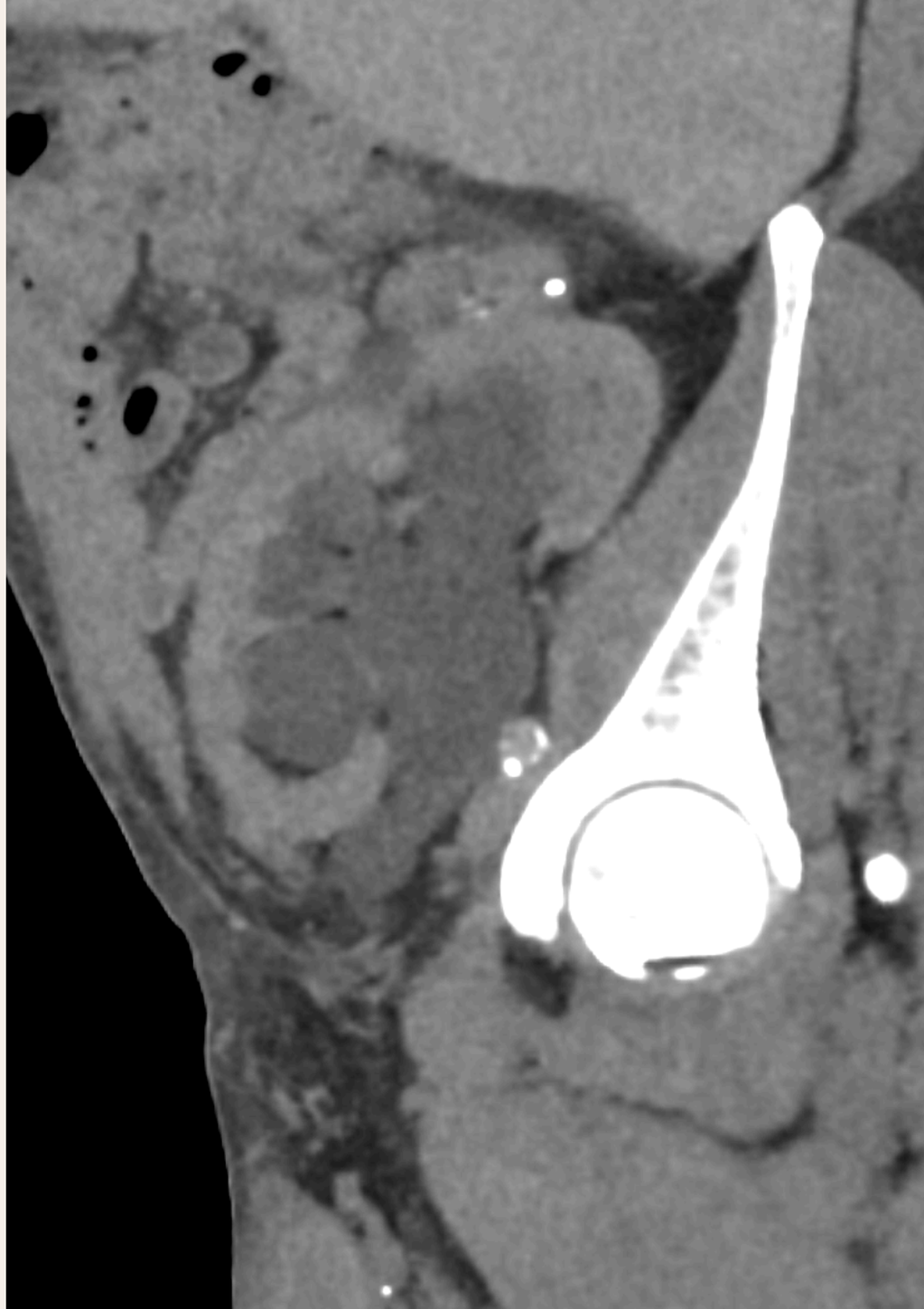
Allograft in Crisis

Imaging cues and IR solutions in renal transplant emergencies

Dr B McInerney - ST5 Radiologist, Dr C Kozel - Consultant Radiologist
Swansea Bay University Health Board, Wales



BACKGROUND

Renal transplant recipients can deteriorate quickly from complications where imaging can guide urgent IR salvage.

Renal transplant graft-threatening complications can be split broadly into four groups:

- Obstruction of the collecting system
- Urine leaks
- Haemorrhage or Vascular complication
- Sepsis/infected collections

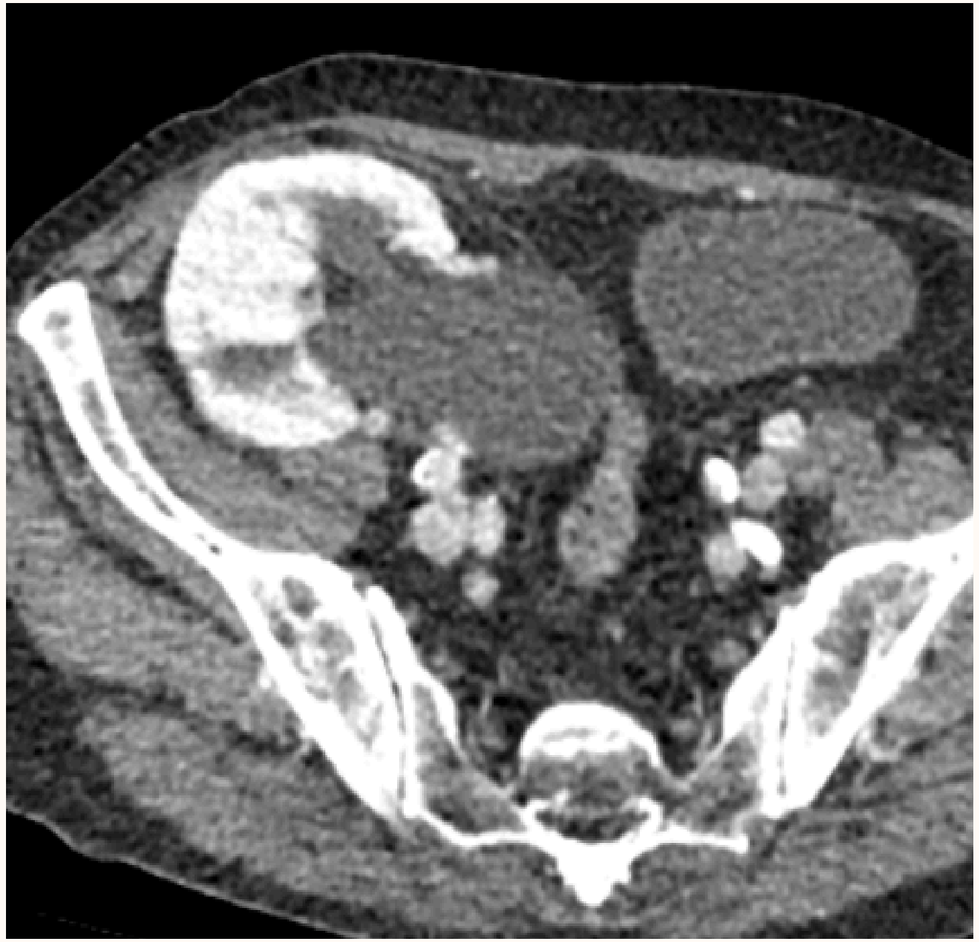
WHEN TO SUSPECT A COMPLICATION?

- Anytime: Trauma
- Peri-operative: Artery/vein thrombus, haematoma, anastomotic leak
- Early: Lymphocele/haematoma with compression, slow leak, infection, AVF
- Intermediate: Ischaemic strictures, stones, recurrent infection
- Late: Stones, fibrotic strictures, ureteric herniation

Obstruction

US / CT:
hydroureteronephrosis with a transition point; follow the entire ureter to the bladder. No/minimal contrast past transition point on delayed phases.

IR: Nephrostomy → antegrade stent; drain/aspirate obstructing collections.

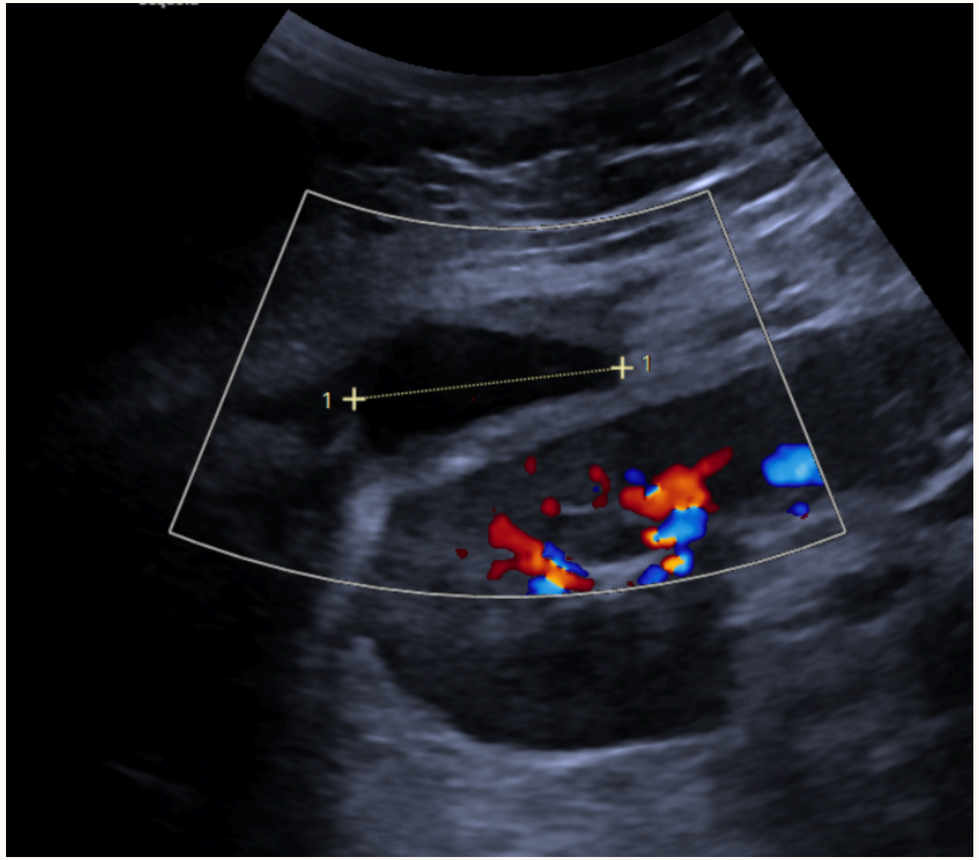


Hydronephrosis

Urine leak

CT / MR: extraluminal contrast on delayed phase, excreted contrast in to a collection (urinoma), anechoic collection on US

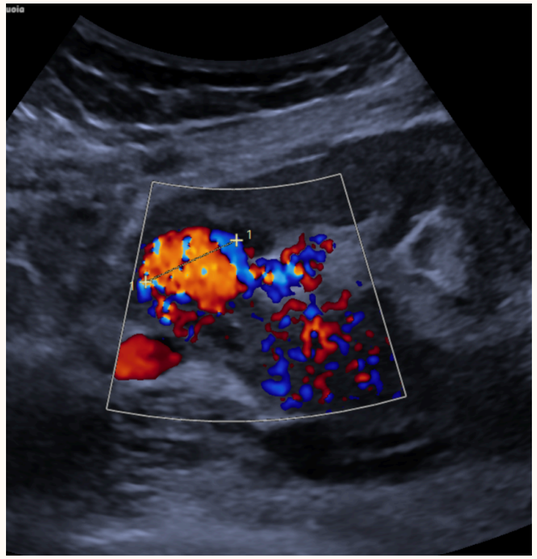
IR: diversion (nephrostomy ± stent), drainage of urinoma.



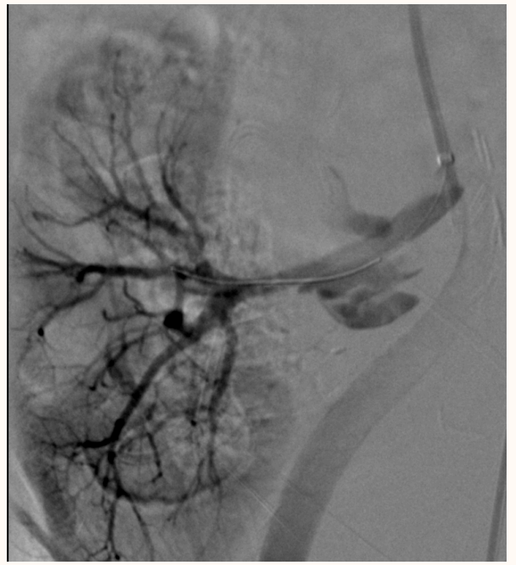
Urinoma

Haemorrhage

CT/CTA: Haemoperitoneum, active contrast blush, haematoma especially around anastomosis. Lacerations if trauma.
US: Vascular occlusive events (renal vein/artery thrombosis) more likely perioperatively.
Doppler: 'yin-yang' in pseudoaneuryms. Arterialised venous waveform in AVF.
IR: selective embolisation or covered stent. Thrombin injection. Thrombectomy is centre dependent.



Pseudoaneurysm 'yin-yang'

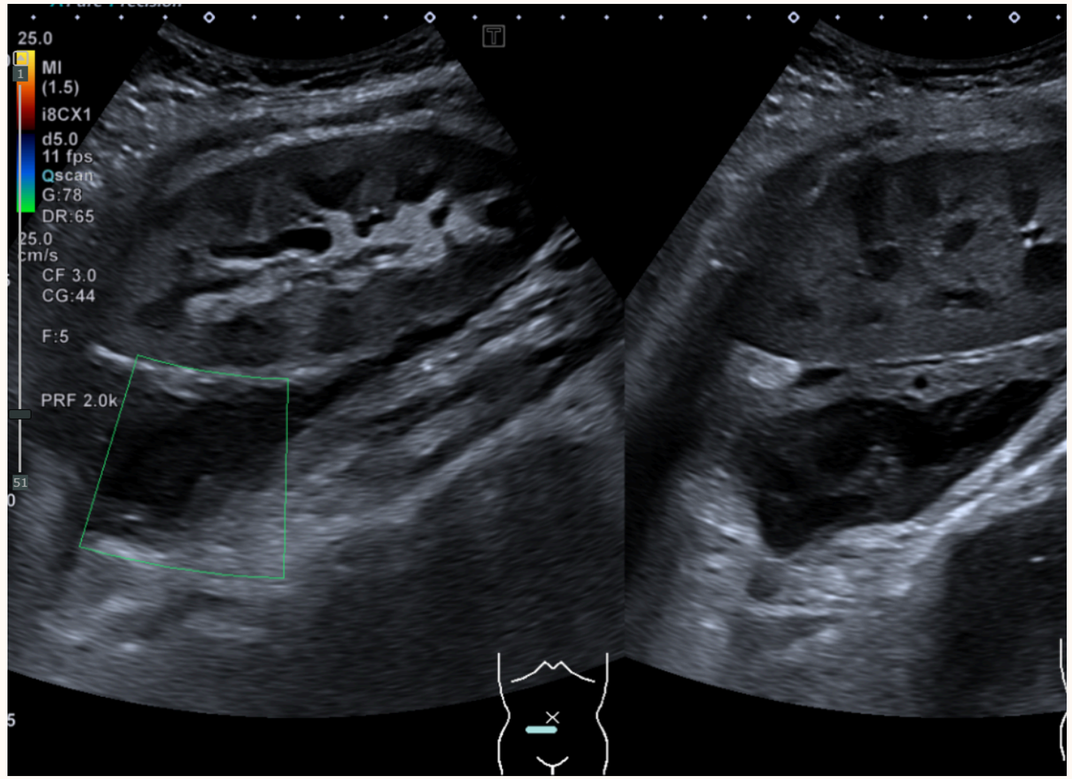


Grafted renal artery extravasation

Sepsis / infected collection

CT/US: Collection with layering debris/gas; rim-enhancement.

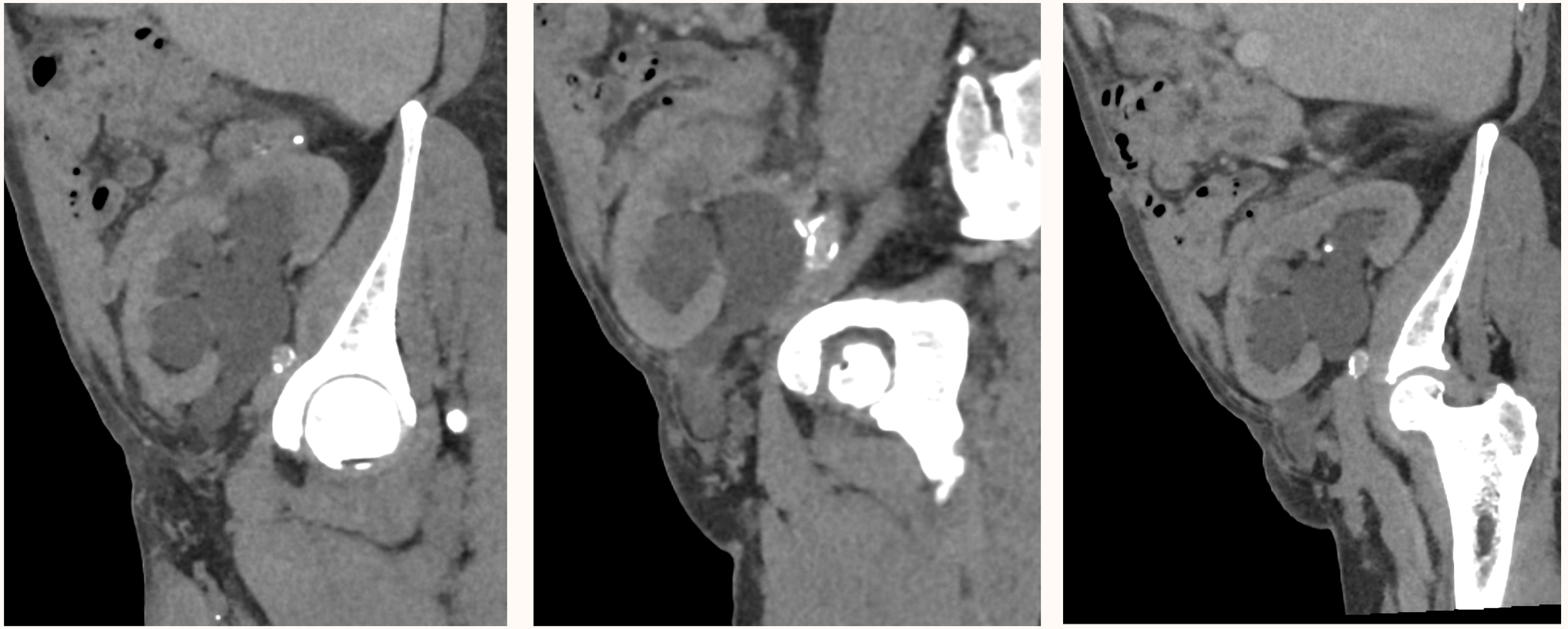
IR: image-guided drainage ± diversion.



Perinephric collection

CASE EXAMPLE

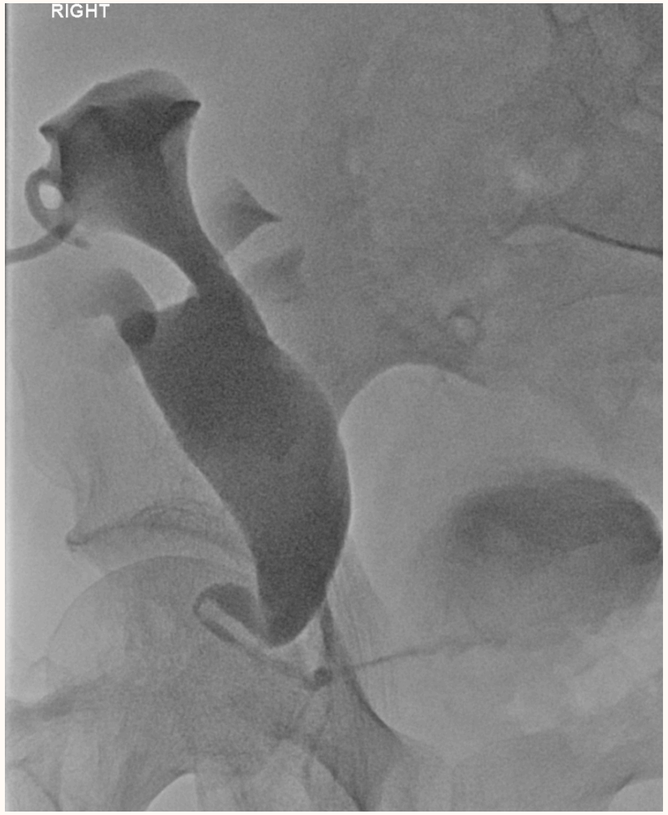
Stable long-term renal-transplant recipient with new, worsening acute AKI - putting the allograft at risk.

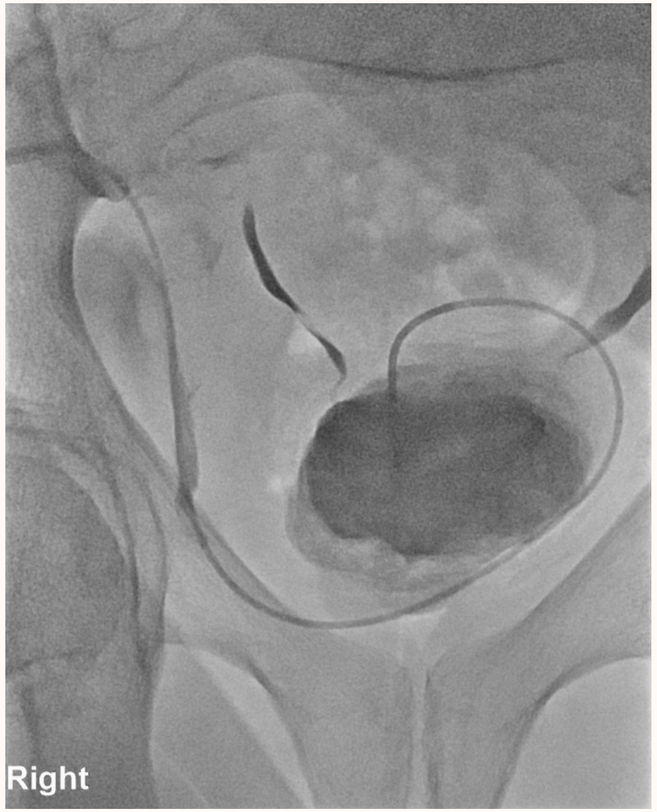


CT: Transplant ureter looping into the right inguinal canal with upstream hydroureteronephrosis.

CASE EXAMPLE

Stable long-term renal-transplant recipient with new, worsening acute AKI - putting the allograft at risk.





Emergent nephrostomy inserted followed by ureteric stent
The patient had subsequent outpatient inguinal hernia repair

REFERENCES

- Shampain KL et al. Semin Roentgenol. 2020;55(2):115-131
- Ghonge NP et al. Br J Radiol. 2021;94(1124):20201253
- Low G et al. Radiographics. 2013;33(3):633-652
- Sugi MD et al. Radiographics. 2019;39(5):1327-55

THANK YOU

brenna.mcinerney@wales.nhs.uk

charis.kozel@wales.nhs.uk