CIRA Case of the Week

Case Courtesy of Drs. Xiaoyang Liu, Derek Cool, and Robert Beecroft

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Mount Sinai Hospital • University Health Network • Women's College Hospital

Case: Clinical Presentation

- 61 year old female

2010
Endometrial Cancer
TAH & BSO

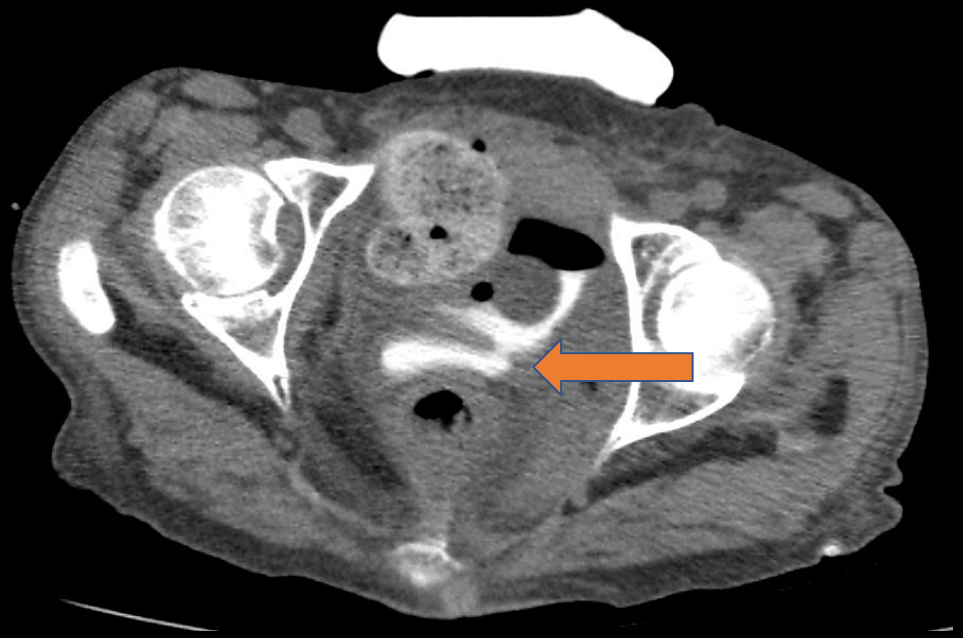
2014
Recurrence: cul-de-sac, left distal ureter, left trigone
Resection, partial cystectomy & L ureter re-implant, sigmoid resection

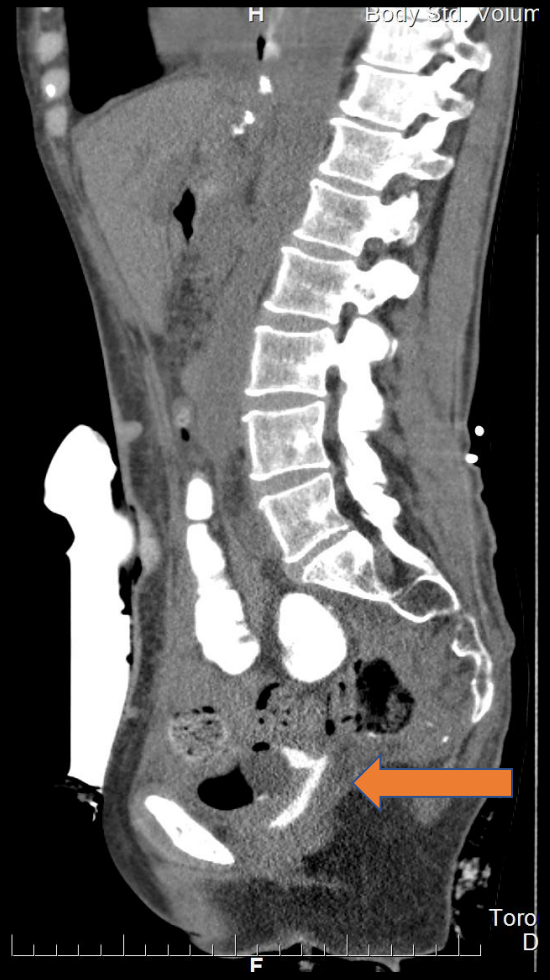
Complication: vesicovaginal fistula

2015
Surgical repair of vesicovaginal fistula

Persistent urinary drainage per vagina
Bilateral nephrostomy tube and Foley for urinary diversion

Diagnostic Imaging



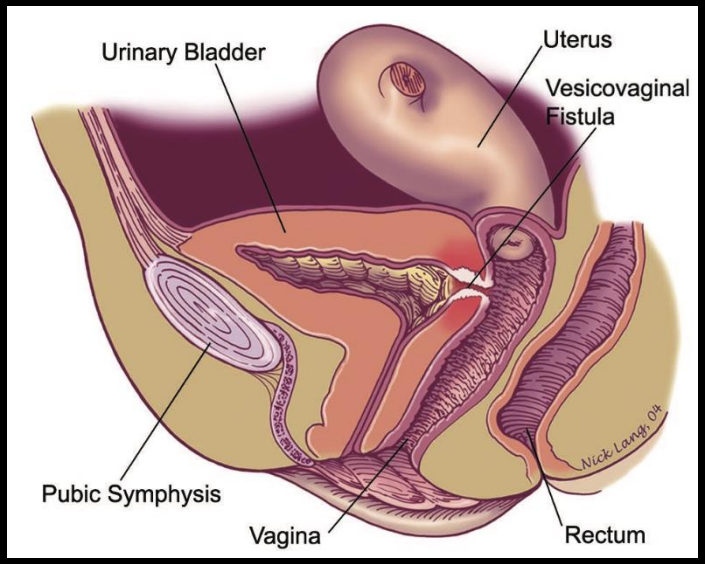


Persistent vesicovaginal fistula
Persistent urinary leak via vagina

Background: vesicovaginal fistula

- Causes:
  - Most common: gynecologic surgery (abdominal & vaginal hysterectomies causing 75% of lower urinary tract fistulas) (Avritscher et al, 2004)
  - Others: diverticulitis, pelvic malignancies, pelvic irradiation, trauma, iatrogenic (Popuri et al , 2011)

- Treatment:
  - Temporary urinary diversion with nephrostomy to allow healing at site of leak (Asvadi et al, 2015)
  - Surgical diverting ileal conduit

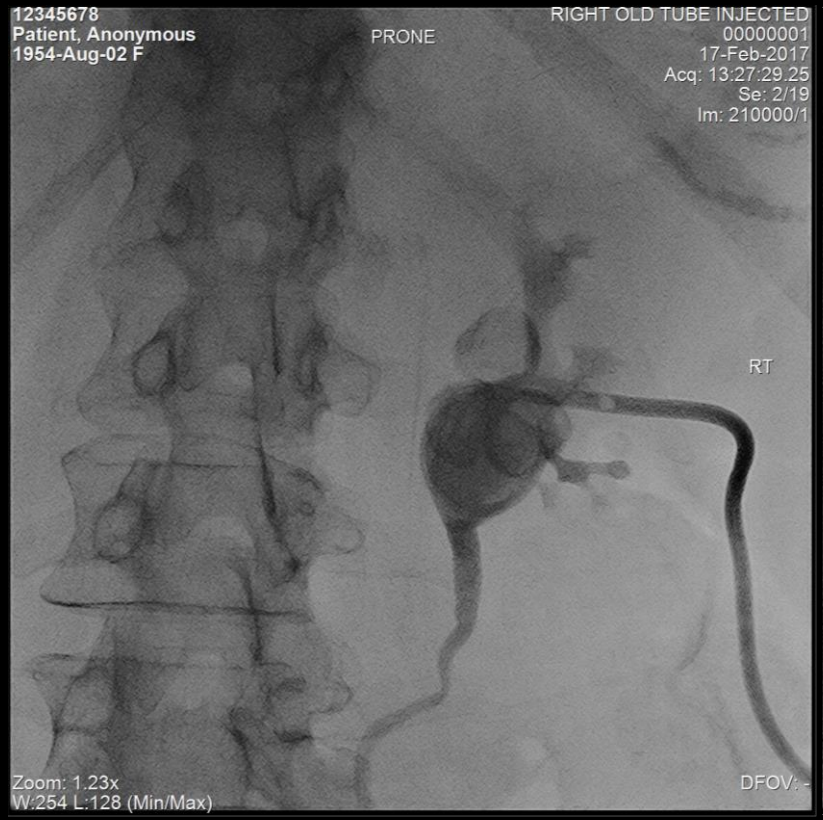


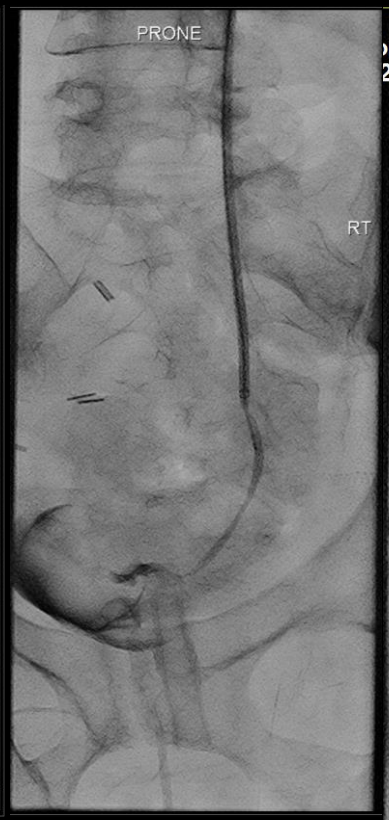
Avritscher et al. Radiographics. 2004.

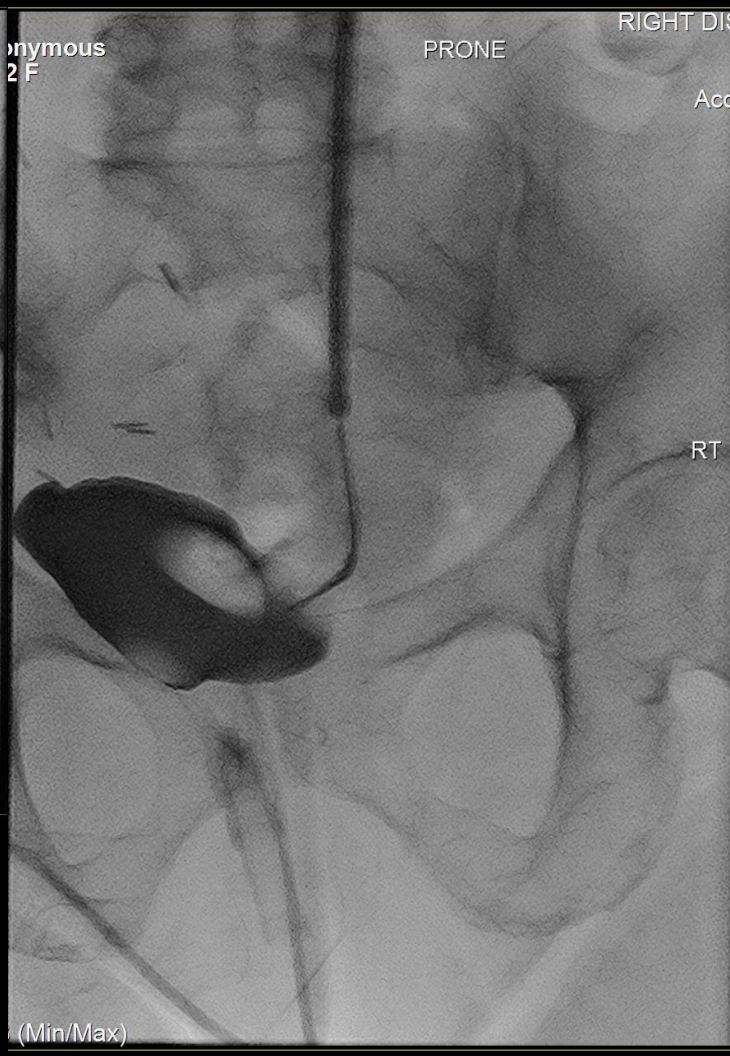
Plan: Distal right ureteric occlusion

- Given comorbidities, minimal invasive approach of distal right ureteric occlusion is preferred
- Non-functional left kidney
- Occlusion as distally as possible to preserve means of ureteric implantation at a later date
- If successful occlusion of ureter, permanent right nephrostomy tube will be required

Procedure

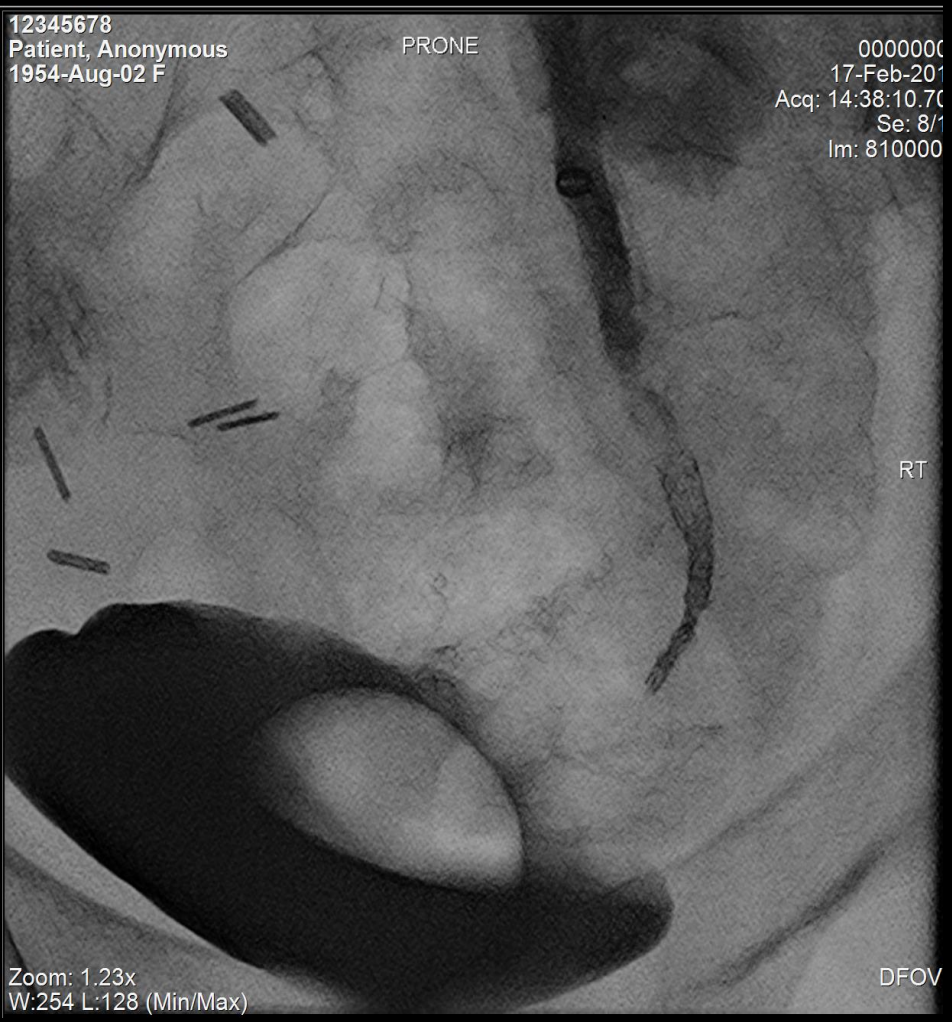


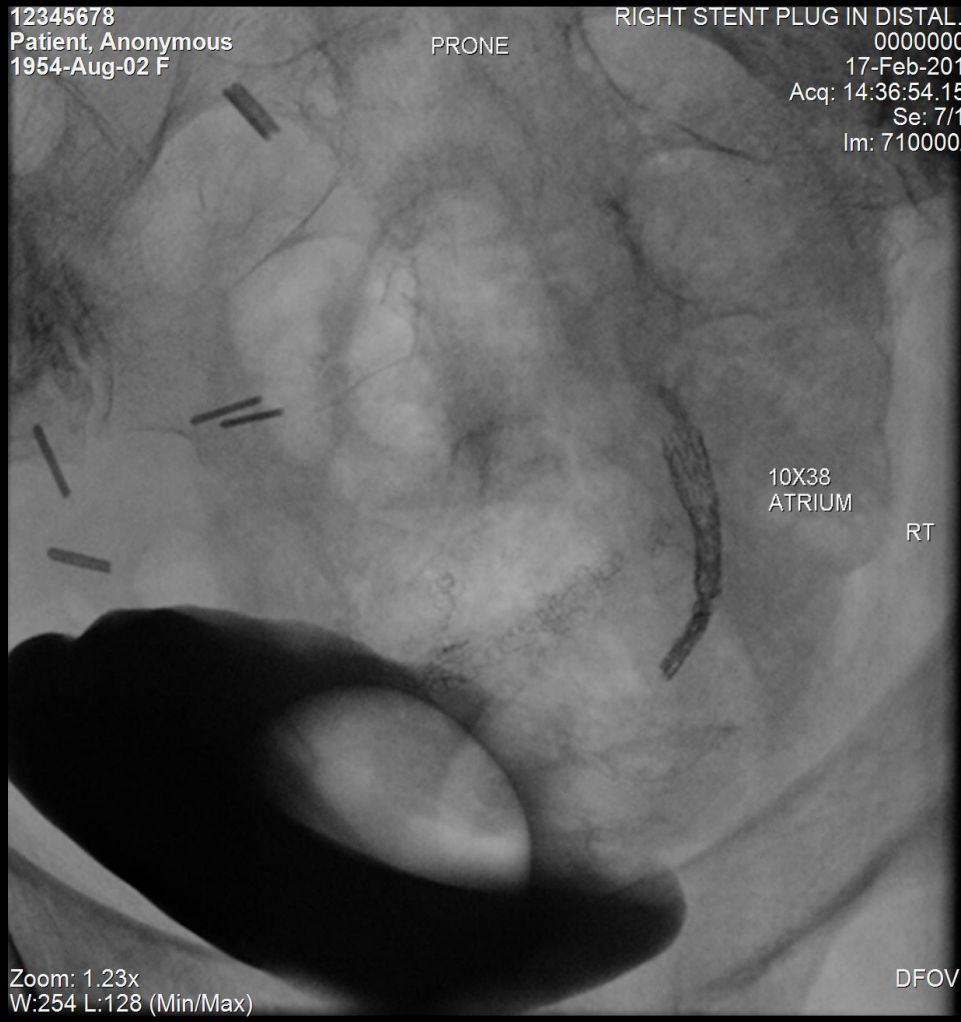




Antegrade access via existing right nephrostomy

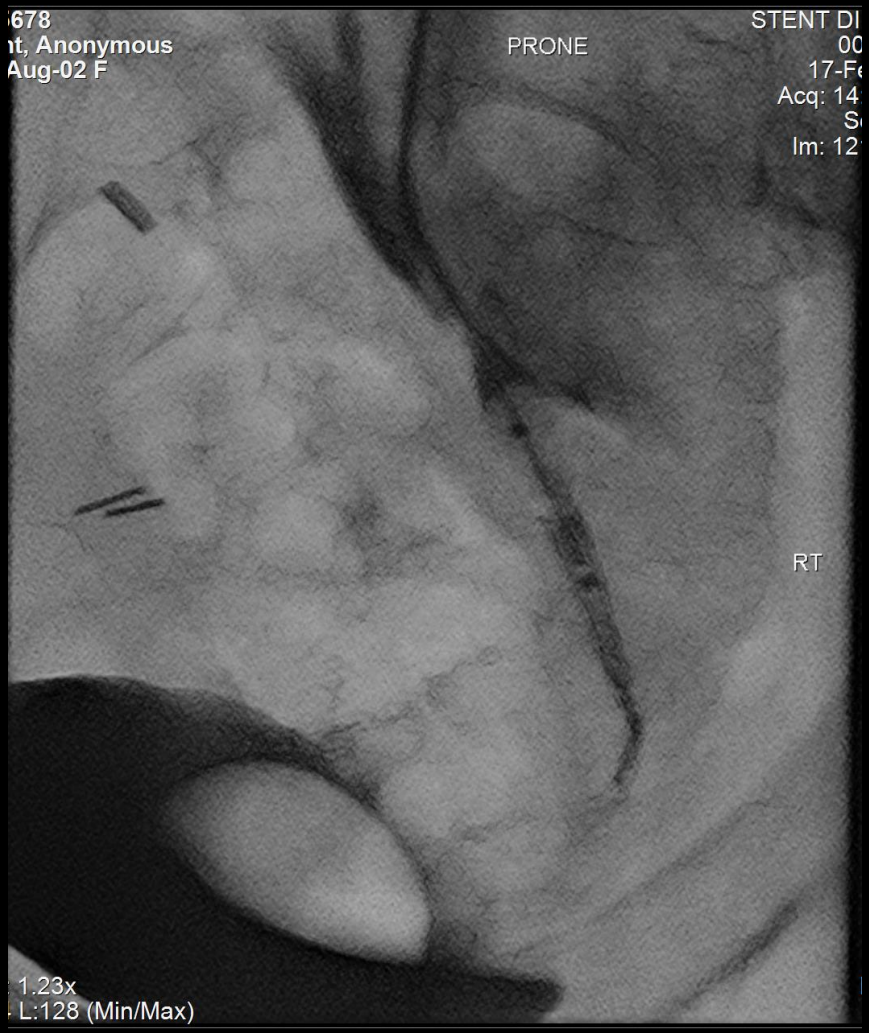
Procedure

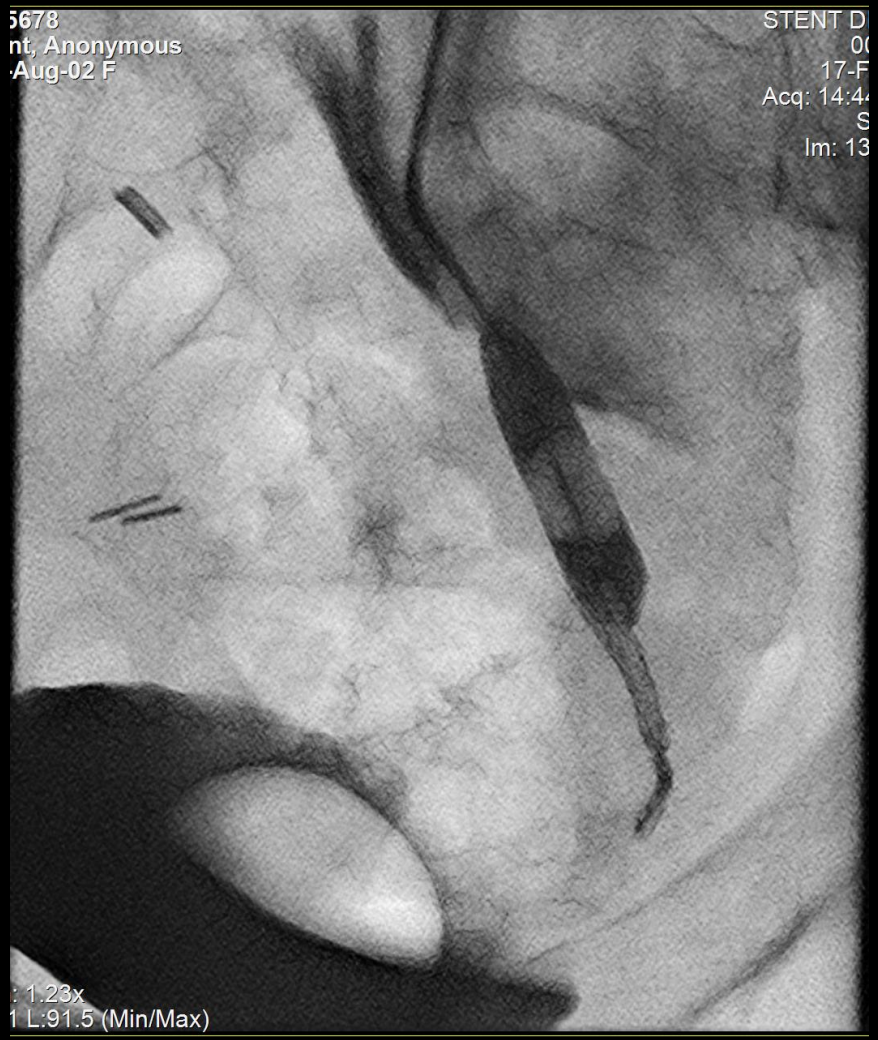




- 10 mm x 3 cm Atrium stent graft was deployed outside with distal end suture ligated
- Advanced through 10F sheath into distal ureter and balloon flaring of the proximal stent

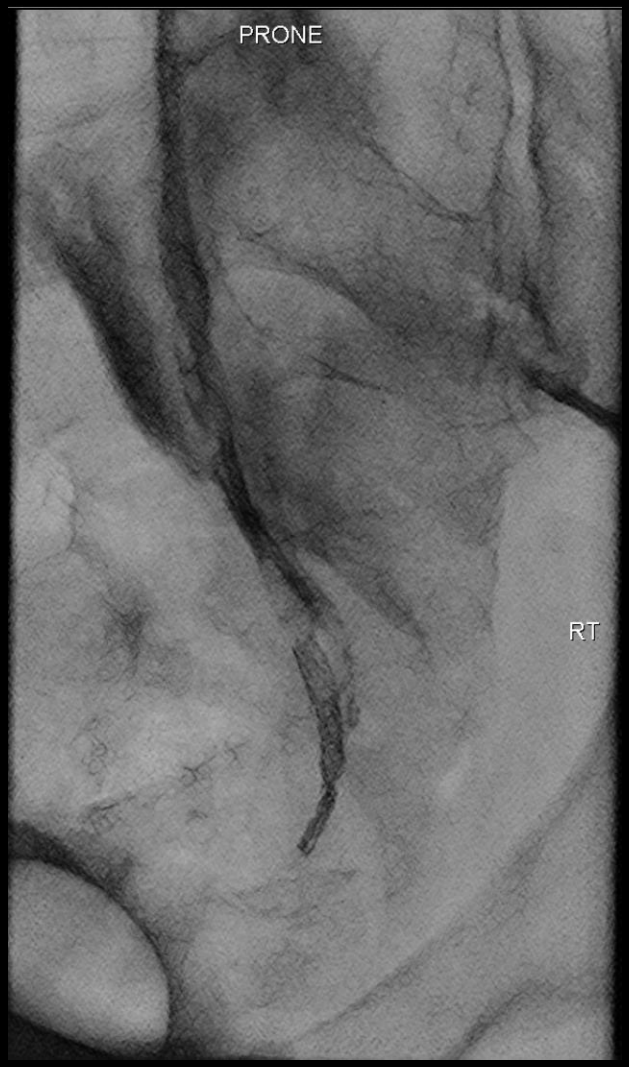
Procedure

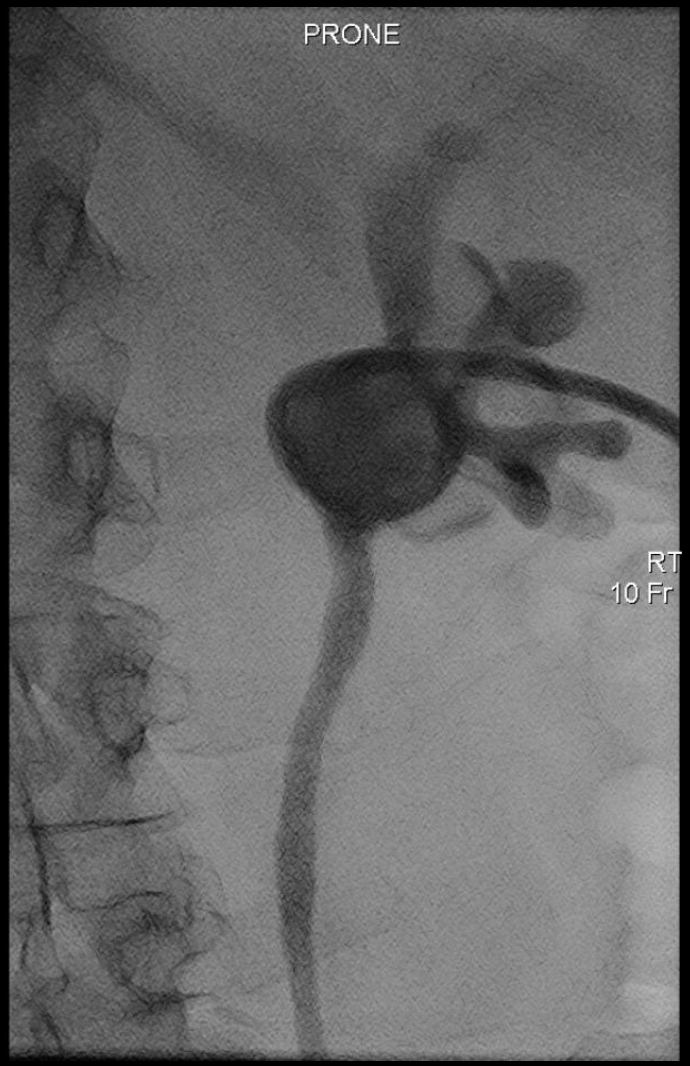




- The proximal end of stent did not flare well with the atrium balloon, contrast injections showed some ureteric extravasation
- The proximal open portion of the stent was accessed with a Bentson wire and a 10mm x 2cm Mustang balloon to attempt flaring again

Procedure





- Post balloon contrast: no flow was seen antegrade through the ureter into the bladder
- 10F sheath then removed and 10F nephrostomy tube placed

Post-procedure follow-up

- Successful relief of urinary leakage for 1 month
- Opened up in Dec 2016: patient felt something dislodged, significant pain and bleeding, then vaginal leakage recurred

Evidence: Transrenal ureteral occlusion IR approaches

Author	Device	No. of Ureters Occluded	Success (%)	Longest Follow-up (mo)
Gaylord (1)	Gianturco coils/Gelfoam	9	100	22
Bing (2)	Gianturco coils/Gelfoam	9	100	14
Schild (7)	Detachable balloon	52	69	61
Schild (7)	Butyl-2-cyanoacrylate	31	55	38
Cragg (9)	Percutaneous clip	7	100	7
Papanicolaou (8)	Nondetachable balloon	3	66	5
Sanchez (10)	Silicone occluding device	6	50	8
Kopecky (11)	Electrocautery	1	100	3

Farrell, 1997

Authors	Device	# ureter	# pt	Success %	Follow up
Saad et al	2 Amplatzer vascular plugs + N-butylcyanoacrylate	5	3	67%	Mean 11.3m
Pieper et al	AVP + coil& adhesive (5); AVP + latex cover (10)	15	9	80%	10-462 d
Schild et al	AVP + latex cover	1	1	100%	2 m
Horenblas et al	Foley balloon catheter, angioplasty catheters	13	7	71%	45-169d
Franke et al	Detachable semicompliant balloon	18	10	67% need re-oclusion (balloon deflation or dislocation), 83% secondary success	5-250d
Shindel et al	Coil +/- gelatine sponge	52	29	93	1-92 m

Conclusion

- Ureteral occlusion is useful in symptomatic control for **palliative** patients with urinary fistulas from advanced pelvic malignancies, when surgery is not an option
  - Comorbidities & poor health condition
  - Short expected life span, for **quality of life**
  - Persistent urinary leakage despite nephrostomy tube
- Variety of mechanical method to achieve ureteral occlusion
  - Lack of large scale long term data due to short life span
- Future direction:
  - Prospective comparative study
  - Include patient perspective: quality of life, satisfaction

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