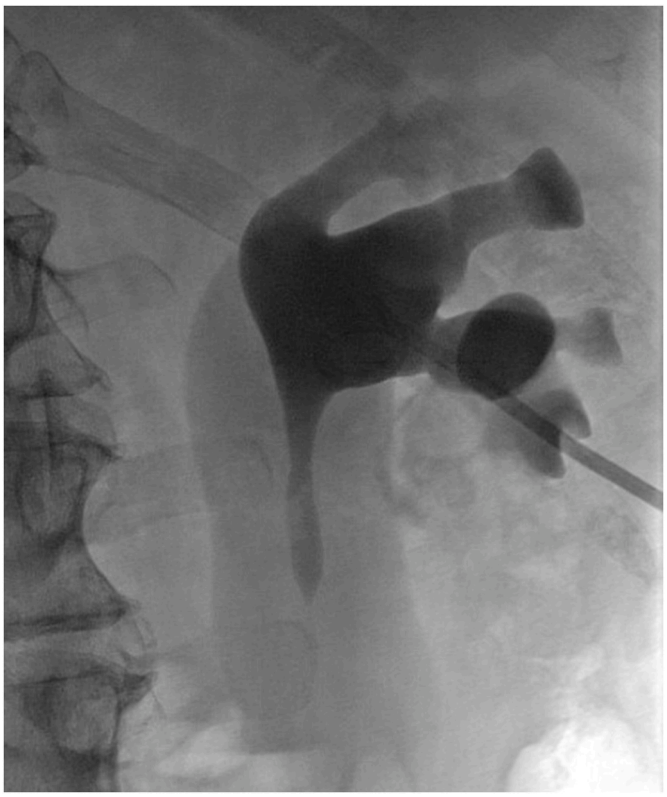

Fig. 1. Nephrostogram showing the parapelvic cyst appearing to impinge on the proximal ureter causing an abrupt cut off at the proximal ureter.

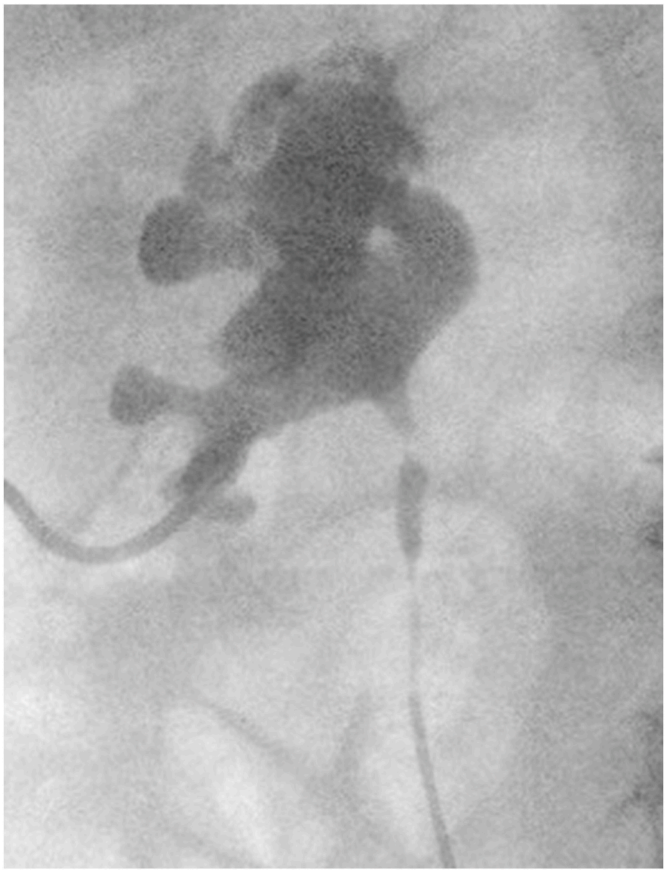

Fig. 2. Nephrostogram displaying a narrowing 1cm below the UPJ which would ultimately be the twisting seen in Fig. 4. An additional narrowing is seen 3cm below UPJ due to the parapelvic cyst.

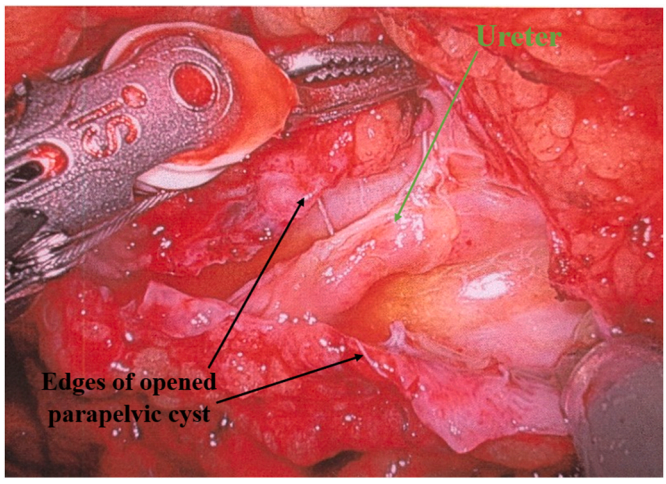

Fig. 3. Ureter within the parapelvic cyst following incision of the cyst. The flaps of the cyst are spread by the graspers, displaying the previously hidden ureter.

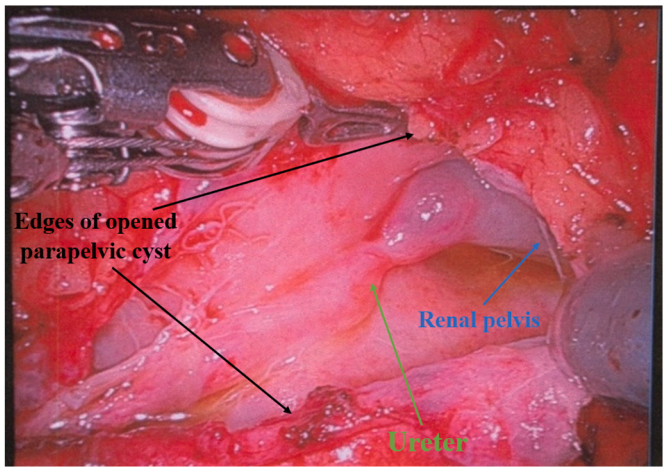

Fig. 4. As the cyst was further incised superiorly, a twisting below the UPJ was visualized. This twisting was consistent with the narrowing 1cm below the UPJ seen on the retrograde pyelogram.

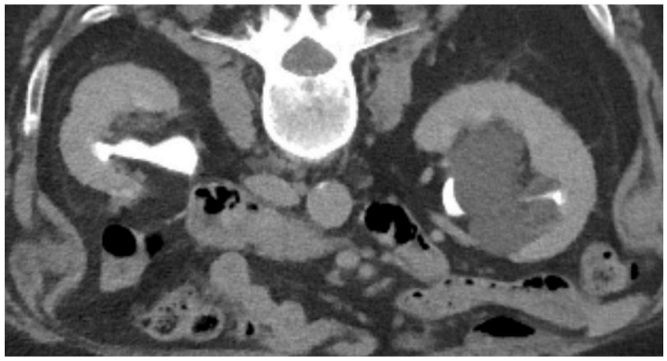

Fig. 5. Four months post-op CT scan displaying renal pelvis and ureter filling with no evidence of obstruction and no recurrence of the parapelvic cyst.

3. Follow up

Four months post-op, the patient underwent a CT scan with contrast in the prone position, which displayed excellent transit down the ureter, indicating successful repair (Fig. 5). His renal function and electrolytes were within normal limits. He will receive a renal ultrasound and

electrolyte panel in 6 months with continued follow-up two years post pyeloplasty.

4. Discussion

Ureteropelvic junction obstruction secondary to ureter impingement from a parapelvic cyst is a rare but not undescribed phenomenon.[2–5] However, an extensive literature review found no cases where the ureter progressed through the parapelvic cyst. In all other cases, it was extrinsic obstruction of the ureter causing obstruction. This case is unique in that the ureter progressed through the parapelvic cyst, causing obstruction with a concomitant UPJ obstruction.

CRediT authorship contribution statement

Austin Hill: Writing – review & editing, Writing – original draft, Data curation. **Cameron Charchenko:** Writing – review & editing, Supervision, Investigation, Formal analysis, Data curation, Conceptualization.

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