Title: Lumbar Herniation of Ureter Leading to Obstructive Uropathy: A Rare Case Report.

Authors: *Karthik M Chavannavar [1],Benjith Daniel [1], Velmurugan Palaniyandi[2], Hariharasudhan Sekar [3], Sriram Krishnamoorthy [3]*

1. SENIOR RESIDENT, SRI RAMACHANDRA MEDICAL COLLEGE,CHENNAI.
2. ASSOCIATE PROFESSOR, SRI RAMACHANDRA MEDICAL COLLEGE,CHENNAI
3. PROFESSOR, SRI RAMACHANDRA MEDICAL COLLEGE,CHENNAI

Abstract:

We report an unusual case of ureteral lumbar hernia in a 67-year-old female, which led to significant obstructive uropathy and hydronephrosis. The diagnosis was challenging due to the absence of specific symptoms .Due to advanced imaging techniques we were able to diagnose the condition promptly. Prompt surgical repair resolved the obstruction and restored renal function. This case emphasizes the importance of recognizing rare causes of ureteral obstruction and reviewing the pertinent literature to enhance diagnostic accuracy.

Case Presentation: This report discusses a 67-year-old female who initially presented with right loin pain.Physical examination revealed right lumbar fullness. A computed tomography (CT) scan revealed hydronephrosis in the right kidney and upper ureter. CT urography identified herniation of the left ureteral pelvis and upper ureter into theLUMBAR REGION, associated with tortuosity and significant hydronephrosis. The patient underwent abdominal wall hernia repair with ureterolysis, and recovered without complications.

Conclusions: Ureteral obturator hernia is a rare condition, often presenting with non-specific symptoms such as vague abdominal pain. It can progress to urinary tract obstruction, renal insufficiency, infections, nephrolithiasis, or even uremia. Diagnosis is challenging based solely on physical examination, underscoring the value of early urography for precise identification. Timely surgical intervention is crucial in cases of renal function impairment, as it prevents further deterioration and ensures favorable outcomes.

Key words: Ureteral lumbar hernia, Obstructive uropathy, Hydronephrosis, Laparoscopic hernia repair, Ureterolysis, CT urography, Rare hernias, Renal function preservation

Introduction: Ureteral herniation is an uncommon condition, and lumbar herniation involving the ureter is exceedingly rare[1,2].Ureteral lumbar hernia is categorized under ureteral hernias, which may occur at various anatomical sites such as the groin, femoral ring, ischial foramen, obturator, and even the thoracic region [3].

Typically presenting with non-specific symptoms, it poses a diagnostic challenge for clinicians. Lumbar hernia occurs when abdominal contents, including retroperitoneal structures, protrude through defects in the lumbar region. When the ureter is involved, it may result in severe obstructive uropathy and necessitates prompt surgical intervention to prevent irreversible renal damage. We present a rare case of ureteral lumbar hernia and review relevant literature to provide a comprehensive understanding of this condition.

Case Presentation:

A 67-year-old female presented to our outpatient department with complaints of right loin pain persisting for three months. She denied dysuria, hematuria, fever, or lower urinary tract symptoms. Her past medical history included well-controlled hypertension but no prior abdominal surgeries or trauma.The abdomen was soft wih a palpable mass of 5X5 cm in the right lumbar region (Figure 1). On palpation over the renal angle mild tenderness was elicited.

FIGURE 1: *Clinical photograph showing right lumbar herniation.*

Laboratory results revealed a hemoglobin level of 11 g/dL,WBC count of 22000 cells/cubic centimetre and a serum creatinine level of 1.8mg/dL, suggesting mild renal impairment. Urinalysis showed the presence of 3–5 red blood cells per high-power field (HPF) and 4–6 pus cells per HPF. Imaging studies included an ultrasound, which demonstrated moderate right-sided hydronephrosis without evidence of calculi. Further evaluation with CT urography (Figure 2) confirmed the presence of a left-sided lumbar hernia involving the ureter, accompanied by tortuosity and significant hydronephrosis.

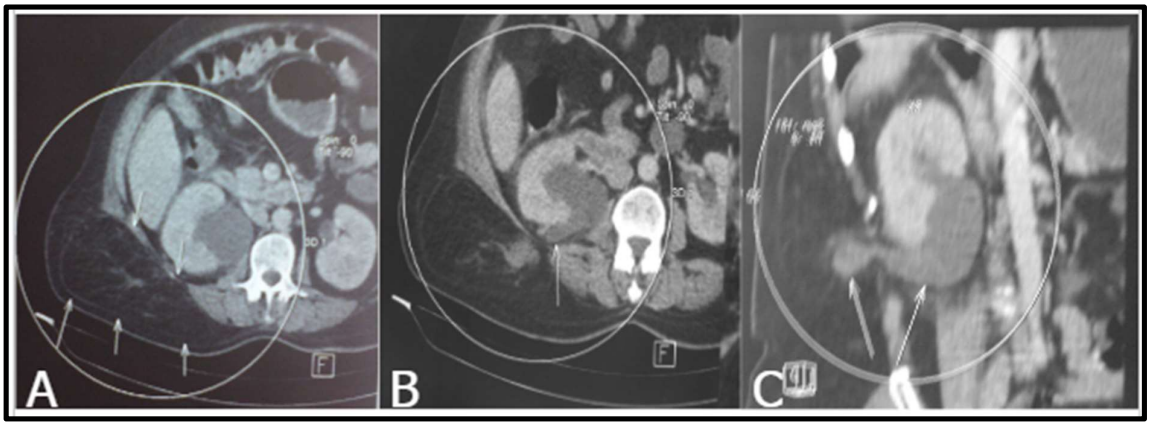

FIGURE 2:

2A:*Computed tomogram showing right lumbar herniation with right hydronephrosis.*

2B:*Computed tomogram picture showing ureter as the content of right lumbar hernia.*

2C:*Zoomed in image of computed tomogram showing right ureteral herniation with right hydronephrosis.*

An open approach was adopted for repair.Before proceeding for open repair patient was put in lithotomy position and a retrograde pyelogram was done which showed the acute angulation in the proximal part of the right ureter with dilatation in the proximal ureter. Bilateral stenting was done as a precautionary measure to safeguard the functions of both kidneys (Figure 3). The patient was placed in a lateral decubitus position. A 11th rib cutting incision was taken and deepened in layers. Dissection revealed that the right ureter had prolapsed through a defect in the lumbar fascia, resulting in obstruction. The hernia was repaired using non-absorbable sutures, and the ureter was carefully repositioned within the abdominal cavity (Figure 4). Ureterolysis ensured restoration of normal function.

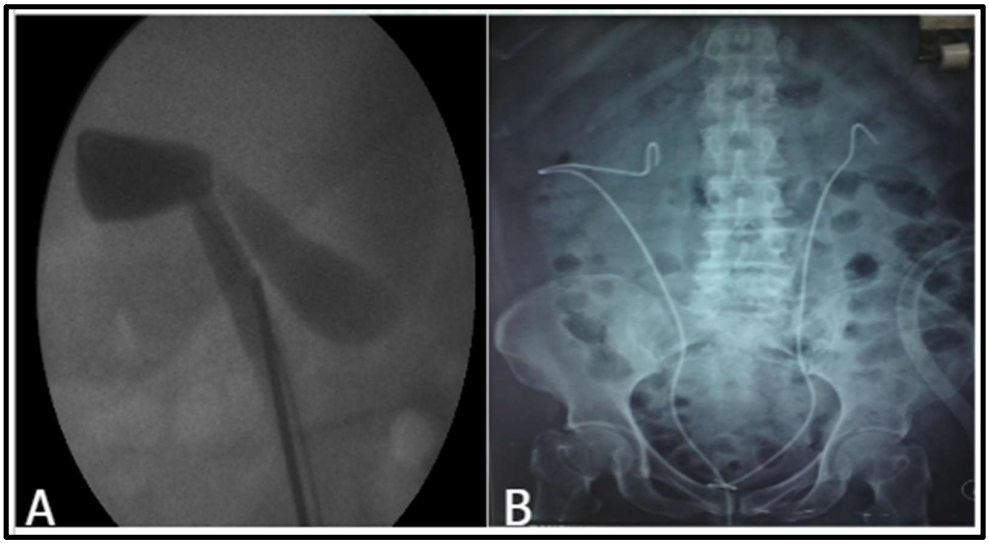

FIGURE 3:

3A:Retrograde pyelogram of right side showing acute kinking of proximal ureter.

3B:X ray KUB showing bilateral double J stent insertion.

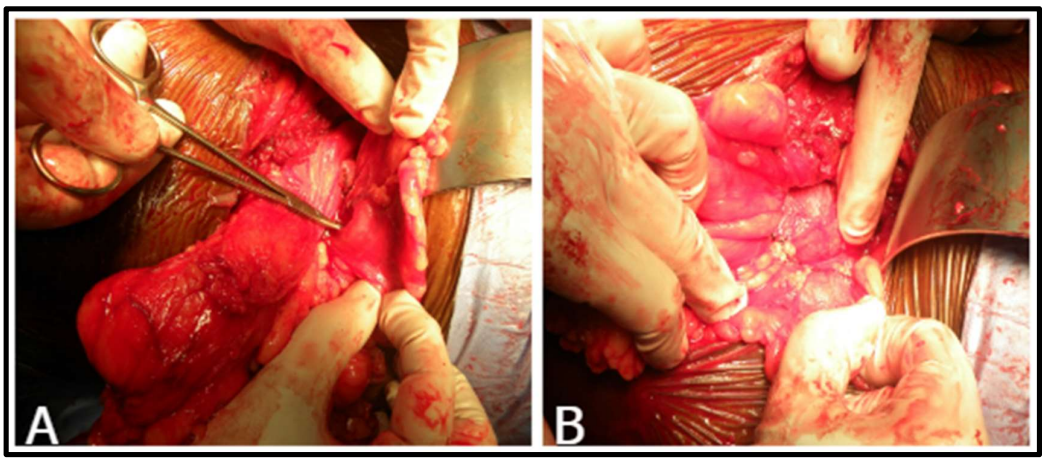

FIGURE 4:

4A: Ureter seen as the contet in the lumbar hernia.

4B: Intraoperative image showing ureterolysis and repair of lumbar hernia.

The patient had an uneventful recovery. Serum creatinine levels normalized to 1.0 mg/dL within one week. Follow-up imaging showed significant resolution of hydronephrosis and no residual obstruction.

Discussion:

Lumbar hernia is a rare type of abdominal wall hernia. Ureteral involvement, termed ureteral lumbar hernia, results from protrusion of the ureter through a lumbar defect. This condition can be classified as:

1. Congenital: Due to anatomical weaknesses in the lumbar region.
2. Acquired: Secondary to trauma, surgery, or increased intra-abdominal pressure.

The symptoms of ureteral lumbar hernia are typically non-specific, ranging from mild discomfort,pain in the loin to signs of urinary obstruction, such as hydronephrosis. Cases with intermittent ureteral kinking may present with fluctuating renal function or recurrent infections.

Ultrasound may detect hydronephrosis but is insufficient for identifying ureteral herniation. CT urography, considered the gold standard for diagnosing ureteral lumbar hernias, provides detailed anatomical and functional insights, with three-dimensional reconstructions enhancing diagnostic accuracy[4,5,6]. Retrograde pyelography is useful in assessing the degree and level of obstruction, offering additional information to aid in diagnosis[7].

Surgical repair is the definitive treatment for ureteral lumbar hernias . The laparoscopic approach is preferred due to its minimally invasive nature.However, open approach gives better visualisation and is a time tested procedure. Key surgical steps include reduction of the herniated segment, ureterolysis to restore function, and closure of the hernial defect. Reinforcement of the repair site with a synthetic mesh may be considered to prevent recurrence.

A comprehensive literature review reveals fewer than twenty reported cases of ureteral lumbar hernias. Most cases were diagnosed intraoperatively or via advanced imaging modalities. Conservative management is generally reserved for asymptomatic cases without significant obstruction or renal impairment [4]. However, when hydronephrosis or renal function deterioration is evident, timely intervention is crucial to prevent permanent renal damage [8].

Percutaneous nephrostomy for external drainage and ureteral stent insertion for internal drainage can help lessen obstructive symptoms and preserve renal function in cases of severe impairment. Following the removal of the protruding ureter when there is noticeable dilatation, atresia, inflammation, or necrosis, the ureteroscopy should be used[9].

With prompt surgical management, patients typically have excellent outcomes, as seen in our case. Long-term follow-up with imaging and renal function tests is recommended to ensure sustained resolution and monitor for recurrence[10].

Conclusion: Ureteral lumbar hernia is a rare but significant cause of obstructive uropathy that requires a high index of suspicion for diagnosis. Advanced

imaging techniques, particularly CT urography, are instrumental in accurate identification. Early surgical intervention ensures optimal outcomes and prevents irreversible renal damage. This case highlights the importance of considering uncommon etiologies in patients presenting with unexplained hydronephrosis.

References:

1. Pollack H, Popky G, Blumberg M. Hernias of the ureter. An anatomicroentgenographic study. Radiology. 1975;117(2):275–81.
2. Orlando CA, Nunziata BC, Alfredo S. Retrocrural loop of the ureter: CT fndings. Am J Roentgenol. 1998;170:1293–4.
3. Hong Y, Zhang S, Kong X, et al. Case report of ureter obturator hernia and literature review analysis. *BMC Urology.* 2021;21(86):1-5.
4. Lin FC, Lin JS, Kim S, Walker JR. A rare diaphragmatic ureteral herniation case report: endoscopic and open reconstructive management. BMC Urol. 2017;17(1).
5. Curry NS, Pollack HM. Hernias of the urinary tract. In: *Clinical Urography.* 2nd ed. WB Saunders; 2000:2987-9.
6. Catalano O, Nunziata A, Cusati B. CT findings in retrocrural ureteral loops. *AJR Am J Roentgenol.* 1998;170:1293-4.
7. Yanagi K, Kan A, Sejima T, Takenaka A. Treatment of ureterosciatic hernia with a ureteral stent. Case Rep Nephrol Dial. 2015;5(1):83–6.
8. Allam ES, Johnson ES, Grewal SG, Johnson FE. Inguinoscrotal herniation of the ureter: description of five cases. Int J Surg Case Rep. 2015;14:160–3.
9. Bertolaccini L, Giacomelli G, Bozzo RE, Gastaldi L, Moroni M. Inguinoscrotal hernia of a double district ureter: case report and literature review. Hernia. 2005;9(3):291–3.
10. Izzo M, Regusci L, Fasolini F. Obturator hernia with ureteral entrapment. *Case Rep Gastroenterol.* 2014;8(2):156-61.