

Delayed Post-Traumatic Ureteropelvic Junction Obstruction on a Pelvic Ectopic Kidney in a 2-Year-Old Boy: Case Report

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DOI: [10.36347/sjmcr.2023.v1i104.022](https://doi.org/10.36347/sjmcr.2023.v1i104.022)

| Received: 27.02.2023 | Accepted: 12.04.2023 | Published: 14.04.2023

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Abstract

Case Report

This case report highlights the risk of renal injury in the presence of a pelvic kidney following blunt abdominal trauma. The case involved a 2-year-old boy who suffered from pelvic tenderness and total macroscopic hematuria after an abdominal blunt trauma. CT scan revealed a left pelvic kidney with a double pyelic system and pyelocal dilatation, coupled with an inferior polar parenchymatous fracture that extended to the excretory tract. The patient initially received conservative treatment, but later developed ureteropelvic junction obstruction, resulting in surgical intervention with a dismembered pyeloplasty. This case highlights the importance of early diagnosis and follow-up imaging for patients with UPJ lesions and the need for conservative treatment options, such as ureteral stenting or percutaneous nephrostomy, to alleviate obstruction and facilitate the healing process. In all cases of conservatively treated renal trauma, rigorous clinical and radiological monitoring is essential.

Keywords: Renal trauma, children, post traumatic ureteropelvic junction obstruction.

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INTRODUCTION

In the event of abdominal blunt trauma, a pelvic kidney predisposes to an increased risk of renal lesion. Although conservative treatment is the gold standard in renal trauma, surgery remains an eventuality. We report the case of a 2-year-old boy with a pelvic kidney injury who underwent delayed surgery because of delayed ureteropelvic junction obstruction.

CASE REPORT

We report the case of a 2-year-old infant admitted to the pediatric surgical emergency department for abdominal blunt trauma by hoof strike. On

admission, the patient was conscious and hemodynamically and respiratorily stable. The examination revealed pelvic tenderness with total macroscopic hematuria. The rest of the examination was unremarkable.

The patient underwent an abdominal-pelvic CT scan (figure 1) which revealed a left pelvic kidney with pyelocal dilatation measuring 14 mm, coupled with a double pyelic system with a single permeable ureter. The kidney was also found to have suffered an inferior polar parenchymatous fracture that extended to the excretory tract, leading to intraperitoneal contrast extravasation that was classified as AAST stage IV.

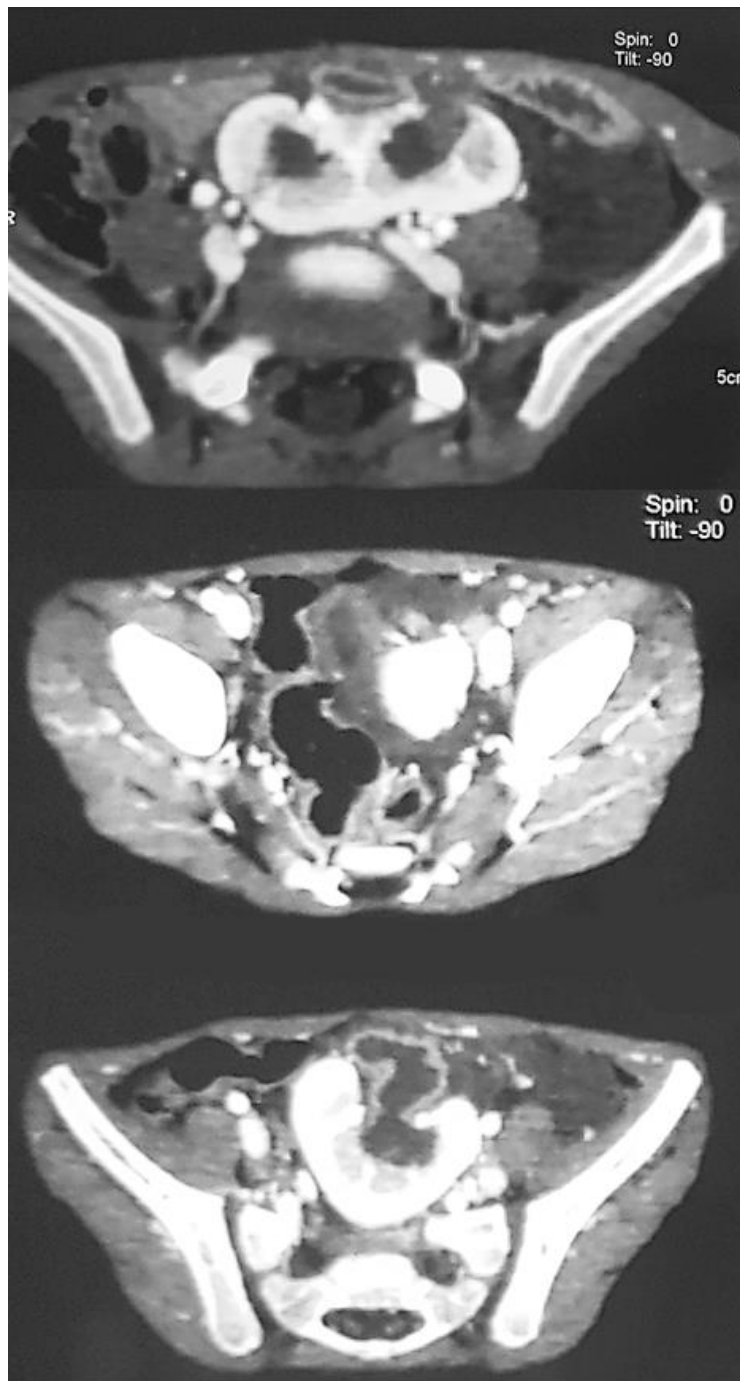


Figure 1: abdominal-pelvic CT scan showing an ectopic left kidney of pelvic location with an inferior polar fracture associated with a double pyloric system with a single ureter and a pyelo-caliceal dilatation with renal pelvis measured at 14 mm.

Initially, the patient received conservative treatment without surgery, and the hematuria resolved after five days. The patient was discharged but was required to undergo clinical and radiological follow-up. However, after 20 days, the patient returned to our

department complaining of pelvic pain. A control CT scan showed a worsening of the pyelocalic dilatation, which had increased to 26 mm at the upper pyelo and 30 mm at the lower pyelo, along with a reduction in the parenchymal index that was measured at 5 mm.

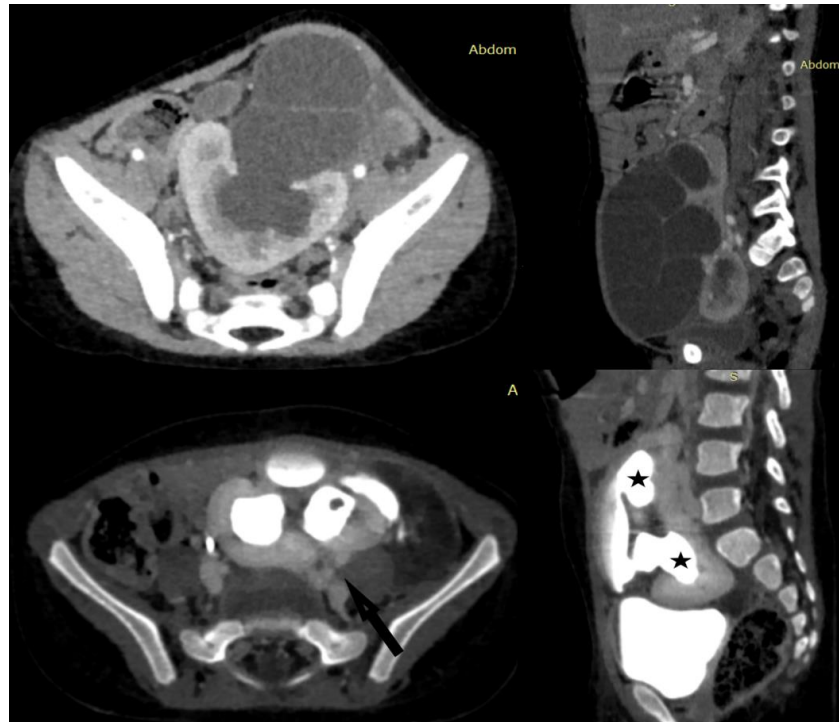


Figure 2: Worsening of pyelo-caliceal distension post-traumatically raising suspicion of post-traumatic ureteral obstruction

To relieve the pressure on the kidney, the patient underwent a percutaneous ultrasound-guided nephrostomy for temporary diversion. One week later, the patient was admitted for surgical repair. By performing a Pfannenstiel approach, we observed a dilated pylon with a narrowed pyelo-ureteral junction. We proceeded with a dismembered pyeloplasty over a double J stent using the Kuss-Anderson-Hynes technique. The patient was discharged on day 5, and the DJ stent was removed four weeks later. The patient has been on our follow-up for the last two years and has been doing well.

DISCUSSION

In abdominal blunt trauma, children have an increased risk of kidney injury compared to adults. This is because of the relatively larger size of the kidneys in children, and the thinner peri-renal fat [1]. Ectopic kidneys, which constitute 7% of renal malformations, are more prone because of their less protected anatomical location [2]. This explains the severity of the lesions in our patient, which were classified as AAST grade IV.

Ureteropelvic junction (UPJ) obstruction is a known complication of blunt abdominal trauma in children. The most common lesion that leads to UPJ obstruction after blunt trauma is thought to be a contusion of the ureter at the UPJ, leading to edema, inflammation, and subsequent scarring, which can result in a functional obstruction. In some cases, UPJ disruption or transection can occur, although this is less common [3].

UPJ lesions can present with a variety of symptoms, ranging from asymptomatic to severe. Some common symptoms of UPJ lesions in blunt abdominal trauma include: Abdominal or flank pain, hematuria. It is important to note that some UPJ lesions may be asymptomatic, especially in children, and can only be detected through imaging studies.

In general, CT scan with intravenous contrast is the preferred imaging modality for the diagnosis of UPJ lesions [4]. Delayed phase imaging with contrast is recommended for the evaluation of UPJ obstruction [3]. It is important to note that the imaging findings may evolve over time and may not be evident immediately after the injury. Indeed, ureteropelvic obstruction often goes undetected in pediatric patients; delay in diagnosis has been reported to be up to 6 weeks [4, 5], may lead to significant morbidity and increase the nephrectomy rate to 40% [4]. Follow-up imaging is mandatory to evaluate the progression of the injury and to guide treatment [5, 6].

Conservative treatment is the preferred approach for the management of grade IV renal injuries in the setting of blunt trauma [7]. As our patient was hemodynamically stable, had no vascular injury and a patent ureter, we initially adopted a non-operative conservative approach, which had a good initial outcome. However, the patient presented 20 days later with pelvic pain and worsening of the pyelo-caliceal dilatation. This was attributed to a delayed diagnosis of ureteropelvic junction obstruction.

In stable patients with ureteropelvic junction obstruction, less conservative treatment options such as ureteral stenting or percutaneous nephrostomy may be used to alleviate the obstruction and facilitate the healing process [8, 9]. In more severe or unresponsive cases, surgical intervention may be necessary. The surgical approach typically involves a pyeloplasty procedure to repair the obstruction and restore normal urine flow. The choice of surgical technique may depend on the severity and location of the obstruction, as well as the surgeon's experience and preference.

To alleviate the kidney and enhance the surgical conditions, a nephrostomy was placed in our patient. As the kidney was located in the pelvic area, we chose to use a Pfannenstiel incision and performed a dismembered pyeloplasty that proved to be highly effective.

CONCLUSION

In all cases of conservatively treated renal trauma, rigorous clinical and radiological monitoring is mandatory. In the case of our patient, it allowed the diagnosis of a late-onset obstruction of the pyelo-ureteral junction. Initial urine diversion allows better conditions for surgery.

CONFLICT OF INTEREST STATEMENT

1. The authors have no financial disclosures.
2. All authors contributed to the writing of this manuscript, all read and approved the final version.

Ethical Approval

The patient and his parents are written approval was obtained for publication of this article.

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