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Case Report

Para-peritoneal inguinal hernia of ureter in paediatrics- A case report with review of literature

Ashok Kumar Chopra[1], Pankaj Goyal[1], Arvind Kumar Shukla[1], Pradeep Gupta[1]*

[1]Dept. of Pediatric Surgery, Sawai Man Singh Medical College, Jaipur, Rajasthan, India.

Abstract

Introduction and Importance: Inguinal hernias are the most commonly experienced disease in paediatric surgery. However, it is rare for the organs of the urinary system to prolapse as the contents of the hernia.
Case Presentation: We report a case of a 2-month 4-day old male child with congenital Para peritoneal inguinal herniation of the ureter. Intraoperatively, we found an unfamiliar tubular loop structure arising from the deep inguinal ring in the left inguinal canal. The tubular structure, which may have been part of the ureter, was left in the inguinal canal to avoid damage. Postoperative drip infusion pyelography-computed tomography showed anatomical irregularity of the ureter in the inguinal canal. Follow-up in the 5th postoperative year showed no recurrence of hydrocele and complications associated with ureteral obstruction.
Clinical Discussion: Inguinal ureteral hernias are rarely reported in children. Para peritoneal inguinal hernias are reported to be associated with vesicoureteral reflux and posterior urethral valve. Patients rarely present with symptoms like those observed in our case report. Whilst general surgical treatment is to return the ureter to the retroperitoneal space, we opted to leave the ureter in the inguinal canal to avoid unnecessary damage. However, this intraoperative management resulted in slight haematuria. The ureter should be placed back where it belongs, and postoperative monitoring using computed tomography may be important.
Conclusion: This case provides valuable insight into preoperative diagnostic difficulties and intra- and postoperative management of an inguinal ureteral hernia in children, highlighting the importance of accurate diagnosis and appropriate surgical intervention in the treatment of this disease.

Keywords: Extra peritoneal, Para peritoneal, (DIP-CT)

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1. Introduction

Inguinal hernias are the most commonly experienced disease in pediatric surgery. However, ureter prolapse as the contents of the hernia is significantly rare, and few pediatric cases of congenital inguinal herniation of the ureter have been reported.[1] Most cases with inguinal ureteral hernias are reported to occur in adults. We report a case of an inguinal hernia with ureteral prolapse in children.

2. Case Report

A- 2-month 4-day old male child who presented with right scrotal bulging, was referred to our hospital. He had a complain of difficulty in micturition like dribbling of urine and crying during micturition since 10 days. History of on and off fever since 5 days.

3.1. On examination

Reducible right inguinoscrotal swelling present which is noticed by attender one month's back. Per-abdominally, no any lump palpable and per-rectally- anal stenosis present.

3.2. On ultrasonography

Defect of size 62mm noted at right inguinal region through which ureter herniated up to the scrotum. Right kidney-75/44mm size, pelvicalyceal system and ureter dilated with thickened urothelium, suggestive of pyo-uretero-nephrosis SFU-4 with cystitis. Left kidney- non-visualized or atrophic.

3.3. Cect Kub

Right kidney measuring 81x33mm in size with dilatation of right pelvicalyceal system (parenchymal thickness 14 mm at

*Corresponding author: Pradeep Gupta
Email: drpradeepgupta.pg@gmail.com

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mid pole) with gross ureteric dilatation and tortuosity (maximum thickness 17mm) till its herniation into right Inguinal region through the defect of size 16mm and reaching up to UV junction. Intravasation of contrast noted in vas deferens causing its opacification in till right scrotum. Left kidney is not visualized in left renal fossa. Urinary bladder is partially filled and UV junction not clearly identified calculus, mass or diverticulum is seen. Asymmetric distribution of perirectal and peri-sigmoid fat in perineum. There is agenesis of ano-rectal vertebra.

3.4. Impression

Right gross hydroureteronephrosis with dilated ureter herniating in to the right inguinal canal till the scrotum. Ano-rectal malformation with sacral agenesis.

MCU- There is gross dilatation of right ureter

Renal DMSA scan- Static images of the kidneys were acquired in different projections after IV injection for Tc99m OMSA.

Impression: Left Kidney: Not visualized anywhere in the abdomen. Absent or practically non-functioning kidney. Right Kidney: Enlarged kidney having impaired and grossly homogeneous cortical function with no evidence of dominant focal cortical scarring/SOL on this study.

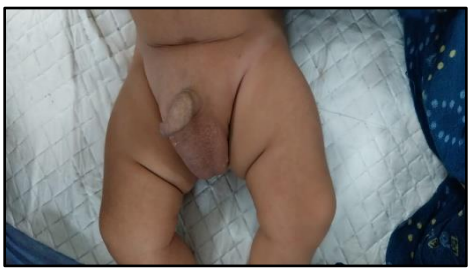

Figure 1: Preoperative- right inguinoscrotal swelling

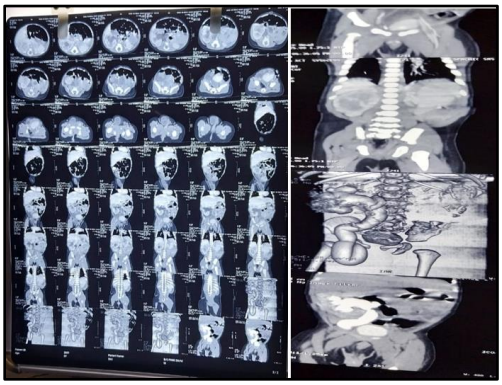

Figure 2: CECT KUB- gross dilatation of right ureter with herniation

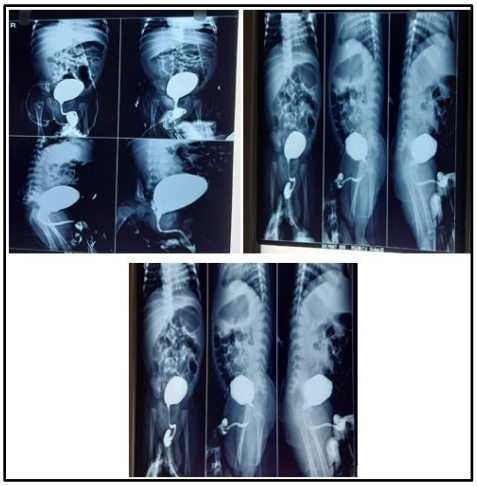

Figure 3: Micturating cystourethrogram

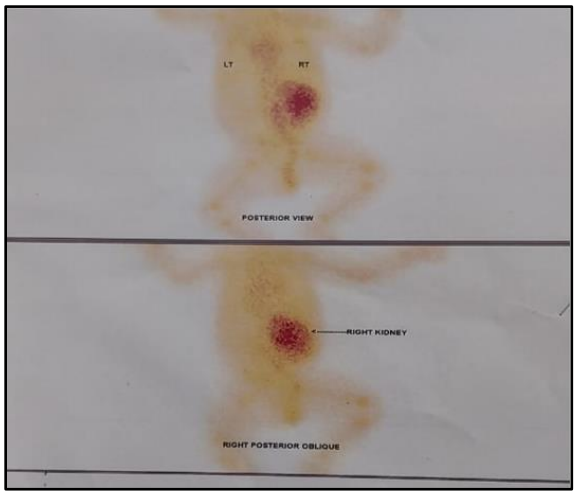

Figure 4: DMSA scan

On haematological examination- Haemoglobin- 8.9 gm/dl, WBC count- 12500, Creatinine- 0.68mg/dl, Urea- 44mg/dl, PT/INR- 1.3.

3.5. On exploration

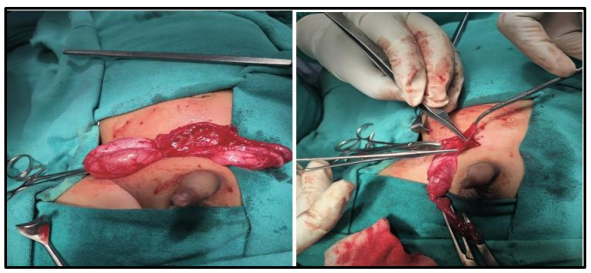

Figure 5: Intr aoperative picture

He had a past medical history of left inguinal hernia surgery when he was one. According to the initial operation record, two vasa deferentia were confirmed, and one of them was significantly thick at 4 mm. The general operation for inguinal hernia could not be performed, and high ligation of the hernia sac could be performed at long last after detaching a severe adhesion of “some” spermatic cords. There were

thus far no complications after the inguinal hernia surgery. During the initial physical examination, the patient had an egg-sized, smooth, and painless translucent solid mass in the left scrotum. No tumor was palpable in the groin, and both the silk glove sign and pump tests were negative. Ultrasonography revealed a large hydrocele (10 cm) around the left testis. The procedure was performed under general anesthesia. A skin incision was performed along the previous surgical wound, and the inguinal canal was opened. The intestinal tract and a hernia sac were not shown in the inguinal canal. After detaching a severe adhesion of the spermatic cord, we detected an unfamiliar elastic soft tubular structure (thickness 4 mm; length 5 cm) which emanated from the internal inguinal ring separately from the spermatic cord and returned to the internal inguinal ring (**Figure 1**). We opted only to incise and open the hydrocele in the scrotum; as we reasoned that the hydrocele showed no patency in the inguinal canal and was diagnosed as a no communicating scrotal hydrocele. Judging from its shape, the unusual tubular structure was most likely to be a ureter, but it was unrecognizable at that time. We adopted a policy to leave the tubular structure in the inguinal canal to avoid needless damage due to the detachment procedure and did not close the defect considering the risk of some obstruction in the inguinal canal. Postoperative drip infusion pyelography-computed tomography (DIP-CT) was performed to confirm the urinary system abnormalities. DIP-CT showed no abnormalities in the shape and position of both kidneys and no hydronephrosis. Nevertheless, the left ureter reached the inguinal canal via the internal inguinal ring, looped around, changed direction, and then connected to the bladder (

Figure 2). Based on the above DIP-CT findings, the patient was diagnosed with an inguinal ureteral hernia. He presented with slight hematuria immediately after the operation, but his urine gradually returned to normal. The patient was discharged on postoperative day one, without renal dysfunction. Follow-up in the 5th postoperative year showed no recurrence of hydrocele and complications associated with ureteral obstruction. This work has been reported in line with the SCARE 2020 criteria.[2]

Discussion- Since the first case of an inguinal ureteral hernia was reported by Leroux et al. in 1880, more than 140 cases of inguinal ureteral hernia have been thus far reported.[3-5] Most inguinal ureteral hernias are indirect hernias and are classified into two types based on their anatomical structure: the paraperitoneal type with a hernia sac and the extraperitoneal type without a hernia sac (**Figure 3**).[6] As shown in Table 1, the paraperitoneal type accounts for 80% of all cases and is acquired by males in their 40s to 60s. In paraperitoneal hernias, prolapse of the bladder and intestine are reported to be associated with the hernia sac. Conversely, in the extraperitoneal type, with retroperitoneal fatty tissue and no hernial sac, only the ureter is reported to prolapse.[6] The congenital, extraperitoneal type is thought to be related to abnormal development of the urinary system, such as abnormal development of the Wolffian duct and ureter, and adhesion of the gubernaculum testis to the ureter. Indeed, many cases of extraperitoneal hernias are associated with malformations of the kidney and urinary tract, such as wandering kidney and crossed renal ectopia.[7] In both types, there are often no specific symptoms other than distention of the inguinal region due to slipping of the ureter. However, extraperitoneal hernias may present with symptoms such as back pain due to obstruction or strangulation of the ureter or incarceration of the hernia.[8] In a study of preoperative diagnosis of inguinal ureteral hernias, one report demonstrated that 1 in 139 patients with inguino-scrotal hernias underwent preoperative ultrasonography to confirm ureteral dilatation.[9] Thus, preoperative diagnosis may be difficult; however, if signs of ureteral obstruction, such as hydronephrosis or hydroureter, are observed in cases of inguinal herniation, the possibility of an inguinal ureteral hernia should be considered. Whilst most cases of inguinal ureteral herniation have been reported in adults, a few cases have been reported in children, as shown in.[10-15] Generally, the paraperitoneal type in adults is associated with rare urological complications or anomalies (Table 1), whereas the paraperitoneal type in children is more commonly associated with vesicoureteral reflux, posterior urethral valve, giant ureter, and polycystic dysplastic kidney (Table 2). Indeed, according to his operation record, a radical operation for a left inguinal hernia, hernia sac, and two vasa deferentia was confirmed in the inguinal canal, in which high ligation of the hernia sac was performed. Based on the fact that the ureter deviated from the natural anatomical position as shown by DIP-CT and the presence of the hernia sac had been confirmed, we diagnosed the patient with a congenital Para peritoneal ureteral sliding hernia. However, scrotal hydrocele. Judging from its shape, the unusual tubular structure was most likely to be a ureter, but it was unrecognizable at that time. We adopted a policy to leave the tubular structure in the inguinal canal to avoid needless damage due to the detachment procedure and did not close the defect considering the risk of some obstruction in the inguinal canal. Postoperative drip infusion pyelography-computed tomography (DIP-CT) was performed to confirm the urinary system abnormalities. DIP-CT showed no abnormalities in the shape and position of both kidneys and no hydronephrosis. Nevertheless, the left ureter reached the inguinal canal via the internal inguinal ring, looped around, changed direction, and then connected to the bladder (

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4. Source of Funding

None.

5. Conflict of Interest

None.

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