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ACUTE EXTRAPERITONEAL HERNIATION OF TRANSPLANT KIDNEY URETER MASQUERADING AS ANURIA OF ACUTE ONSET

Surgery

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ABSTRACT

Herniation of transplant kidney ureter causing obstructive uropathy is a rare, albeit known clinical entity. Most cases present insidiously and are detected during the work up of renal dysfunction. Majority of the herniations are paraperitoneal and present insidiously. Extraperitoneal herniation is a rare clinical entity with only a few cases reported in the literature. We present a case of acute extraperitoneal herniation of transplant ureter in a patient with a previous kidney transplant. The ureter herniated extraperitoneally into the inguinal canal leading to anuria and kidney dysfunction. The patient was operated up on, the hernia was reduced, and repair was effected by coopers ligament repair using mesh. The factors that could have contributed to the occurrence of such rare hernia in our patient were redundant ureter, positioning of ureter over the spermatic cord and inguinal scarring facilitating adhesions between the ureter and spermatic cord as a sequel to kidney transplantation. The patient recovered well and was discharged with a normal kidney function. Herniation of ureter should be considered in the workup of a patient presenting with acute or chronic kidney graft dysfunction with or without clinically obvious hernia as an extra-peritoneal hernia of ureter may not evict any local signs until later stages of graft dysfunction.

KEYWORDS

Kidney transplant, ureter, hernia, obstructive uropathy,

INTRODUCTION:

There are many causes of obstructive nephropathy after kidney transplantation, the most common causes implicate ureter and involve the obstruction to the ureter by stricture, ischemia, fibrosis, lymphocoele, stone, ueteropelvic junction obstruction and ureteral kinking [1]. The implication of transplanted ureter into a hernia is very rare. Two types of ureteral hernia have been described: paraperitoneal, the most common type (80%), in which the ureter slips behind the peritoneal sac and other intra-abdominal structures may be involved; and extraperitoneal, characterized by a defect in the peritoneal sac and in which the ureter may be accompanied only by retroperitoneal fat [2]. The rarity of extra-peritoneal herniation of ureter in the setting of a kidney transplant can be conceived from the fact that such a type of herniation is due to defective embryogenesis of native ureter which is dragged down the inguinal canal with the spermatic cord [3]. Though the above mechanisms relate to the herniation of the native ureters, the transplant kidney ureter may be subject to the same mechanisms on account of two factors: the placement of transplanted kidney ureter in the extraperioneal space, and the possibility of adhesion formation between the surrounding structures and ureter during the kidney transplantation. However sparingly such a herniation can occur due to the incorporation of the transplanted ureter in inguinal scar tissue as has been shown in a a patient with previous inguinal hernia repair[4].

We present a case of anuria of sudden onset caused by acute extra peritoneal inguinal herniation of transplant kidney ureter in a patient with previous perfect graft function. We thought to present this case despite its rarity, firstly due to the interesting mechanism related to herniation. Secondly, the foresight of this condition in any kidney transplant patient presenting with an inguinal hernia may help to avoid the confusion, and prevent inadvertent damage to the ureter during surgery, and thirdly awareness of this condition will lead to timely management without compromising graft function.

Case report:

68-YO Arican American male , with a previous history of a cadaveric kidney transplant in 1995 with a perfect graft function, and right groin surgery as an adult presented to the emergency room for dehydration. His creatinine was elevated (1.6mg/dl) due to dehydration.The patient was fluid resuscitated and the very next day his creatinine returned to baseline (1.12mg/dl). The patient was discharged after refilling his medications. While he was preparing to go, he tripped and suddenly started with severe pain in the right ignition-scrotal area associated with nausea and vomiting. The clinical exam was unremarkable apart from mild tachycardia and mild tenderness in the ignition-scrotal area with some fullness (Figure 1).

Figure 1; reveals almost no groin swelling and a scar from a previous surgery on the right inguinal area.

He was started on intravenous fluids and kept NPO and given morphine for pain. The patient's urine output started falling, and he gradually became anuric. The repeat clinical exam revealed a gradually enlarging swelling in the right ignition-scrotal area. The labs revealed a bump in creatinine to 1.44 mg/dl. Apart from getting a dopler ultrasound of the kidney, which revealed hydronephrosis and perfect blood flow to the kidney, an urgent non contrast CT scan of the abdomen and pelvis was obtained which revealed massive hydronephrosis and hydroureter, and herniation of the transplanted ureter in the right inguinal canal causing acute urinary obstruction as shown in the following figures (2a, 2b).

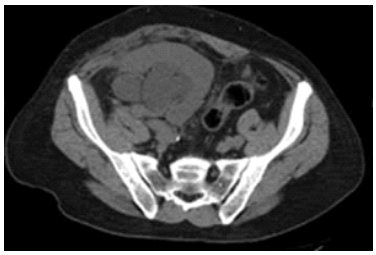

Figure 2a: reveals hydronephrosis of transplanted Kidney

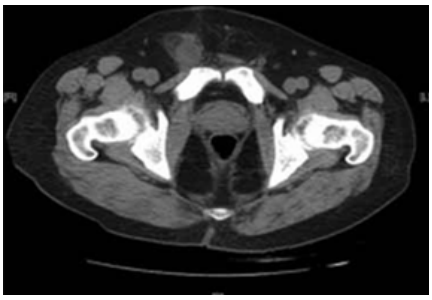

Figure 2b: reveals inguinal herniation of the right transplant kidney ureter.

The patient was emergently booked for OR, but he declined surgery or any percutaneous intervention to decompress the kidney. Next day, he agreed to undergo surgery, and intraoperative findings revealed a direct herniation of transplanted ureter in the inguinal canal which was folded on it self causing an obstructive kink and a big bulge of the dilated pelvis of transplanted kidney though the posterior wall of the inguinal canal. The ureter had flimsy adhesions with the surrounding cord and was easily dissected out and reduced back into the retroperitoneum. The hernia repair was done with coopers ligament repair using a prosthetic mesh as shown in the figure

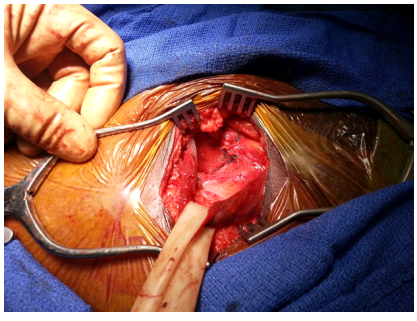

Figure 3; MacVay's Cooper ligament repair using mesh

Postoperatively the patient's urine output picked up, and there was complete resolution of the graft function, and he was discharged in good condition. His graft continued to function well on several postoperative follow ups.

DISCUSSION

All groin hernias are all caused by weakness of the abdominal transverse fascia in myopectineal orifice [5]. Internal ring a a potential site of weakness in the inguinal canal but there are certain dynamic mechanisms like inguinal shutter mechanism which work to prevent the herniation through this potential site of weakness or the posterior wall of inguinal canal in the face of the sudden rise of intra-abdominal pressure. This dynamic mechanism may be compromised by certain factors like advancing age and previous surgery [6].

In our patient, weak tissues due to the frailty of old age and previous right lower abdominal surgery, sudden weight lifting overwhelmed the inguinal protective mechanisms leading to acute herniation. The balance between the resistance of the abdominal wall and the intra-abdominal pressure may be upset even in a fit young man who is suddenly called upon to lift an extremely heavy weight that he is not accustomed or trained to lift and immediately develops pain in the groin and a hernia down to the scrotum. Several factors like obesity, previous abdominal wall operations positioning of the ureter above the spermatic cord, and excessive length of the ureter at the time of urinary tract construction are considered to be predisposing factors for the ureteral herniation[4,7,8]. The factors which predisposed our patient to have herniation of ureter in a sliding fashion through internal ring apart from previous abdominal surgery are the presence of a redundant ureter and the fact that the ureter had been placed over, rather than under, the spermatic cord. What made the ureter to herniate into inguinal canal and get incarcerated there was a small flimsy adhesion between them. So we believe that in the face of the failure of the inguinal shutter mechanism due to weak tissues, these adhesions could have guided the ureter through internal ring along the spermatic cord . There was no hernial sac associated with the ureter lending credence to the fact that this was an extra-peritoneal herniation

Inguinal herniation of ureter is an uncommon cause of acute obstructive transplant nephropathy as after extensive review of the literature we were able to retrieve few cases as depicted in the following table:

Table (1); Reported cases of obstructive uropathy caused by an inguinal herniation of transplanted kidney ureter.

Author	Age/Sex	Treatment	Outcome
Osman et al. 2004	44/M	Percutaneous Nephrostomy, Hernioplasty with proline mesh	Partial resolution of graft function
Sanchez et al. 2005	70/M	ureteral resection and ureteroneocystostomy, Liechtenstein hernia repair	complete resolution of graft function
Furtado et al. 2006	44/M	Hernia repair	unknown
Ingber et al., 2007	72/M	Hernia repair with proline mesh	complete resolution of graft function
Azhar et al. 2009	76/M	antegrade ureteral stenting and hernia repair	complete resolution of graft function
Dicocco et al. 2009	60/M	TURP, DJ stenting	Partial resolution of graft function
Mariana Pourafkari et al., 2013	50/M	Ureteric dilatation and DJ stent	Partial resolution of graft function, death
Anobel Y et al., 2010	58/M	Ureteric reduction and hernia repair with Marlex mesh	complete resolution of graft function
Duy Tran et al., 2011	52/M	Percutaneous nephrostomy, shouldice repair of the hernia	complete resolution of graft function
Present case	68/M	Adhesiolysis of the ureter and Mac Vay hernia repair with mesh	complete resolution of graft function

TURP: Transurethral resection of prostate; DJ: Double J ; M: Male

Treatment for a ureteral hernia involves hernia reduction with hernioplasty although different situations may demand some modifications. Salinas et al. performed the resection of the ureter with ureteroneocystostomy. The ureter in their case was particularly redundant [4].Though ureteral resection and anastomosis have also been reported [11]. We believe that transplanted ureter, unlike the native ureter, derives its blood supply only proximally from kidney, which will render the distal segment ischemic. More over resection will involve the extensive dissection leading to further adhesions formation and recurring entrapment of ureter. However, we believe that ureteral resection with ureteroneocystostomy may be a more tenable option in case the ureter is not reducible due to extensive adhesions. But it may incur the risk of ureteral necrosis due to damage to the tenuous vessels supplying the ureter during adhesiolysis.

We were able to perform a simple reduction of a ureteral hernia which was found above the spermatic cord with mild adhesions to it. After adhesiolysis, we were able to reduce it back into the retroperitonrum, and buttress the posterior wall of the inguinal canal and inguinal ring MacVay cooper's ligament repair using prothetic mesh. In our case, due to a very tenuous adhesion between the ureter and cord, a simple adhesiolysis sufficed, and ureter could be reduced back into the extra peritoneal space with ease.

Conclusion:

The extraperitoneal herniation of the transplanted ureter is a very rare cause of obstructive uropathy in a transplant recipient. A high index of suspicion should be maintained to rule it out as a possible cause of kidney dysfunction in any kidney transplant patient, who has risk factors for hernia formation, and who presents with groin pain with out

any associated groin swelling.

REFERENCES

1. Shoskes DA, Hanbury D, Cranston D, et al (1995) Urologic complications in 1,000 consecutive renal transplant recipients. J Urol, 153,18.
2. Zmora O, Schachter PP. Sliding inguinal hernia containing the ureter: a case report (1996). J Urol, 155, 1387.
3. Giuly J, Fran¸cois GF, Giuly D, Leroux C, Nguyen-Cat RR (2003). Intrascrotal hernia of a ureter and fatty hernia. Hernia, 7,47–49.
4. Salinas Sanchez AS, Cifuentaes Tebar J, Martin MS, et al (2005). Obstructive uropathy secondary to ureteral herniation in a pediatric Enblock renal graft. American J of Transplantation, 5, 2074-2077
5. Yang XF, Liu JL (2016). Anatomy essentials for laparoscopic inguinal hernia repair. Ann Transl Med, 4(19), 372.
6. Kovachev, L. and Tonchev, P. (2014) The Groin Physiology Revisited. International Journal of Clinical Medicine, 5, 741-751.
7. Furtado CD, Sirlin C, Precht A, et al (2006).: Unusual cause of ureteral obstruction in transplant kidney. Abdom Imaging, 31, 379.
8. Ingber MS, Girdler BJ, Moy JF, et al (2007). Inguinal herniation of a transplant ureter: rare cause of obstructive uropathy. Urology, 70, 1224.
9. AzharR,BoutrosM,HassanainM,etal (2009). Ararecase of obstructive uropathy in renal transplantation: ipsilateral indirect inguinal herniation of a transplant ureter. Transplantation, 88, 1038-1039.
10. Osman Y, Ali-El-Dein B, El-Leithy R, Shokeir A (2004). Sliding hernia containing the ureter: a rare cause of graft hydroureteronephrosis: a case report. Transplant Proc, 36, 1402-1404.
11. Ciano G, Burke GW, Nery J, Huson H, Coker D and Miller J (1995). Positional obstructive uropathy secondary to ureteroneocystostomy herniation in a renal transplant recipient. J Urol, 154, 1471-72.
12. Pourafkari M, Ghofrani M, Riahi M (2012). Inguinal herniation of a transplant kidney ureter: a case report. Iran J Radiol, 10(1), 48-50.
14. Di Cocco P1, Orlando G, Bonanni L, D'Angelo M, Mazzotta C, Rizza V, Clementi K, Greco S, Famulari A, Pisani F (2009). Scrotal herniation of the ureter: a rare late complication after renal transplantation. Transplant Proc, 41(4), 1393-7.
15. Odisho, Anobel Y. et al. Inguinal herniation of a transplant ureter (2010). Kidney International, 78 (1), 115.
16. Duy Tran, MD; José Gaboriault, MD; Suzon Collette, MD, et al (2011). Obstructive Uropathy Caused by an Inguinal Hernia in a Kidney Transplant Recipient: Report of Hernia Cure by the Shouldice Technique. Dialysis & Transplantation, September, 413-414.