CAIR Case of the Month

Case Courtesy of Drs. S. Xu and D. Cool

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Case: Clinical Background

- 66 year old man underwent radical cystoprostatectomy with ileal conduit formation for high grade urothelial carcinoma in November 2017

- Past medical history of significant tobacco use, otherwise non-contributory

Case: Clinical Background

- Post-operative course was complicated by fascial dehiscence and migration of his urinary stents

- 7 months following discharge, the patient re-presented to hospital with flank pain and AKI with elevated creatinine >300 umol/L (previously around 150 umol/L)

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Case: Presenting CT

a)

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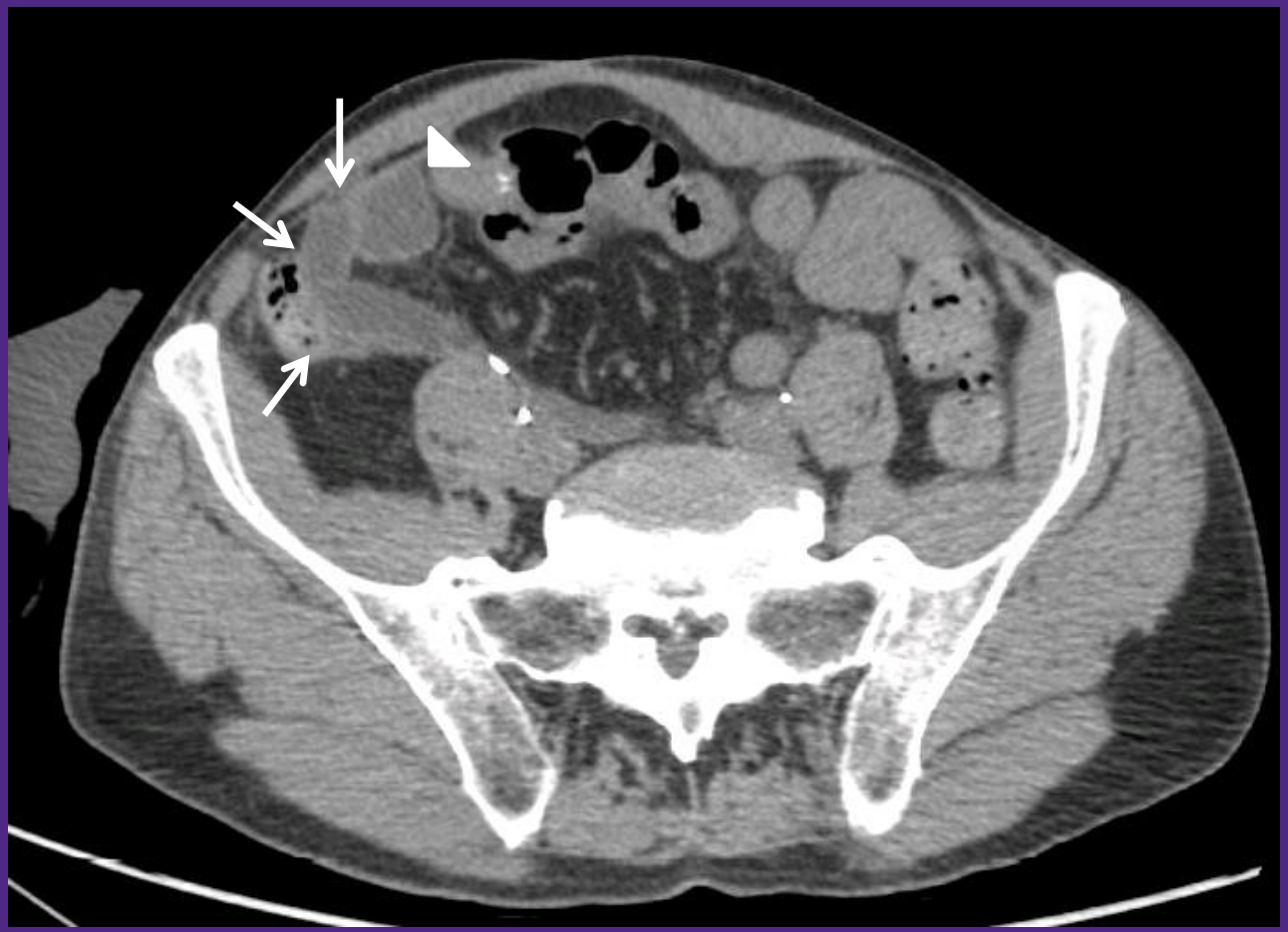
Case: Presenting CT

b)



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Case: CT Findings

- Acute right hydronephrosis and hydroureter without a radio-opaque calculus
  - The left kidney is atrophic, secondary to the patient's initial malignancy and chronic obstruction
- Tight angulation at the ureteroenteric anastomosis (arrows)
  - Ileal conduit is seen medially (arrowhead)
- Given the patient's symptoms, he was taken to the angio suite for nephrostomy tube insertion

Case: Nephrostomy Tube and Initial Ureterogram

a)

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Case: Nephrostomy Tube and Initial Ureterogram

b)

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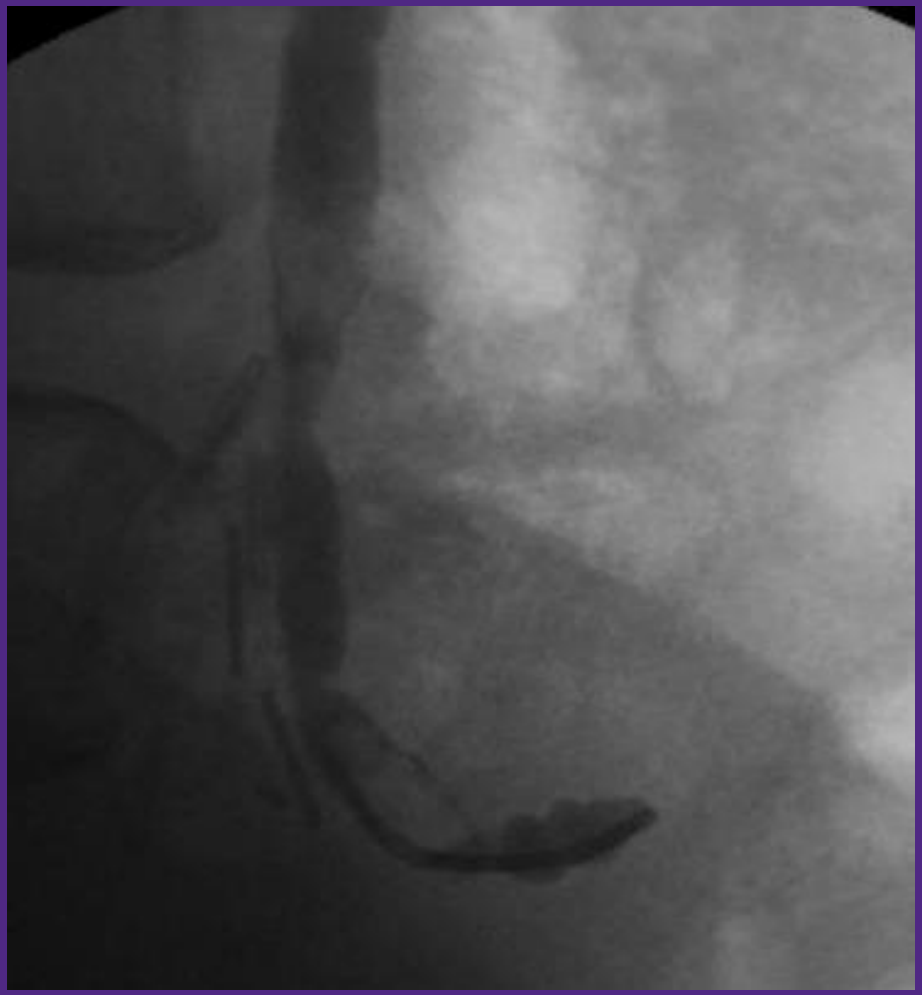
Case: Initial Ureterogram

- Right nephrostomy tube was placed to alleviate the right hydronephrosis (Fig a)
  - Ureterogram showed complete ureteric occlusion secondary to a severe ureteroenteric anastomotic stricture (Fig b, arrow)

- Three months later (7 months post op), patient requested internalization of the tube
  - Patient stated notably decreased quality of life with managing a nephrostomy tube

Case: Initial Attempt



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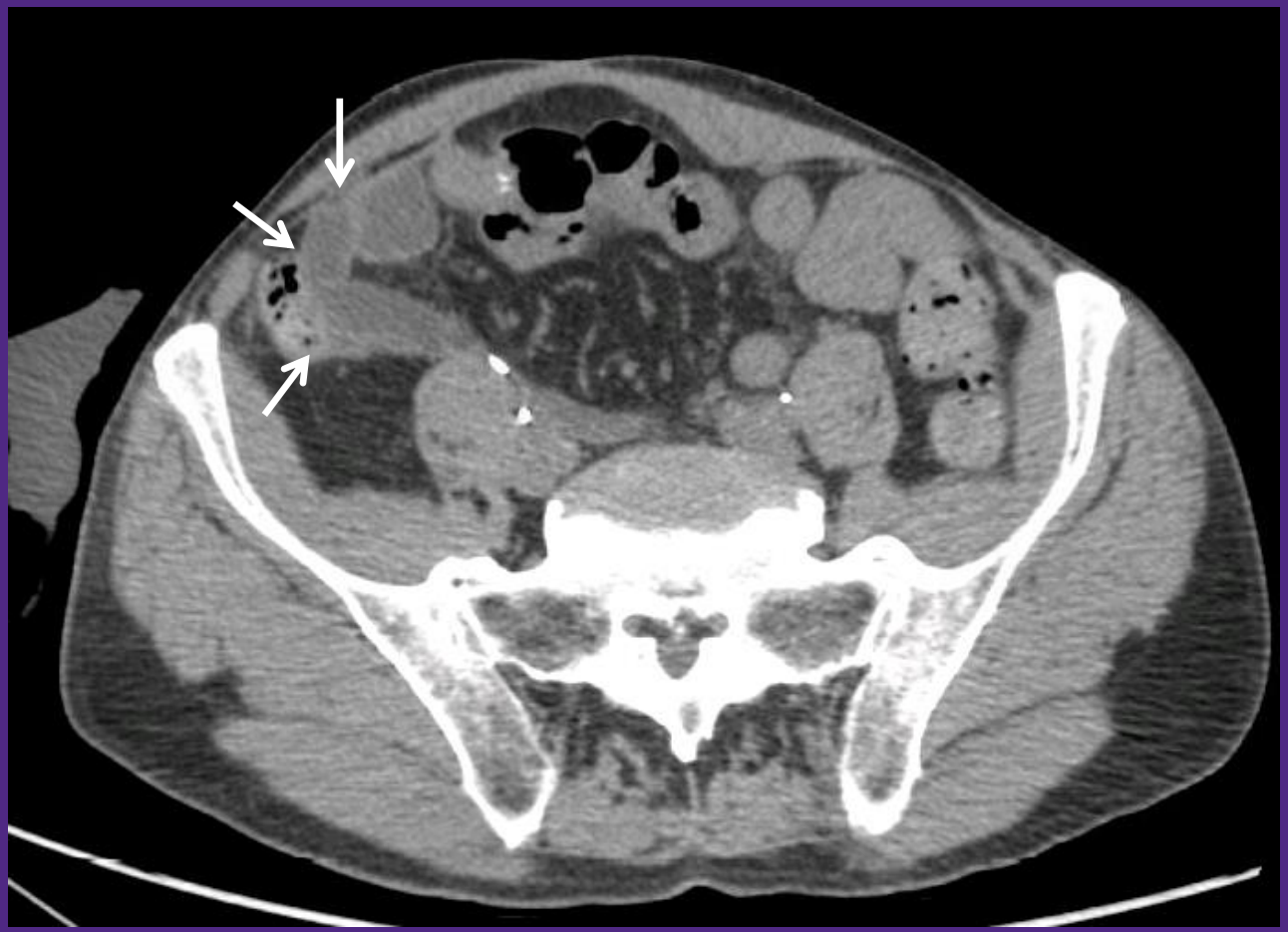
Case: Initial Attempt

- Attempts at crossing the stricture using a 5 Fr angled catheter and 0.035” angled hydrophilic wire were unsuccessful due to sharp angulation at the anastomosis
  - Attempts at antegrade sharp recanalization with the back end of wire and retrograde needle puncture from the ileal conduit into the ureter failed

- Patient demanded surgical anastomosis revision due to the negative impact of managing the nephrostomy tube bag drainage on his quality of life
  - Urology consulted IR to see if a minimally invasive procedure could cross the occlusion to insert a ureteral stent and avoid hazardous surgical reintervention

Case: What to Do?



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Case: What to Do?

- As other techniques failed, and the difficult angle of approach to the anastomosis as seen on CT, consideration from treating IR to use a radiofrequency (RF) wire

- Radiofrequency wires initially established for crossing vascular (venous and arterial) occlusions
  - Subsequent use in biliary duct stenoses and occluded TIPS
  - This would allow creation of a more favourable angle for catheter placement and access

Case: Further Attempt

a)

a) b)

Case: Further Attempt

b)

Case: Further Attempt

Figure a):

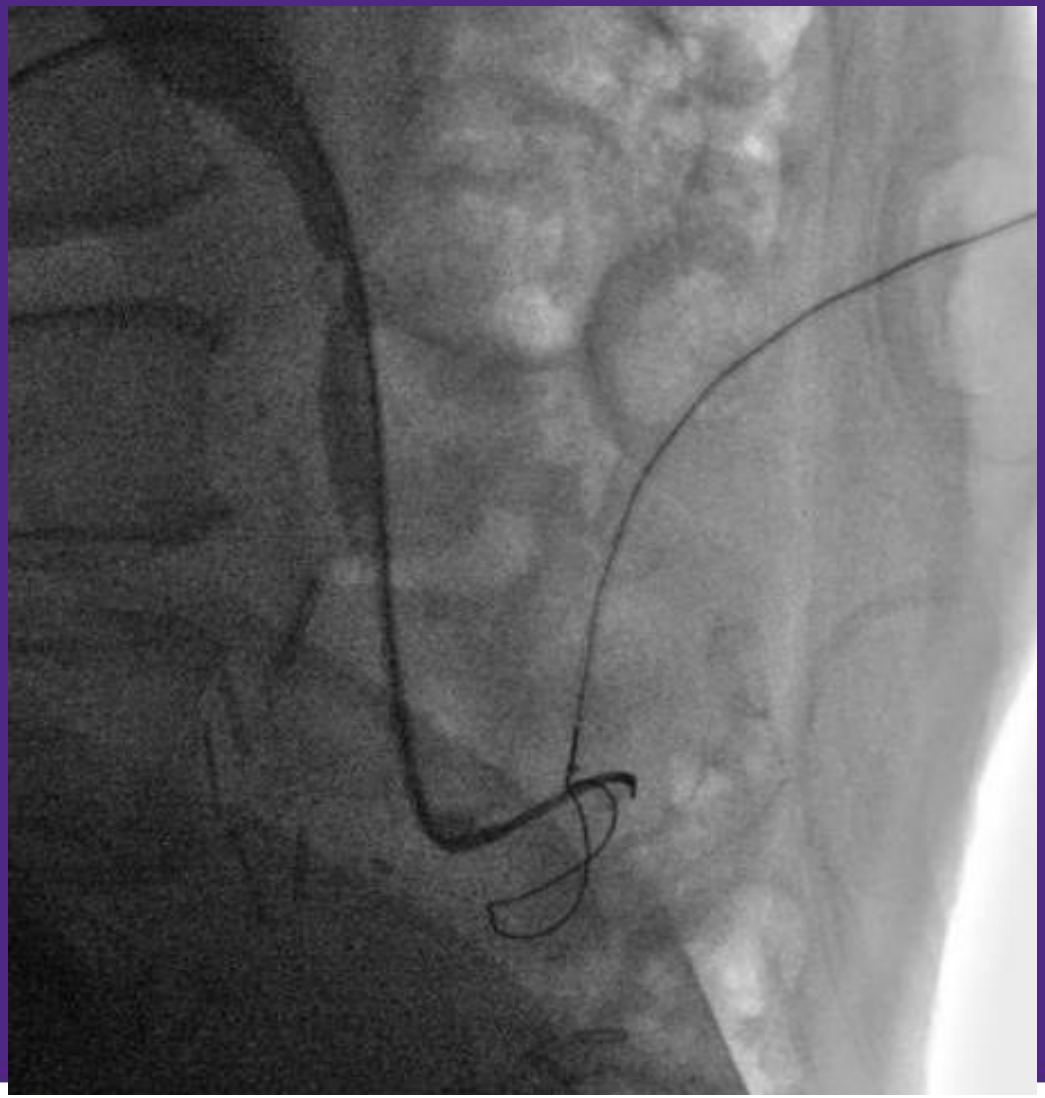
- –The nephrostomy tube was exchanged for a 7 Fr renal double curve sheath (red arrow) and 5 Fr RIM catheter
- –A Foley was inserted into the ileal conduit, which was then distended with contrast (white arrow)

•Figure b):

- –Under fluoroscopic guidance, a 25 mm gooseneck snare was placed beside the Foley within the ileal conduit
- –The 5 Fr RIM catheter was able to navigate the tight curve of the distal ureter and positioned approximately 2 cm from the gooseneck snare

Case: Treatment

a)



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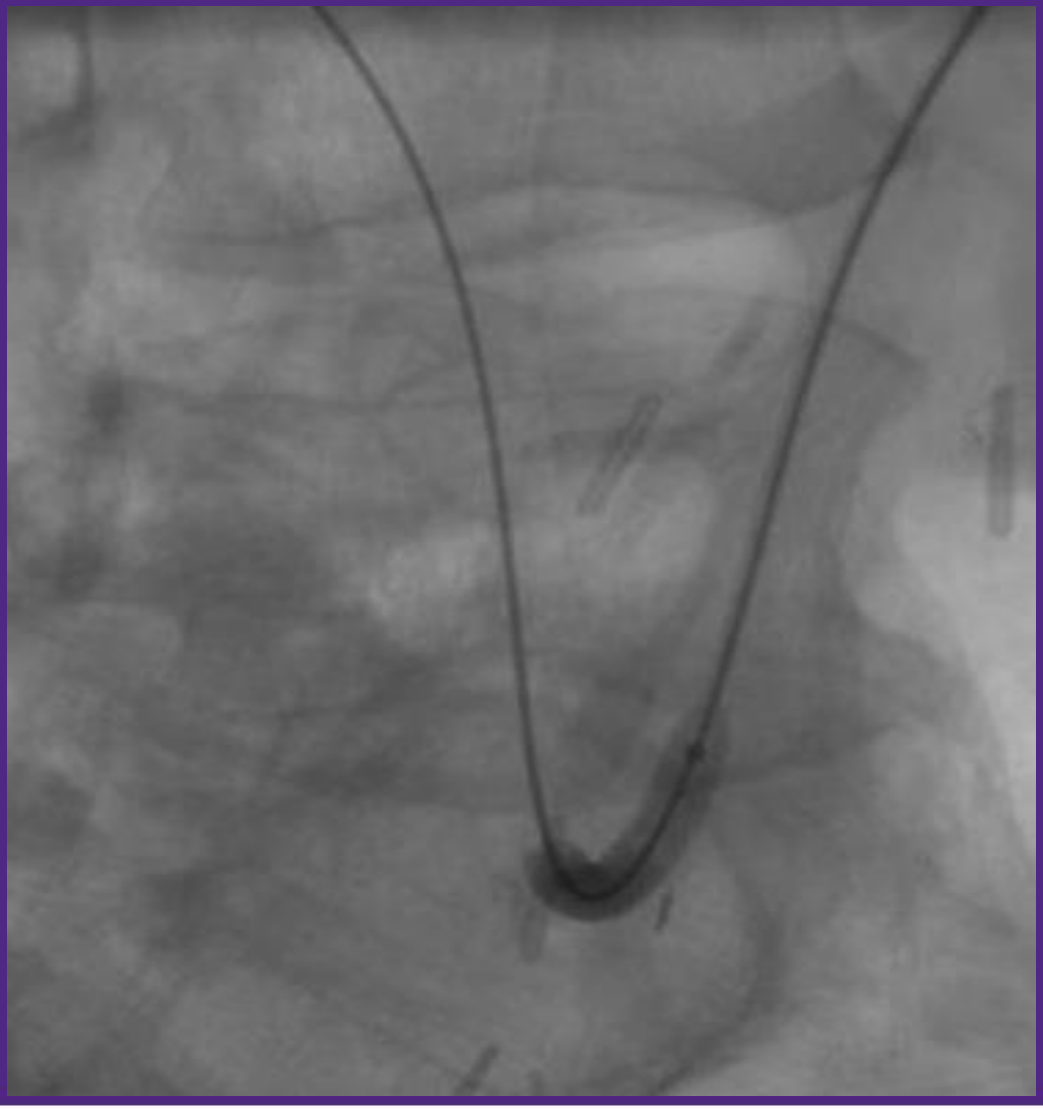
Case: Treatment

b)



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Case: Treatment

- Figure a):
  - A straight RF wire was advanced through the catheter
  - Five pulses were delivered, the occlusion crossed, and the wire was captured in the snare within the ileal conduit, creating the neoanastomosis

- Figure b):
  - With through and through access, a catheter was advanced across the neoanastomosis and the RF wire was exchanged for a superstiff Amplatz wire
  - The neoanastomosis was then dilated with a 5x40 mm balloon

Case: Outcome

A 10 Fr reverse nephroureterostomy stent was placed across the neo-anastomosis

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Case: Outcome

Three month follow-up for routine change showed no residual hydronephrosis or hydroureter

Kidney function improved with creatinine returning to baseline of around 150umol/L

Patient satisfied with outcome

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Discussion

- Ureteroenteric strictures occur in 3-10% of cystectomy patients
- Limited long term non-invasive treatment options for benign ureteroenteric strictures
  - Balloon dilation or ureteric stenting, but only possible if able to cross stricture with wire
- For total occlusions, options are:
  - Life-long nephrostomy or
  - Surgical revision (80% success rate, but high risk of perioperative complications)

Discussion

- Only other reported case of RF wire use in ureter by Cisu et al in 2018
  - Transplant kidney which developed an ureteric anastomotic stricture
  - Ureterostomy performed in conjunction with urology under direct cystoscopic visualization

Discussion

- Presented technique is a sole IR solution to recanalizing ureteric occlusions
- Potential risks of the procedure include:
  - Failure due to difficulty targeting
  - Injury to surrounding vascular structures and organs
  - Urine leak

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