CASE REPORT

Inguinal hernia containing bladder and ureteroneocystostomy: a rare cause for acute renal graft dysfunction

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SUMMARY

A 77-year-old man presented with acute graft dysfunction 25 years after a renal transplant in the left iliac fossa. He also had an asymptomatic left inguinal hernia. Renal ultrasound showed a significant pyelocaliceal dilation of the kidney graft and the patient was submitted to a percutaneous nephrostomy. An antegrade nephrostogram was performed, which showed a dilated ureter and the bladder included in the left inguinal hernia that caused the obstructive uropathy. Concomitant retrograde cystography also showed a significant portion of the bladder in the hernia sac. The patient was submitted to inguinal hernia repair, which resolved the obstruction. We present a rare and potentially curable cause of obstructive uropathy in a transplant recipient; it is possible to revert graft dysfunction and prevent graft loss if the condition is recognised early.

BACKGROUND

Inguinal herniation of the bladder or ureter is an uncommon finding, and can be the cause of obstructive uropathy, which can cause renal damage. In the context of renal transplantation, it is an even rarer situation, with very few cases reported in the literature.

However, surgical repair of an inguinal hernia with careful dissection and reduction of the contents to its original position is usually sufficient to establish patency of the urinary tract, thus being a potentially curable cause of obstructive uropathy and acute graft dysfunction when diagnosed early.

CASE PRESENTATION

A 77-year-old man presented to the nephrology consultation with acute graft dysfunction (serum creatinine of 2.28 mg/dL) 25 years after undergoing a renal transplant. He had received a deceased-donor renal graft for end-stage renal disease secondary to organophosphate poisoning.

The graft was a right kidney, which had been implanted extraperitoneally through a Gibson incision in the left iliac fossa. There was a single renal artery along with a vein, which were implanted on the external iliac vessels. The ureter was implanted to the bladder using a Lich-Gregóir technique over a double J stent.

The patient had stable renal function (serum creatinine baseline level around 1.0 mg/dL) and was under immunosuppression with cyclosporine and prednisolone.

He also presented with an asymptomatic left inguinal hernia. He had no genitourinary complaints.

An urgent ultrasound scan of the transplant kidney showed graft hydronephrosis with a dilated pelvicaliceal system and proximal ureter, and a percutaneous nephrostomy was inserted. In the next few days, the renal function slowly returned to normal levels.

INVESTIGATIONS

An antegrade nephrostogram confirmed a dilated ureter up to the pelvic region. The distal ureter and the ureterovesical anastomosis were included in a sliding hernia (figure 1). Simultaneous retrograde cystography showed that the majority of the bladder was also included in the hernia.

DIFFERENTIAL DIAGNOSIS

- Ureteric stricture
- Obstructive uropathy secondary to inguinal sliding hernia containing bladder and/or graft ureter.
- Other ureteric obstruction cause—ureterolithiasis, kink and external compression.

TREATMENT

The patient underwent elective surgical exploration via a left inguinal incision. The hernia sac was dissected and the bladder and ureteroneocystostomy were identified. The hernia sac was easily reduced.

Figure 1 Antegrade nephrostogram showing the bladder and ureteroneocystostomy included in a left inguinal hernia.

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Figure 2 Intraoperative antegrade nephrostogram after surgical repair of the inguinal hernia. Contrast flowed easily towards the bladder, with no signs of ureteral stricture.

An intraoperative antegrade nephrostogram was performed; it confirmed that the transplant ureter was patent with an easy flow of contrast to the urinary bladder (figure 2). It was also confirmed that with the reduction of the hernia the bladder returned to its original position.

The inguinal hernia was corrected using a standard Rutkow-Robbins technique with a non-absorbable mesh and plug.

OUTCOME AND FOLLOW-UP

During the first postoperative day, the nephrostomy was kept in place but clamped. The urinary drainage maintained normal levels, and the nephrostomy was subsequently removed.

The postoperative period was uneventful. The patient was later reassessed—he had neither healing nor infectious complications; serum creatinine was back to baseline levels.

DISCUSSION

Herniation of the urinary bladder into the inguinal canal is an uncommon finding in inguinal hernia, ranging from 1% to 4% of all inguinal hernias^{1 2} but reaching up to 10% in obese men aged between 50 and 70 years.² Involvement of the ureter in an inguinal hernia is an even rarer situation, with 64 cases of inguinoscrotal herniation of the ureter described up to 2004.³ Furthermore, inguinal herniation of a transplant ureter has also been reported, with 11 cases described.^{4–14} Until now, there had been only one reported case of inguinal herniation of the bladder and ureteroneocystostomy in a transplant recipient.¹⁵

Ureteric stricture is the most common cause of obstructive uropathy in renal transplantation and can occur in up to 3.9% of renal transplants.¹⁶ Other causes of obstructive uropathy include development of lymphocoele, ischaemia/fibrosis, stones, ureteral injury, ureteropelvic junction obstruction and ureteral kinking. Herniation of the transplanted ureter is an extremely rare, but described, aetiology of obstructive uropathy.¹³

Inguinal herniation of a transplant ureter is rare after a renal transplant and usually is associated with implementing a long redundant ureter or the ureter crossing over the spermatic cord.¹⁴

In our clinical case, the ureter and bladder were included in the sliding inguinal hernia, which was the cause of the obstructive uropathy. Finally, simple reduction and repair of the inguinal

hernia sufficed to re-establish the patency of the transplant ureter.

Although also rare, there have been reported cases of acute¹⁷ and chronic renal insufficiency¹⁸ because of obstructive uropathy secondary to a sliding inguinal hernia that included bladder. After the repair of the inguinal hernia renal function usually returns to normal levels.

Inguinoscrotal bladder hernias generally present with intermittent swelling in the groin/scrotum, and significant lower urinary tract symptoms. More advanced cases may be associated with two-stage urination or a decrease in scrotal size after voiding.²

The diagnosis is usually made clinically, with history and physical examination.

IV pyelography (IVP), cystography and even CT can give important diagnostic information. There is usually no contrast in the herniated bladder part during IVP. Retrograde cystography is the radiological modality with the highest diagnostic value. Typical radiological findings include abnormal localisation of the herniated structures and asymmetry, protrusion of the ureter outside the pelvic bones and indentation of the bladder wall.¹⁹

On average, only 7% of patients have a preoperative diagnosis, and 16% are diagnosed after postoperative complications occur.¹⁵

According to their relationship with the peritoneum, bladder hernias have been classified into three types: paraperitoneal, intraperitoneal and extraperitoneal hernias.

Paraperitoneal hernias are the most frequent type, and the extraperitoneal portion of the hernia lies along the medial wall of the sac.

In intraperitoneal hernias, the herniated bladder is completely covered by the peritoneum, whereas in extraperitoneal hernias, the bladder herniates without any relationship to the peritoneum.¹³

The standard treatment for inguinal hernias involving the bladder is surgical repair. On surgical exploration of the inguinal canal, the bladder is identified, dissected off its surrounding structures and reduced to its original location within the pelvis. Standard repair of the direct defect in the inguinal floor is then performed according to the surgeon's preference. Historically, surgeons have resected the herniated portion of the bladder when the hernia has been massive. Current recommendations suggest bladder resection should be reserved only for cases with bladder wall necrosis, true herniated bladder diverticulum, a tight hernial neck or tumour in the herniated bladder.²

Learning points

- ▶ The most common cause of obstructive uropathy in a transplant recipient is ureteral stricture.
- ▶ Inguinal hernias occasionally include the bladder and ureter, and can be the cause of obstructive uropathy.
- ▶ Inguinal herniation of a transplant ureter is rare and associated with implementing a long redundant ureter or with a trajectory over the spermatic cord.

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Competing interests None declared.

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