

## CASE REPORT

## PEER REVIEWED | OPEN ACCESS

# A case of ureteral herniation in large sliding inguinoscrotal hernia

Bertrand Ng Ren Joon, Pradeep Subramanian

## ABSTRACT

**Introduction:** Ureteral herniation present in a large sliding inguinoscrotal hernia is rare and usually remains asymptomatic for years. Often, the diagnosis is only made intraoperatively as an incidental finding during an elective repair of a large inguinoscrotal hernia. A detailed urological history should always be performed with any inguinal hernia patient. **Case Report:** I present a case on an average built and a non-transplant elderly man who initially presented with lower urinary tract symptoms with clinical history and examination suggestive of benign prostate enlargement. He then had a computed tomography (CT) scan which reveals a ureteral herniation and the subsequent management of the case. **Conclusion:** Patients with a large inguinoscrotal hernia and unexplained urinary symptoms, renal impairment, or hydronephrosis should warrant further investigation. A general surgeon should always be aware of ureteric herniation as part of the differential diagnosis when handling cases of large inguinoscrotal hernia and must always exert extreme caution during dissection as there is the rare possibility of a ureter hiding among the fatty tissue in the sac.

**Keywords:** Lower tract urinary symptoms, Mesh, Open herniorrhaphy, Sliding inguinoscrotal hernia, Ureteral herniation

## How to cite this article

Joon BNR, Subramanian P. A case of ureteral herniation in large sliding inguinoscrotal hernia. J Case Rep Images Surg 2020;6:100071Z12BJ2020.

Article ID: 100071Z12BJ2020

\*\*\*\*\*

doi: 10.5348/100071Z12BJ2020CR

## INTRODUCTION

Ureteral herniation present in a large sliding inguinoscrotal hernia is rare and usually remains asymptomatic for years. It commonly occurs in obese and post-renal transplant patients. Often, the diagnosis is only made intraoperatively as an incidental finding during an elective repair of a large inguinoscrotal hernia. I present a case on an average built and a non-transplant elderly man who initially presented with lower urinary tract symptoms with clinical history and examination suggestive of benign prostate enlargement. He then had a CT scan which reveals a ureteral herniation and the subsequent management of the case.

## CASE REPORT

A 74-year-old gentleman presented to the urology outpatient clinic for increasing nocturia frequency, terminal dribbling, and feeling incomplete bladder emptying. Ultrasound of the urinary tract revealed moderately enlarged prostate with a volume of 48 cc and a slight increase in post-micturition residual urine at 45 mL. Both kidneys were of normal size and shape and no obvious obstructing cause was identified. A digital rectal examination was done which was consistent with a benign enlarged prostate approximately 40 cc. His prostate

Bertrand Ng Ren Joon<sup>1</sup>, Pradeep Subramanian<sup>2</sup>

**Affiliations:** <sup>1</sup>Associate Lecturer, General Surgical Department, University of Queensland, QLD, Australia; <sup>2</sup>General Surgeon, General Surgical Department, QLD, Australia.

**Corresponding Author:** Bertrand Ng Ren Joon, 116 Water Street, South Toowoomba, QLD 4350, Australia; Email: bertrand.ng@health.qld.gov.au

Received: 08 March 2020

Accepted: 17 March 2020

Published: 25 March 2020

specific antigen (PSA) was within the normal range at 2.1 mcg/L. He was started on 5-alpha reductase enzyme inhibitors and alpha-blocker medication and was planned for a uroflow test before his next clinic appointment in two months. On his next outpatient clinic appointment, his uroflow study reflected a normal maximum flow rate at 18 mL/S. Clinically, he reported improvement in his lower urinary tract symptoms (LUTS). However, he also reported an episode of macroscopic hematuria during this time frame. He was booked for a flexible cystoscopy with a CT intravenous pyelography (IVP) prior to the procedure to exclude any stone and urothelial lesions.

On further history, he has been known to have left inguinal hernia extending into his scrotum for years now however has remained asymptomatic. His significant past medical and surgical history included atrial fibrillation on apixaban, a previous open right inguinal hernia repair, and an open umbilical hernia repair.

The CT IVP showed the distal aspect of the left ureter extending into the left inguinal canal within a left indirect inguinal hernia (Figure 1). The kidneys and renal tract were otherwise normal in size with no stone or obstructive uropathy was seen. He was referred to the general surgical outpatient clinic by our fellow urology colleague for consideration of a herniorrhaphy.

After a multidisciplinary discussion with the urology team, the patient was then booked for an open left inguinal hernia repair with left ureteric stent insertion on the day of surgery before the herniorrhaphy.

He proceeded to have a rigid cystoscopy which revealed normal ureter, non-occlusive prostate, and no bladder lesions were visualized. A 6 Fr stent was inserted and a retrograde pyelogram was done which revealed the stent was within the hernia sac and also a tortuous dilated ureter (Figures 2 and 3).

A Lichtenstein open left inguinal hernia repair followed. Intraoperatively a sliding hernia was identified with presumed ureter and retroperitoneal fat content seen inside the sac and the hernia sac was freed and reduced into the abdominal cavity without any exploration done on the hernia sac (Figure 4). On-table X-ray was used to confirm that the entire ureteric stent is in the peritoneal cavity (Figure 5). The posterior wall of the hernia was then repaired and reinforced with a partially absorbable lightweight mesh (Figure 6).

The patient was followed up six weeks postoperatively and a seroma measuring approximately 4 mL was noted however no recurrence of hernia was noted. The seroma was treated conservatively.

## DISCUSSION

A sliding hernia is defined as a protrusion of a retroperitoneal organ through an abdominal wall defect with or without its mesentery or adjacent peritoneal sac [1]. Sliding hernia consists of 3–8% of all elective inguinal hernia cases [1]. The most frequent classification used is



Figure 1: Axial view of the CT IVP. Arrow depicts the contrasted ureteral forming a loop in the left inguinal canal.



Figure 2: A retrograde pyelogram performed intraoperatively via cystoscope. Dye can be seen passing in the ureter, however, the ureter is seen passing back into the groin before heading up into the kidney. Red arrow: pubic symphysis, Blue arrow: left ischial tuberosity.

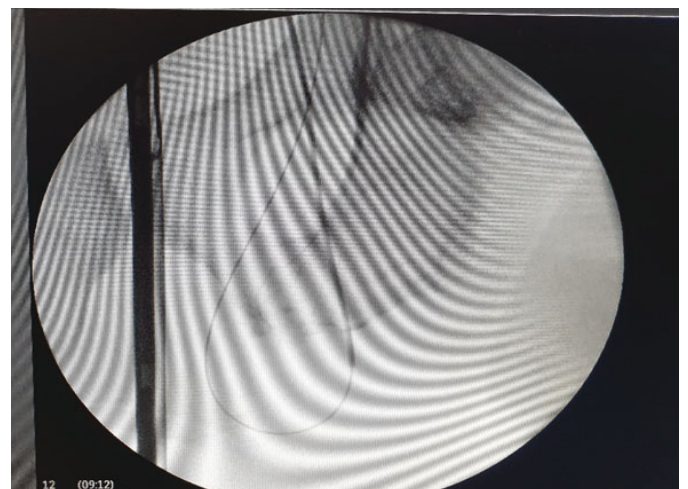


Figure 3: Guidewire passed into ureter for placement of stent clearly depicting the path of the ureter.



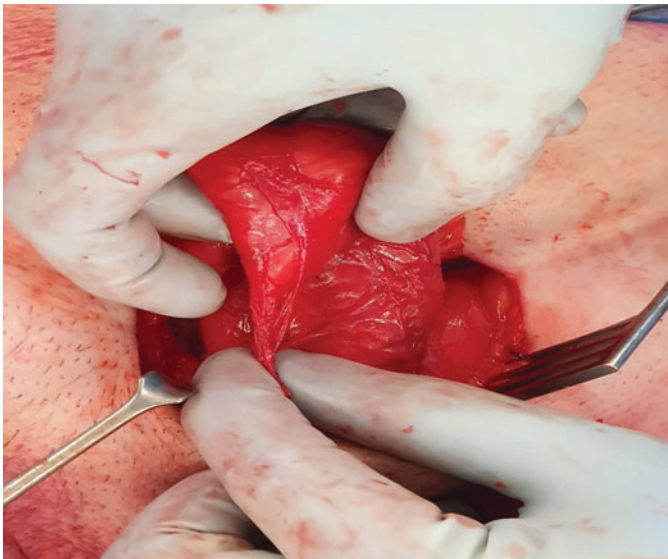


Figure 4: Close-up photo of the hernia sac.

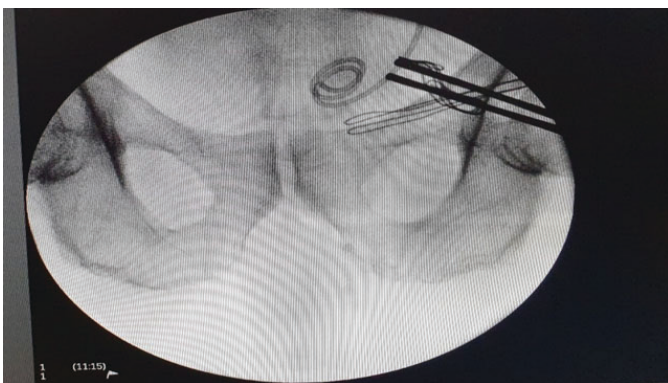


Figure 5: On-table X-ray to confirm ureteric stent is in peritoneal cavity after hernia sac reduced back into abdominal cavity.

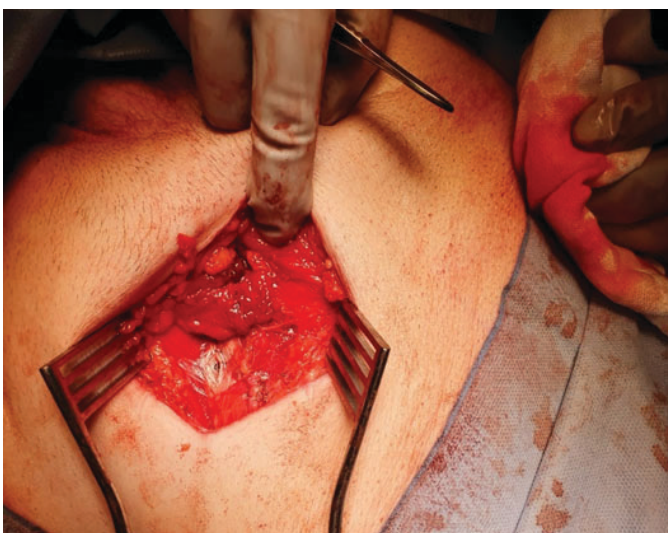


Figure 6: Intraoperative photo after hernia is reduced back into the peritoneal cavity.

Robert Bendavid classification who divides sliding hernia into three types [2]. Type I, the commonest type which accounts for 95% of sliding hernia is a hernia in which

part of the hernia sac is made up by the wall of the viscus [3]. Type II is a hernia containing retroperitoneal viscus and its mesentery with the mesentery forming part of the wall of the hernia sac. Type III, which is the rarest type, is a protrusion of the viscus itself where the hernia sac may be very small or absent [3]. The mechanism of how a sliding hernia happens has not been fully explained yet with a few theories being proposed but they all shared a common precondition, which is the widening of the internal inguinal ring. The few operating steps that should be undertaken to safely operate on a sliding inguinal hernia are careful separation of the spermatic cord, separation of the transversalis fascia near the neck of the sac, careful identification of the sliding viscus and its wall and gentle dissections of adhesions [2]. It is of note that it is not always necessary to open all hernia sacs as part of the wall may constitute a viscus or mesentery wall [1]. In our case above, the hernia sac was not open as we were able to reduce the sac into the abdomen without difficulty. The position of the ureter was confirmed with an on-table X-ray after reduction of the sac into the abdomen.

Inguinoscrotal ureteral hernias are extremely rare with only 140 cases described in world literature and only 2 cases diagnosed on preoperative urogram [4]. The risk factors include obesity, scarring from previous hernia repair, anterior displacement of ipsilateral ureter from psoas muscle, and post-renal transplant patient [4, 5]. A ureteral hernia can occur in inguinal, femoral, thoracic, and parailiac areas with 42% of cases occurring in the inguinoscrotal region [6]. A ureteral hernia can be generally classified into two types: paraperitoneal and extraperitoneal. Paraperitoneal type, the commonest type with 80% of cases, occurs when a loop of ureter extends alongside the peritoneal sac into the hernia sac [7]. It is due to adhesion of the underlying structure to the peritoneum and is believed to be acquired with a peak between the 4th and 6th decades of life [8]. On the other hand, the extraperitoneal type which consists of 20% of cases, is a congenital embryonic defect that occurs when there is a failure of separation of the ureteric bud from the Wolffian duct with the ureter descending the inguinal canal with the testis [9]. In the extraperitoneal type, there is a lack of peritoneal sac and only the herniated ureter is seen accompanied by retroperitoneal fats.

The presence of urological symptoms such as hematuria, flank pain, and hydronephrosis may sometimes be seen in herniation of urinary organs, however, these symptoms are commonly associated with bladder herniation, with a large number of ureteric herniation patient remaining asymptomatic [10]. Paraperitoneal ureteric hernia also commonly affects the elderly male population and sometimes diagnosis is difficult as patients can also present with underlying benign prostate hyperplasia, urothelial cancer, or urinary tract calculi. There are also a growing number of inguinal hernia cases that are booked for elective herniorrhaphy based on clinical findings without prior

imaging. Commonly, ureteric hernias are only identified intraoperatively during herniorrhaphy or postoperatively after a complication has occurred which inadvertently increased the risk of ureteric injury. When encountering a huge fatty hernia intraoperatively, a surgeon should always be cautious during dissection as to not injure the ureter and to patiently reduce the fatty mass into the retroperitoneum rather than ligating and excising the fatty mass to prevent injuring any retroperitoneum structure. A detailed urological history should always be performed with any inguinal hernia patient as the aim should be to detect any urinary organ involvement early to avoid any surgical complications. Unexplained renal impairment or hydronephrosis with LUTS symptoms should raise suspicion and CT IVP should be considered with a multidisciplinary approach between urology and general surgeons [7].

## CONCLUSION

Patients with a large inguinoscrotal hernia and unexplained urinary symptoms, renal impairment, or hydronephrosis should warrant further investigation. A general surgeon should always be aware of ureteric herniation as part of the differential diagnosis when handling cases of large inguinoscrotal hernia and must always exert extreme caution during dissection as there is the rare possibility of a ureter hiding among the fatty tissue in the sac.

## REFERENCES

1. Kamat M, Singh N, Nattey K. A rare encounter of obstructed direct inguinal hernia of sliding variety. *Int J Surg Case Rep* 2018;49:209–14.
2. Komorowski AL, Moran-Rodriguez J, Kazi R, Wysocki WM. Sliding inguinal hernias. *Int J Surg* 2012;10(4):206–8.
3. Bendavid R. Sliding hernias. *Hernia* 2002;6(3):137–40.
4. Sripathi S, Rajagopal K, Kakkar C, Polnaya A. Case Report-Inguinoscrotal ureteral hernia diagnosed on micturating cystourethrography. *Indian J Radiol Imaging* 2011;21(3):199–201.
5. Yahya Z, Al-Habbal Y, Hassen S. Ureteral inguinal hernia: An uncommon trap for general surgeons. *BMJ Case Rep* 2017;2017. pii: bcr2017219288.
6. Falidas E, Gourgiotis S, Veloudis G, Exarchou E, Vlachos K, Villias C. Asymptomatic extraperitoneal inguinoscrotal hernia involving ureter: A case presentation and review of the literature. *J Nat Sci Biol Med* 2015;6(Suppl 1):S153–5.
7. Sidiqi MM, Menezes G. Asymptomatic herniation of ureter in the routine inguinal hernia: A dangerous trap for general surgeons. *Int J Surg Case Rep* 2018;49:244–46.
8. Burgu B, Reşorlu B, Süer E, Soygür T. Scrotal hernia of the ureter in association with posterior urethral valves. *J Pediatr Urol* 2010;6(1):87–8.

9. Lu A, Burstein J. Paraperitoneal inguinal hernia of ureter. *J Radiol Case Rep* 2012;6(8):22–6.
10. Ansari K, Keramati MR, Rezaei Kalantari K, Jafari M, Godazandeh G, Pakzad M. Gross hematuria as the presentation of an inguinoscrotal hernia: A case report. *J Med Case Rep* 2011;5:561.

\*\*\*\*\*

## Acknowledgments

University of Queensland, Australia.

## Author Contributions

Bertrand Ng Ren Joon – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Pradeep Subramanian – Conception of the work, Design of the work, Acquisition of data, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

## Guarantor of Submission

The corresponding author is the guarantor of submission.

## Source of Support

None.

## Consent Statement

Written informed consent was obtained from the patient for publication of this article.

## Conflict of Interest

Authors declare no conflict of interest.

## Data Availability

All relevant data are within the paper and its Supporting Information files.

## Copyright

© 2020 Bertrand Ng Ren Joon et al. This article is distributed under the terms of Creative Commons Attribution License which permits unrestricted use, distribution and reproduction in any medium provided the original author(s) and original publisher are properly credited. Please see the copyright policy on the journal website for more information.

Access full text article on  
other devices



Access PDF of article on  
other devices







INTERNATIONAL JOURNAL OF  
CASE REPORTS AND IMAGES



VIDEO JOURNAL OF  
CLINICAL RESEARCH



VIDEO JOURNAL OF  
BIOMEDICAL SCIENCE



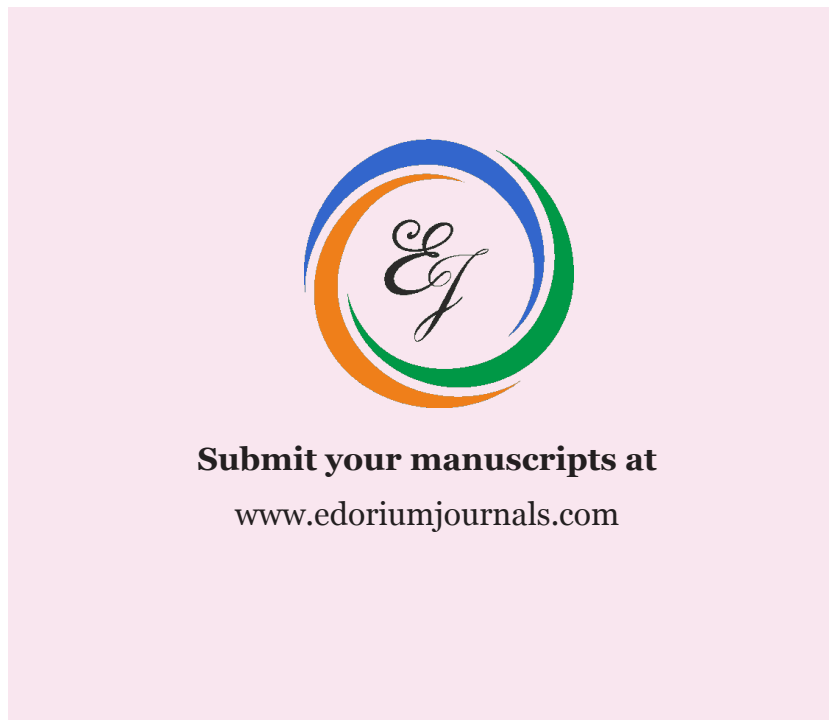
INTERNATIONAL JOURNAL OF  
HEPATOBIILIARY AND  
PANCREATIC DISEASES



INTERNATIONAL JOURNAL OF  
BLOOD TRANSFUSION AND  
IMMUNOHEMATOLOGY



EDORIUM JOURNAL OF  
OPHTHALMOLOGY



EDORIUM JOURNAL OF  
MEDICINE



EDORIUM JOURNAL OF  
CARDIOTHORACIC AND  
VASCULAR SURGERY



JOURNAL OF CASE REPORTS  
AND IMAGES IN ORTHOPEDICS  
AND RHEUMATOLOGY



EDORIUM JOURNAL OF  
PSYCHOLOGY



EDORIUM JOURNAL OF  
CELL BIOLOGY



JOURNAL OF CASE REPORTS AND IMAGES IN  
DENTISTRY



EDORIUM JOURNAL OF  
CANCER



EDORIUM JOURNAL OF  
PSYCHIATRY



JOURNAL OF CASE REPORTS AND  
IMAGES IN INFECTIOUS DISEASES



EDORIUM JOURNAL OF  
ANATOMY AND EMBRYOLOGY



EDORIUM JOURNAL OF  
SURGERY



JOURNAL OF CASE REPORTS  
AND IMAGES IN PATHOLOGY



EDORIUM JOURNAL OF  
ANESTHESIA