CASE REPORT

Contralateral inguinal herniation of a transplant ureter causing obstructive uropathy in a renal transplant recipient

Niyati Lobo, Fiona McCaig, Jonathon Olsburgh

Department of Renal Transplant, Guy's and St Thomas' Hospital, London, UK

Correspondence to

Niyati Lobo,
niyatilobo@gmail.com

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SUMMARY

Ipsilateral inguinal herniation of the transplanted ureter has been reported as a rare cause of obstructive uropathy in renal transplant recipients. A 73-year-old man presented with acute renal failure 29 years after receiving a deceased donor renal transplant. Radiological investigations demonstrated marked hydronephrosis of the left iliac fossa transplant kidney and herniation of the distal transplant ureter and bladder into the right inguinal canal. The patient underwent placement of a nephrostomy and antegrade stent followed by definitive hernia repair with return of graft function to baseline level.

BACKGROUND

Inguinal herniation of the transplant ureter and bladder has been reported as a rare cause of obstructive uropathy in renal transplant recipients. In almost all reported cases, herniation has occurred into the ipsilateral inguinal canal. We report a rare case of obstructive uropathy caused by herniation of the transplant ureter and bladder into the contralateral inguinal canal.

CASE PRESENTATION

A 73-year-old renal transplant recipient presented to his local hospital with a 3-week history of cough and shortness of breath. He had received a deceased-donor renal transplant 29 years previously for end-stage renal disease secondary to bilateral nephrectomies for renal abscesses. His medical history was significant for hypertension, type 2 diabetes mellitus, atrial fibrillation and a previous right inguinal hernia repair.

On admission, he was found to be in acute renal failure with a creatinine of 650 $\mu\text{mol/L}$ from a baseline of 250 $\mu\text{mol/L}$. Examination of the abdomen revealed a reducible right inguinal hernia which was reported by the patient to be asymptomatic. He was treated for a community-acquired pneumonia and underwent imaging of the transplant kidney.

INVESTIGATIONS

Abdominal ultrasound scan revealed hydronephroureter of the left iliac fossa transplant kidney with an AP diameter of 2.7 cm. He underwent a non-contrast CT scan that showed extensive vascular calcification and marked hydronephrosis of the transplant kidney. The dilated transplant ureter could be followed to the bladder which had

herniated down the right inguinal canal into the groin ([figure 1](#)). The ureteroneocystostomy was visualised in the inguinal canal.

TREATMENT

A percutaneous nephrostomy and antegrade stent were inserted for decompression and the creatinine postprocedure fell to 205 $\mu\text{mol/L}$. Three days later, the patient underwent a right inguinal hernia repair with prolene mesh. The spermatic cord was divided and a large lipoma of the cord excised. The hernia sac was dissected and the bladder and transplant ureter were reduced. A decision was made intraoperatively that the transplant ureter did not require shortening. An intraoperative nephrostogram was performed, confirming satisfactory position of the bladder and a patent transplant ureter with an easy flow of contrast to the bladder ([figures 2 and 3](#)).

OUTCOME AND FOLLOW-UP

The patient did well postoperatively and was discharged with graft function back to baseline level.

Figure 1 Sagittal CT showing herniation of the transplant ureter and bladder into the contralateral inguinal canal.

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Figure 2 Intraoperative nephrostogram showing contrast in the bladder following hernia repair.

Figure 3 Intraoperative nephrostogram showing contrast in the bladder following hernia repair.

One year later, his creatinine was 280 $\mu\text{mol/L}$ with no evidence of hernia recurrence.

DISCUSSION

Ureteric obstruction is a well-recognised complication of renal transplantation and is seen in up to 4.5% of recipients following surgery.^{1 2} The majority of obstructions occur within the first year and are caused by stricture formation secondary to devascularisation of the ureter during surgery.³ Other causes include calculi, lymphoceles and ureteral kinking due to redundancy.⁴ Inguinal herniation of the transplanted ureter is a rare cause of ureteric obstruction, with only 11 reported cases in the literature.^{4–14} In all reported cases, herniation of the transplant ureter occurred into the ipsilateral inguinal canal. The first case of obstructive uropathy

caused by contralateral inguinal herniation of the transplant ureter and bladder has been recently reported by du Toit *et al*¹⁵ in a 39-year-old man 11 years post-transplant. To the best of our knowledge, this report represents the second such case and highlights several learning points.

Several factors may contribute to inguinal herniation of the transplant ureter. These include an excessive redundant ureteral length, placement of the donor ureter over the spermatic cord and obesity. In our patient, it is unclear whether herniation of the transplant ureter occurred due to a degree of redundancy or secondary to herniation of the bladder and contralateral vesico-ureteric junction. Herniation of the bladder occurs in 1–4% of all inguinal hernias,¹⁶ but has only been reported in conjunction with transplant ureter herniation¹² or ureteroneocystostomy^{17 18} on three occasions. Risk factors for bladder herniation include male gender, older age, obesity and history of hernia repair, all of which our patient had.

Standard management involves urgent decompression of the collecting system with nephrostomy insertion and antegrade stenting to prevent irreversible graft dysfunction followed by definitive hernia repair. Alternative management strategies include immediate repair of the ureteral obstruction with herniorrhaphy and ureteric re-implantation¹⁴ and conservative management with an antegrade stent in those unfit for surgery.¹¹

Learning points

- ▶ Inguinal herniation of the transplant ureter is a rare cause of obstructive uropathy in renal transplant recipients.
- ▶ Risk factors for inguinal transplant ureteric herniation include excessive ureteral length, its anterior positioning in relation to the spermatic cord and obesity.
- ▶ Risk factors for inguinal bladder herniation include male gender, older age, obesity and history of previous hernia repair.
- ▶ Transplant physicians and surgeons should be aware of this complication and examine all patients who underwent transplant presenting with obstructive uropathy for hernias.
- ▶ Management consists of decompression with nephrostomy insertion followed by hernia repair and reduction of the transplant ureter and bladder.

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