Acta Scientific Gastrointestinal Disorders (ISSN: 2582-1091)

Volume 3 Issue 11 November 2020

Case Report

A Case Report on Right Hydroureter from an Incarcerated Inguinal Hernia in a Male Patient: Nephrostomy Tube or Surgery?

Rodolfo J Oviedo[1], Kyle Welburn[2] and Evan Ward[2]

[1]*Houston Methodist Department of Surgery Houston, TX, USA*

[2]*University of the Incarnate Word, School of Osteopathic Medicine San Antonio, TX, USA*

***Corresponding Author:** Rodolfo J Oviedo, Department of Surgery, Houston Methodist, USA.

Received: December 20, 2020

Published: January 22, 2021

Abstract

Introduction: Incarcerated inguinal hernias that cause obstruction of the ipsilateral ureter are an uncommon pathology that must be treated urgently to prevent life-threatening complications as well as to preserve renal function for the affected kidney. In this case study, we examine the question of whether the afflicted patient should be treated first with nephrostomy tube followed by surgery, or if immediate inguinal hernia repair should take precedence.

Case Presentation: A 50-year-old man presents to the emergency department with complaints of a chronic large right-sided inguinal mass and associated inguinal pain. A decreased glomerular filtration rate (GFR), presence of a significant right hydroureter at the level of the inguinal canal, and evidence of incarcerated inguinal hernia contents prompted emergency surgical exploration and repair.

Clinical Findings and Investigations: Given the physical exam correlated with imaging findings in addition to laboratory studies, the differential diagnosis of an incarcerated inguinal hernia involving the ureter was prioritized. Intraoperatively, the dilated ureter was visualized and separated from the hernia sac and the presumed diagnosis was visually confirmed..

Interventions and Outcome: Clinical experience and judgment were used when determining that emergent surgery was the priority intervention with the hope and expectation that the surgical intervention would also resolve the hydroureter and acute kidney injury (AKI) without need for further intervention. Intraoperatively, the bowel was reduced and ultimately the defect was repaired with mesh. Postoperatively, the patient passed multiple kidney stones, experienced resolution of pain, and a normalization of key lab findings, suggesting relief of the ureteral obstruction. The patient's renal function quickly returned to normal following surgical intervention and no further urological treatment was necessary.

Relevance and Impact: In an emergency setting, the need for patients with incarcerated inguinal hernias involving the ureter to have surgical intervention should supersede the need for nephrostomy tube placement. Additionally, this study suggests the necessity of considering herniation of the ureter in the differential diagnosis of patients known to have an inguinal hernia that also present with AKI or hydroureter. Finally, this case reminds the general surgeon of the need to identify the ureter during hernia repair in which the ureter is suspected to be involved in order to prevent complications.

Keywords: Hydroureter; Nephrostomy; Incarcerated; Emergency; Ureteral Herniation; Inguinal Hernia

Introduction

Inguinal hernias involving the ureter are a very uncommon phenomenon that have only been presented in fewer than 200 English language case reports since the 18th century [1-4]. Many of these reports have involved patients that are obese or have undergone a renal transplant, as this positions the ureter such that it is more prone to inguinal herniation [2,5]. The case presented here is one of the rare exceptions that does not involve either risk factor, but instead focuses on a patient with previously normal renal function.

Currently, given the rarity of this condition, there is a lack of clinical guidelines outlining treatment of ureteral involvement in

an incarcerated inguinal hernia. Previous studies have discussed the use of nephrostomy tubes in relieving the obstruction and lowering creatinine levels while awaiting surgery in patients that have previously had a renal transplant [4-6]. This case evaluates the management options of treating a patient who presents emergently with pain secondary to inguinal hernia with incarceration involving the ureter. Moreover, it promotes the idea of performing urgent surgery in otherwise healthy patients in order to avoid the further pain, financial burden, and potential complications associated with having to undergo a nephrostomy tube insertion and the associated waiting period prior to surgical intervention.

This case report has been reported in line with the SCARE Criteria [7].

Case Presentation

A 50-year-old man presented to the local emergency department (ED) with complaints of large right inguinal mass and right sided inguinal pain. He reported that the hernia had been present for more than 5 years. Additionally, the patient complained of nausea and multiple episodes of emesis. He had no further relevant medical or surgical history. Physical exam confirmed a large, incarcerated right inguinal hernia with the overlying skin showing no erythema or other signs suggestive of strangulation of hernia contents. The remainder of the exam was otherwise unremarkable. Initial vitals show the patient as hemodynamically stable and afebrile. Numerical laboratory values showed a reduced GFR raising concerns of renal involvement. The ED physician consulted the first author, a fellowship trained bariatric and general surgeon. Given no obvious signs of strangulation, an attempt to reduce the hernia manually was made at the bedside with taxis techniques, but ultimately the hernia proved irreducible.

The patient's white blood cell count (WBC) was 13.5K cells/mL^3 while the creatinine was 1.8 mg/dL, with a blood urea nitrogen (BUN) of 28 mg/dL. The GFR was 50 mL/minute. Given the severity of the patient's pain, the stability of the patient's hemodynamic status, and the presence of an irreducible inguinal hernia, the decision was made to obtain a non-contrast axial computerized tomography (CT) scan. Images from the CT demonstrated the presence of a massively dilated right hydroureter that protruded through the inguinal canal in addition to the incarcerated hernia contents (Figure 1-7).

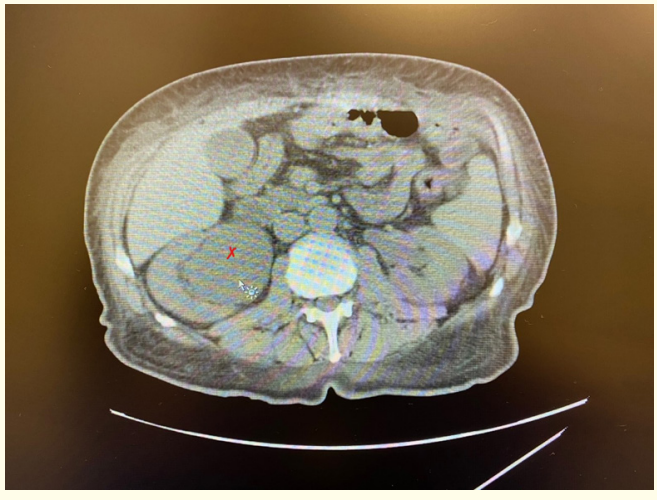

Figure 1: Right hydroureter seen coming from the right kidney on axial CT (indicated with red "x"). Note the exceptional size difference between the right and left ureters and the expansion of the right kidney.

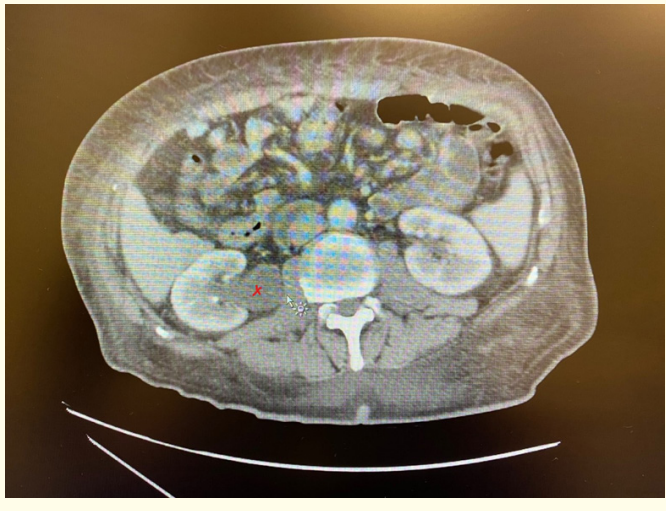

Figure 2: Slightly inferior axial CT shows right hydroureter continuing its path out of the kidney.

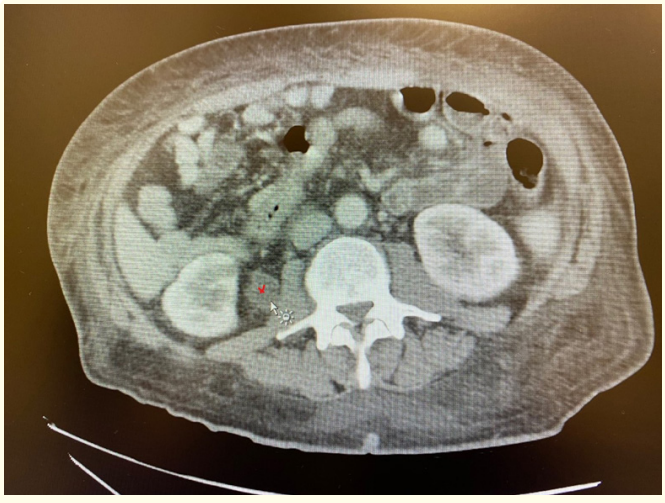

Figure 3: Right hydroureter continues to move toward midline in this next inferior axial CT.

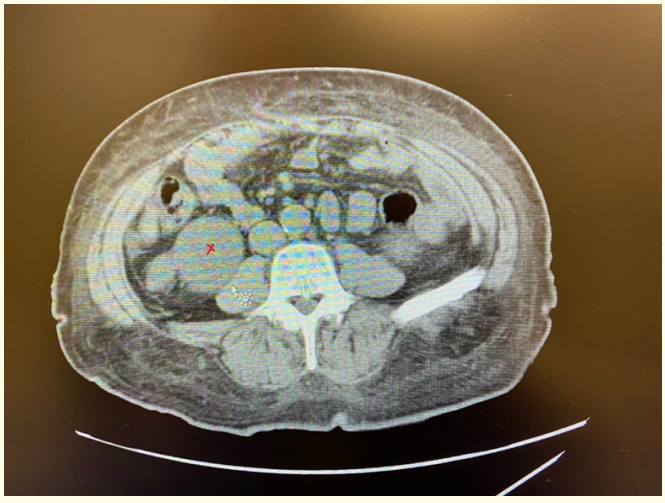

Figure 5: As the ureter draws closer to the point of obstruction, note the drastic increase in diameter.

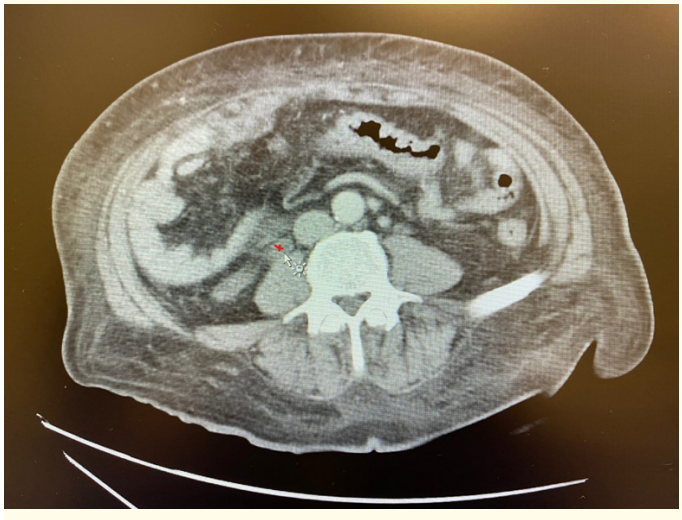

Figure 4: The right ureter continues to be enlarged throughout its inferior course.

Figure 6: The ureter moves further toward the midline and anteriorly as the right incarcerated inguinal hernia begins to appear.

The surgeon deemed emergent surgery necessary and prioritized herniorrhaphy over placement of nephrostomy tube. The patient was admitted and taken to the operating room within the hour by surgical staff. Given the complicated nature of the case and the significant size of the hernia with its contents, including the right colon and appendix, the distal ileum, the right ureter, and the urinary bladder, an open approach was elected by the surgeon. Intraoperatively, the hernia sac was mobilized from surrounding structures. Among the surrounding structures was a tubular structure with a diameter of 4 cm. Further dissection of the herniated contents demonstrated that the aforementioned structure was the massively dilated ureter. The viable loops of distal ileum, the right colon and appendix, and the urinary bladder were reduced into the peritoneal cavity at the point of herniation along with the right ure-

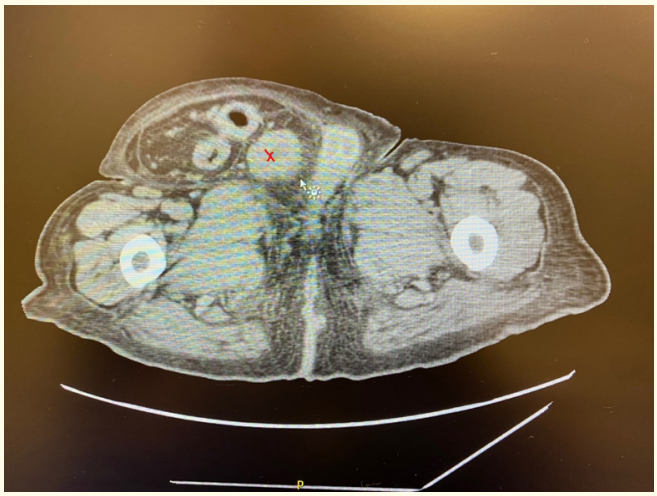

Figure 7: In this final axial CT, we note the position of the ureter within the massive inguinal hernia, demonstrating the point of obstruction.

ter, and a synthetic mesh plug and patch system was fashioned to repair the hernia in a tension-free manner. There were no complications, and the patient tolerated the procedure well.

Postoperatively, the patient passed a multitude of kidney stones. This finding, in addition to the resolution of pain, absence of unexpected urinalysis findings, and normalization of key lab findings were highly suggestive of a resolution of the ureteral obstruction. Although the patient was lost to follow-up, we are not aware of any adverse events or complications that occurred during the surgery or post-operatively relating to the interventions taken. The patient was discharged at the end of post-operative day #2.

Discussion

This case provides a strong example of the successful management of an incarcerated inguinal hernia with ureteral involvement in an emergency setting. This example serves to provide substantial guidance to general surgeons treating patients with similar pathologic findings. This case may also serve to assist collaboration efforts between general surgeons, urologists, and interventional radiologists in deciding whether or not a tube placement should be performed prior to surgical intervention to ultimately resolve the ureteral obstruction.

There are, however, some significant limitations to this case that may restrict the applicability of our approach to other instances of incarcerated inguinal hernia involving the ureter. First, the patient involved in this case was middle-aged and healthy apart from the hernia. If the patient were elderly or had other comorbidities that negatively impacted his candidacy for surgical intervention, nephrostomy tube placement may have been indicated prior to surgery in order to improve the likelihood of favorable surgical outcomes. Additionally, given the current lack of clinical guidelines and the relatively sparse collection of case studies exploring the management options for this condition, additional case studies are required to demonstrate the generalizability of this management approach. Finally, it is important to consider the technical ability and experience of the surgeon when considering urgent surgical intervention over nephrostomy tube placement. Less experienced surgeons may opt to place a nephrostomy tube prior to surgery in order to minimize the chance of complications.

Despite these limitations, we believe that there is substantial benefit to foregoing insertion of a nephrostomy tube and instead opting for emergency surgical intervention. Several previous studies have also demonstrated successful outcomes resulting from this same management strategy [8,9]. Additionally, while there are risks associated with emergency surgical intervention, there are also significant risks associated with nephrostomy tube placement, despite how common this procedure is. In various studies in the U.S. and Europe, those complication rates hover around 3-7% and can present with adverse events as serious as sepsis or septic shock [10]. There are also risks associated with leaving incarcerated inguinal hernias untreated [11]. In light of these considerations and where possible (accounting for the limitations described above), emergency surgical intervention may not significantly increase the rate of patient complications and will likely save the patient from having to undergo an additional nephrostomy procedure and the inconvenience of delaying definitive treatment of an incarcerated inguinal hernia.

Conclusion

In cases of hydroureter caused by an ipsilateral incarcerated inguinal hernia such as what has been described in this case study, we advocate for surgeons to strongly consider emergency surgical

intervention with inguinal hernia repair and relieve of the ureteral obstruction in place of delaying definitive treatment for nephrostomy placement.

Conflict of Interest

The authors declare that they do not have any conflicts of interest.

Funding

There were no sources of funding for this case report.

Authors' Contribution

- Rodolfo J. Oviedo, MD, FACS, FASMBS: Case report design, data collection, editing
- Kyle Welburn, BS: writing
- Evan Ward, MBS, BS: writing

Guarantor

Rodolfo J. Oviedo, MD, FACS, FASMBS.

Presentation

This case has not been presented in a conference or regional meeting.

Bibliography

1. Grice PT and Nkwam N. "Inguinal hernia causing extrinsic compression of bilateral ureters leading to chronic obstructive uropathy". *Journal of Surgery Case Reports* 4 (2018).

2. Sidiqi MM and Menezes G. "Asymptomatic herniation of ureter in the routine inguinal hernia: A dangerous trap for general surgeons". *International Journal of Surgery Case Reports* 49 (2018): 244-246.

3. Oruç MT., *et al*. "Urological findings in inguinal hernias: a case report and review of the literature". *Hernia* 8.1 (2004): 76-79.

4. Extraperitoneal herniation of the ureter (2020).

5. Anderson E and Corcoran A. Obstructive Uropathy Due to an Incarcerated Ureteroinguinal Hernia". *World Journal of Nephrology and Urology* 4.3 (2015): 237-239.

6. Osman Y., *et al*. "Sliding hernia containing the ureter--a rare cause of graft hydroureteronephrosis: a case report". *Transplantation Proceedings* 36.5 (2004): 1402-1404.

7. Agha RA., *et al*. "The SCARE 2020 Guideline: Updating Consensus Surgical CAse REport (SCARE) Guidelines". *International Journal of Surgery* 84 (2020): 226-230.

8. Es A., *et al*. "Inguinoscrotal herniation of the ureter: Description of five cases". *International Journal of Surgery Case Reports* 14 (2015): 160-163.

9. Cheung F., *et al*. "Different Management Options for Transplant Ureteral Obstructions within an Inguinal Hernia". *Case Reports in Transplantation* (2016).

10. Turo R., *et al*. "Complications of percutaneous nephrostomy in a district general hospital". *Turkish Journal of Urology* 44.6 (2018): 478-483.

11. Information NC for B, Pike USNL of M 8600 R, MD B, Usa 20894. "Hernias: Overview". Institute for Quality and Efficiency in Health Care (IQWiG) (2020).