



Left Kidney Within a Large Left Inguinal Hernia

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CASE PRESENTATION

The patient is an 86-year-old male who presented with hematuria and discoloration of his left hemiscrotum. He had a past medical history significant for atrial fibrillation on apixaban, coronary artery disease, hypertension, diabetes, and a repaired 8-cm abdominal aortic aneurysm. He had recently been successfully treated for a urinary tract infection. He also had history of inguinal hernia for over 3 years for which he had consulted a general surgeon who recommended observation in view of the patient's multiple comorbidities and absence of symptoms.

He denied any pain in the groin but was concerned about the swelling and the black and blue discoloration of the scrotum. On physical examination, patient was overweight with a body mass index of 28.5 Kg/m² and required assistance climbing onto the examination table. There was no tenderness over the abdomen. The patient was noted to have a left inguinal hernia. Scrotal skin displayed resolving ecchymosis.

Basic metabolic panel revealed blood urea nitrogen of 26 mg/dL, creatinine of 1.61 mg/dL, potassium of 4.3 mmol/L, and normal liver enzymes. Complete blood count revealed white blood cell count of 5.55 cells/nL, hemoglobin 13 g/dL, and platelets 130,000/ μ L. Computerized tomography (CT) displayed a normal right kidney and adrenal glands and the presence of a large left inguinal hernia containing the left kidney and proximal left ureter (Figs. 2 and 3). There was mild hydronephrosis and hydroureter. Fat and perinephric stranding extended into the left hemiscrotum. An 8 cm infrarenal abdominal aortic aneurysm containing an aorto-iliac endoluminal stent was seen. Bladder was normal and not involved in the hernia. No ureteral stone, mass, or fluid collections were seen.

Patient subsequently underwent cystoscopy and left retrograde pyelogram revealing a deviated course of the left ureter and kinking related to the displaced kidney in the hernia. There was no evidence of hydronephrosis or other

filling defects. The bladder mucosa was unremarkable. No significant cause of hematuria was identified. In view of the patient's age, multiple comorbidities, and lack of symptoms, a shared decision was made not to surgically intervene and monitor the hernia and the pelvic kidney. Patient was advised to watch for signs and symptoms of hernia obstruction or incarceration such as pain as well as urological symptoms. After six months, he continues to do well on follow-up.

DISCUSSION

Presented by Daniel M. Moreira, M.D., M.H.S.

Inguinal hernia is a very common surgical problem. Although its prevalence is unknown due to underdiagnosis and under-reporting, it is estimated that between 1% and 4% of the population will eventually require surgical repair for an inguinal hernia.¹ Occasionally, inguinal hernias can involve intra-abdominal organs, most commonly the small bowel and colon. However, solid organ-containing hernias are rare in adults and are most frequently seen in pediatric patients where they are commonly associated with congenital defects.² Involvement of the urinary system by an inguinal hernia is a rare occurrence. Nevertheless, there have been several reports of inguinal hernia involving the urinary system, most commonly the bladder and ureter.³⁻⁶ The renal transplant literature also demonstrates the occurrence of vesical and ureteral inguinal hernias after a kidney transplant.⁷⁻⁹ It is estimated that up to 4% of patients undergoing surgery for inguinal hernia have part of the bladder involved in the hernia. The prevalence approaches 10% among men older than 50 years.¹⁰ Given the lack of urinary symptoms in most cases and the low specificity of urinary symptoms among those who are symptomatic, only 7% of bladder hernia cases are diagnosed preoperatively, usually on an imaging study such as CT scan.¹¹ Similarly, herniation of the ureter into an inguinal hernia is a rare event and it is usually asymptomatic with most cases being diagnosed intraoperatively. However, some patients may develop ureteral kinking and present with signs and symptoms related to ureteral obstruction. In such cases, a CT scan is usually diagnostic of the ureteral hernia and related obstruction.¹² There have been 2 types of ureteral herniation described in the literature: (1) para-peritoneal characterized by an indirect

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Submitted: January 2, 2019, accepted (with revisions): February 12, 2019

peritoneal hernia sac to which the ureter adheres posteriorly and slides together and (2) extraperitoneal ureteral herniations where the ureter herniates without a concurrent hernia sac.¹³ Our case is a para-peritoneal type, which represents more than 80% of all ureteral hernias and is characterized by hernia sac containing other sliding organs, most commonly the colon, and not generally associated with any urological malformations.



Figure 1. Raj A. Kumar, B.S. (Color version available online.)



Figure 3. Axial CT scan demonstrating pelvic position of the left kidney.



Figure 2. CT scan demonstrating pelvic position of the left kidney.

Kidney herniation into an inguinal hernia is exceptionally rare. Reported cases of inguinal hernias containing kidney are in the setting of an ectopic pelvic kidney, supranumerary kidneys, or after a kidney transplant.^{3,14,15}

The management of an inguinal hernia involving the urinary system follows the same general principles that dictate the treatment of any inguinal hernia. In the past, surgical repair was routinely recommended for all hernias given the risk of complications. However, several studies have shown that small and minimally symptomatic hernias do not require surgical repair, and patients may be followed expectantly.¹⁶ Patients should be counseled to seek prompt evaluation in case of incarceration or strangulation. In contrast, those with large and/or symptomatic hernias should be referred for repair, unless the surgical risk is prohibitive. Additionally, when the urinary system is involved the presence of complications such as ureteral obstruction or urinary symptoms such also be taken into consideration when deciding to surgically intervene or not. In our case, although the patient had a large inguinal hernia and some degree of hydronephrosis, he was asymptomatic and there were no clinically relevant urinary complications. Moreover, given his significant comorbidities and frailty, a major abdominal surgery would be risky. As such, he was managed conservatively and was doing well on follow-up.

References

1. Burcharth J, Pedersen M, Bisgaard T, et al. Nationwide prevalence of groin hernia repair. *PLoS One*. 2013;8:e54367.
2. Sozubir S, Demir H, Ekingen G, et al. Ectopic thoracic kidney in a child with congenital diaphragmatic hernia. *Eur J Pediatr Surg*. 2005;15:206–209.

3. Dikmen AV, Guneri C, Yalcin S, et al. A ureteral inguinoscrotal hernia from a pelvic kidney. *Curr Urol*. 2017;11:51–53.
4. Tan FQ, Yang K, Zheng JH, et al. Inguinoscrotal hernia of the ureter combined with renal pelvic carcinoma. *Urology*. 2013;82:e5–e6.
5. Hamidi Madani A, Mohammadi Nikouei H, Baghani Aval H, et al. Scrotal herniation of bladder: a case report. *Iran J Med Sci*. 2013;38:62–64.
6. Weitzenfeld MB, Brown BT, Morillo G, et al. Scrotal kidney and ureter: an unusual hernia. *J Urol*. 1980;123:437–438.
7. Ghielmini E, Julita L, Cerantola Y, et al. Inguinal bladder hernia with acute ureteral obstruction 14 years after kidney transplantation: a case report. *Transplant Proc*. 2017;49:1593–1595.
8. Lobo N, McCaig F, Olsburgh J. Contralateral inguinal herniation of a transplant ureter causing obstructive uropathy in a renal transplant recipient. *BMJ Case Rep*. 2017;2017.
9. Coelho H, Nunes P, Canhoto C, et al. Inguinal hernia containing bladder and ureteroneocystostomy: a rare cause for acute renal graft dysfunction. *BMJ Case Rep*. 2016;2016.
10. Kraft KH, Sweeney S, Fink AS, et al. Inguinoscrotal bladder hernias: report of a series and review of the literature. *Can Urol Assoc J*. 2008;2:619–623.
11. Safavy S, Mitsinikos E, Tropea B, et al. Obstructive uropathy and sepsis caused by an inguinoscrotal bladder hernia: a case report. *Perm J*. 2018;22.
12. Won AC, Testa G. Chronic obstructive uropathy due to uretero-inguinal hernia: a case report. *Int J Surg Case Rep*. 2012;3:379–381.
13. Prete FP, Pezzolla A, De Leo V, et al. Inguino-scrotal herniation of the ureter containing stones. *Hernia*. 2016;20:887–890.
14. Farrell MR, Coogan C, Hibbeln J, et al. Inguinal hernia containing a kidney with a duplicated system: an exceptionally rare case. *Int J Urol*. 2014;21:338–340.
15. Kusuma V, Hemalata M, Suguna BV. Ectopic supernumerary kidney presenting as inguinal hernia. *J Clin Pathol*. 2005;58:446.
16. Fitzgibbons Jr. RJ, Giobbie-Hurder A, Gibbs JO, et al. Watchful waiting vs repair of inguinal hernia in minimally symptomatic men: a randomized clinical trial. *JAMA*. 2006;295:285–292.