Section: Pediatric Surgery

Case Report

EXTRA-RENAL URETEROPELVIC JUNCTION OBSTRUCTION MIMICKING AN ABDOMINOPELVIC MASS: LESSONS LEARNED FROM A DIAGNOSTIC CHALLENGE

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Received *: 11/03/2026*
Received in revised form *: 03/05/2026*
Accepted *: 19/05/2026*

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DOI: 10.70034/ijmedph.2026.2.694

Source of Support: Nil,
Conflict of Interest: None declared

Int J Med Pub Health
2026; 16 (2); 4216-4218

ABSTRACT

Background: Giant hydronephrosis (GH) is an uncommon clinical entity in the pediatric population. Due to its massive dimensions, it frequently alters typical anatomical boundaries, masquerading as other large pediatric abdominal cystic lesions such as mesenteric cysts or giant ovarian cysts.

Case Presentation: We report the case of a 12-year-old female presenting with a painless, progressively enlarging abdominal mass in the left lumbar and iliac regions for one year. Preoperative computed tomography (CT) demonstrated a massive abdominopelvic cystic lesion measuring 101 mm × 174 mm × 215 mm, which was initially interpreted as an independent adnexal cyst displacing a minimally hydronephrotic left kidney. A smaller secondary left adnexal cyst (39 mm × 25 mm) was also identified. Diagnostic laparoscopy confirmed the mass and excised a left fimbrial cyst. However, a massive retroperitoneal cyst was encountered that necessitated conversion to an open exploratory laparotomy. The retroperitoneal mass was identified as gross left extra-renal hydronephrosis secondary to a ureteropelvic junction obstruction (UPJO). Reconstructive surgery consisting of redundant renal pelvis excision and a left dismembered pyeloplasty over a Double-J (DJ) stent along nephrostomy was completed.

Conclusion: This case highlights the unique diagnostic challenges associated with large fluid-filled abdominal lesions in pediatric females. GH should remain a principal differential diagnosis for giant abdominal cysts, even when initial cross-sectional imaging strongly suggests a primary gynecological or adnexal etiology.

Keywords: Extra-renal pelvis, Abdominopelvic mass, Cystic abdominal mass, Huge Hydronephrosis, Renal Cyst.

INTRODUCTION

Giant hydronephrosis (GH) in children is classically defined in pediatric urology literature as a dilated renal collecting system containing more than 1,000 mL of fluid or a fluid volume exceeding 1.6%–2% of the child's total body weight.[1,2] Although the widespread use of prenatal and pediatric ultrasonography has enabled early detection in most cases, silent or delayed presentations in older children continue to evade timely diagnosis.[3] Due to its gradual and progressive enlargement, a giant hydronephrotic kidney may cross the abdominal midline, distort normal anatomical landmarks, and closely mimic other pediatric abdominal pathologies.[4,5] Important differential diagnoses include mesenteric cysts, omental cysts, retroperitoneal lymphangiomas, choledochal cysts, and giant ovarian cysts.[4,6] We present a uniquely complex diagnostic scenario in a 12-year-old girl in whom a giant hydronephrotic extrarenal pelvis was preoperatively misidentified as a separate pelvic mass of adnexal origin. The diagnostic confusion was

further compounded by the simultaneous presence of a true left ovarian fimbria cyst.

Case Presentation

A 12-year-old premenarchal girl presented to our pediatric surgery outpatient department with a chief complaint of a painless, progressively enlarging abdominal lump localized to the left lumbar and left iliac regions. The swelling had been noticed approximately one year earlier and had gradually increased in size. The patient reported mild localized fullness but denied any history of severe abdominal pain, hematuria, fever, bowel disturbances, or lower urinary tract symptoms. Her developmental, past medical, and family histories were unremarkable. On physical examination, the patient was hemodynamically stable. Abdominal examination revealed significant distension with a large, soft-to-firm, non-tender, fluctuant cystic mass occupying the left lumbar and left iliac fossae and extending across the midline. The mass was dull on percussion, and bowel sounds were normal. No costovertebral angle tenderness was elicited. Routine hematological and biochemical investigations, including blood urea nitrogen and serum creatinine levels, were within normal pediatric reference ranges. Urinalysis was clear and negative for proteinuria, hematuria, and pyuria, while urine culture showed no bacterial growth. Contrast-enhanced computed tomography (CT) of the abdomen and pelvis revealed a well-defined, thin-walled, homogeneous hypodense cystic lesion in the abdominopelvic region measuring approximately 101 mm × 174 mm × 215 mm. The mass extended from the left subdiaphragmatic space into the pelvis (Figure 1A). The radiologist interpreted the lesion as a primary pelvic cyst causing external compression and lateral displacement of the left kidney, which was reported to demonstrate only "minimal hydronephrosis" (Figure 1B). In addition, a separate, distinct cystic lesion measuring 39 mm × 25 mm was identified in the left adnexal region.

Figure 1A: Coronal section of CT scan showing abdomino-pelvic mass (red brick color arrow) and urinary bladder (green color arrow)

Figure 1A: Coronal section of CT scan showing dilated renal pelvis (orange arrow) and normal looking kidney

Based on the clinical evaluation and imaging findings, a provisional diagnosis of a giant ovarian, mesenteric, or omental cyst with a concurrent small left adnexal cyst was made. The patient was planned for diagnostic laparoscopy with possible cyst excision after obtaining informed preoperative consent. Following partial aspiration of the cyst, a large cystic structure was identified protruding laterally to the sigmoid colon and iliac vessels (Figure 2A). The cyst was carefully dissected along its lateral and inferior borders (Figure 2B). The ureter was identified above the iliac vessels and traced proximally toward its upper end. The proximal ureter was found to be attached to the cystic structure, confirming its renal origin (Figure 2C). In addition, a grape-like cystic lesion with a thin, long pedicle arising from the fimbrial end of the left fallopian tube was identified and excised laparoscopically (Figure 2D).

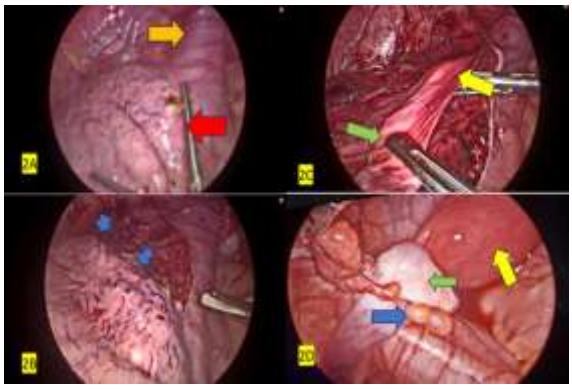

Figure 2A: laparoscopic view showing dilated cyst (red arrow) and iliac vessels (orange arrow)

Figure 2B: laparoscopic view showing lateral and lowermost cyst margin (blue arrow)

Figure 2c: laparoscopic view showing the ureter near the iliac vessels (yellow arrow) and the ureter inserting into the cyst (green arrow)

Figure 2d: laparoscopic view showing the uterus(yellow arrow), ovary (green arrow), and fimbriated cyst (blue arrow)

Safe laparoscopic dissection and clear delineation of the anatomical boundaries of the mass were not feasible because of severe distortion of the normal anatomy. Consequently, the procedure was safely converted to an open exploratory laparotomy through a midline incision to allow precise identification of the ureteric attachment. On open exploration, a markedly thinned and narrowed ureter was found to be attached to a hugely dilated renal pelvis, with preservation of normal-appearing renal parenchyma (Figure 3A). The redundant renal pelvis, along with the narrowed ureteric segment, was excised (Figure 3B). An open Anderson–Hynes pyeloplasty was then performed over a Double-J (DJ) stent, along with placement of a nephrostomy tube. The excised tissue was sent for histopathological examination (HPE). The patient had an uneventful postoperative recovery and was scheduled for follow-up evaluation of the nephrostomy, with planned subsequent DJ stent removal. Histopathological examination of the excised specimens confirmed the dual pathology of

ureteropelvic junction obstruction and a benign fimbrial/adnexal cyst.

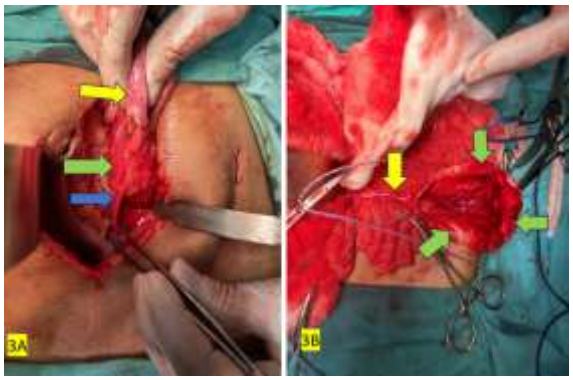

Figure 3A: Intraoperative image showing normal-looking renal parenchyma (yellow arrow), dilated renal pelvis (green arrow), and narrow upper ureter (blue arrow)

Figure 3B: Intraoperative image showing excised renal pelvis (green arrow) attached with narrowed upper ureter (yellow arrow)

DISCUSSION

Giant hydronephrosis represents a profound diagnostic trap in pediatric surgery. Because it develops slowly and insidiously over months or years, children rarely present with classic signs of acute renal colic, hematuria, or localized costovertebral distress.[1,5] Instead, the most common clinical presentation remains a slowly expanding, painless abdominal mass or progressive abdominal distension.[4,5]

When evaluating large, fluid-filled structures in adolescent females, clinicians naturally lean toward gynecological etiologies, such as giant ovarian serous tumors or mesenteric cysts.[4,6] The presence of a secondary, true fimbrial cyst in this patient served as a confounding diagnostic distraction, reinforcing the pre-surgical assumption of an entirely gynecological pathology.

Cross-sectional imaging, while normally highly accurate, has documented blind spots when dealing with giant retroperitoneal fluid volumes in children.[3] As the extrarenal pelvis balloons anteriorly and inferiorly to fill the abdominal cavity, it compresses, flattens, and pushes the functional renal cortex to the periphery.[1] On an ultrasound or CT scan, this severely compressed parenchyma can become nearly unrecognizable, leading to the misinterpretation that the giant sac is an independent, non-renal mass that is merely compressing a structurally separate kidney.[1,5] This exact structural illusion explains our preoperative CT scan report, which mistakenly described the giant sac as an extrinsic pelvic mass displacing a "minimally hydronephrotic" left kidney. Historically, giant hydronephrotic kidneys in children were frequently subjected to primary total nephrectomy due to the assumption that the severely thinned renal cortex was entirely non-functional.[7,5] However, contemporary pediatric surgery strongly emphasizes a nephron-sparing philosophy.[7,3] Experience has demonstrated that even an extremely thin pediatric renal cortex can display remarkable functional recovery and parenchymal thickening once the high-pressure system is completely decompressed.[7] Standard open dismembered pyeloplasty, occasionally supplemented by reduction or tailoring of the redundant renal pelvis, remains a safe and successful procedure, ensuring the preservation of essential renal mass and optimizing urinary urodynamics in pediatric patients.[7,2]

CONCLUSION

This giant hydronephrosis can closely mimic giant adnexal or ovarian cysts on both clinical examination and cross-sectional CT imaging. Surgical and radiological teams must maintain a high index of suspicion for advanced ureteropelvic junction obstruction when managing large, fluid-filled abdominal masses in children. Initial laparoscopic exploration provides an excellent diagnostic starting point, but a low threshold for conversion to an open laparotomy is critical to protect distorted retroperitoneal structures and complete complex pediatric urological reconstructions.

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