Επεμβατικά Ουροποιητικού

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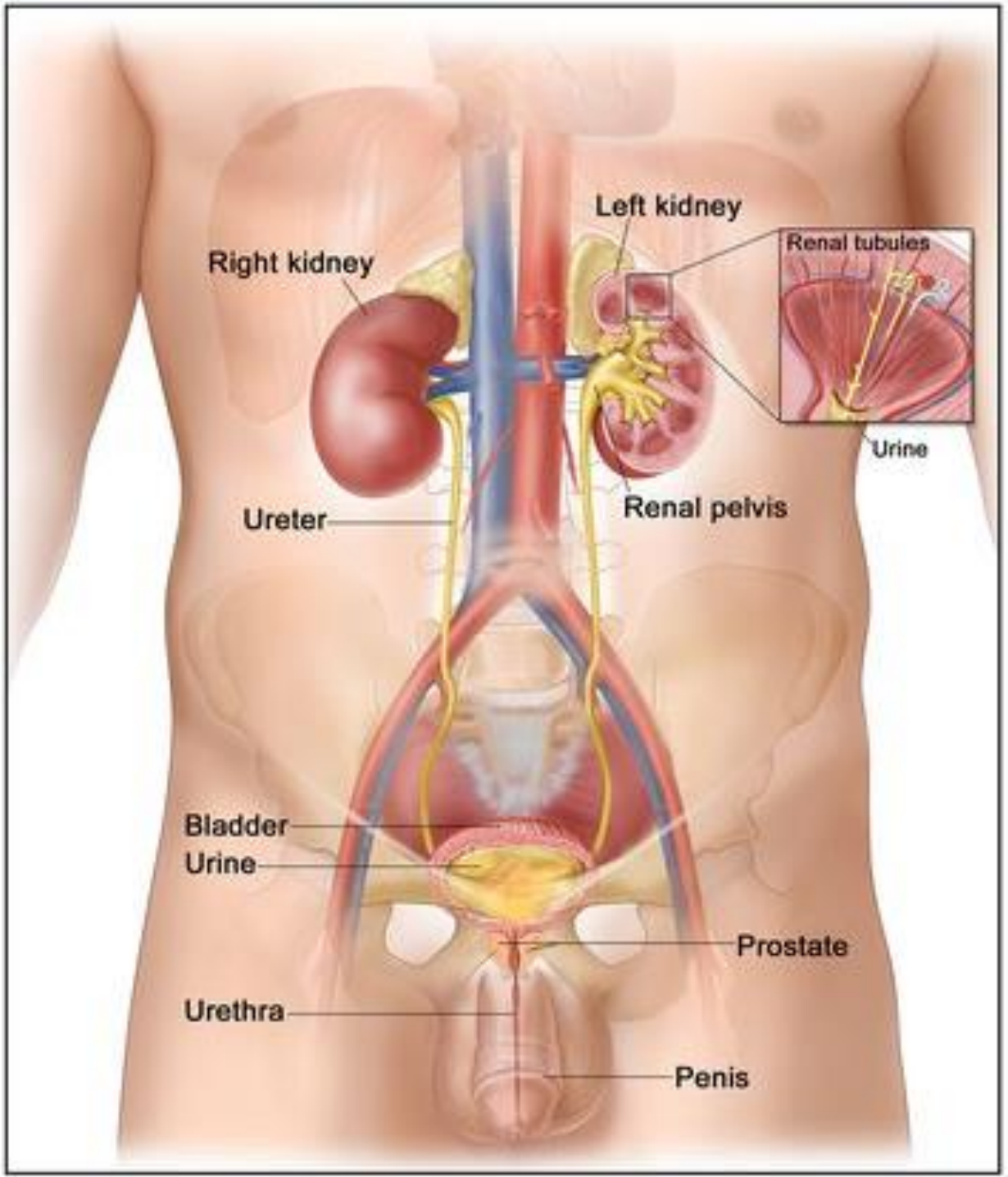
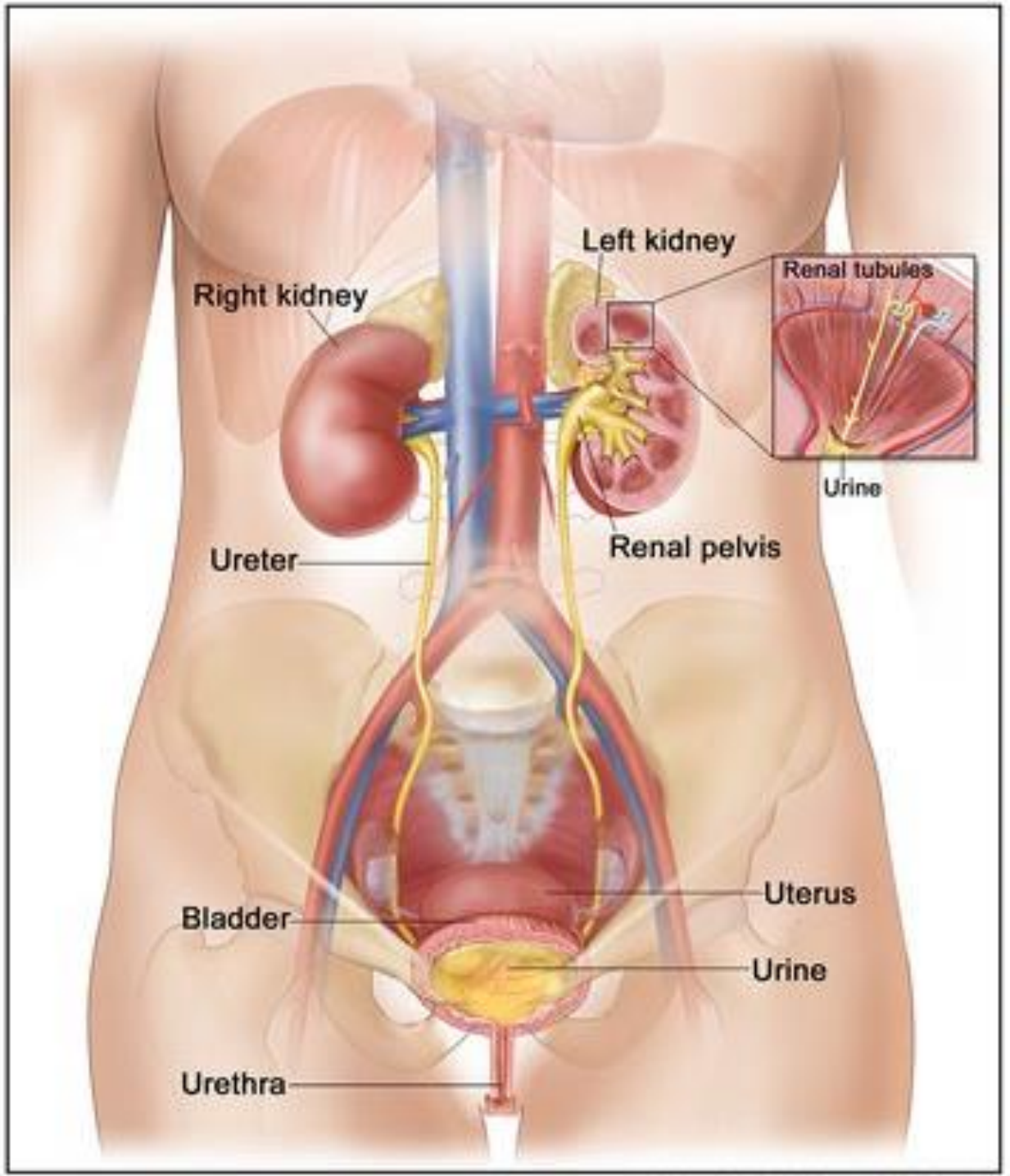
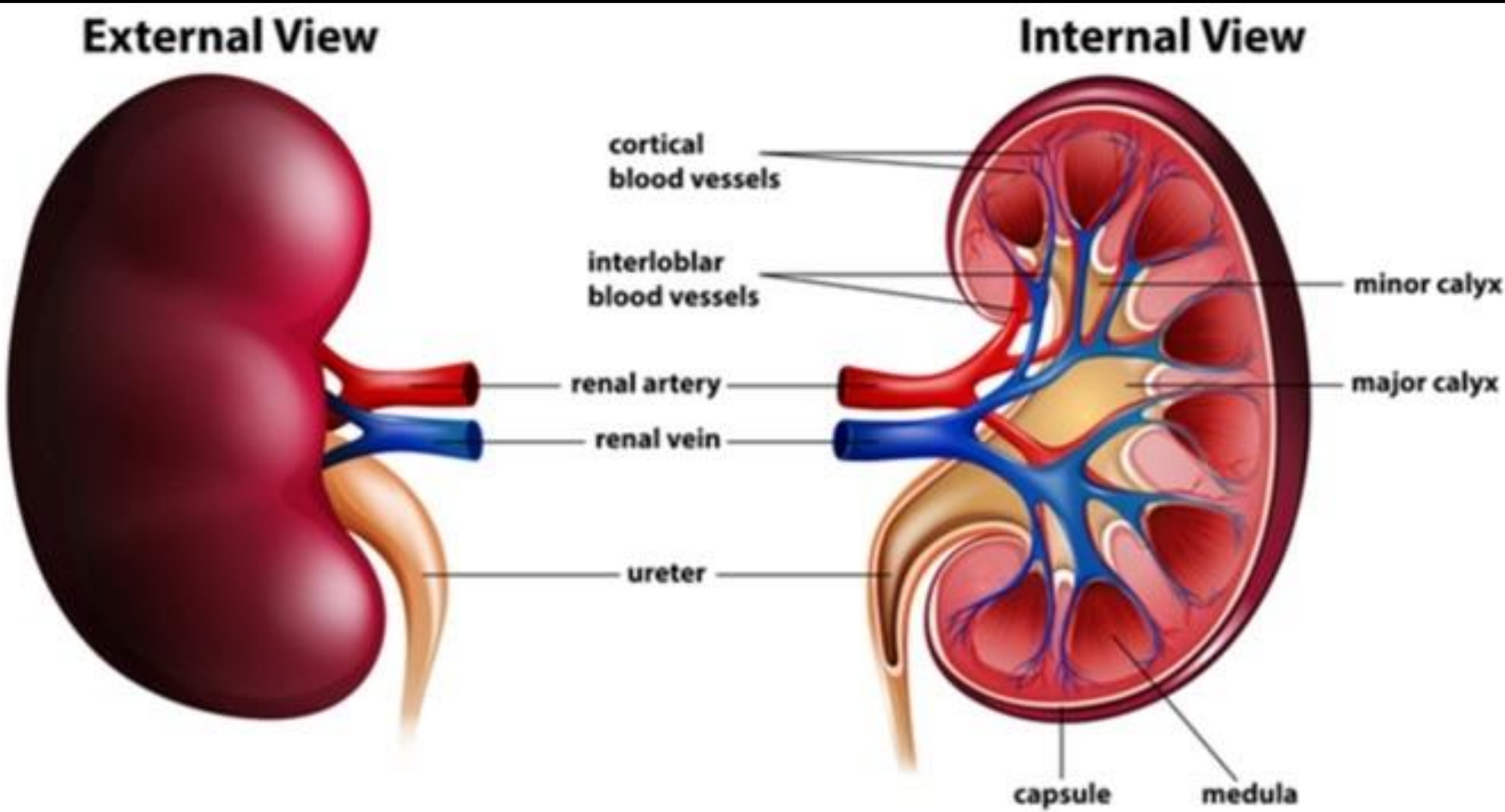
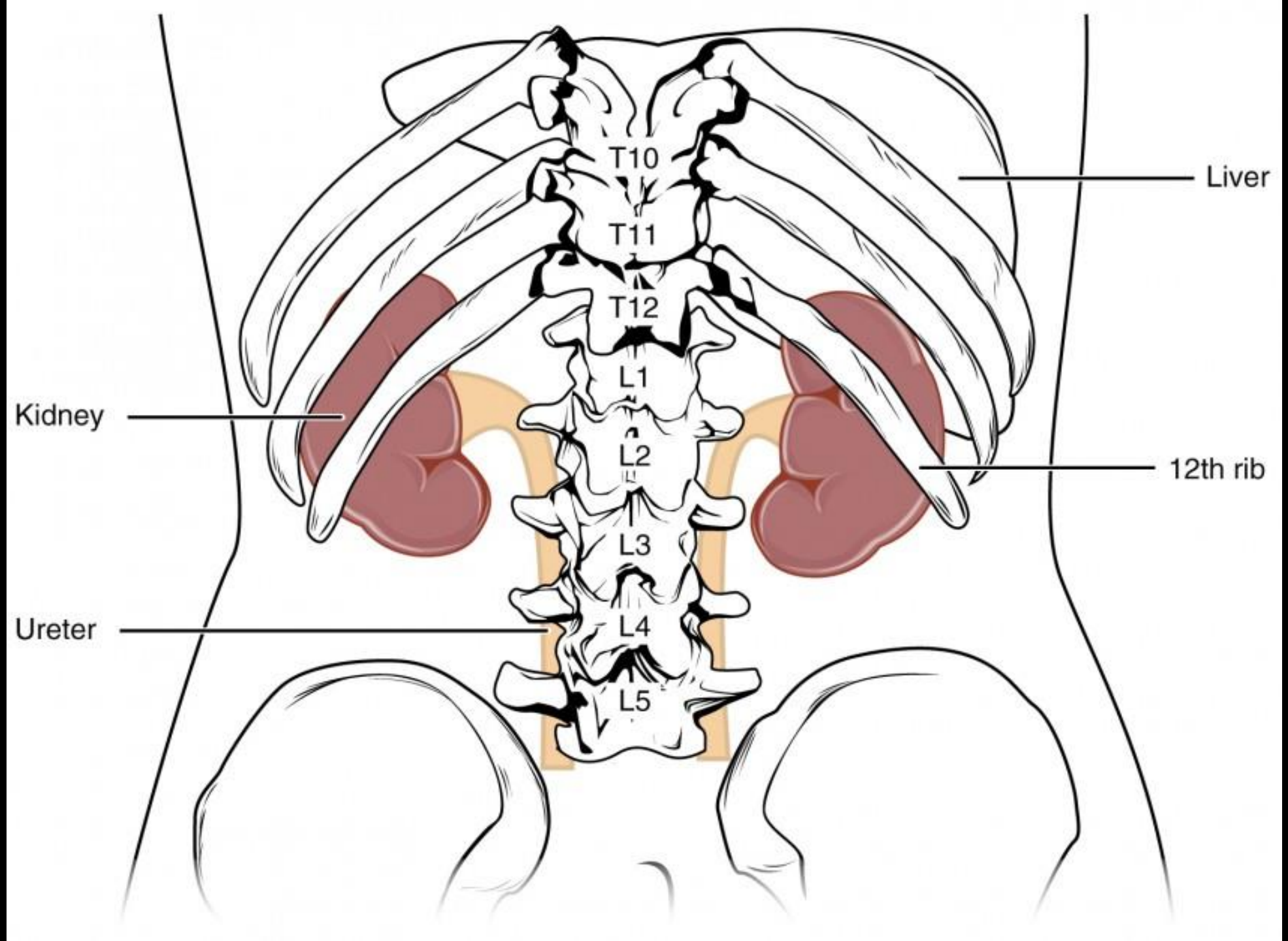
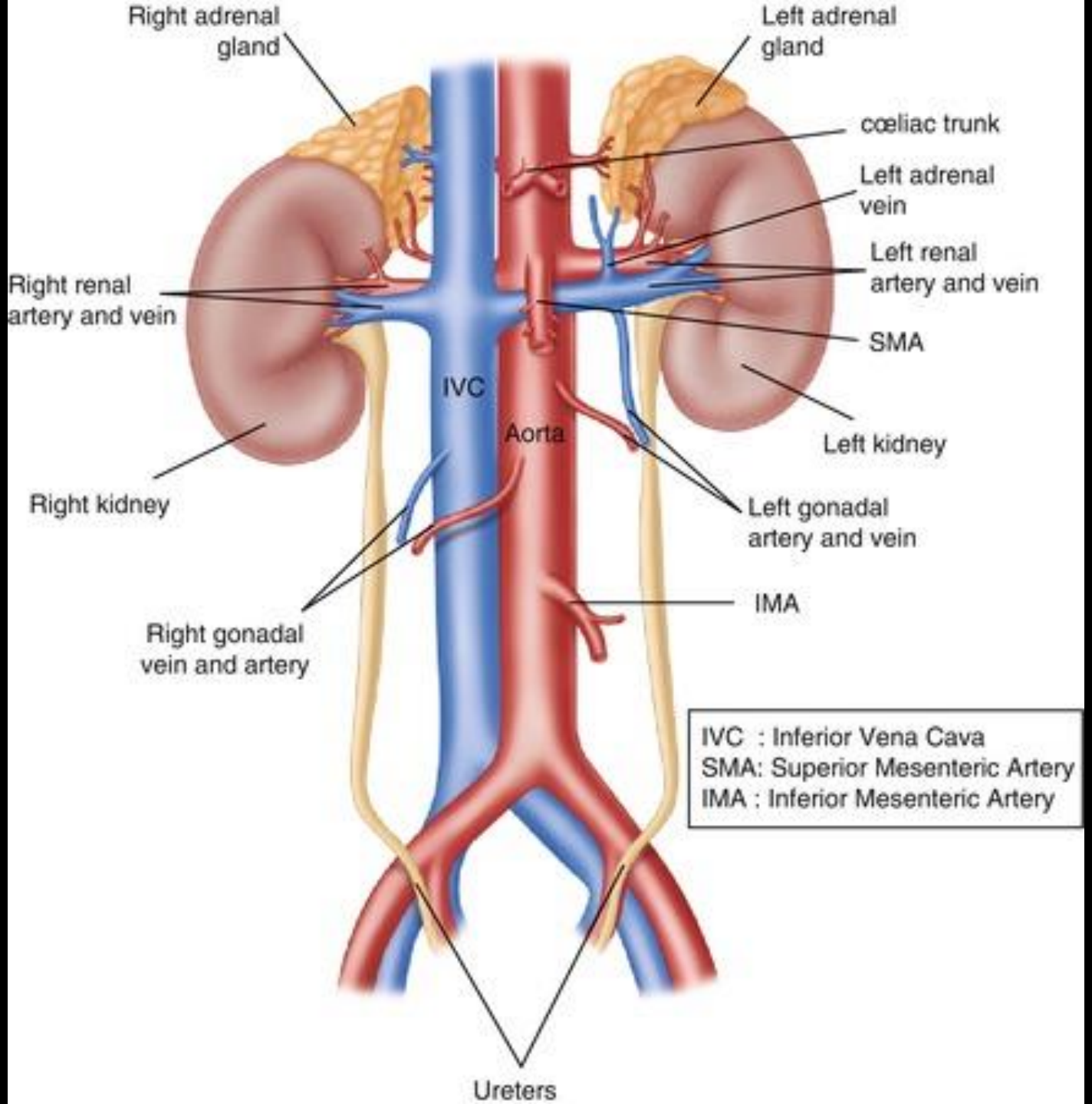
Αναπληρωτής Καθηγητής Επεμβατικής Ακτινολογίας


Left kidney
Right kidney
Renal tubules
Urine
Ureter
Renal pelvis
Bladder
Urine
Prostate
Urethra
Penis


Left kidney
Right kidney
Renal tubules
Urine
Ureter
Renal pelvis
Uterus
Bladder
Urine
Urethra


External View
Internal View
cortical
blood vessels
interloblar
blood vessels
minor calyx
renal artery
major calyx
renal vein
ureter
capsule
medula


T10
T11
T12
L1
L2
L3
L4
L5
Liver
Kidney
12th rib
Ureter


Right adrenal gland
Left adrenal gland
cœliac trunk
Left adrenal vein
Left renal artery and vein
Right renal artery and vein
SMA
IVC
Aorta
Left kidney
Right kidney
Left gonadal artery and vein
IMA
Right gonadal vein and artery
IVC : Inferior Vena Cava
SMA: Superior Mesenteric Artery
IMA : Inferior Mesenteric Artery
Ureters

Ανατομικά Χαρακτηριστικά

Οπισθο-περιτοναϊκά Όργανα

Κοινές Γειτνιάζουσες Ανατομικές Δομές

- Διάφραγμα
- Πνεύμονας
- Επινεφρίδια

Ανατομικά Χαρακτηριστικά

Ξεχωριστές Γειτνιάζουσες Ανατομικές Δομές

ΔΕΞΙΑ

Ήπαρ

Κάτω Κοίλη Φλέβα

Δεξιά Κολική Καμπή

ΑΡΙΣΤΕΡΑ

Σπλήνας

Αορτή

Αριστερή Κολική Καμπή

Νεφρικό Παρέγχυμα

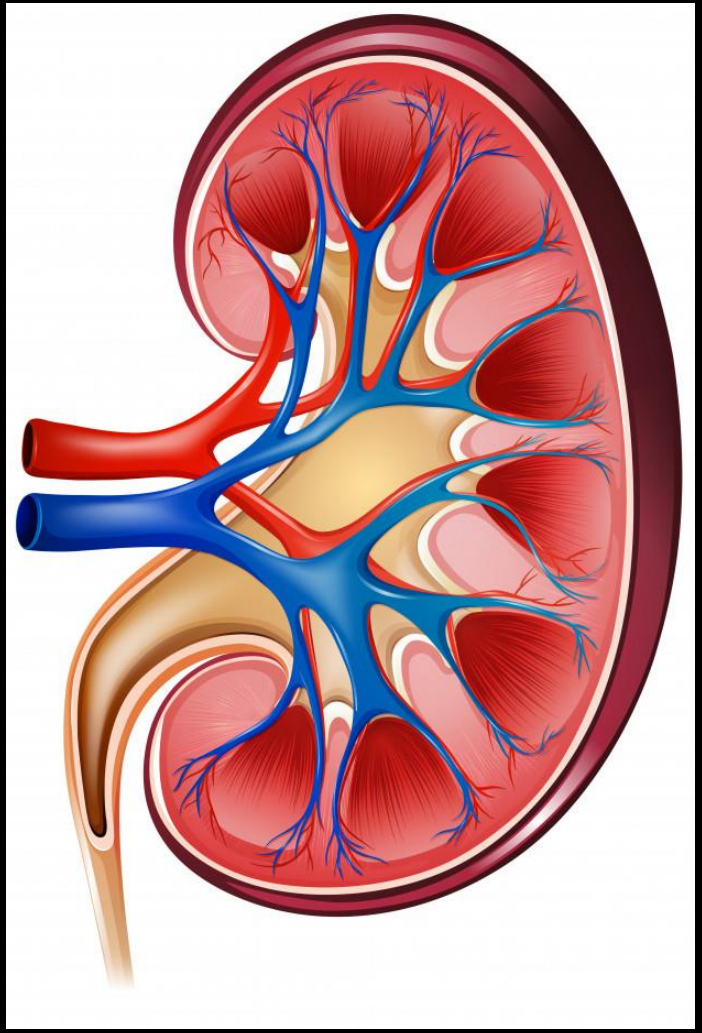
Κύστεις

Όγκοι

- Βιοψία
- Θεραπεία

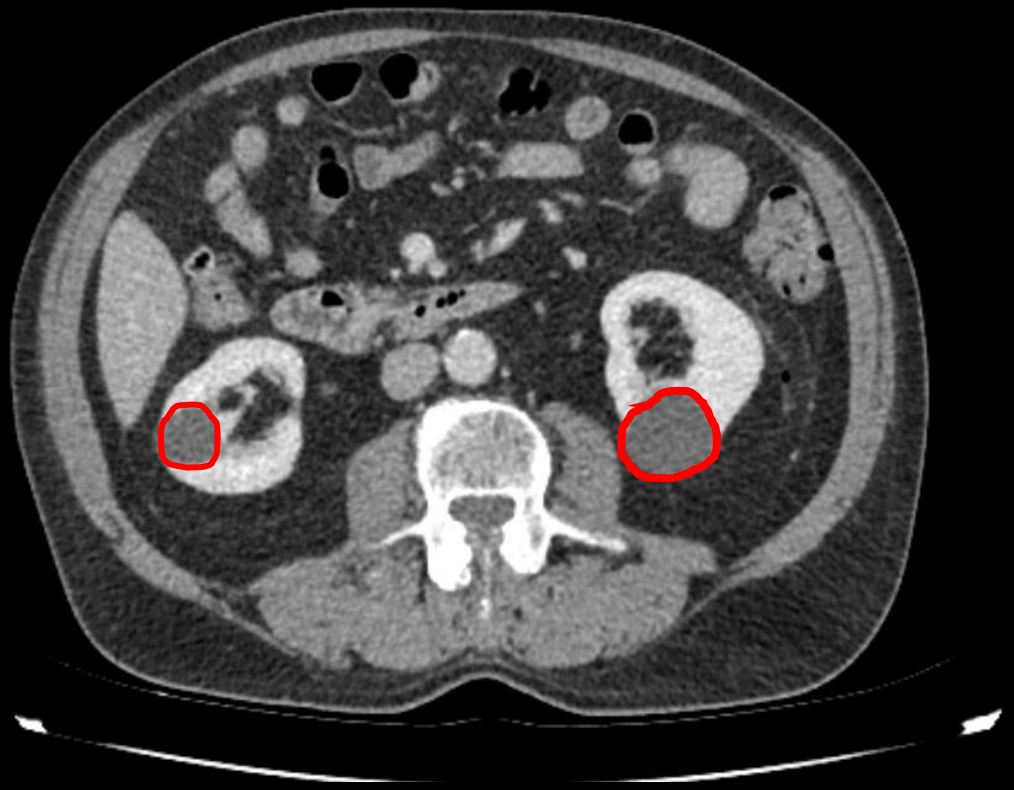
Συλλογές

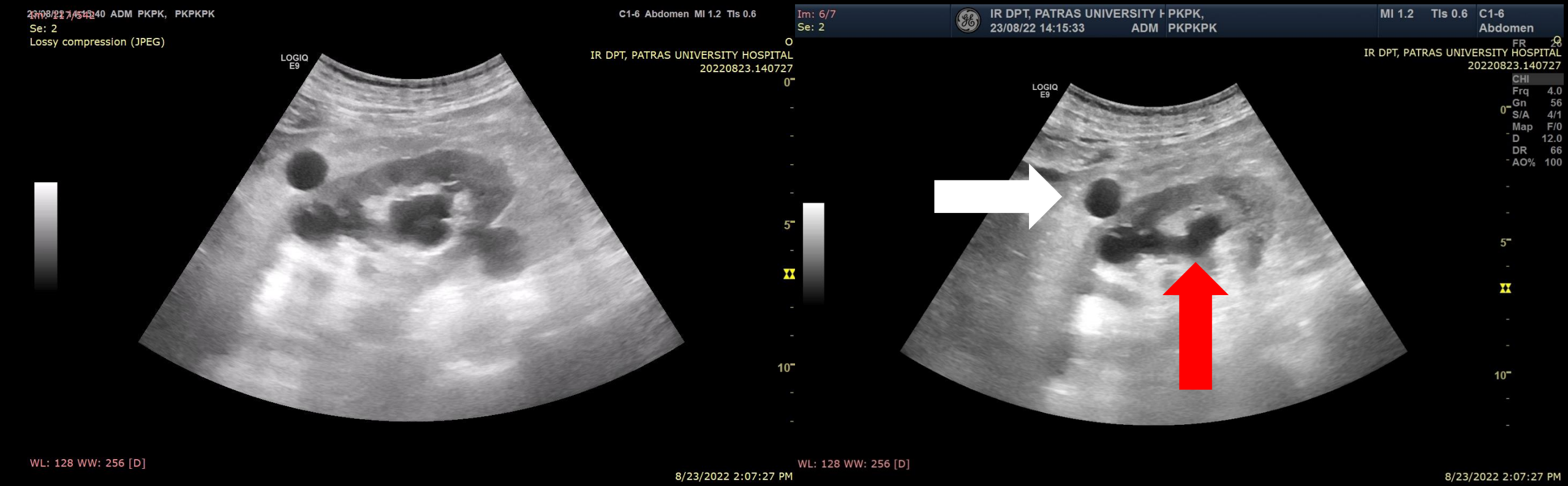
Αιμορραγίες



Νεφρικές Κύστεις

Αντιμετώπιση: Μόνο αν γίνουν συμπτωματικές
Θεραπεία: Αλκοόλη, Foaming

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Se: 2
Lossy compression (JPEG)
LOGIQ E9
C1-6 Abdomen MI 1.2 TIs 0.6
IR DPT, PATRAS UNIVERSITY HOSPITAL
20220823.140727
WL: 128 WW: 256 [D]
8/23/2022 2:07:27 PM
Im: 6/7
Se: 2
IR DPT, PATRAS UNIVERSITY H PKPK,
23/08/22 14:15:33 ADM PKPKPK
MI 1.2 TIs 0.6
C1-6 Abdomen
FR 20
IR DPT, PATRAS UNIVERSITY HOSPITAL
20220823.140727
CHI
Frq 4.0
Gn 56
S/A 4/1
Map F/0
D 12.0
DR 66
AO% 100
WL: 128 WW: 256 [D]
8/23/2022 2:07:27 PM

Νεφρικοί Όγκοι

Individualized approach is needed as there are no pathognomonic imaging characteristics to safely distinguish b/w benign and malignant solid masses

Young woman with hyperdense homogenously enhanced solid mass → Biopsy

Malignant masses may remain stable and benign may increase in diameter

Νεφρικοί Όγκοι

Any mass enhancement >15HU considered RCC until proven otherwise

10-20% of enhancing masses suggestive of RCC prove benign on biopsy or excision

Growth rate of SRM: 0.5-1.0cm/year

≈20% SRM show aggressive growth rates

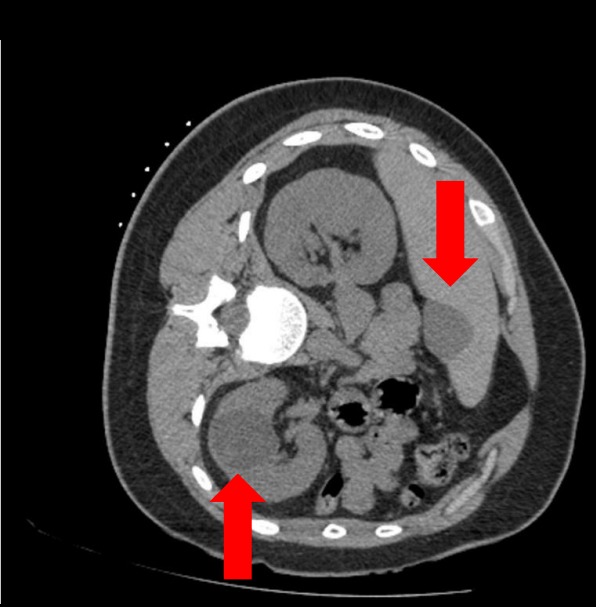
Localized RCC: 5-year survival >90%

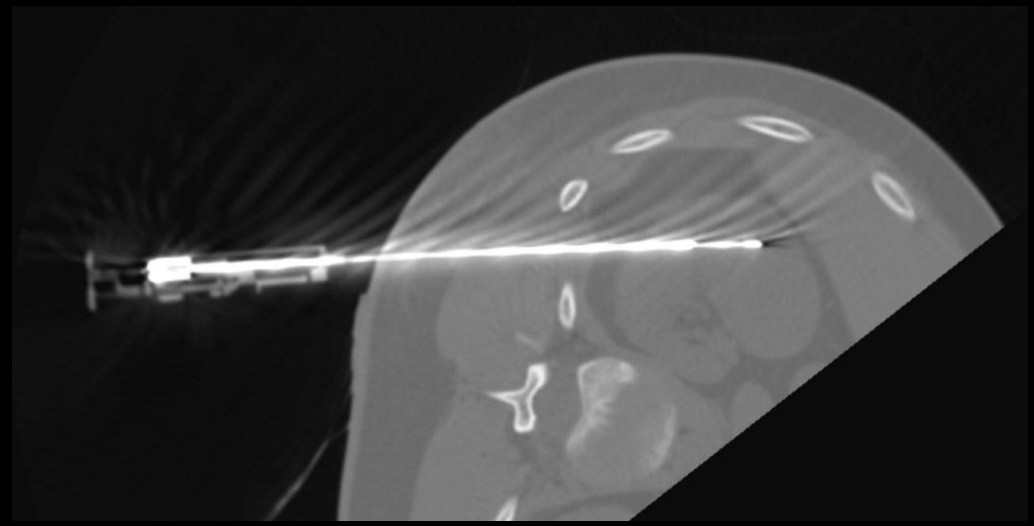
Advanced RCC: 5-year survival ≈10%

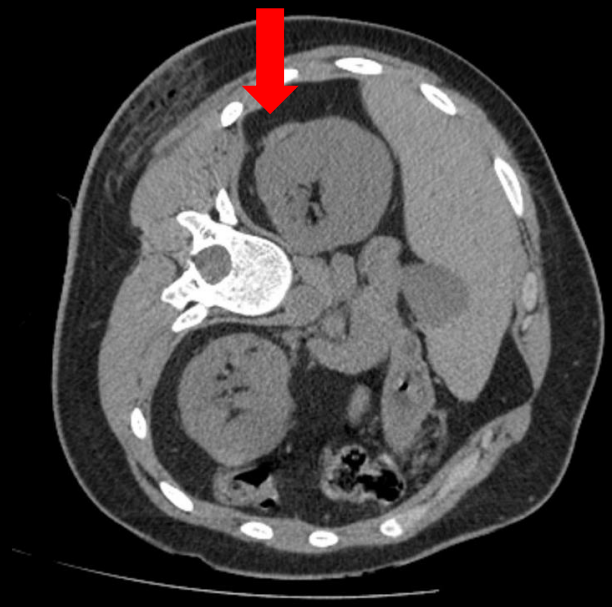
Νεφρικοί Όγκοι - Βιοψία

Παρόμοιες αρχές προσέγγισης με τη βιοψία ήπατος/πνεύμονα

Αυξημένη αγγείωση (Χ4 αιμάτωση του ήπατος)







Νεφρικοί Όγκοι - Αντιμετώπιση

Επεμβατική Αντιμετώπιση: Διαδερμική Εκτομή (Ablation)

Όγκοι έως 4cm (Small Renal Cell Carcinoma, cT1a)

Έως 40% εμφανίζεται ως τυχαίο απεικονιστικό εύρημα

Έως τώρα: Μερική νεφρεκτομή (Gold Standard)

Διαδερμικές μέθοδοι εκτομής

Μεγάλη ηλικία

Συννοσηρότητες

Επηρεασμένη νεφρική λειτουργία

Νεφρικοί Όγκοι - Αντιμετώπιση

Μέθοδοι Διαδερμικής Εκτομής

Θερμική: RadioFrequency, MicroWave, Cryoablation

Βιολογική: Irreversible Electroporation

HIFU: High Intensity Focused Ultrasound

Τι ισχύει σήμερα

T1a tumours

Ideally <3cm

T1b emerging

Palliative any size

(+/- embolisation)

T	Primary tumour
TX	Primary tumour cannot be assessed
T0	No evidence of primary tumour
T1	Tumour ≤7 cm in greatest dimension, limited to the kidney
T1a	Tumour ≤4.0 cm
T1b	Tumour >4.0 cm but ≤7.0 cm
T2	Tumour >7.0 cm in greatest dimension, limited to the kidney
T2a	Tumour >7 cm but ≤10 cm
T2b	Tumour >10 cm, limited to the kidney
T3	Tumour extends to major veins or peri-nephric tissues but not into the ipsilateral adrenal gland and not beyond Gerota's fascia
T3a	Tumour grossly extends into the renal vein or its segmental (muscle-containing) branches, or tumour invades peri-renal and/or renal sinus fat (peri-pelvic) but not beyond Gerota's fascia
T3b	Tumour grossly extends into the vena cava below the diaphragm
T3c	Tumour grossly extends into the vena cava above the diaphragm or invades the wall of the vena cava
T4	Tumour invades beyond Gerota's fascia (including contiguous extension into the ipsilateral adrenal gland)

Υποψήφιοι για διαδερμική παρέμβαση

Patients unfit for surgery

Elderly patients

Single kidney

Bilateral tumors

Genetic predisposition to multiple tumors

Impaired renal function

Ablation and cell death

43° apoptosis in 30-60 sec

50° death in a few minutes

55° death in a few seconds

>60° immediate cell death

Curative Principle
R0 Ablation

10-15%
Less ablation zone
than expected

Τεχνική με MW

No electrical current

Local anaesthesia, sedation/general anesthesia

Percutaneous approach

Larger ablation areas

Up to 100 W for up to 10 mins

Less heat-sink effect

Πριν αρχίσουμε

Have all needed previous imaging
Give antibiotic prophylaxis

Supine is how images are taken
Prone maybe your desired patient position

Anatomy changes
Kidneys move
Bowels move
Lung might interfere in your field especially for upper lobe tumors (use tilt)

Πριν αρχίσουμε

Know possible complications

Think outside the kidney

neighboring organs (mainly bowel and nerves)

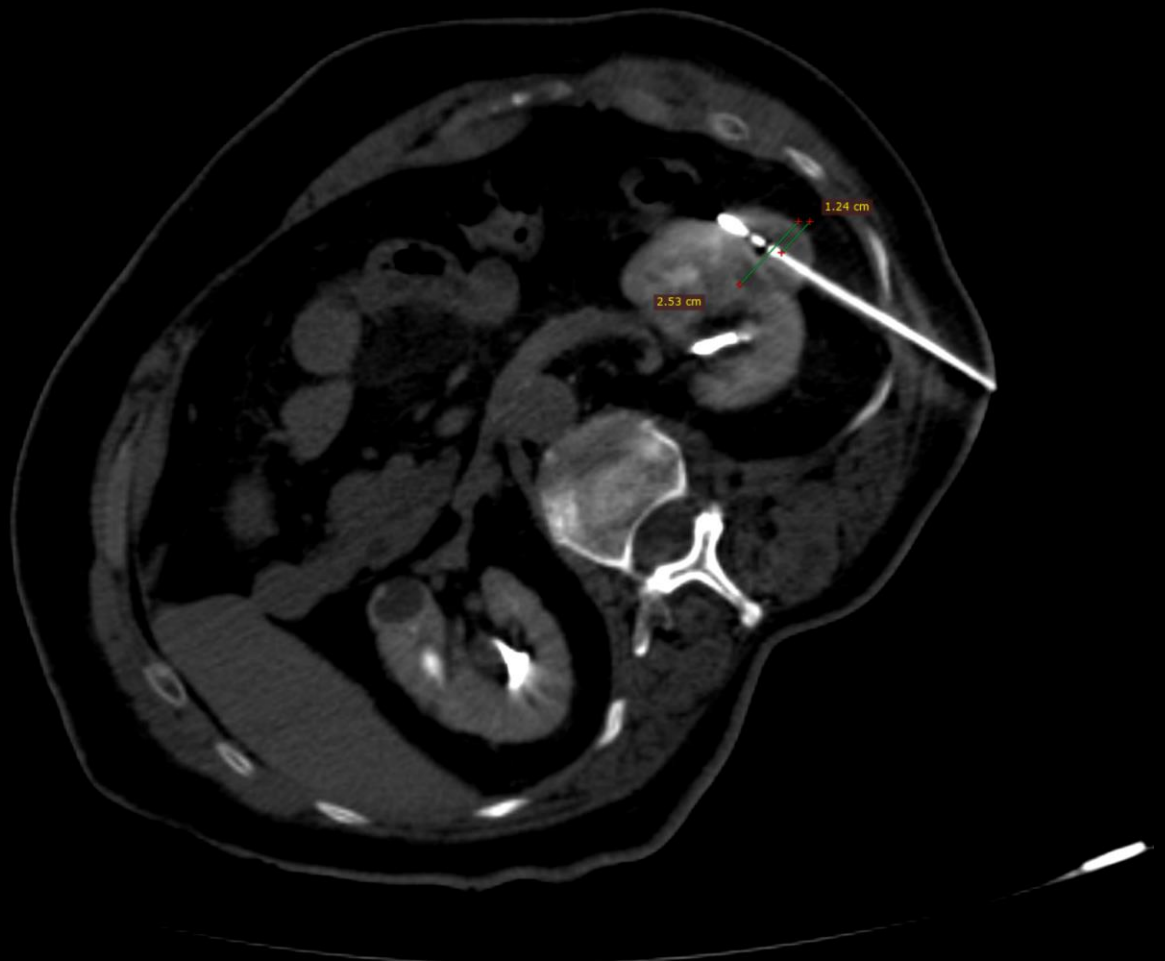
Think inside the kidney

collecting system

vessels

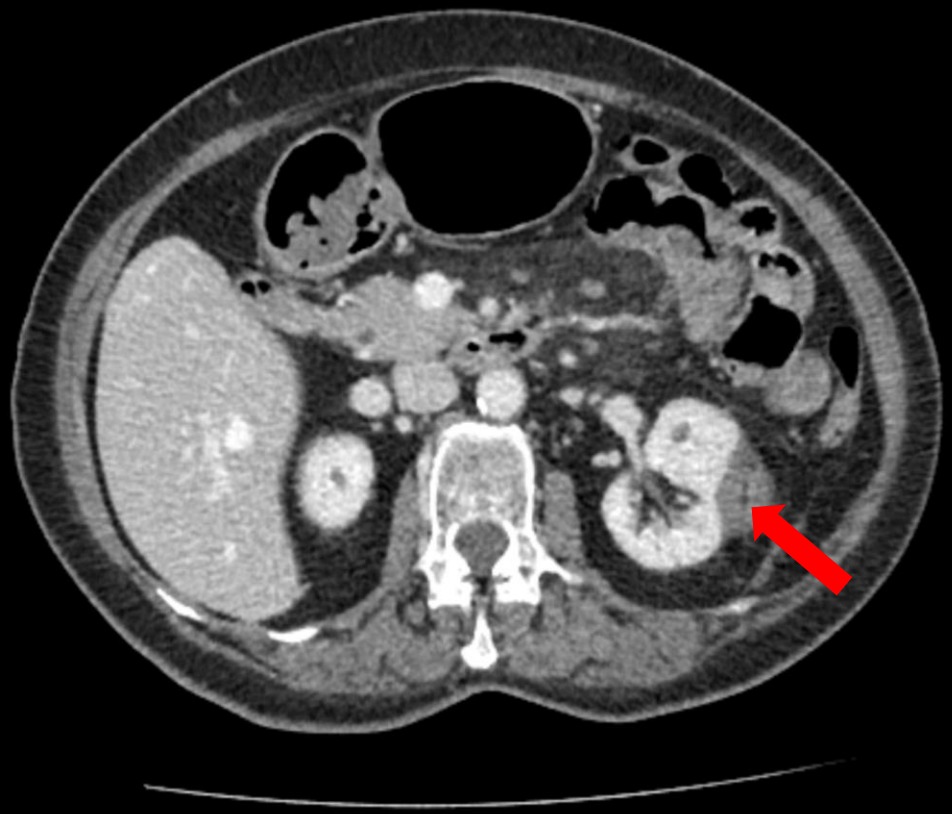
Don’t hesitate to use contrast!!!

Case 1 (62 y.o. male partly exophytic 2.53cm)



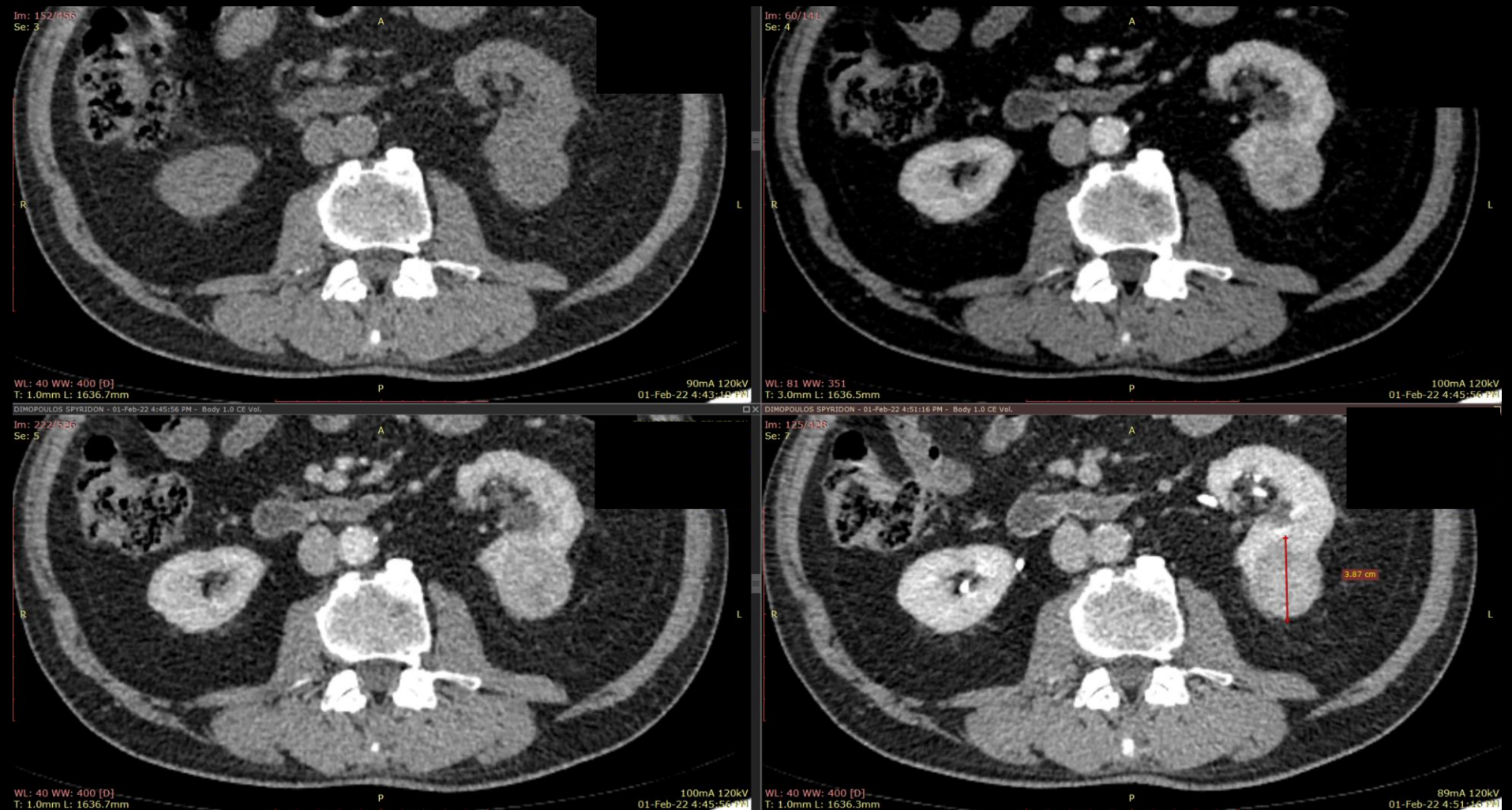
Next day

2-year follow-up



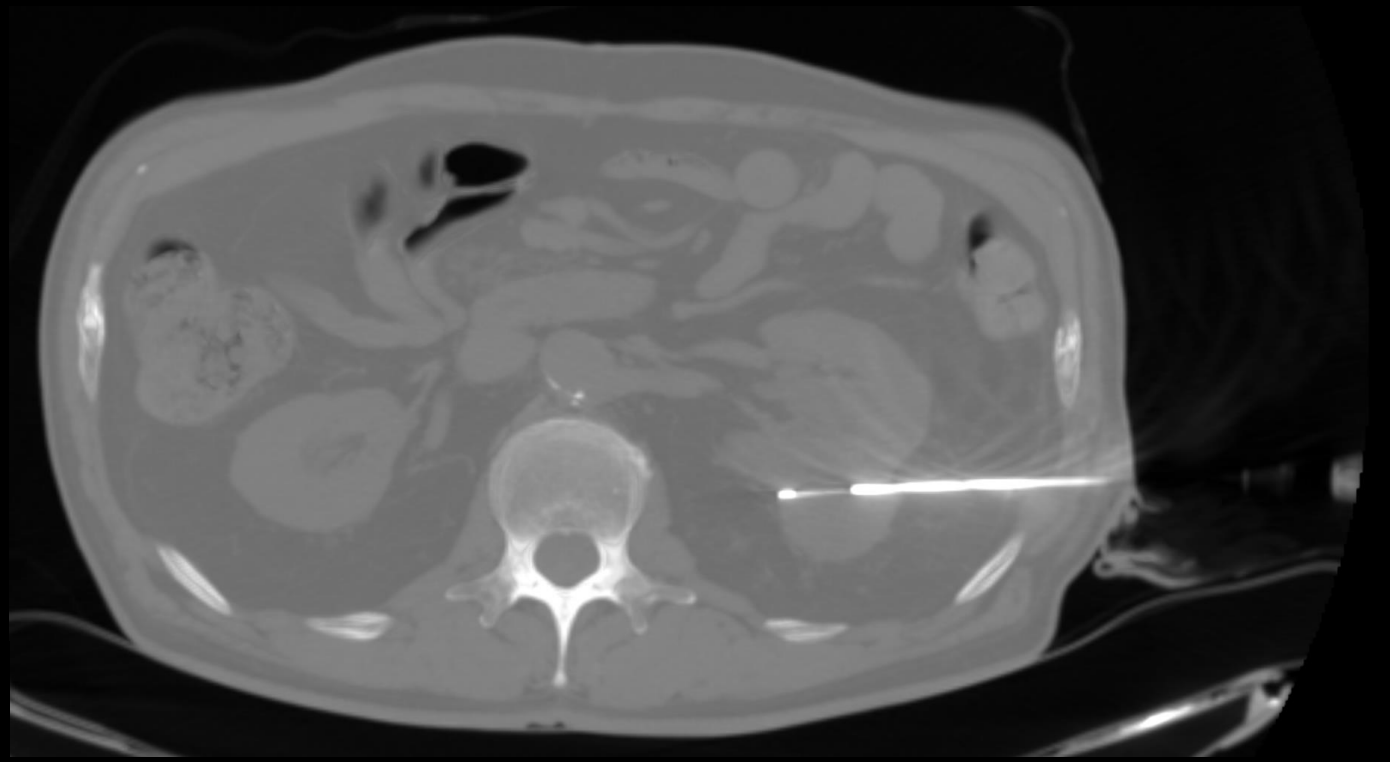
3-year follow-up

Case 2

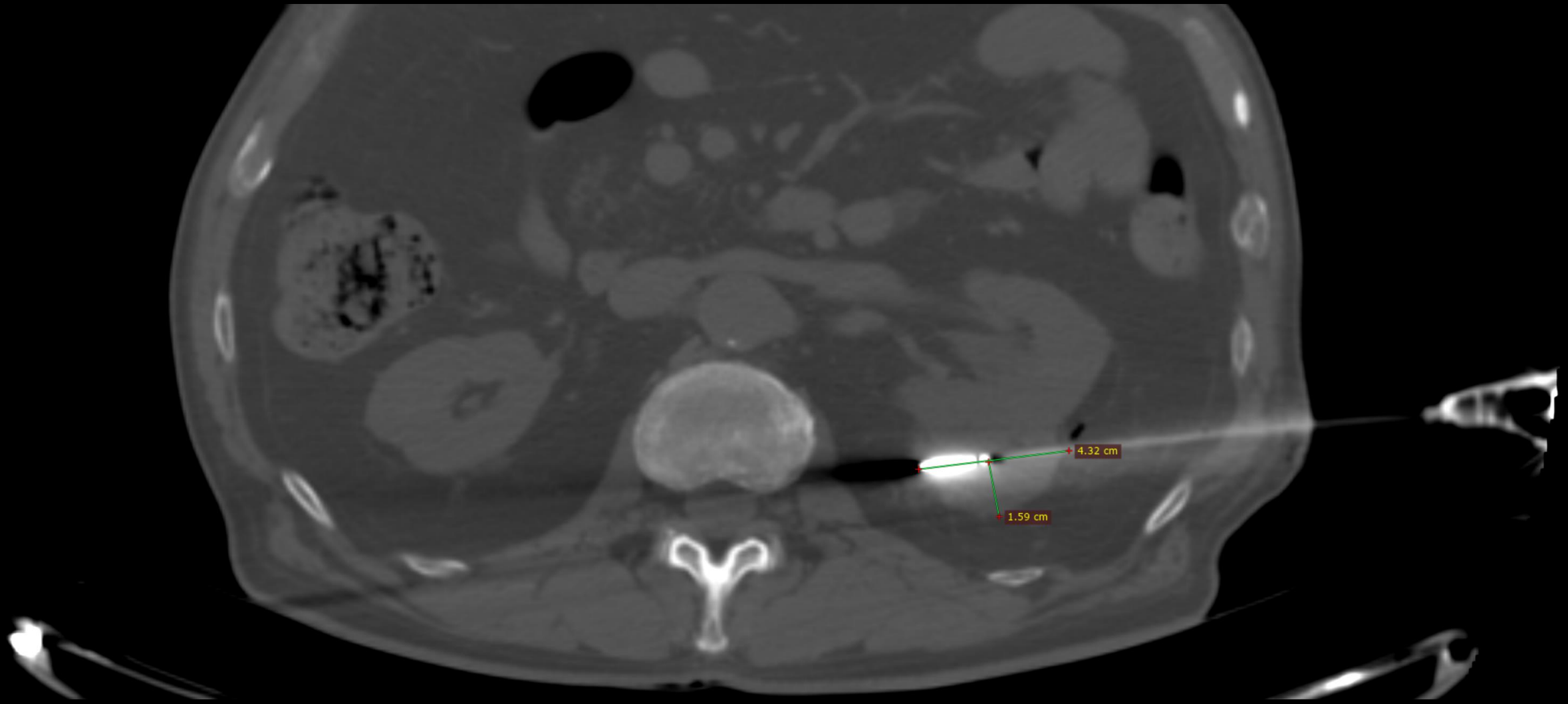


65 y.o. male
Exophytic
3.87 cm

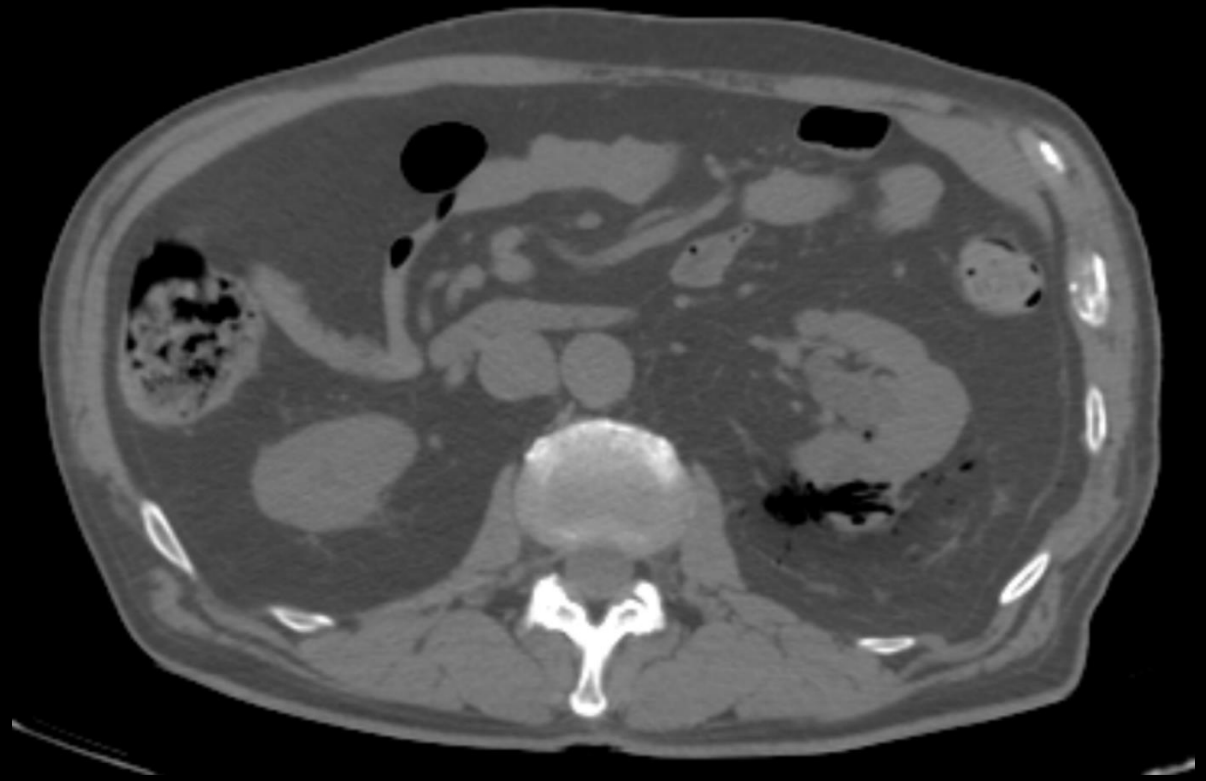
Biopsy

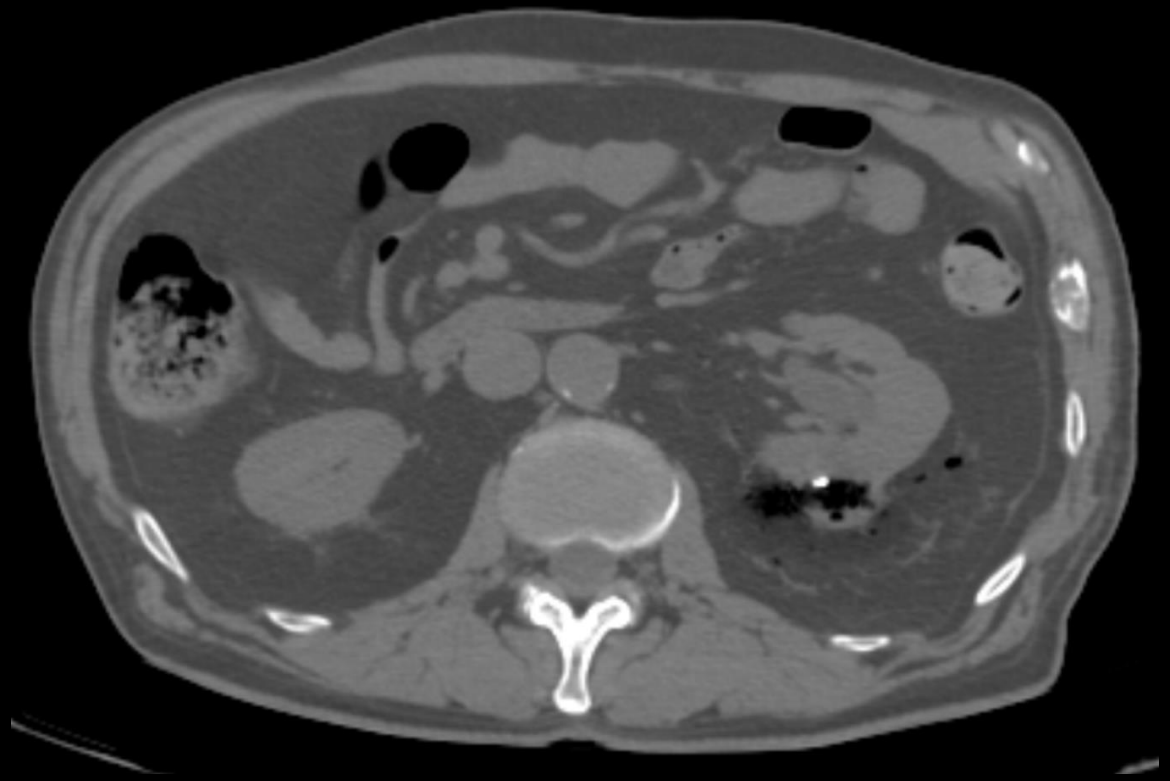


Procedure

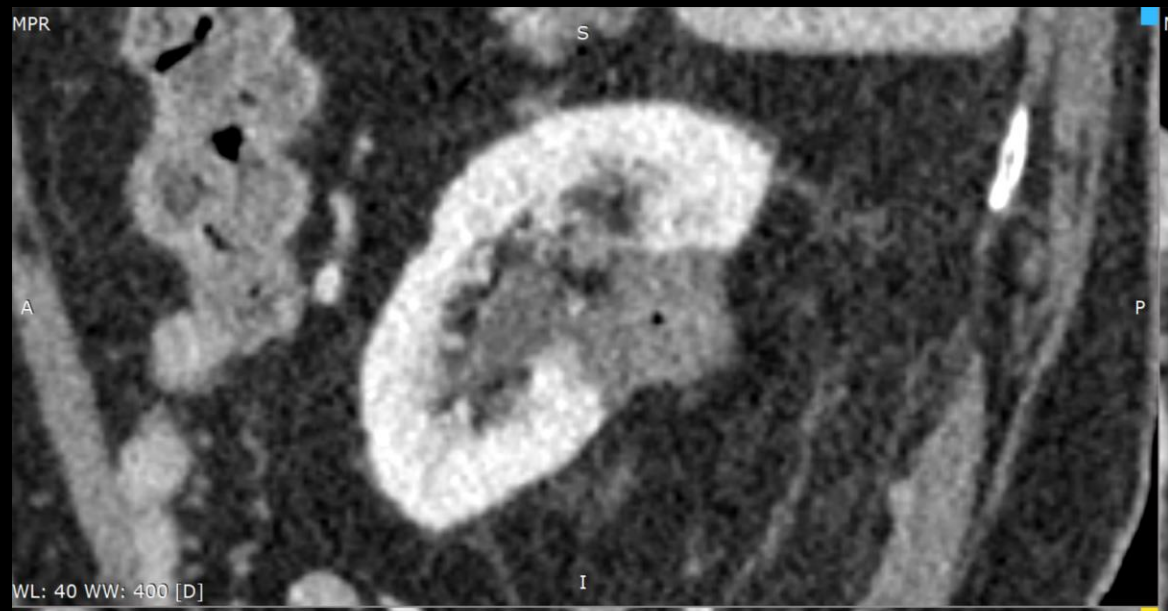


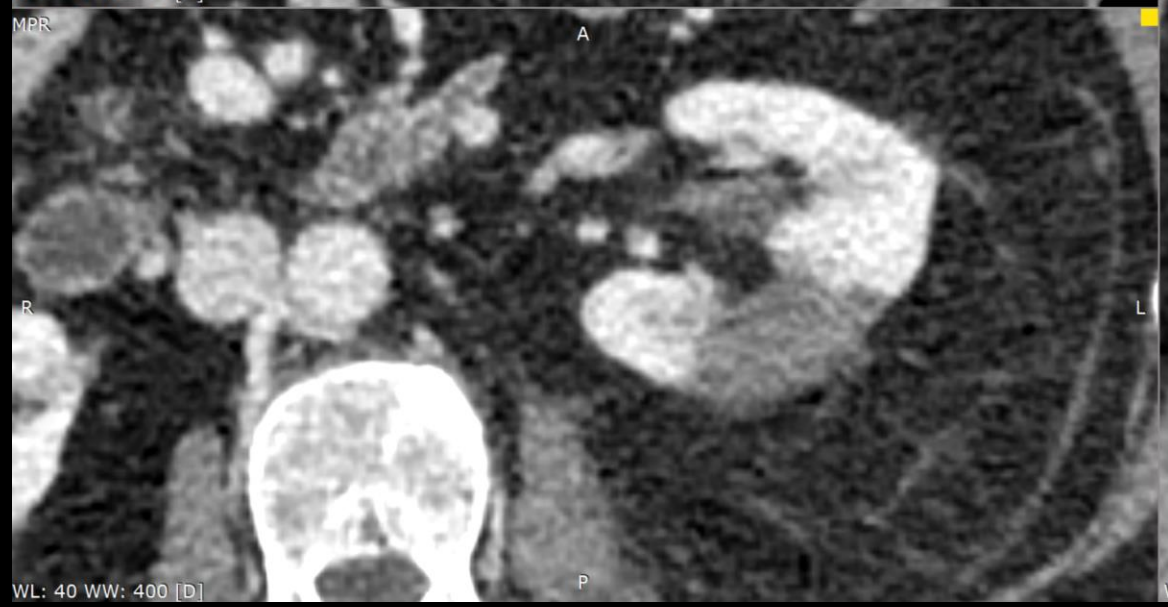
Immediate outcome





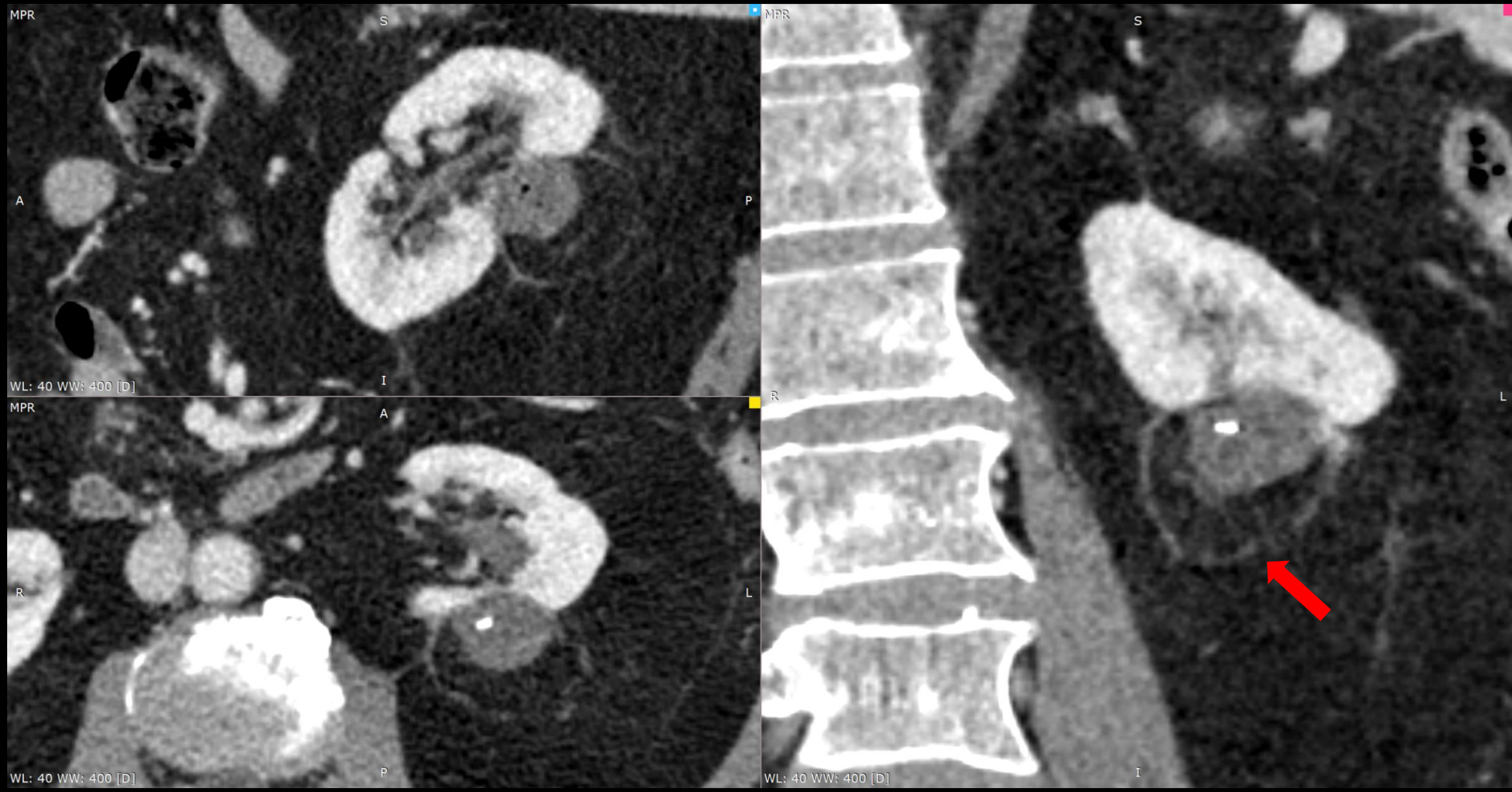
Next day


MPR
S
A
P
WL: 40 WW: 400 [D]
I

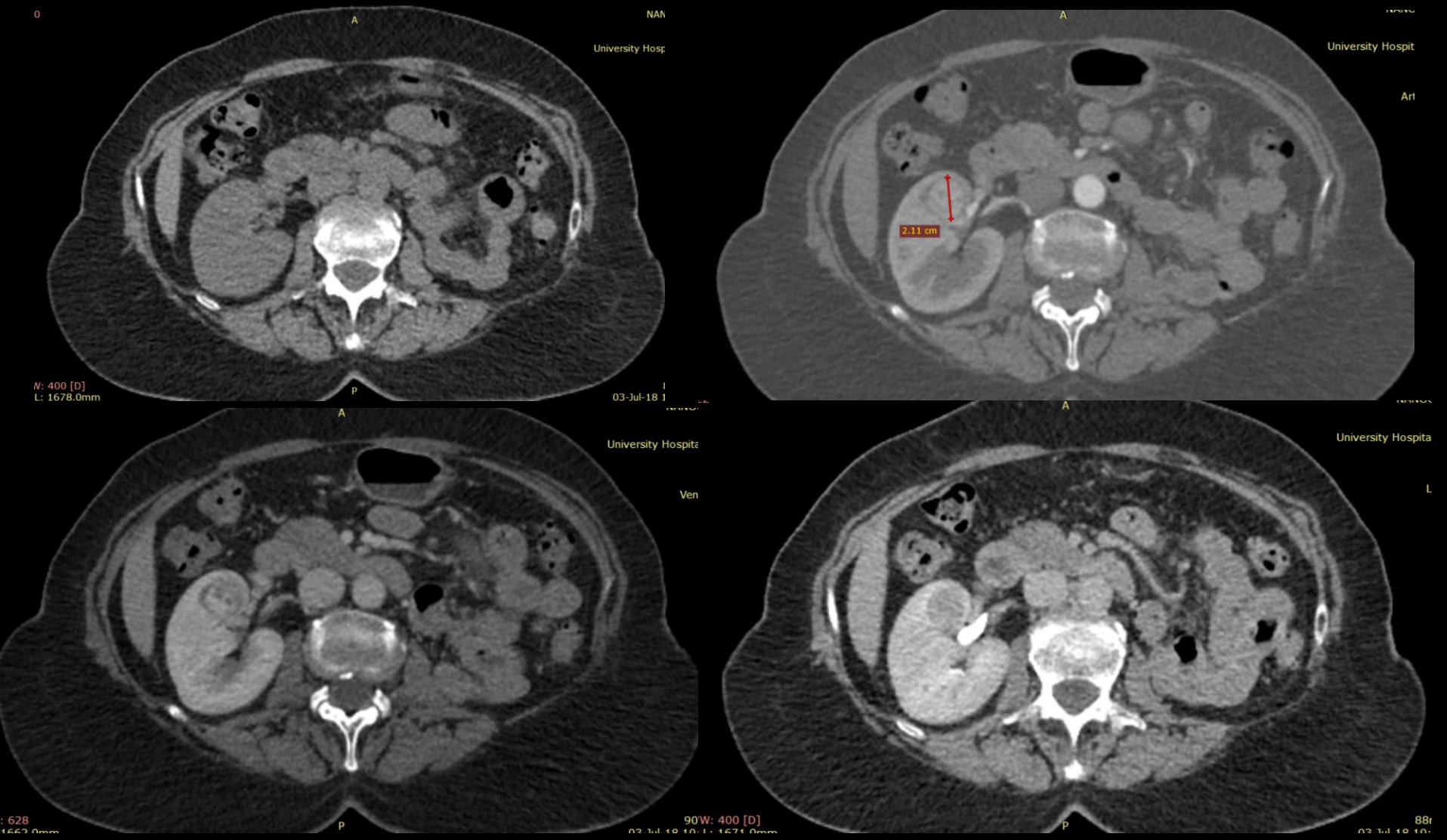

MPR
A
R
L
WL: 40 WW: 400 [D]
P


MPR
S
R
L
WL: 40 WW: 400 [D]
I

2-year follow-up

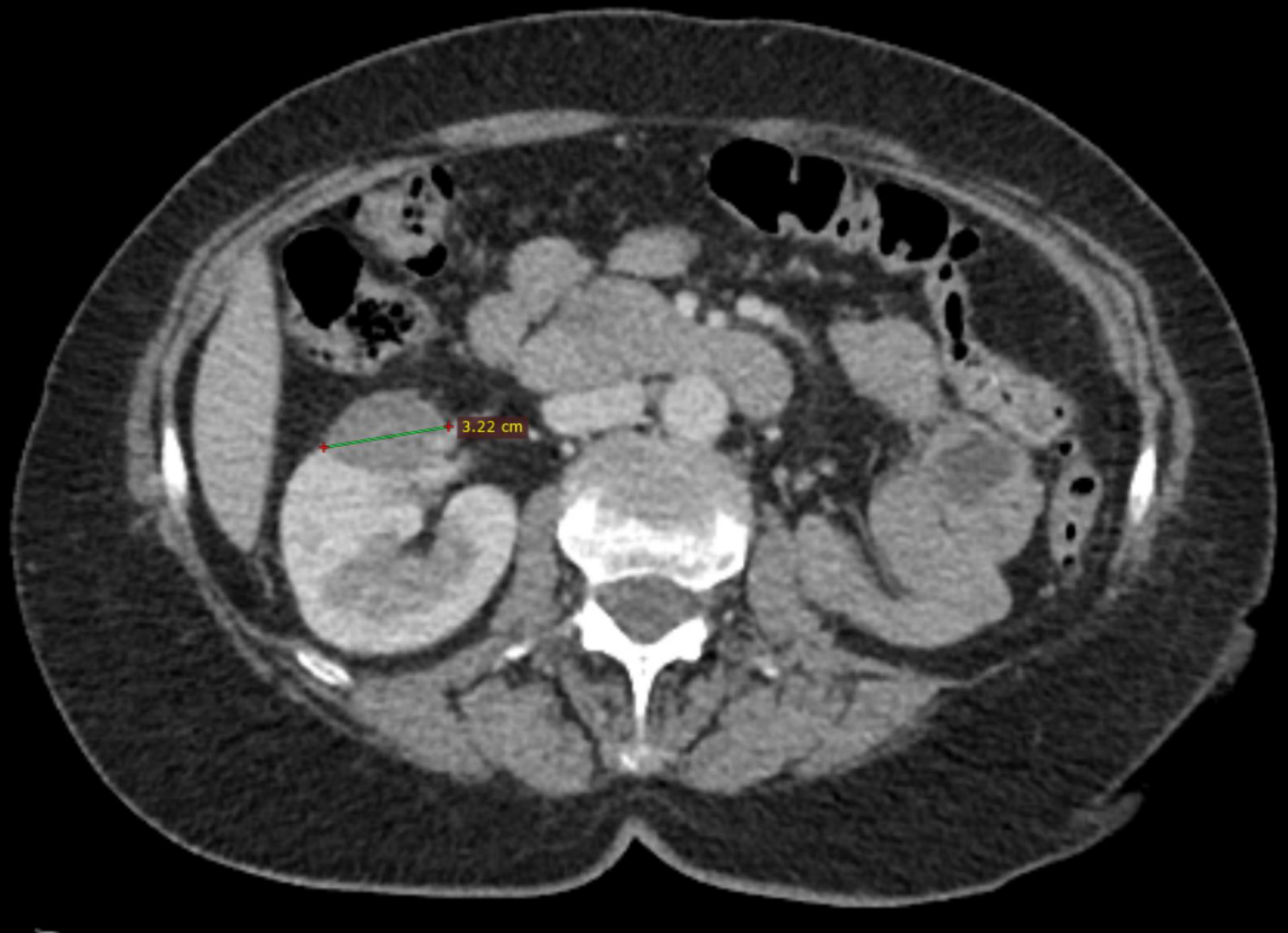


Case 3

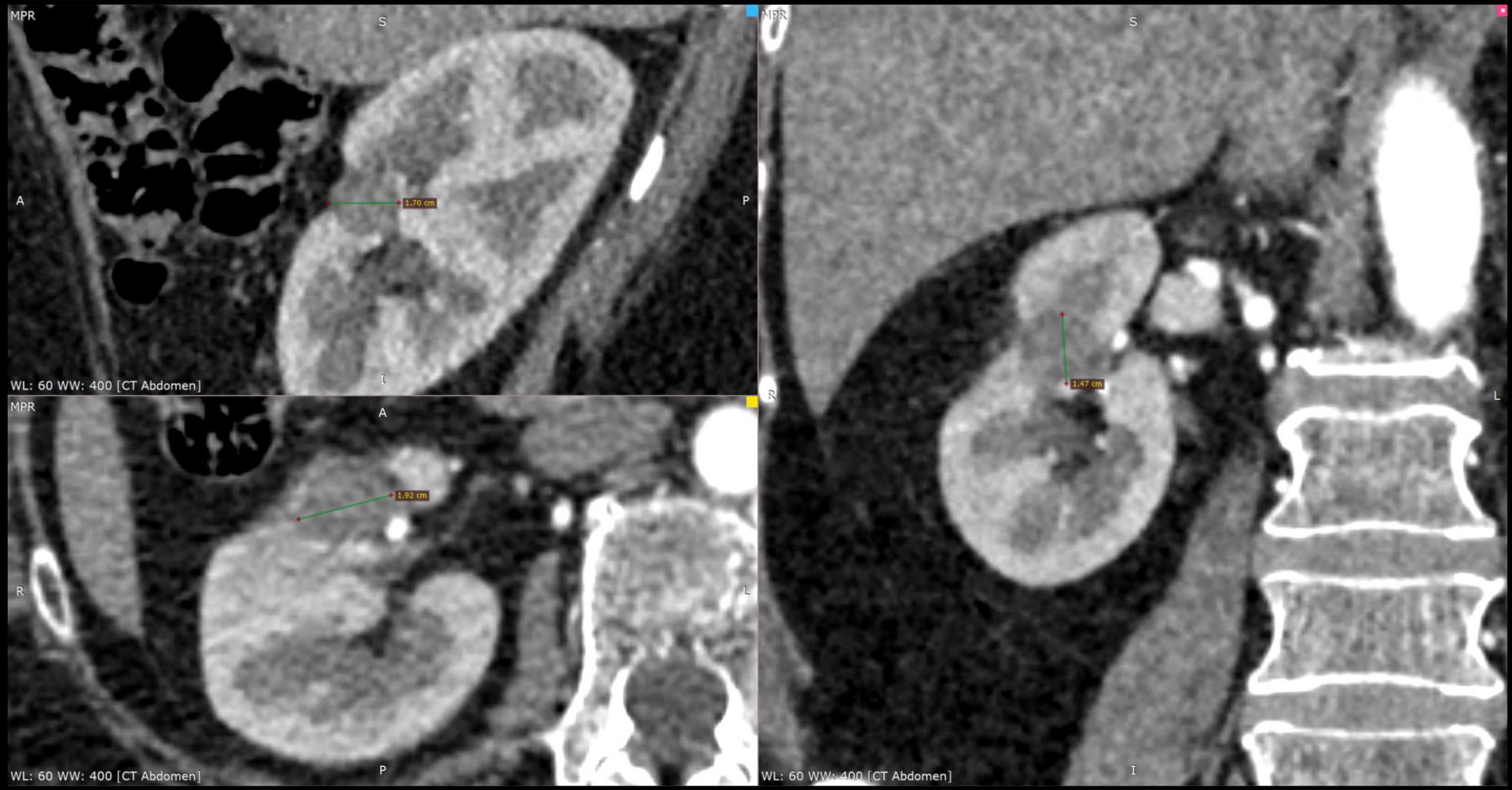


75 y.o female
single-kidney
Endophytic
2.11 cm

6-month follow-up



1-year follow-up

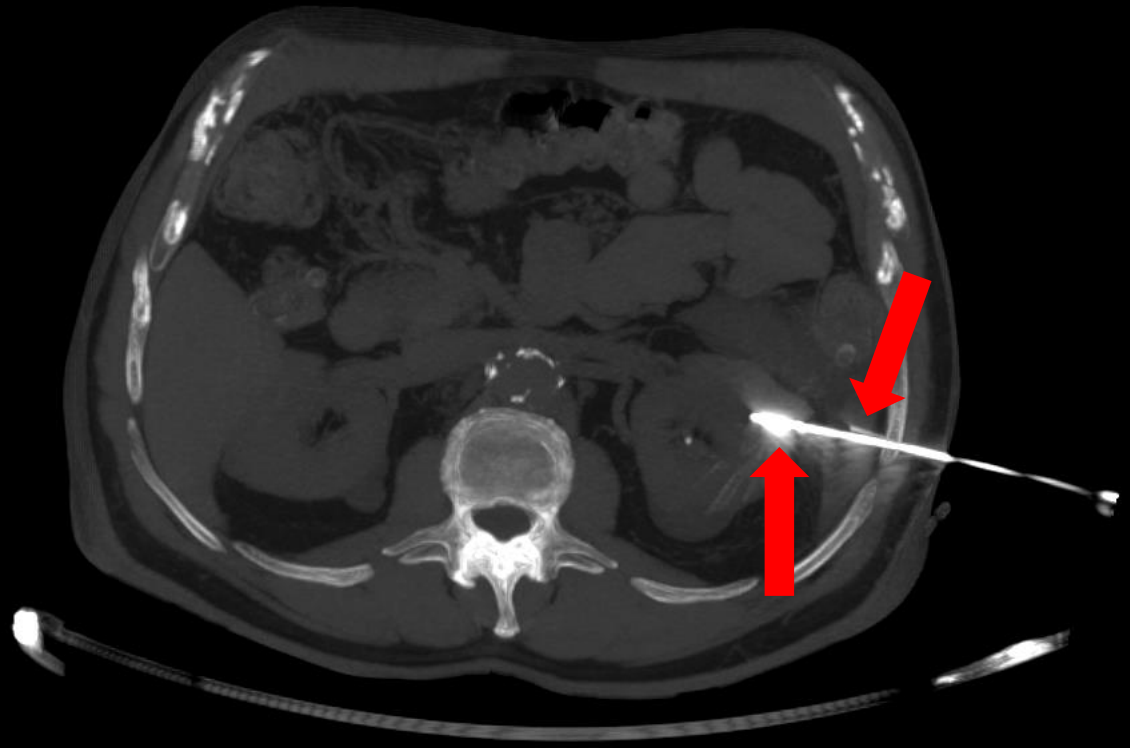


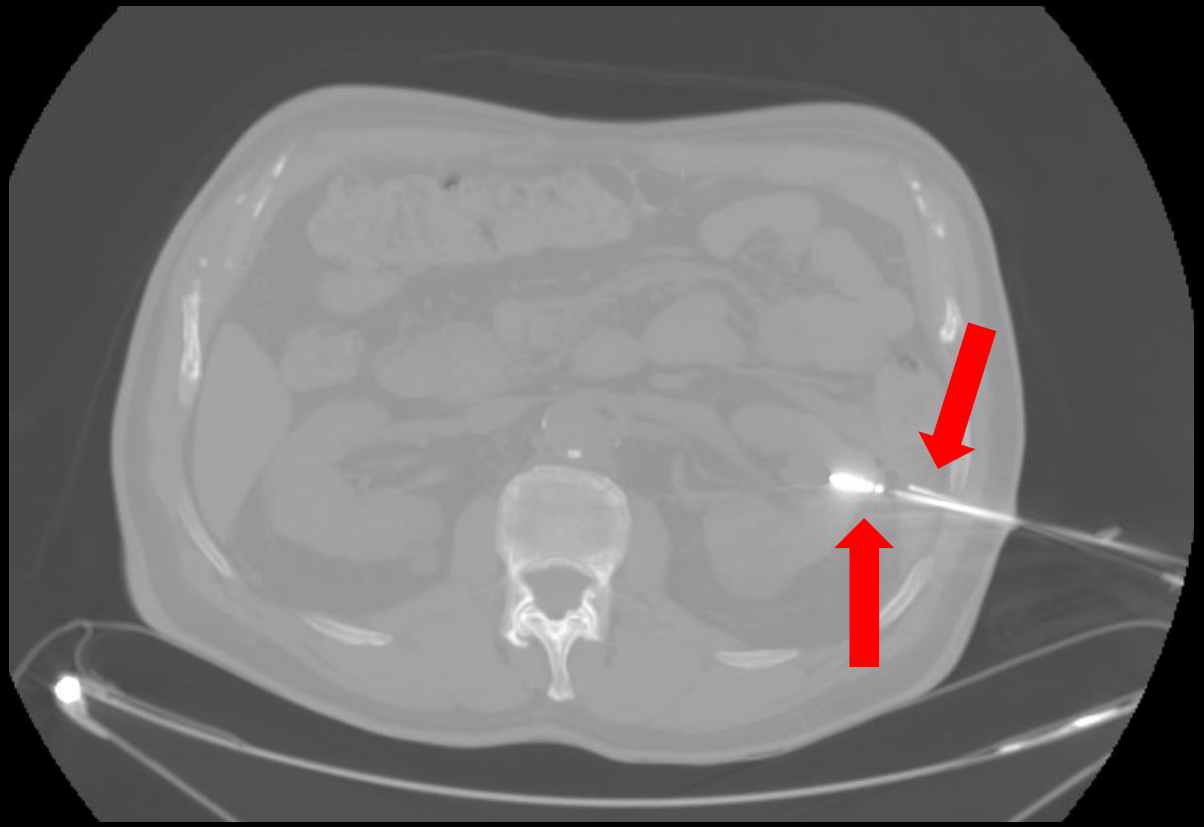
5-year follow-up

Case 4: Hydrodissection

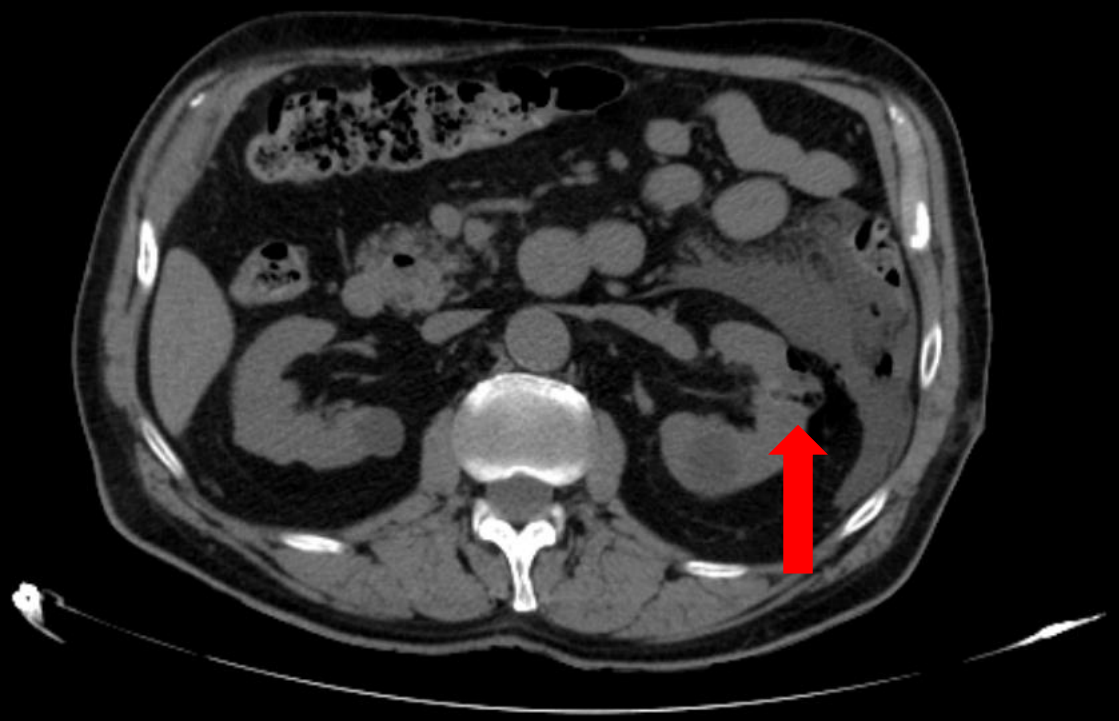
21G Needle
b/w
Bowel & Kidney


Constant
Dextrose injection

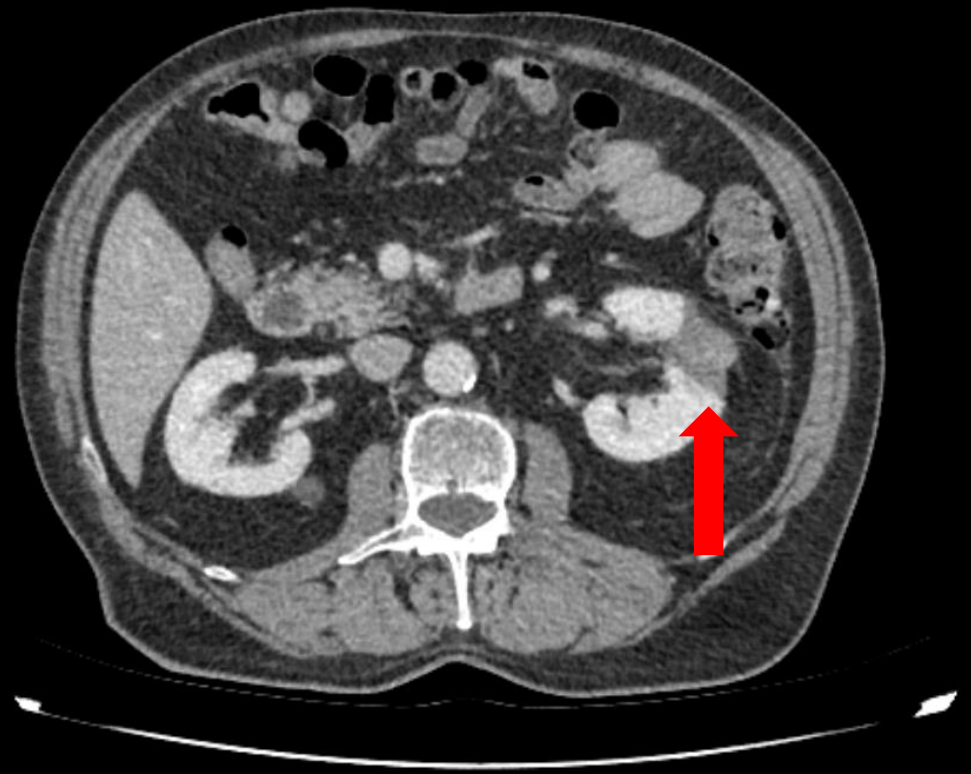




Immediately after



Next day



Follow-up

Schedule ideally CT scan @ next day, 3months, 6 months, 12 months

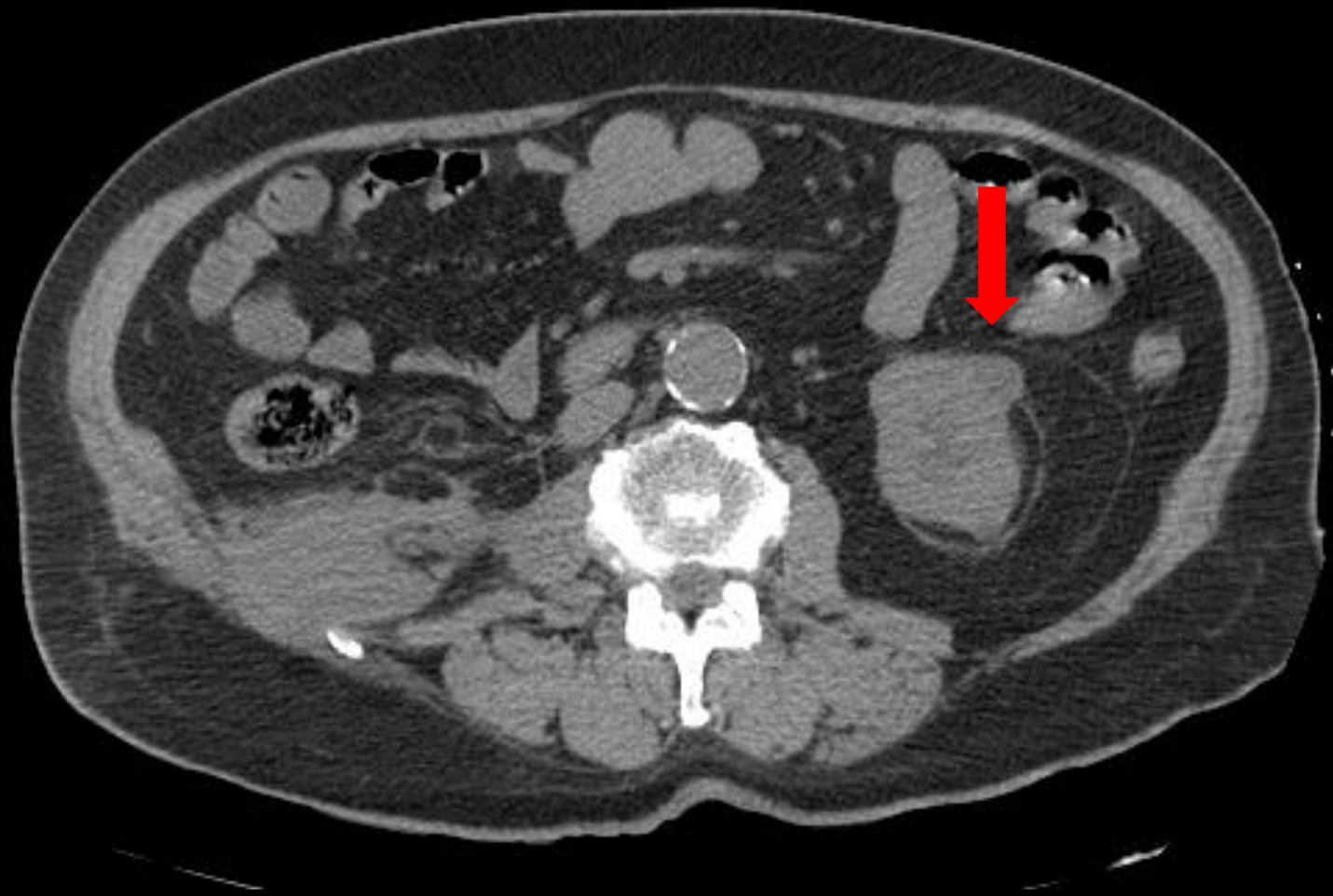
Every year until 5years

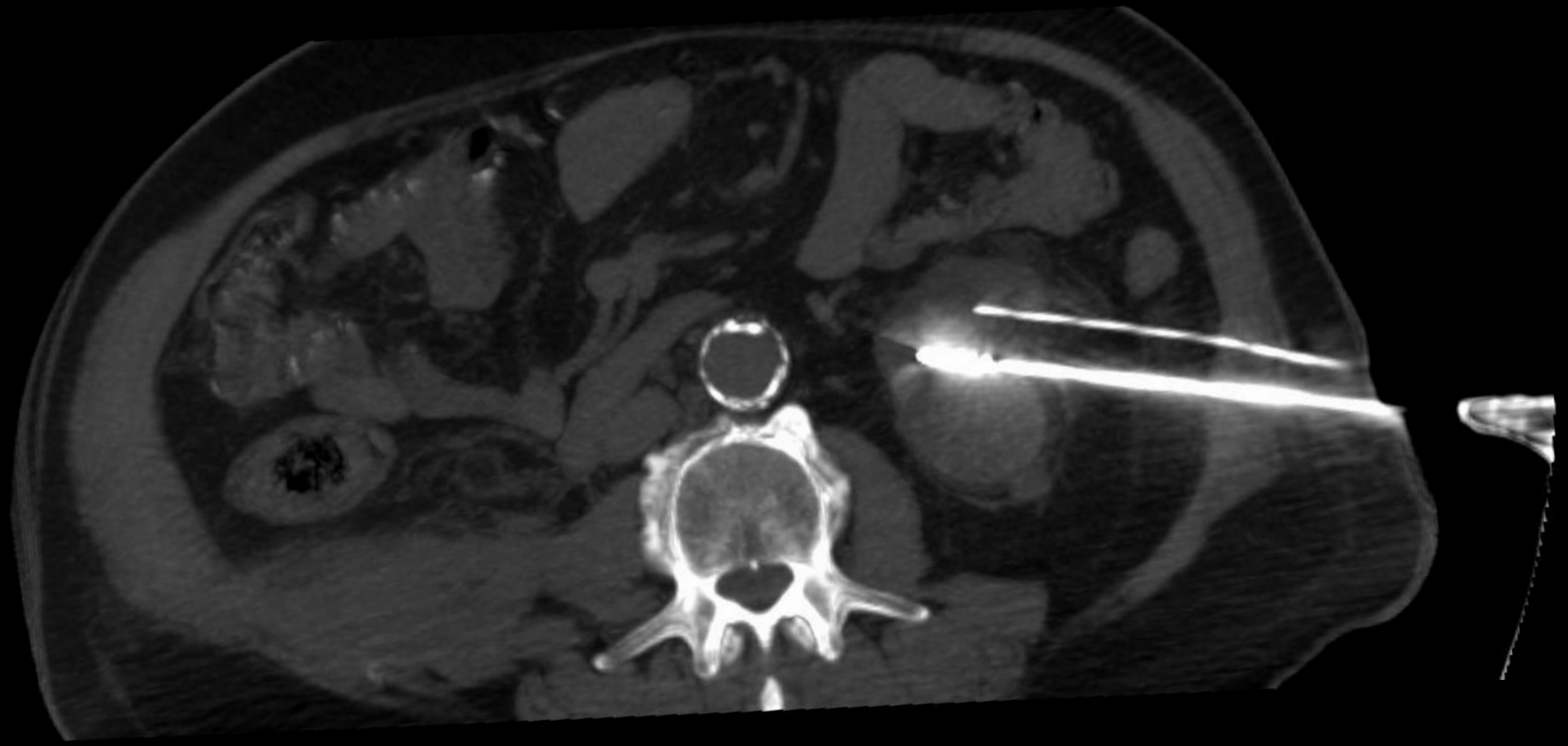
Refer your patient to a radiologist with experience in ablation follow-up

Tips:

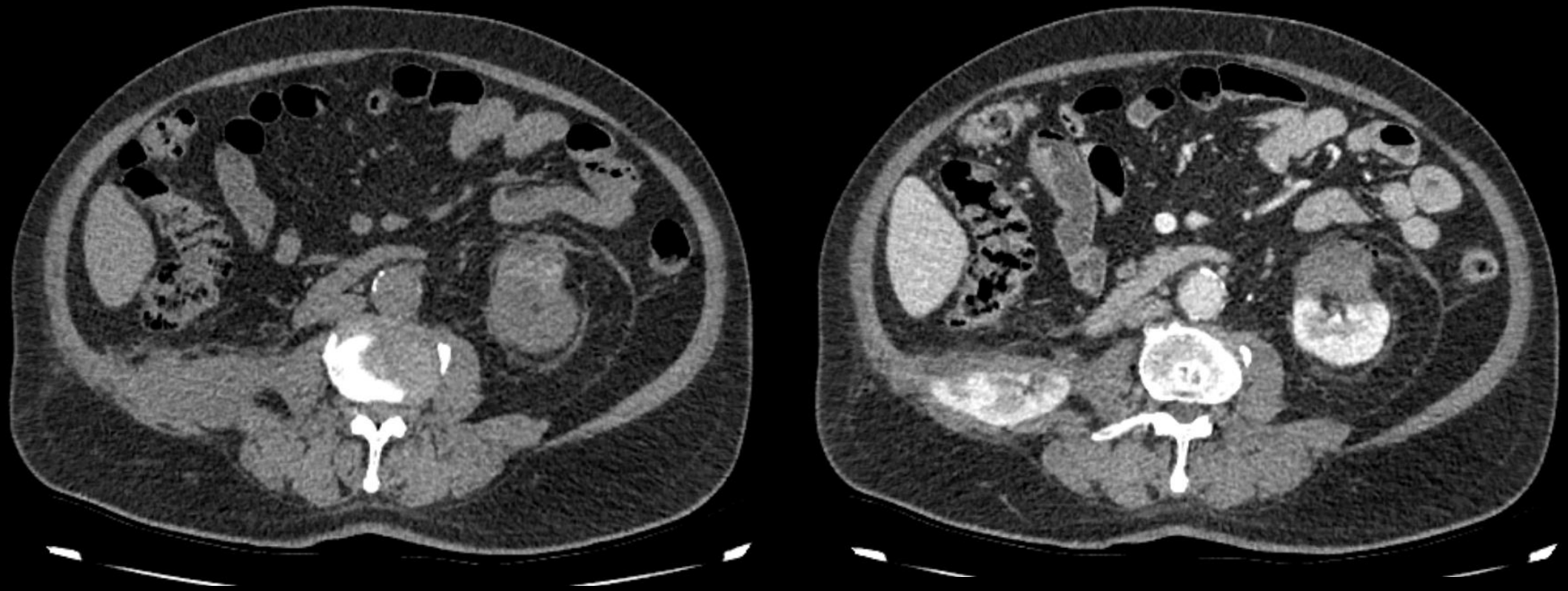
Carbonization (tumor shrinks, burnt and density increases – always ask for a non-contrast scan as part of the exam)

Contrast entrapment (When contrast is used to visualize tumor during the procedure it might get trapped inside the burning zone and look hyperdense)

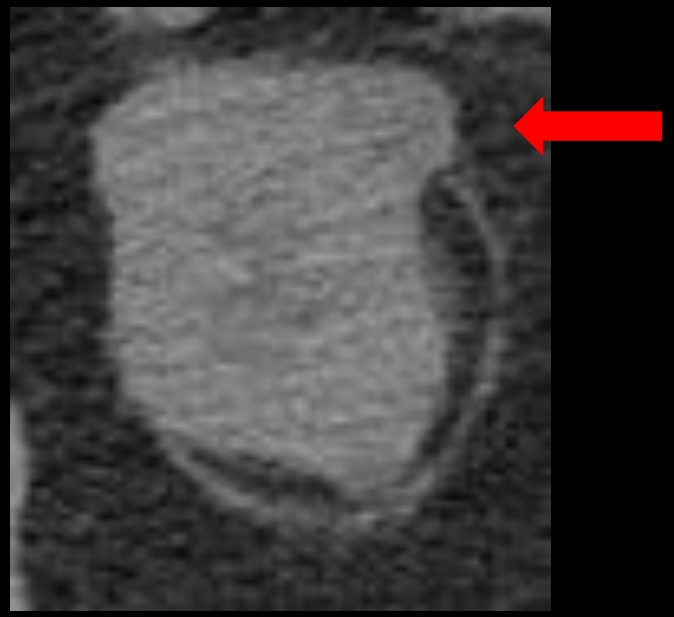


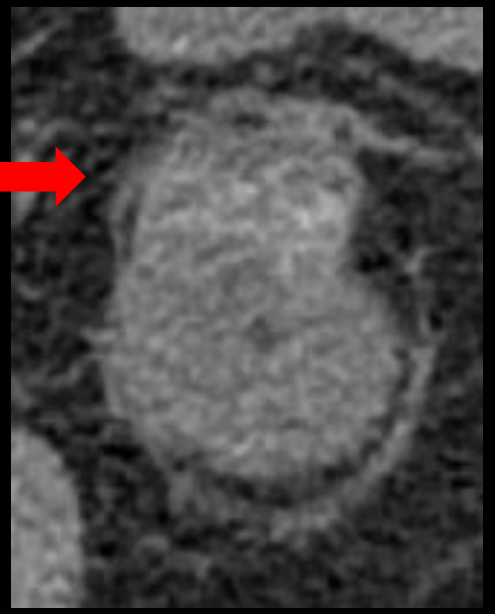


Next day

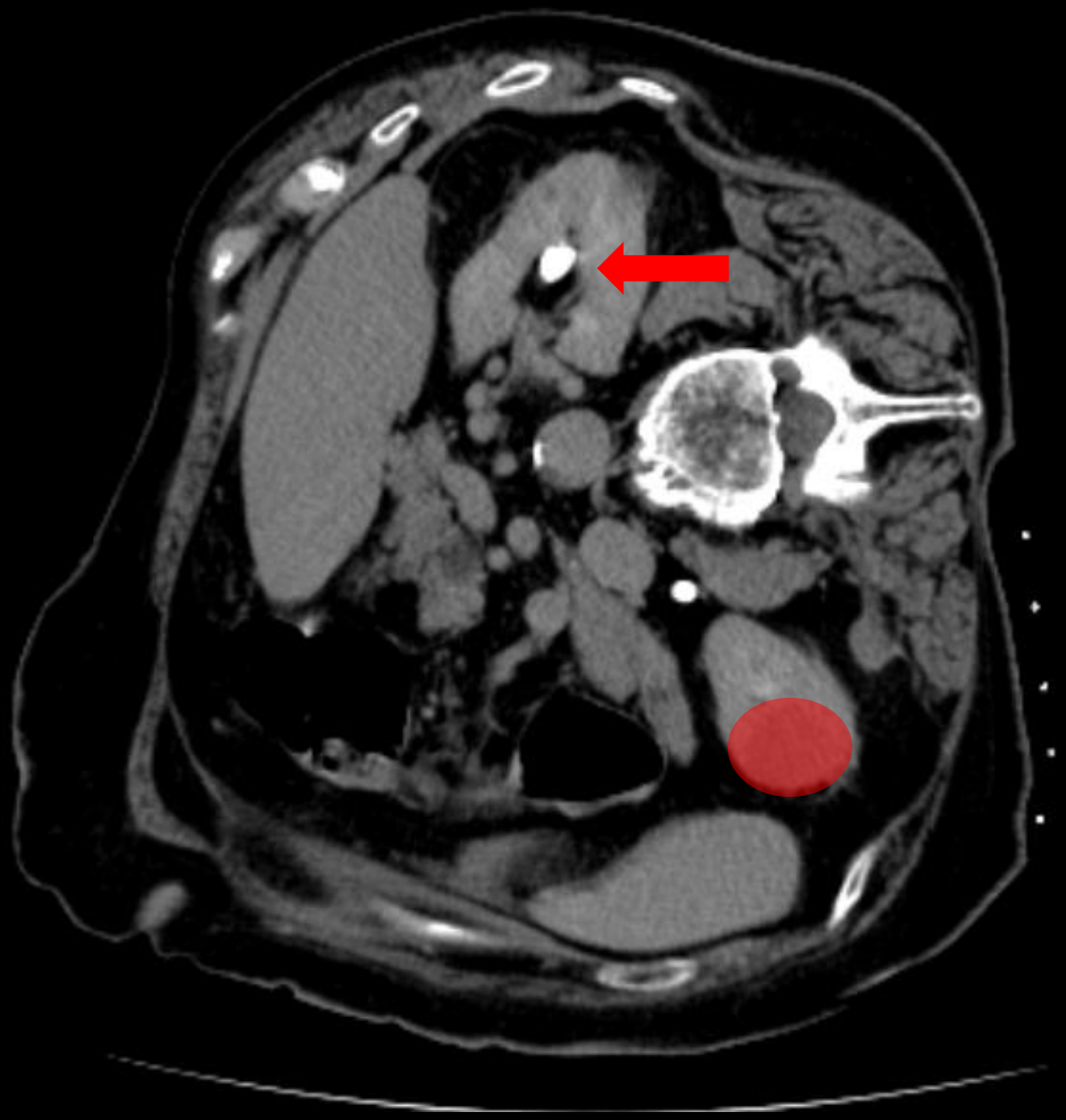


Carbonization





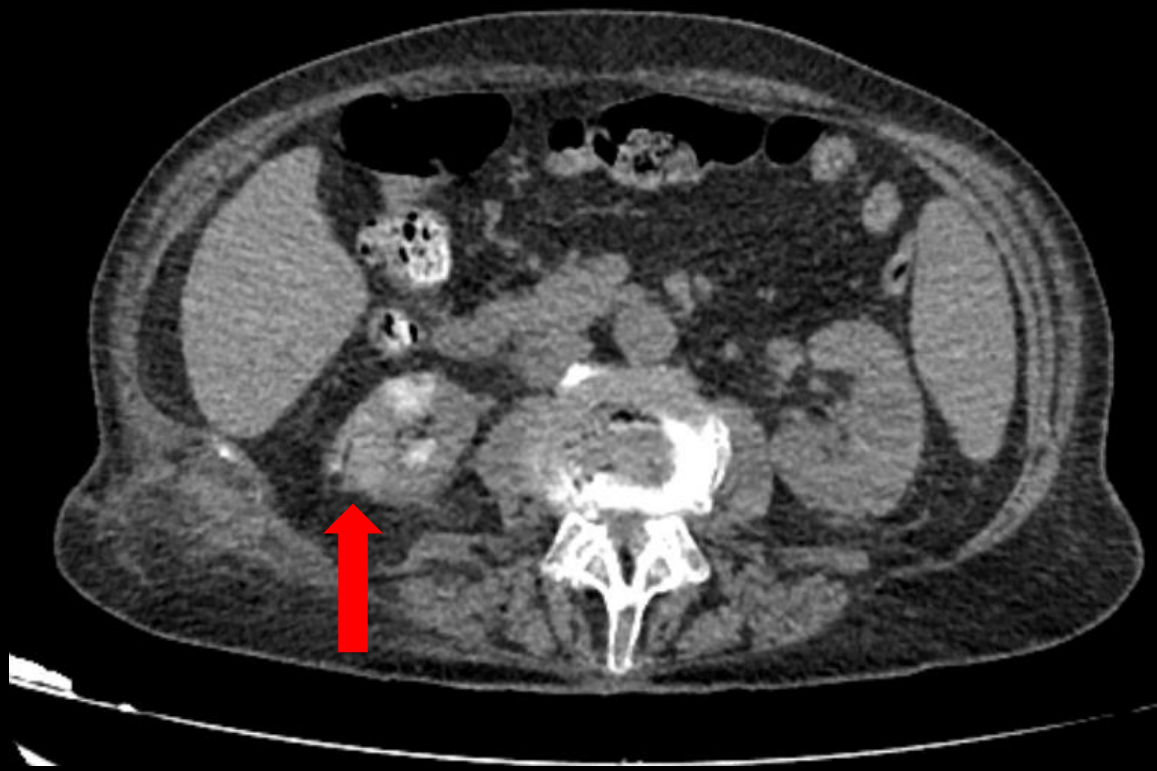
Contrast Entrapment



Non-contrast

Contrast

Next day



Επιπλοκές

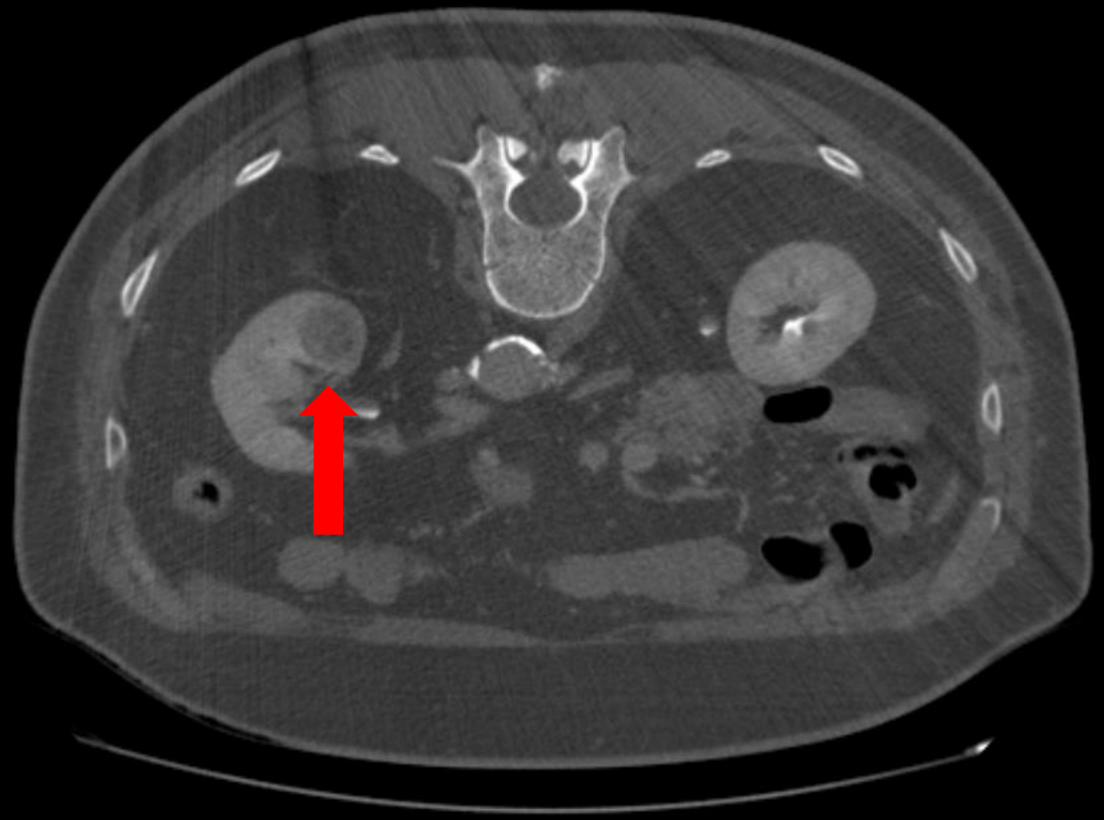
Damage/Burn neighbouring tissues

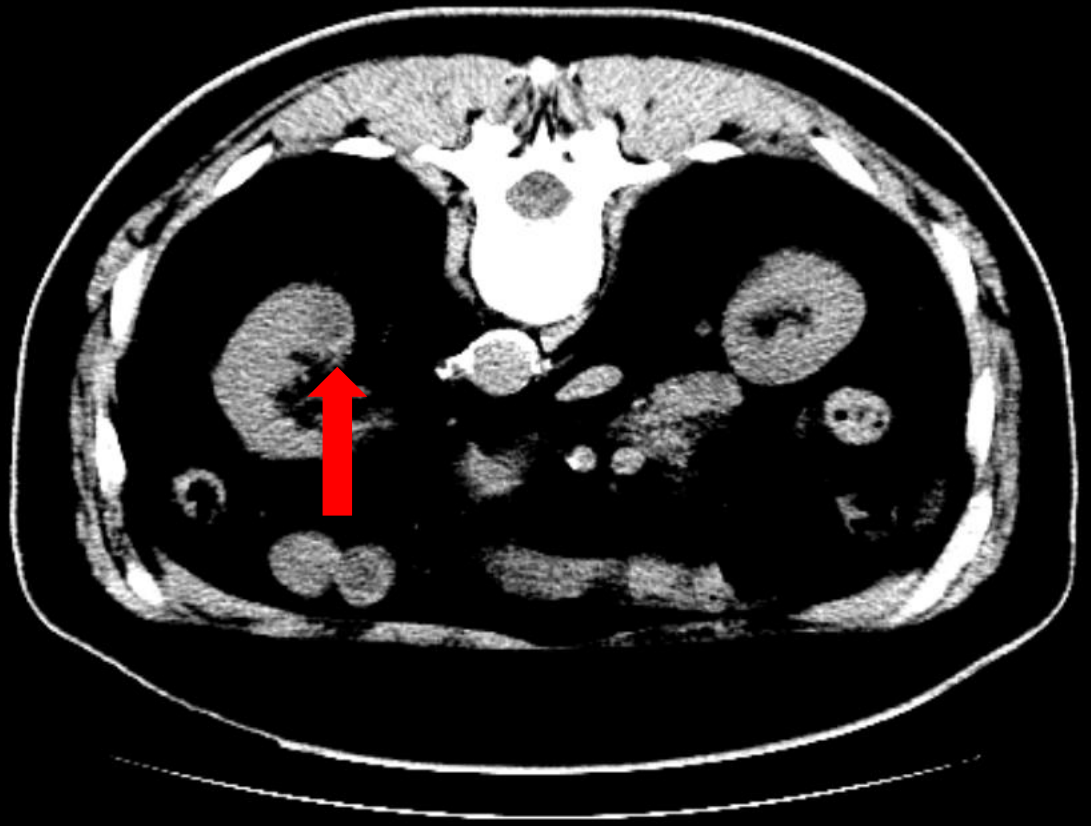
Hemorrhage

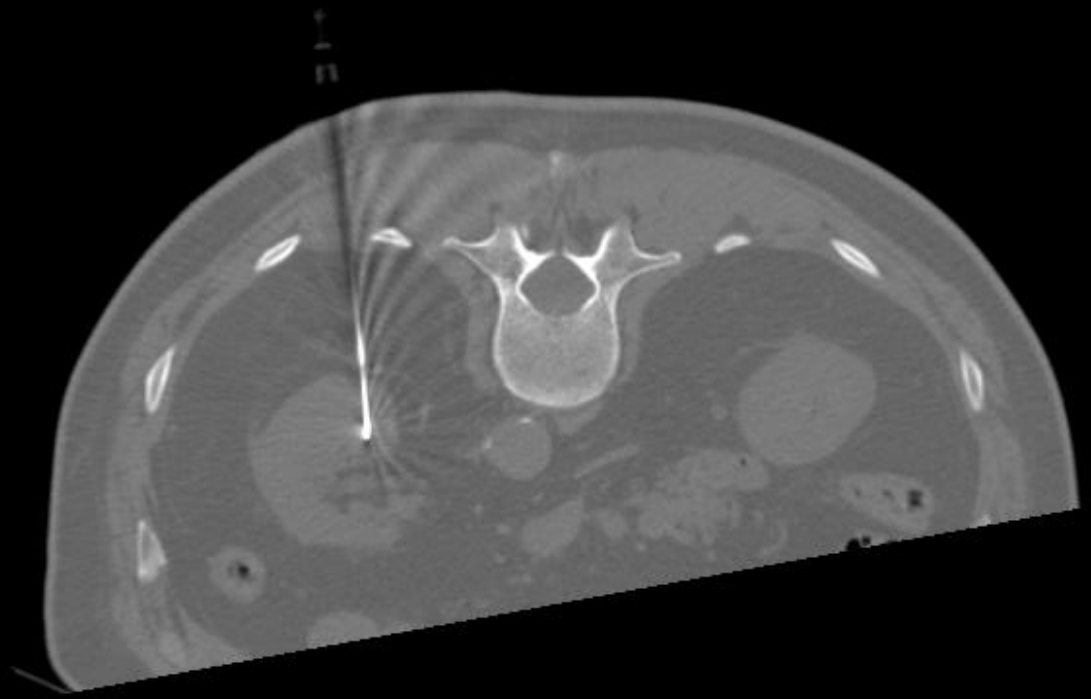
Burn part of the collecting system

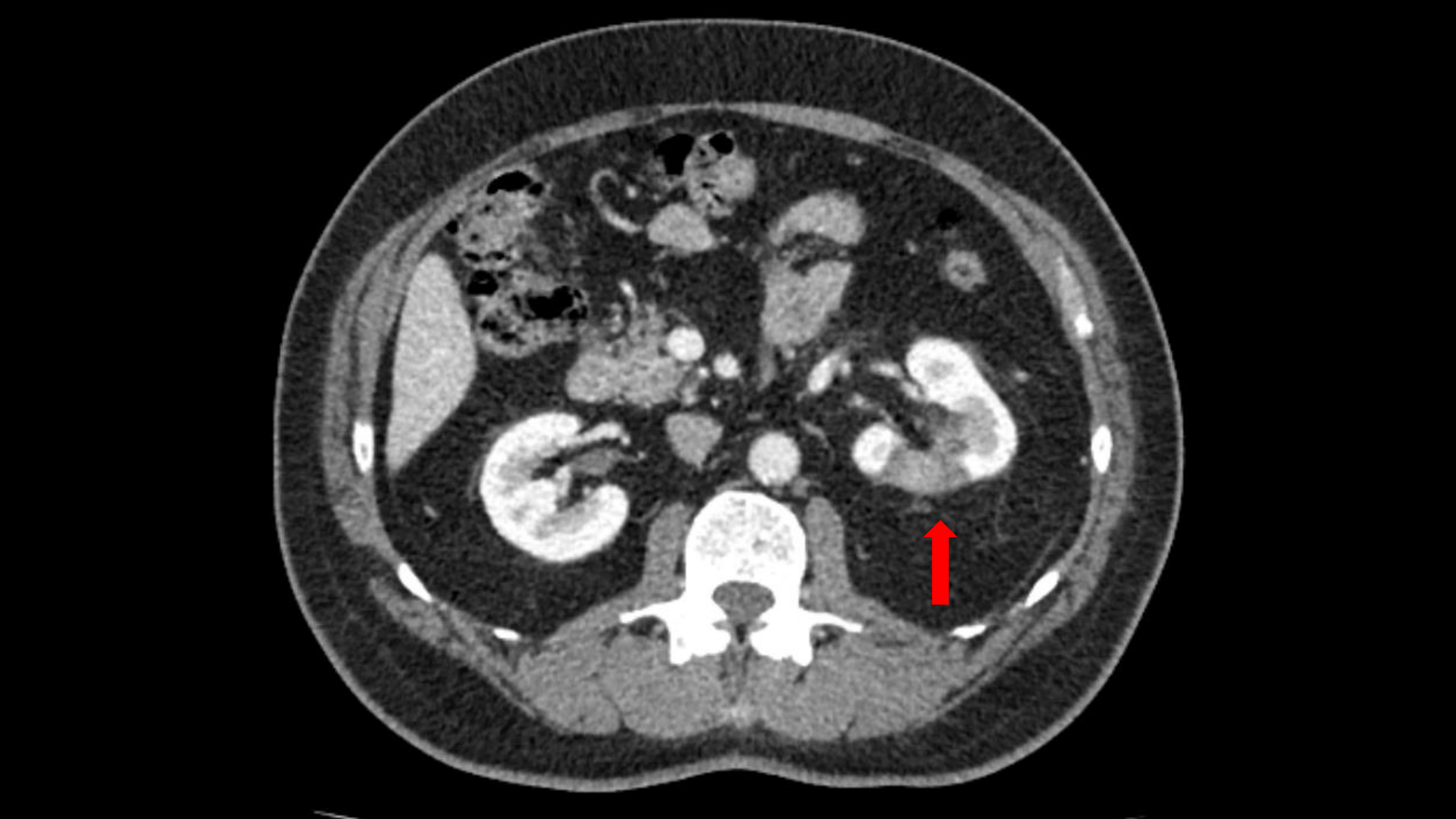
Abscess formation in the kidney around the kidney and across the tract

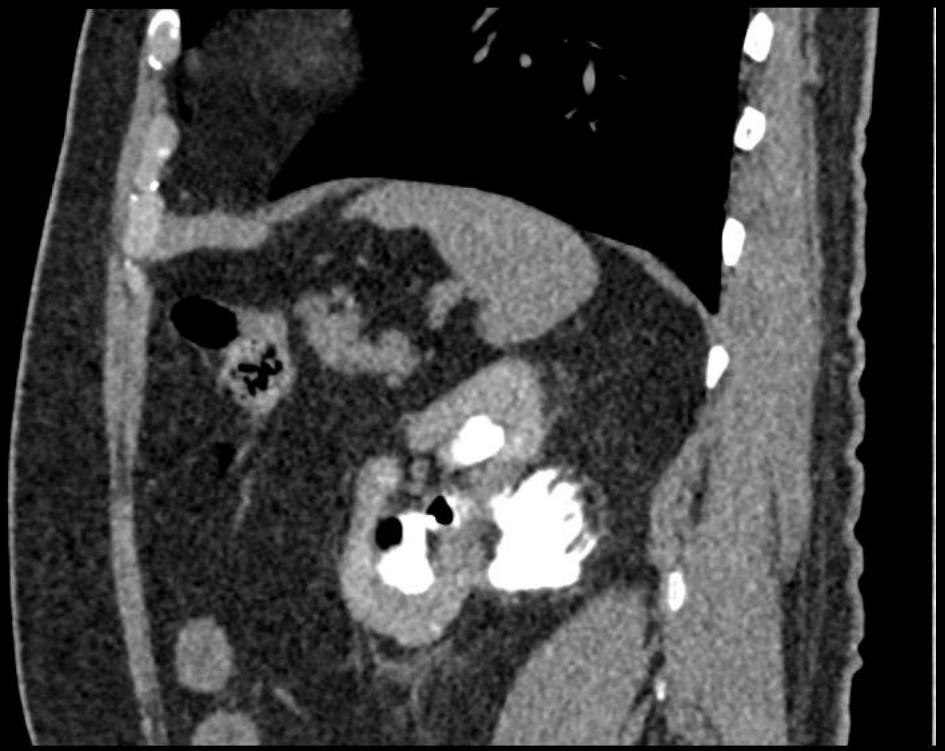
Επιπλοκές

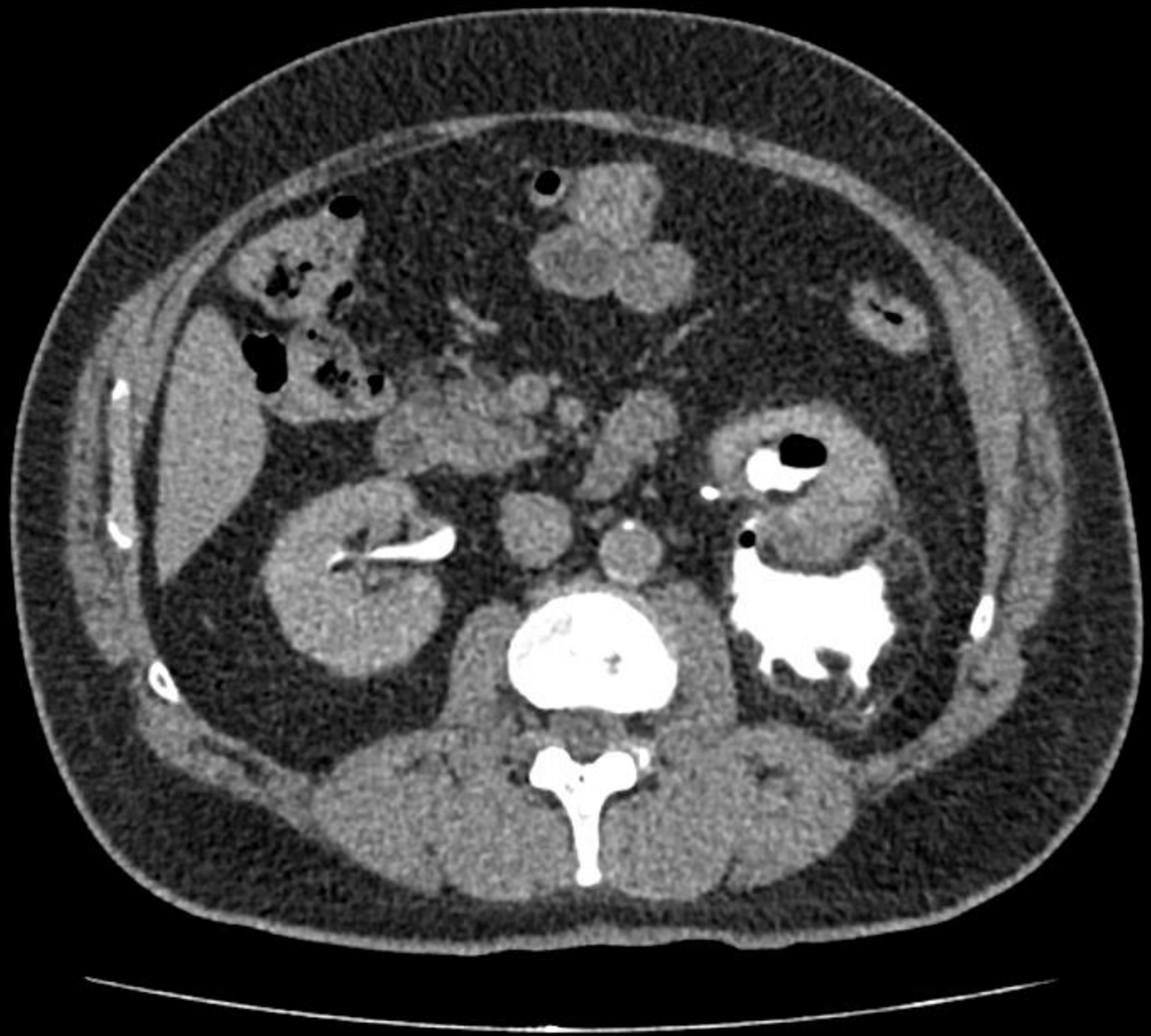


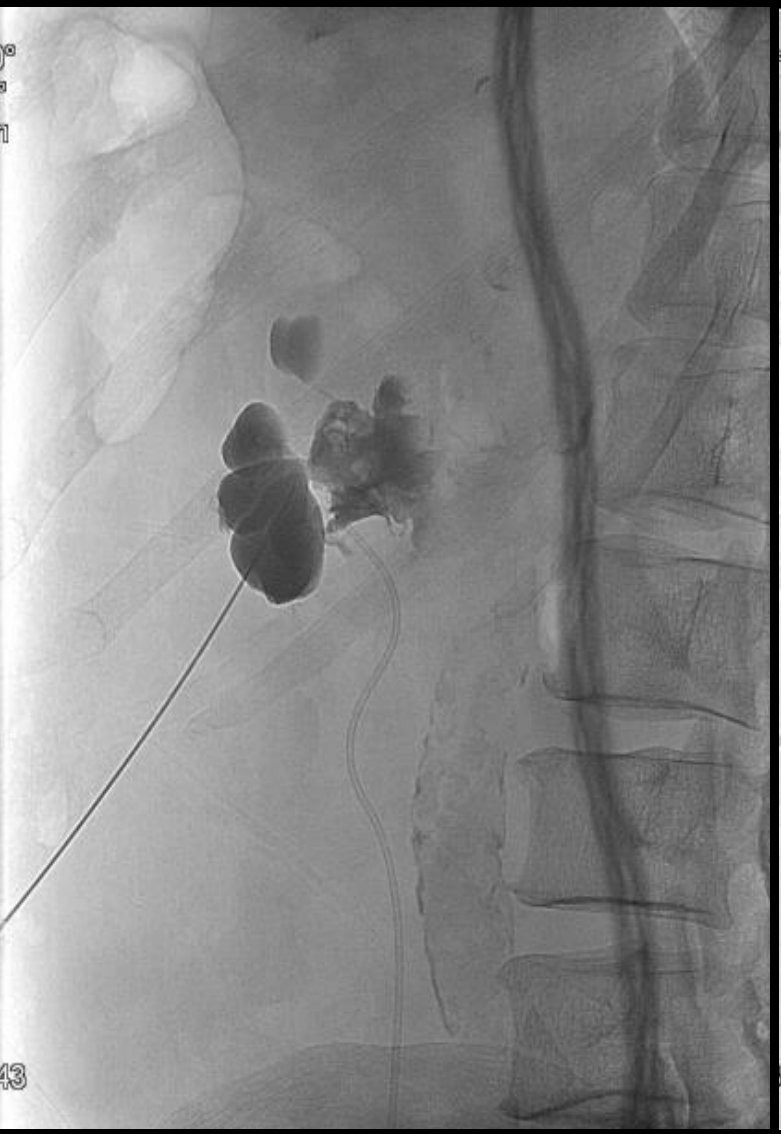




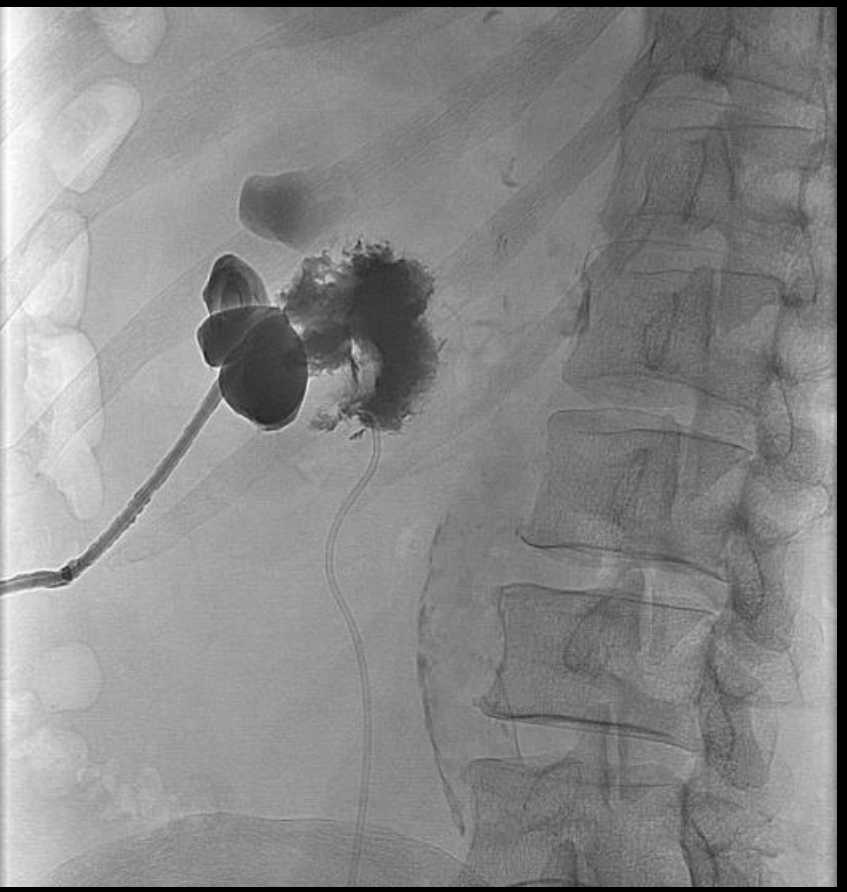


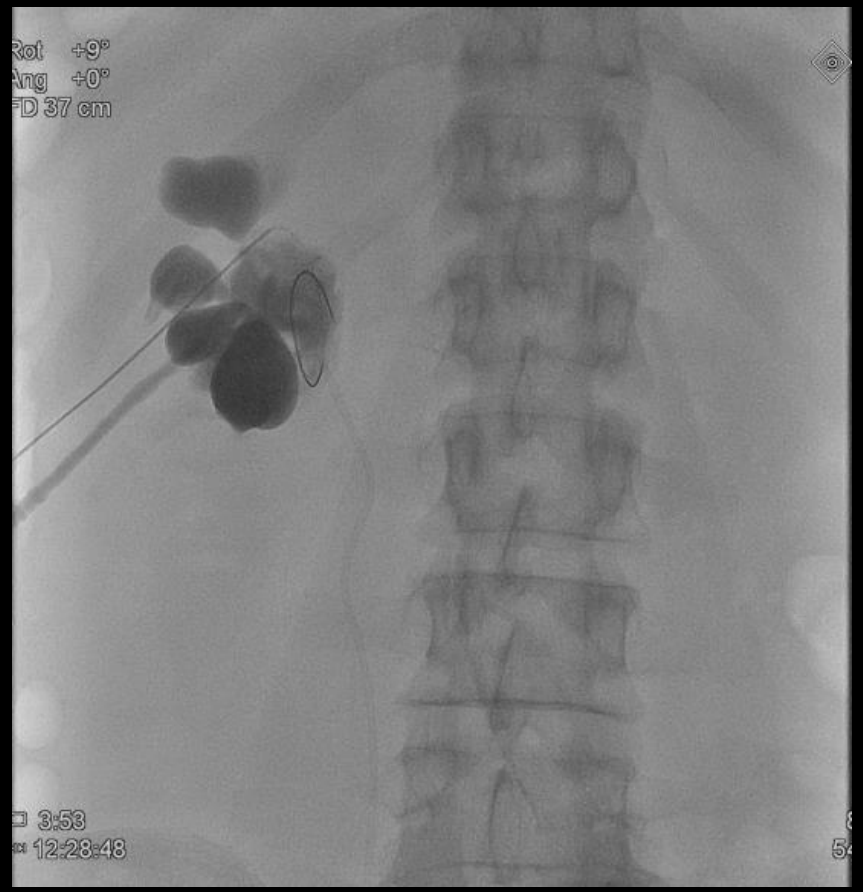


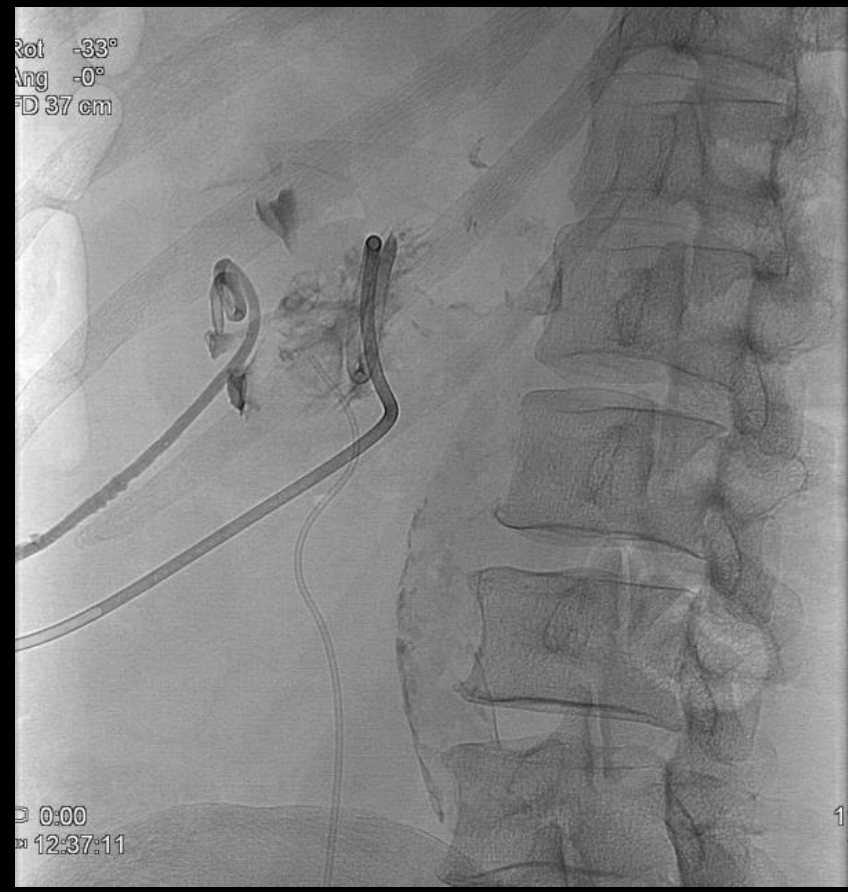




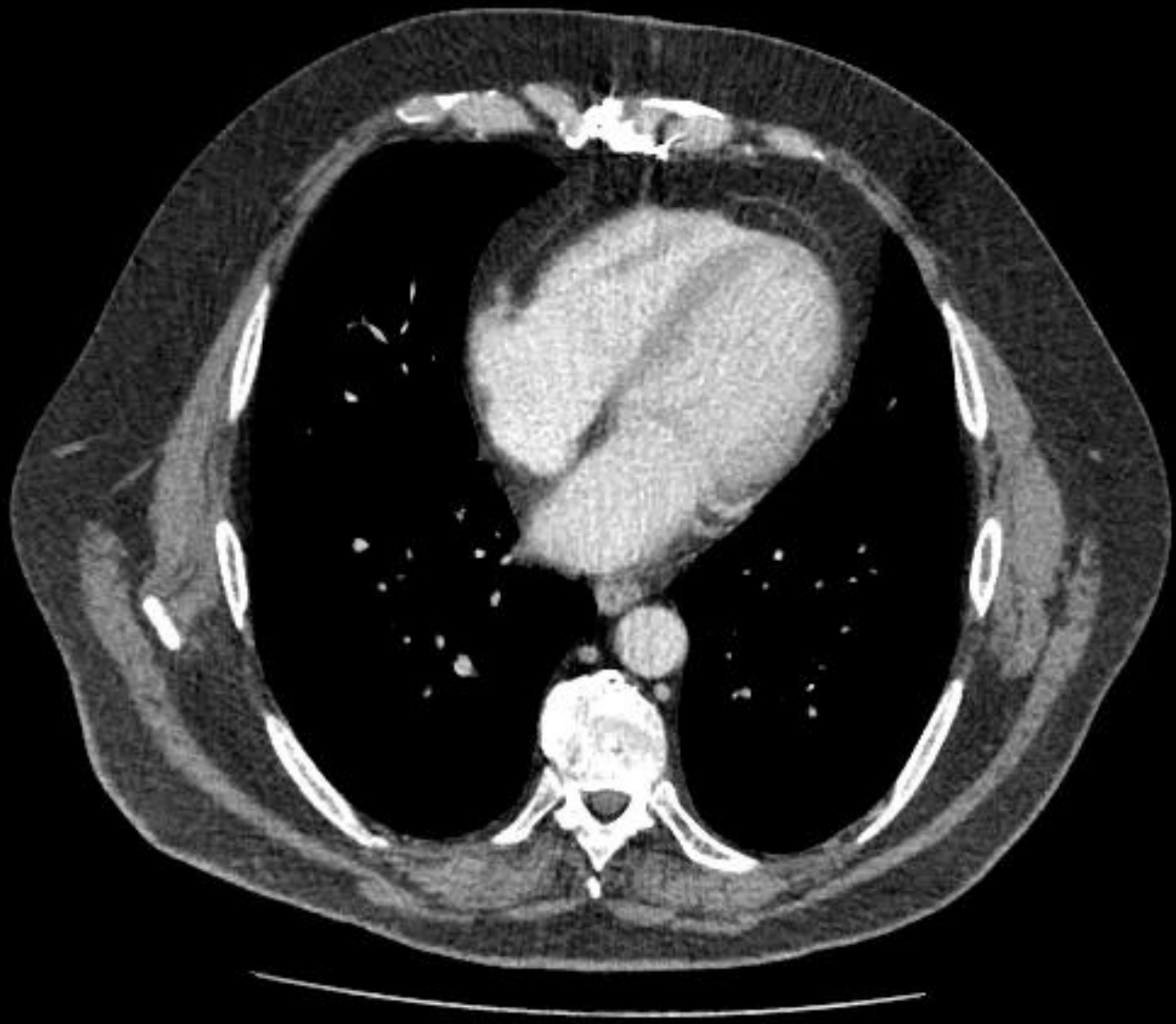

Rot +4°
Ang +25°
FD 31 cm
0:00
15:52:42

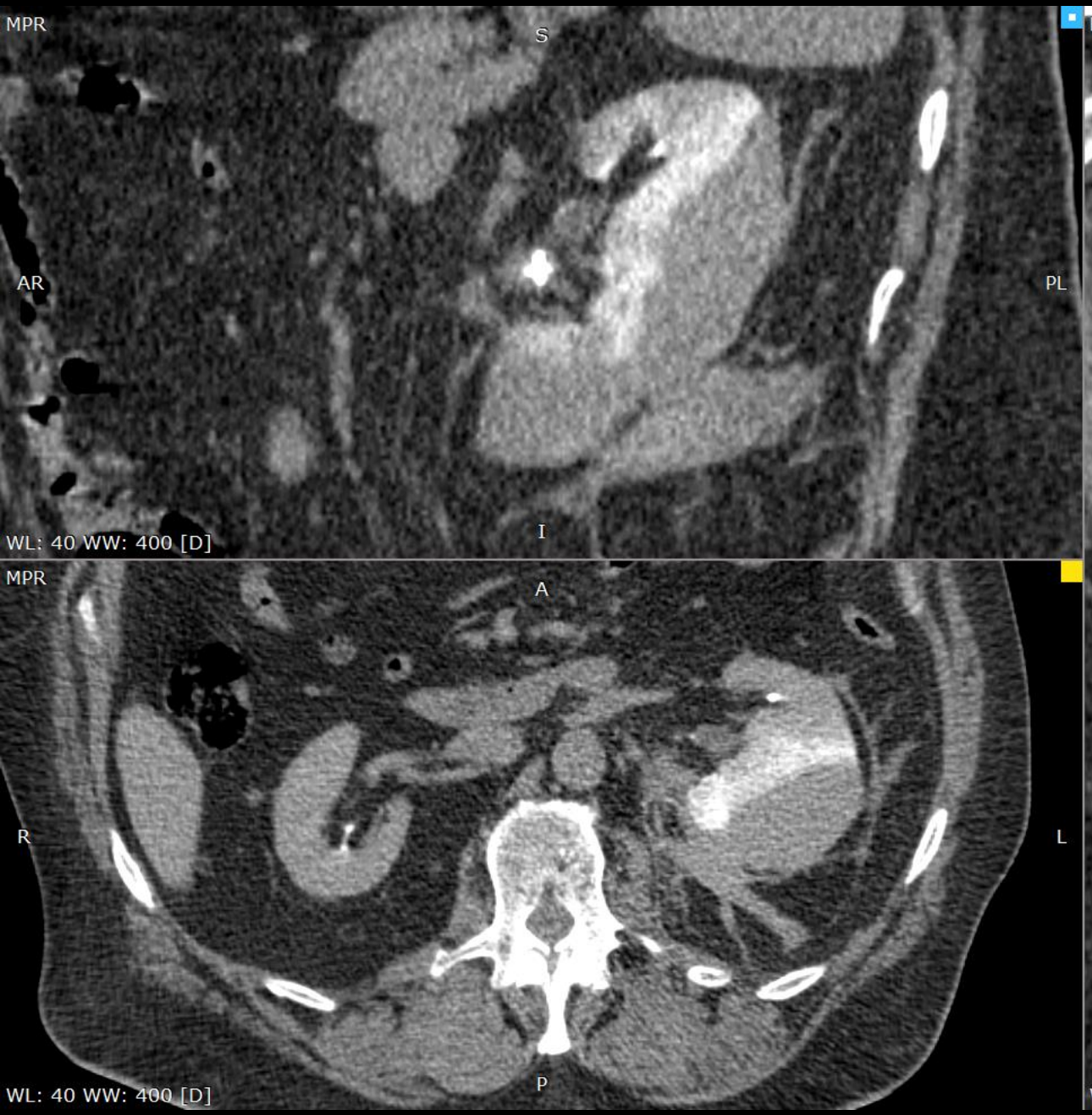



Rot +9°
Ang +0°
FD 37 cm
3:53
12:28:48


Rot -33°
Ang -0°
FD 37 cm
0:00
12:37:11

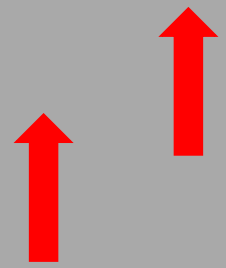
Next day



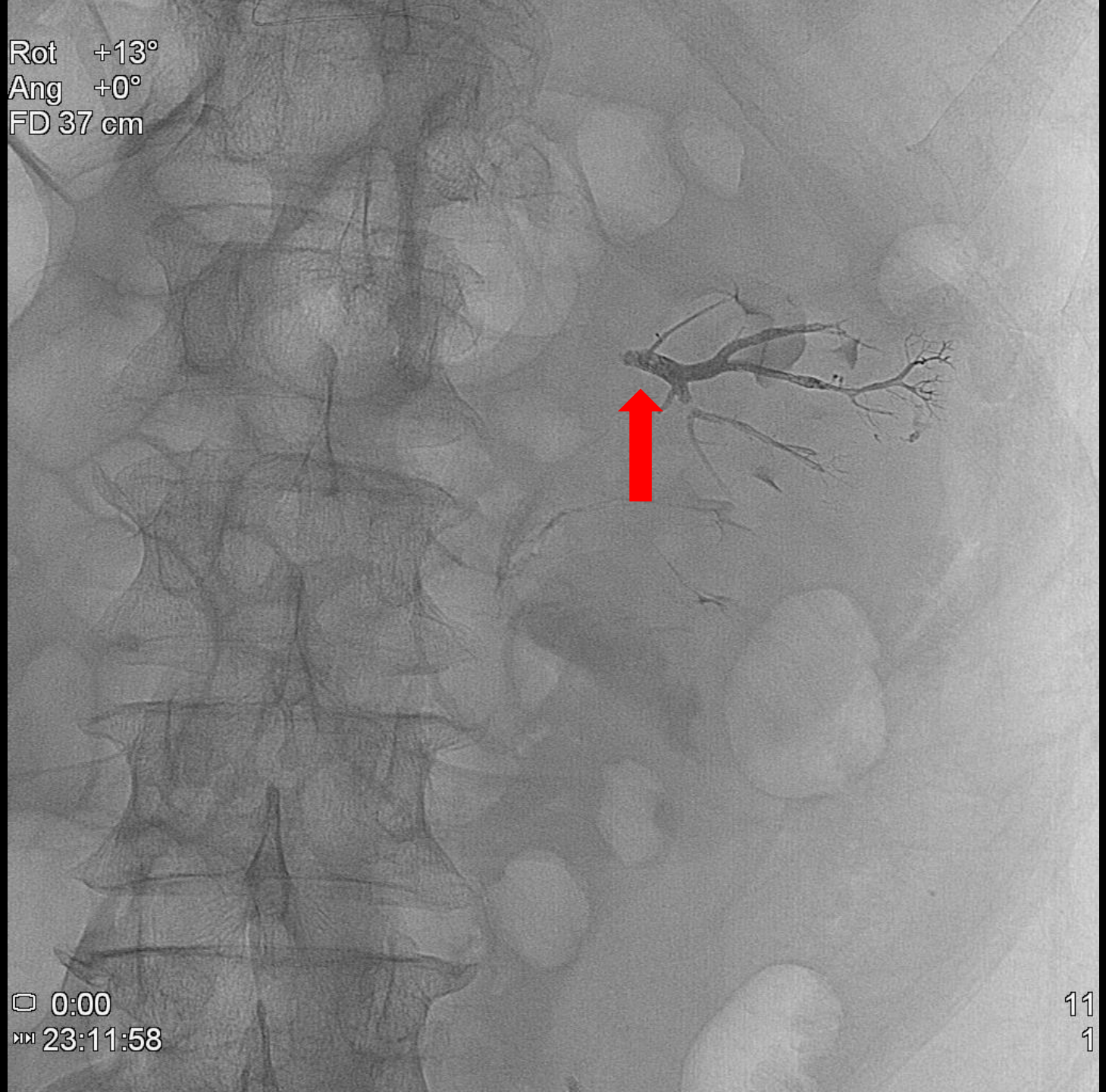

MPR
S
AR
PL
I
WL: 40 WW: 400 [D]

MPR
A
R
L
P
WL: 40 WW: 400 [D]


MPR
S
RP
LA
I
WL: 40 WW: 400 [D]

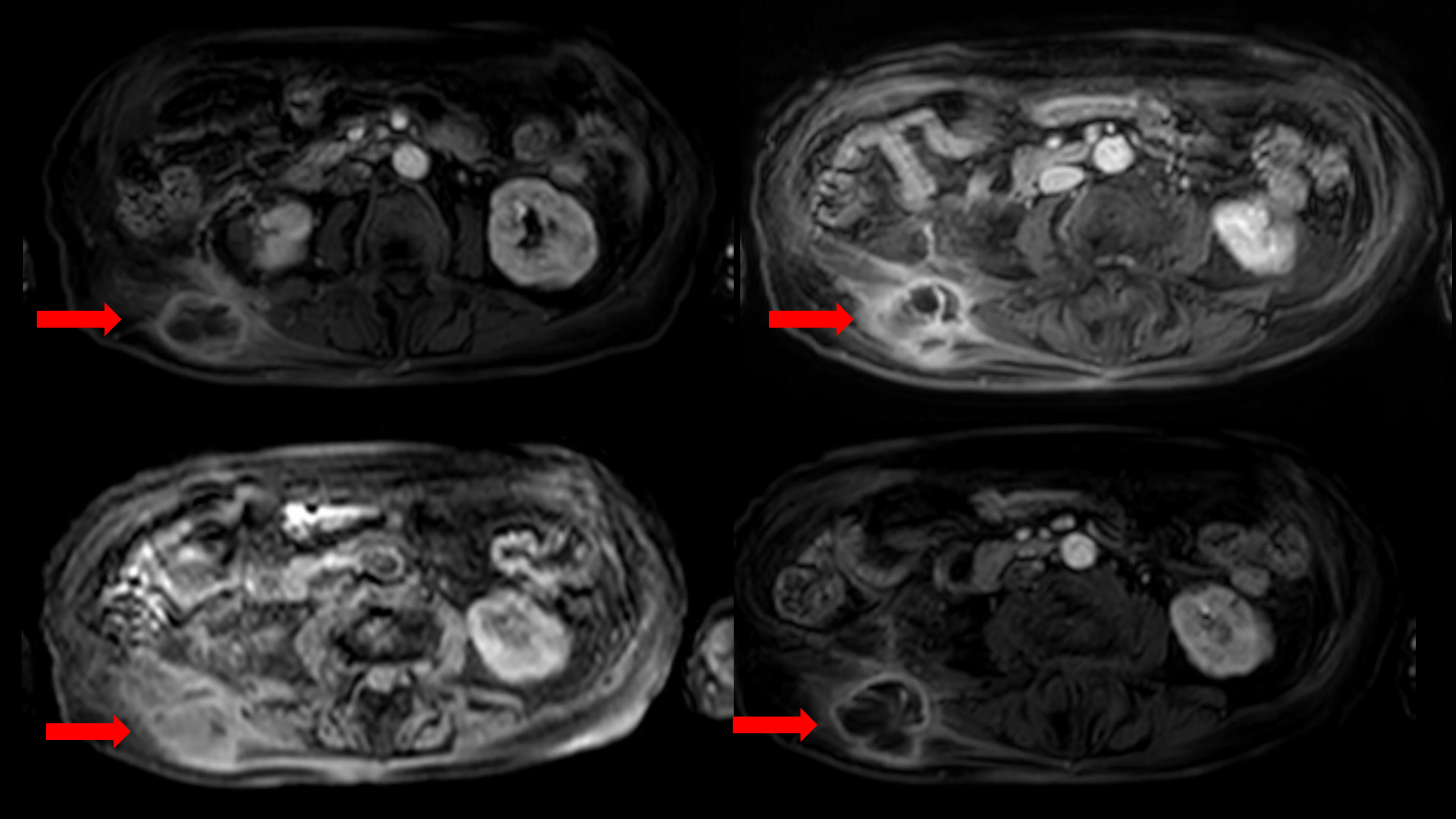


Next day


Rot +13°
Ang +0°
FD 37 cm
0:00
23:11:58
11
1

1.5 years later


R



Συλλογές

Παρόμοιες αρχές προσέγγισης με την παροχέτευση υπεζωκοτικών συλλογών

Είναι κυρίως ουρινώματα, αιμορραγικές συλλογές, αποστήματα

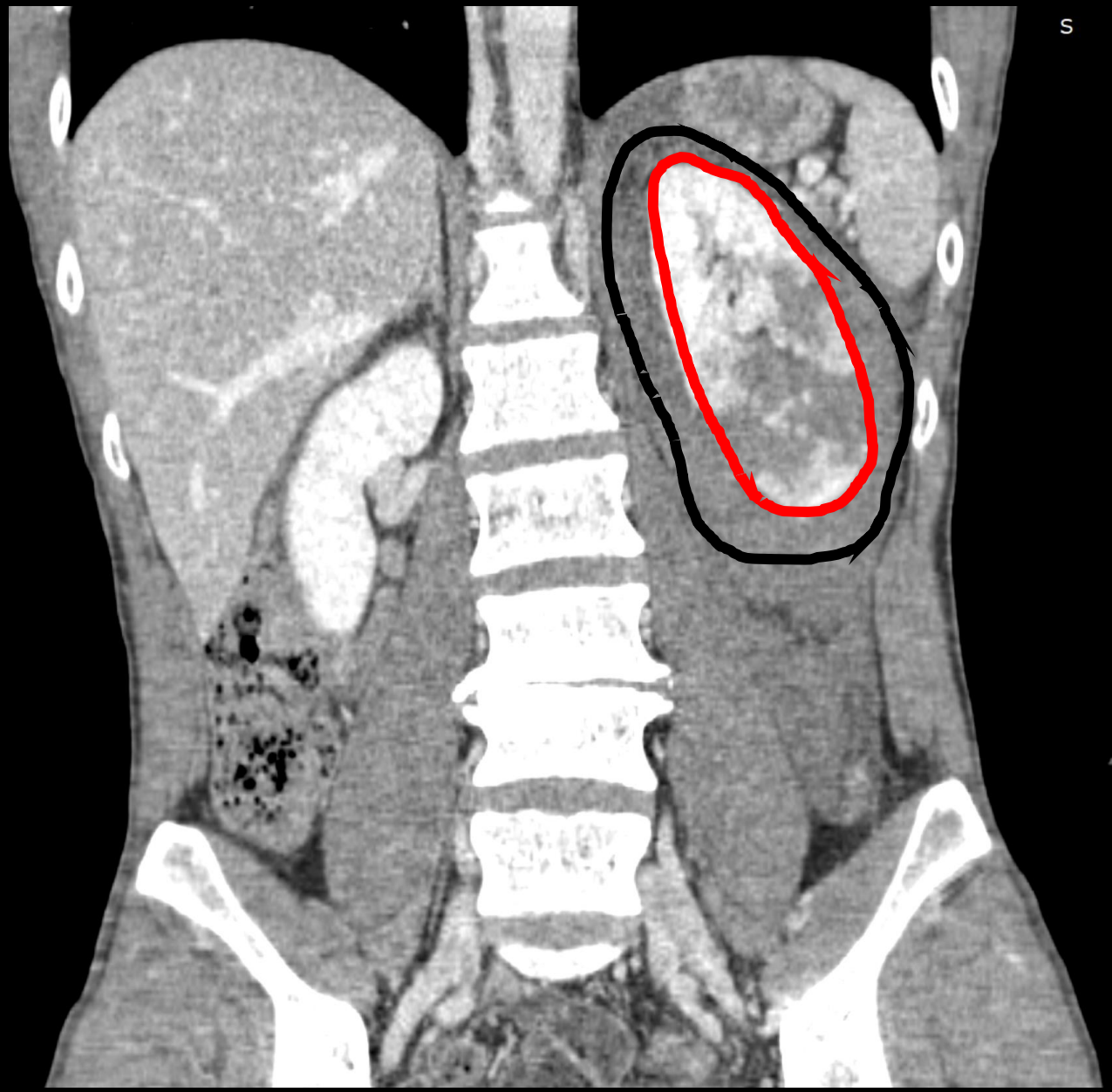
Αιμορραγίες

Αίτια:

- Ιατρογενείς
- Αυτόματες
- Τραυματικές

Αντιμετώπιση:

- Ενδαγγειακός εμβολισμός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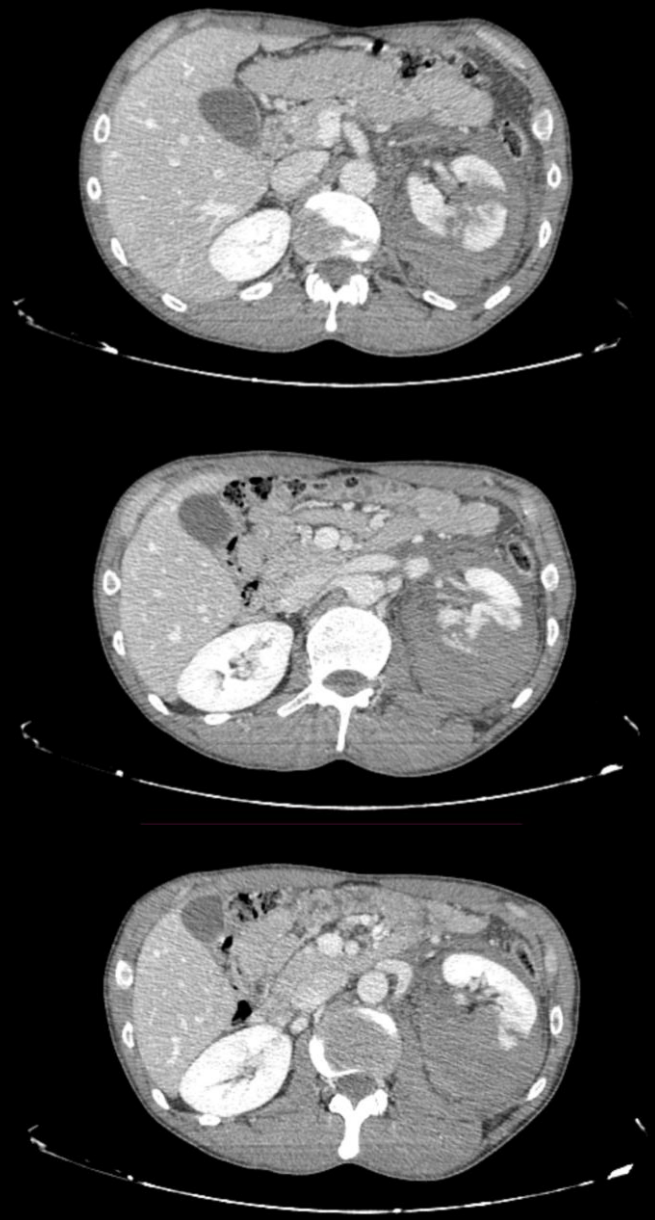
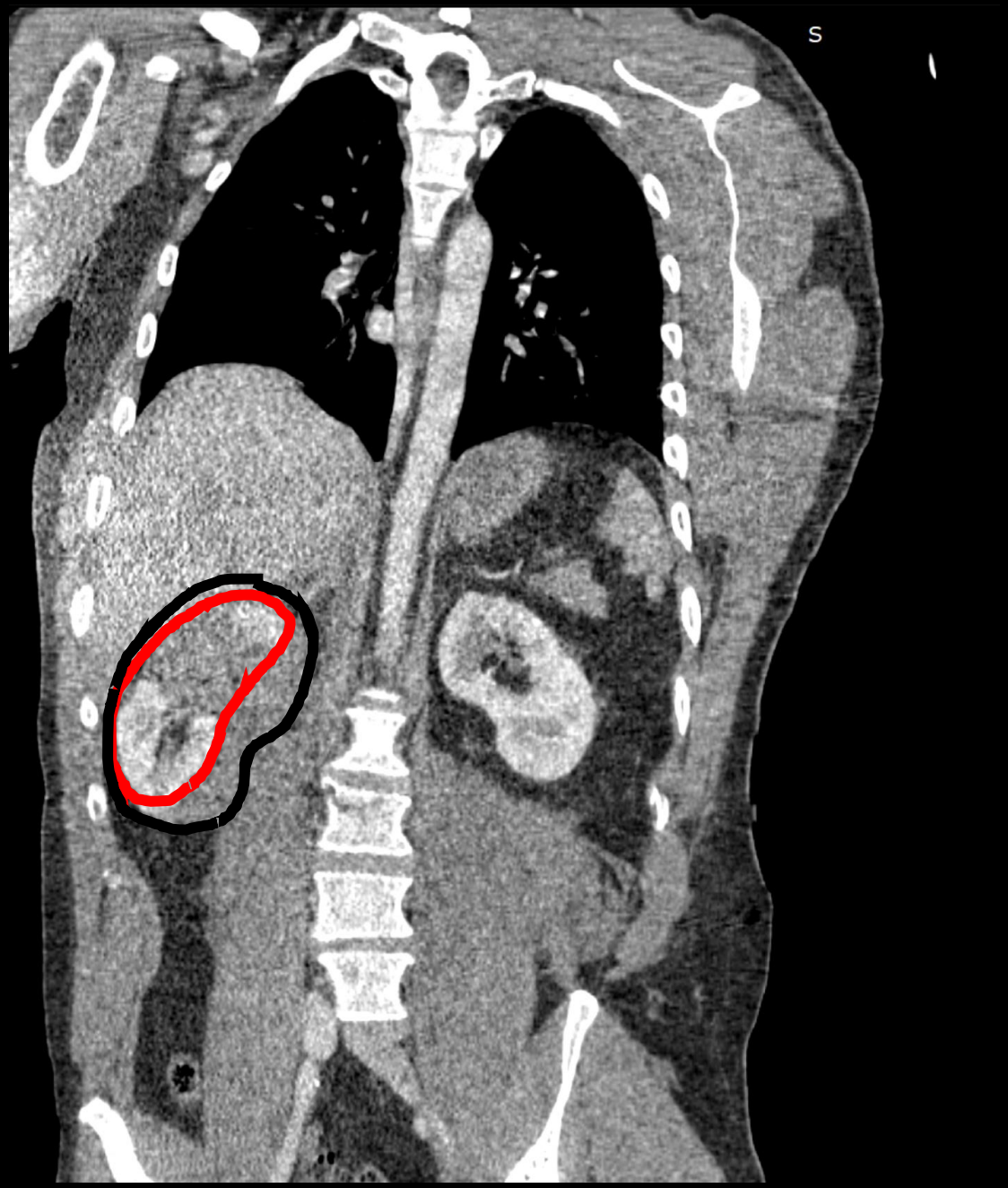



S

Αποχετευτική Μοίρα

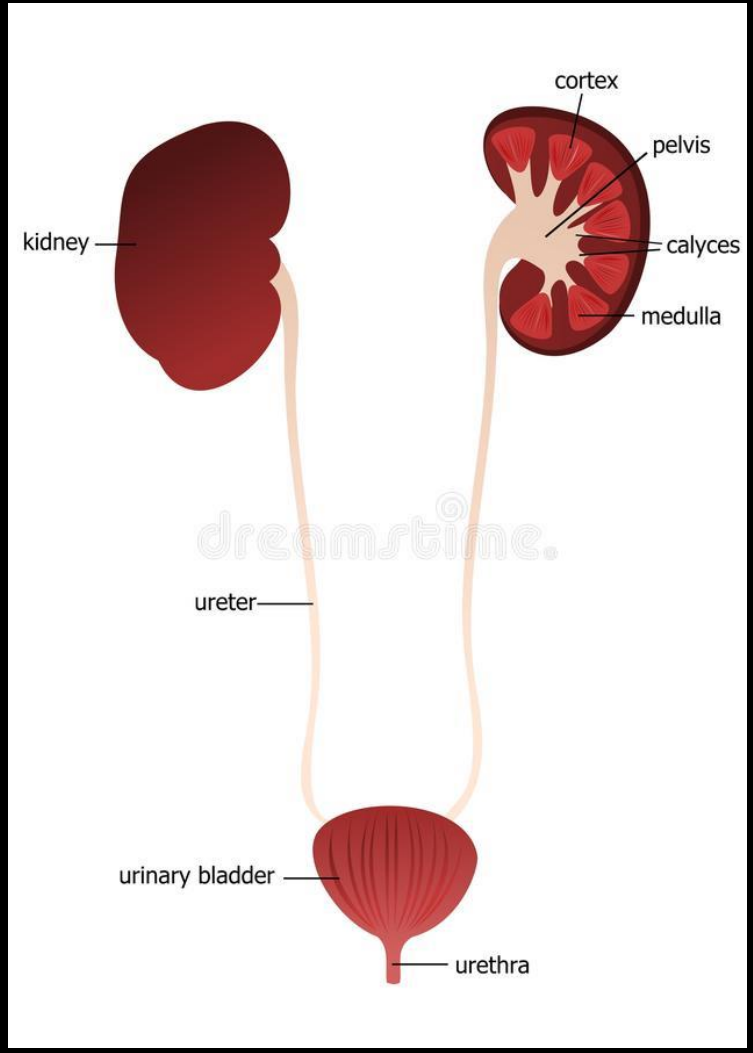
Κάλυκες

Πύελος

Ουρητήρες

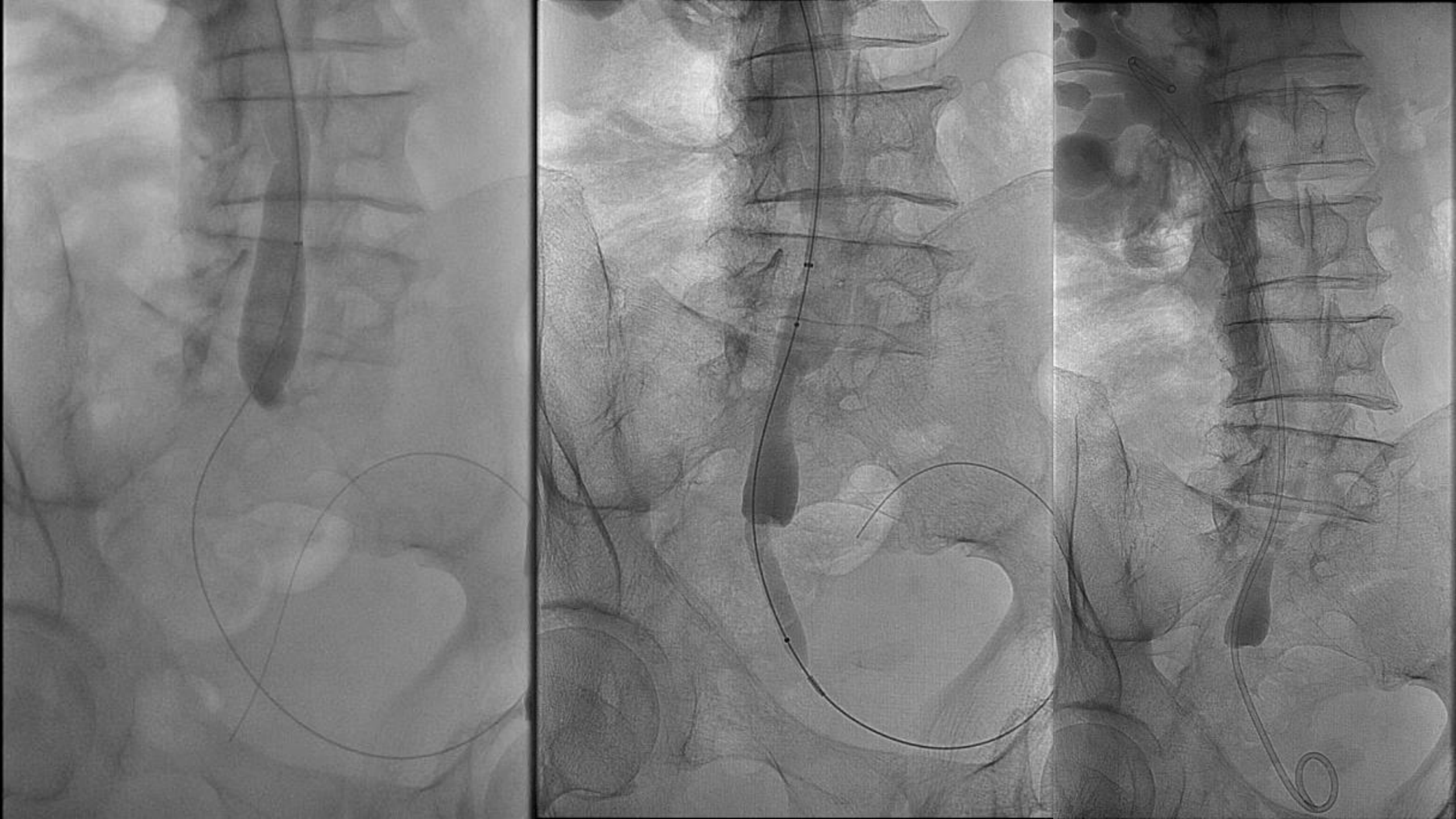
Κύστη

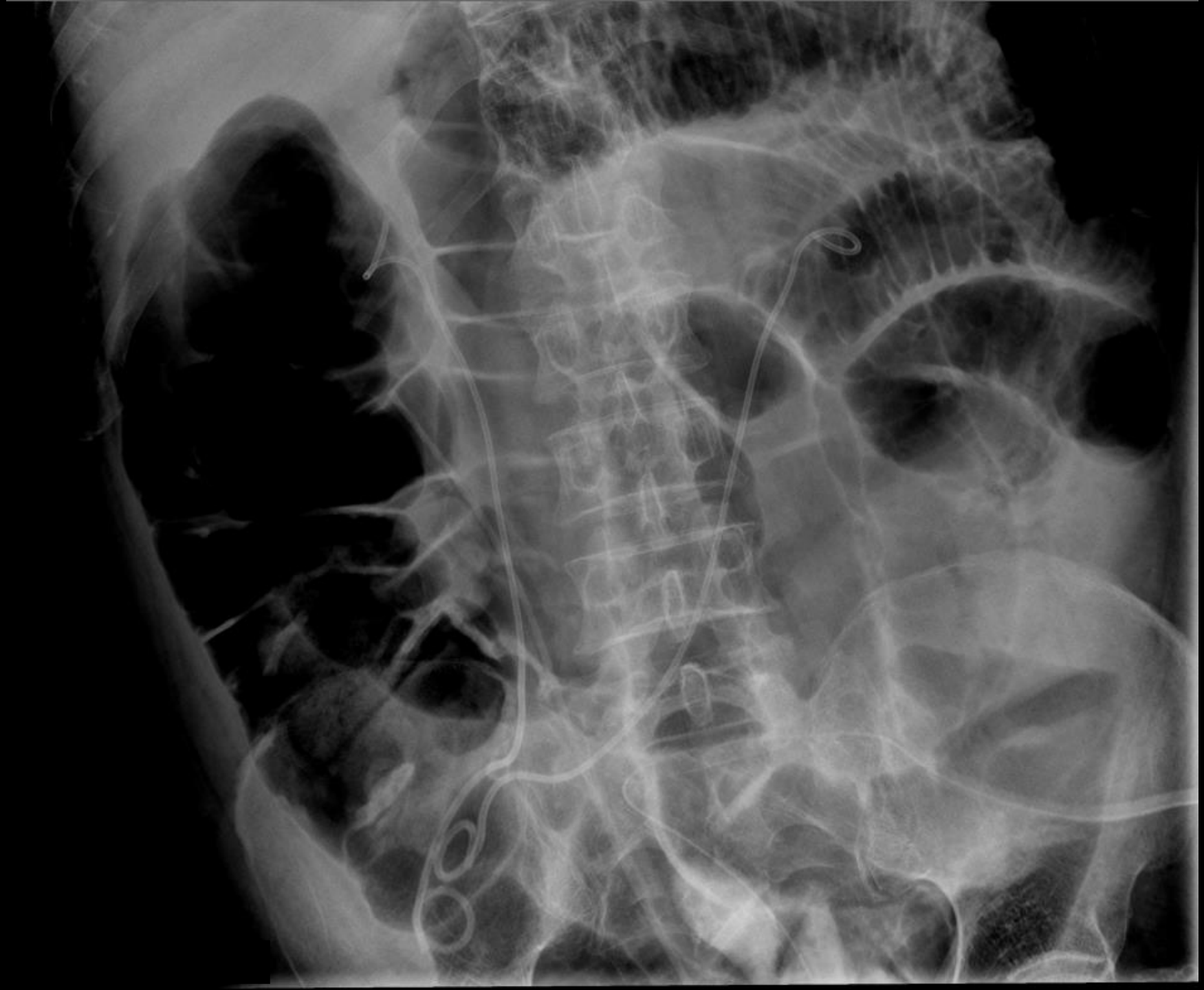
Ουρήθρα

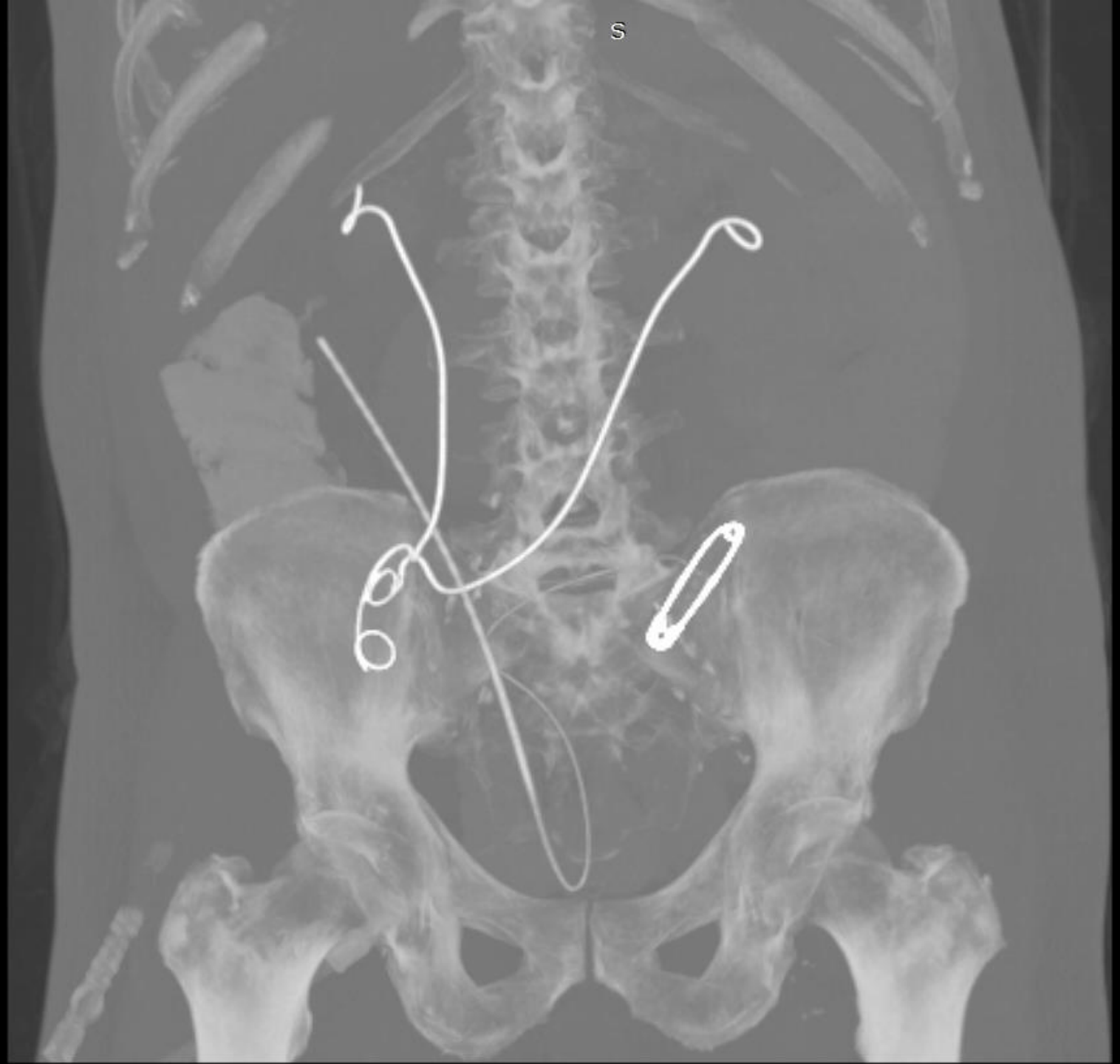


Αποχετευτική Μοίρα

Περισταλτισμός



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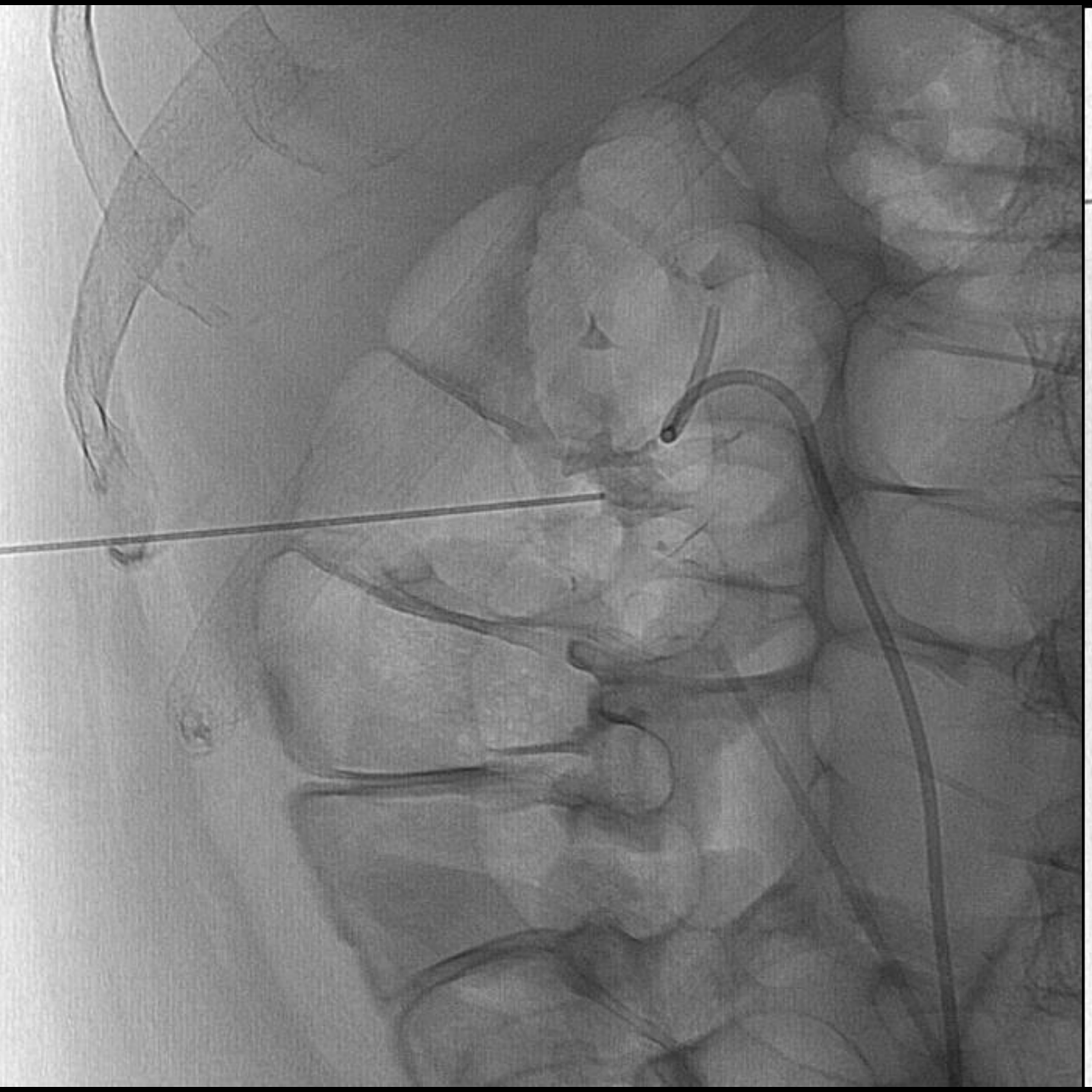
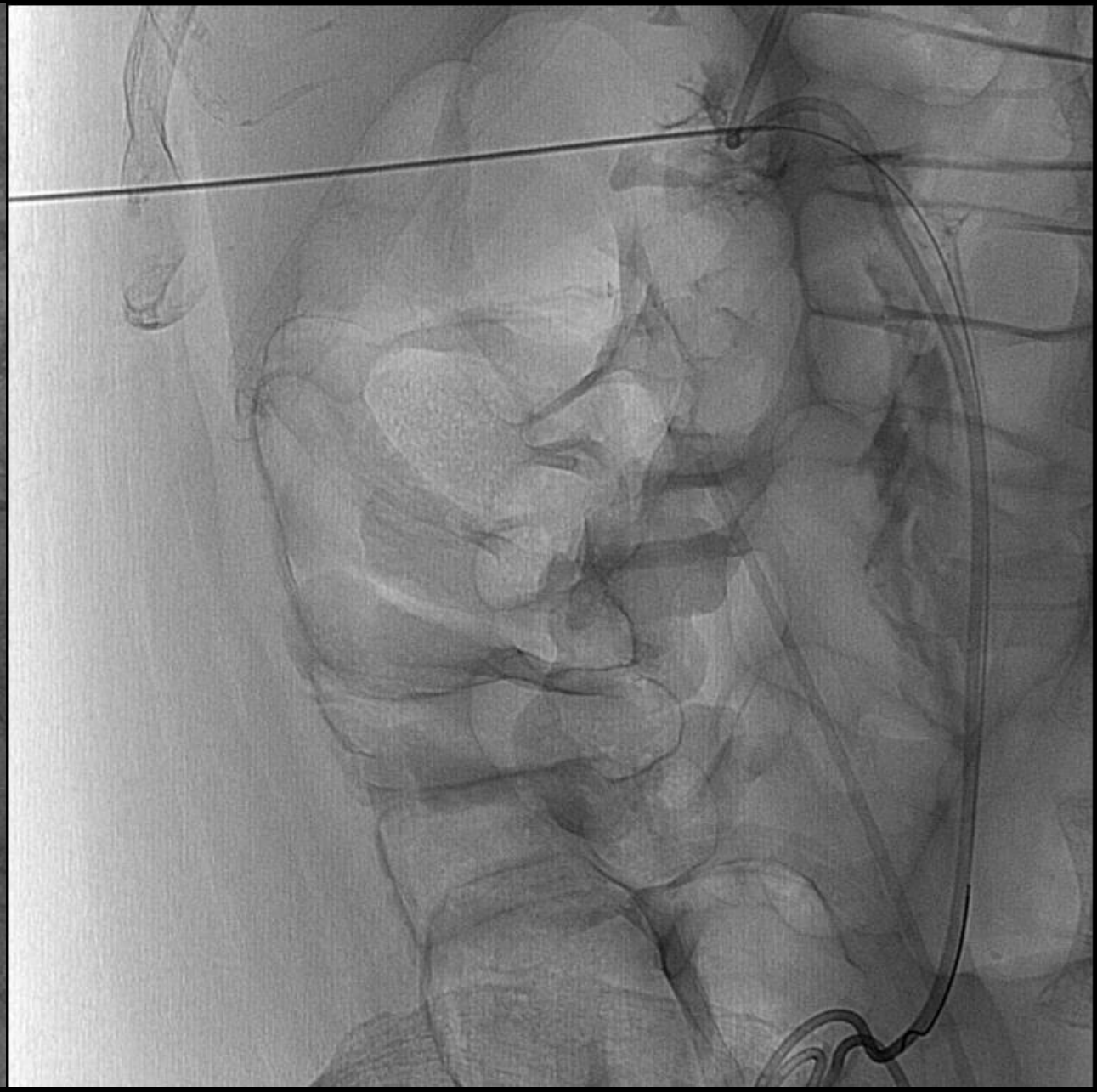

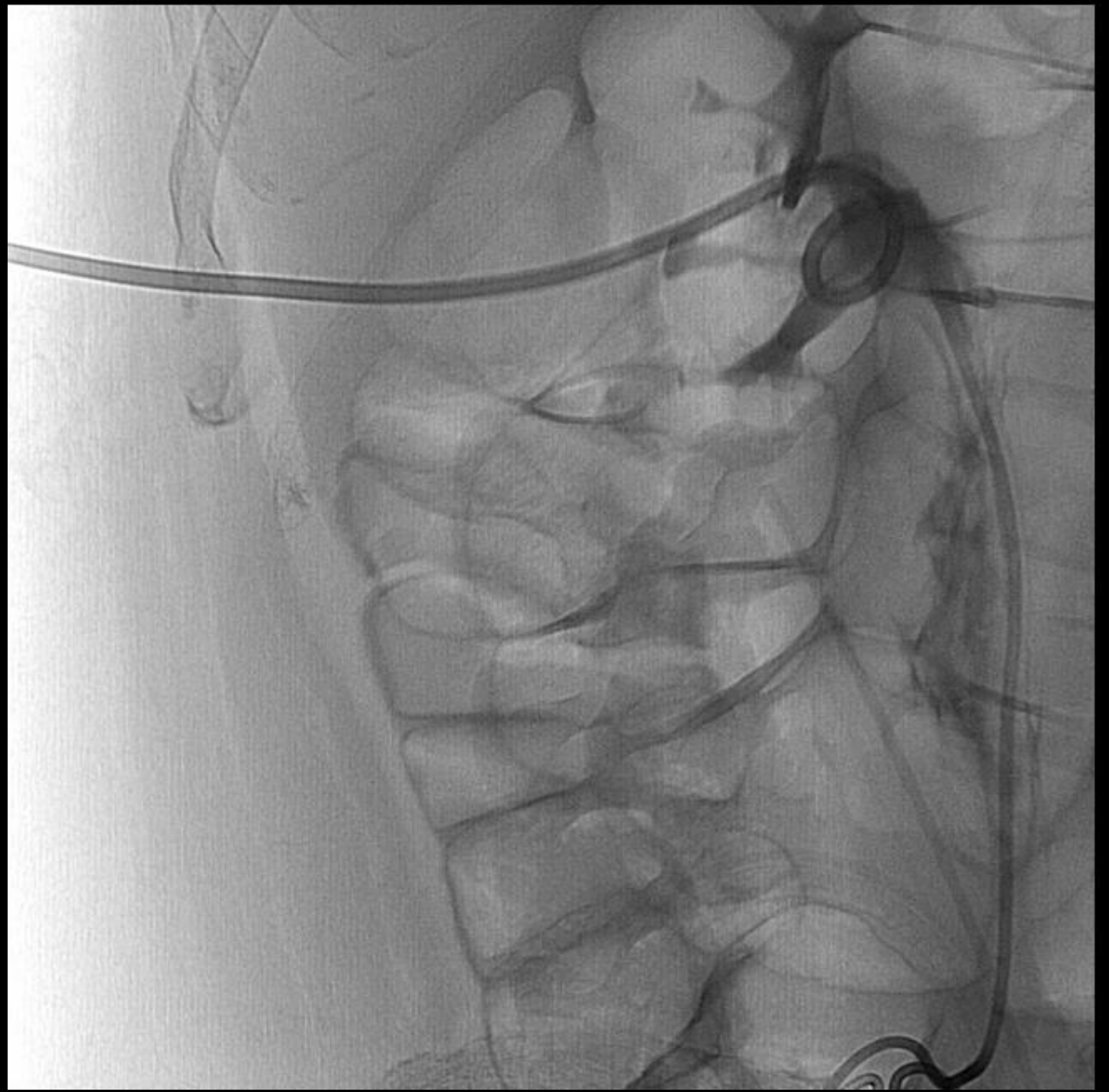

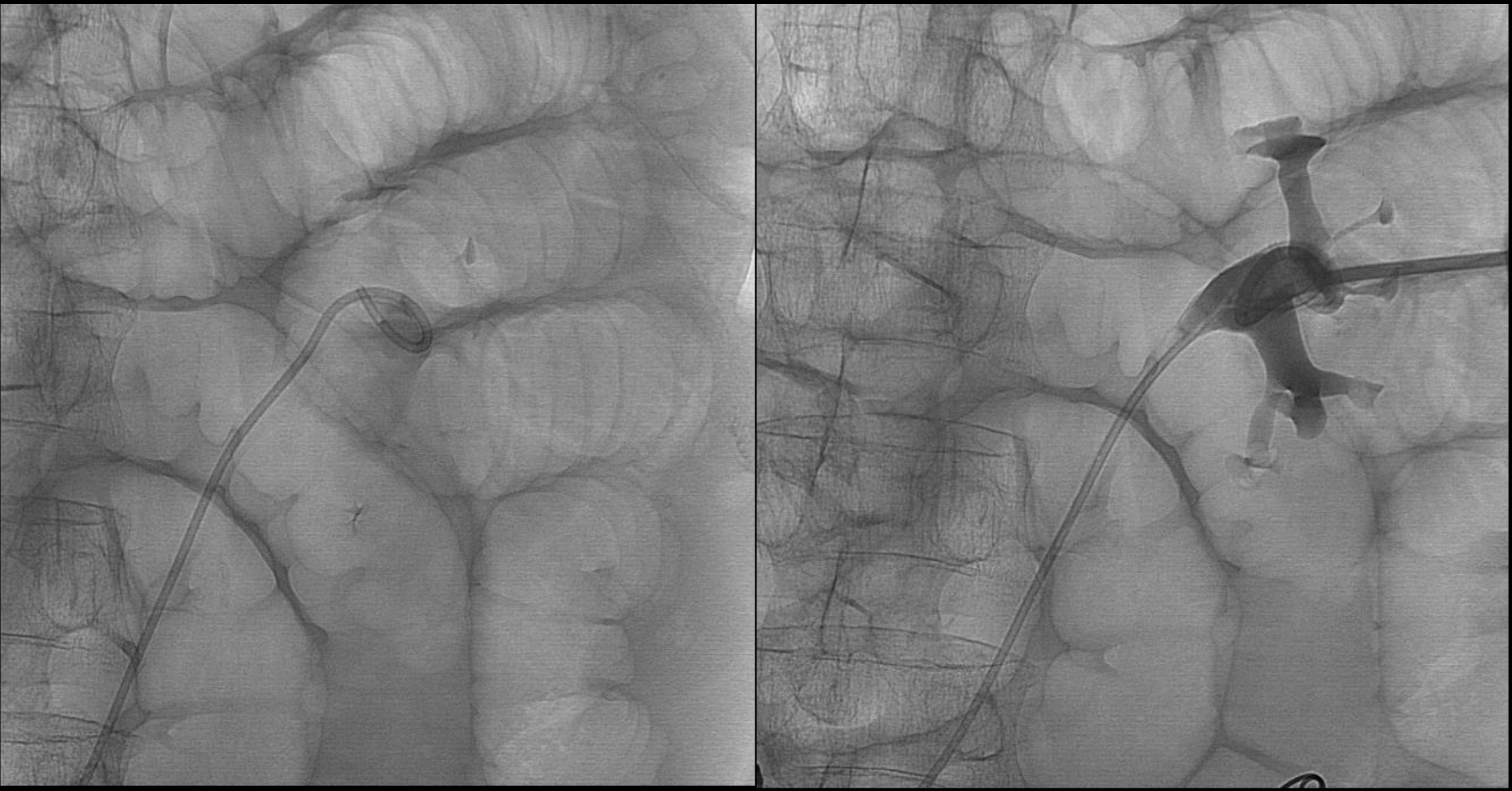


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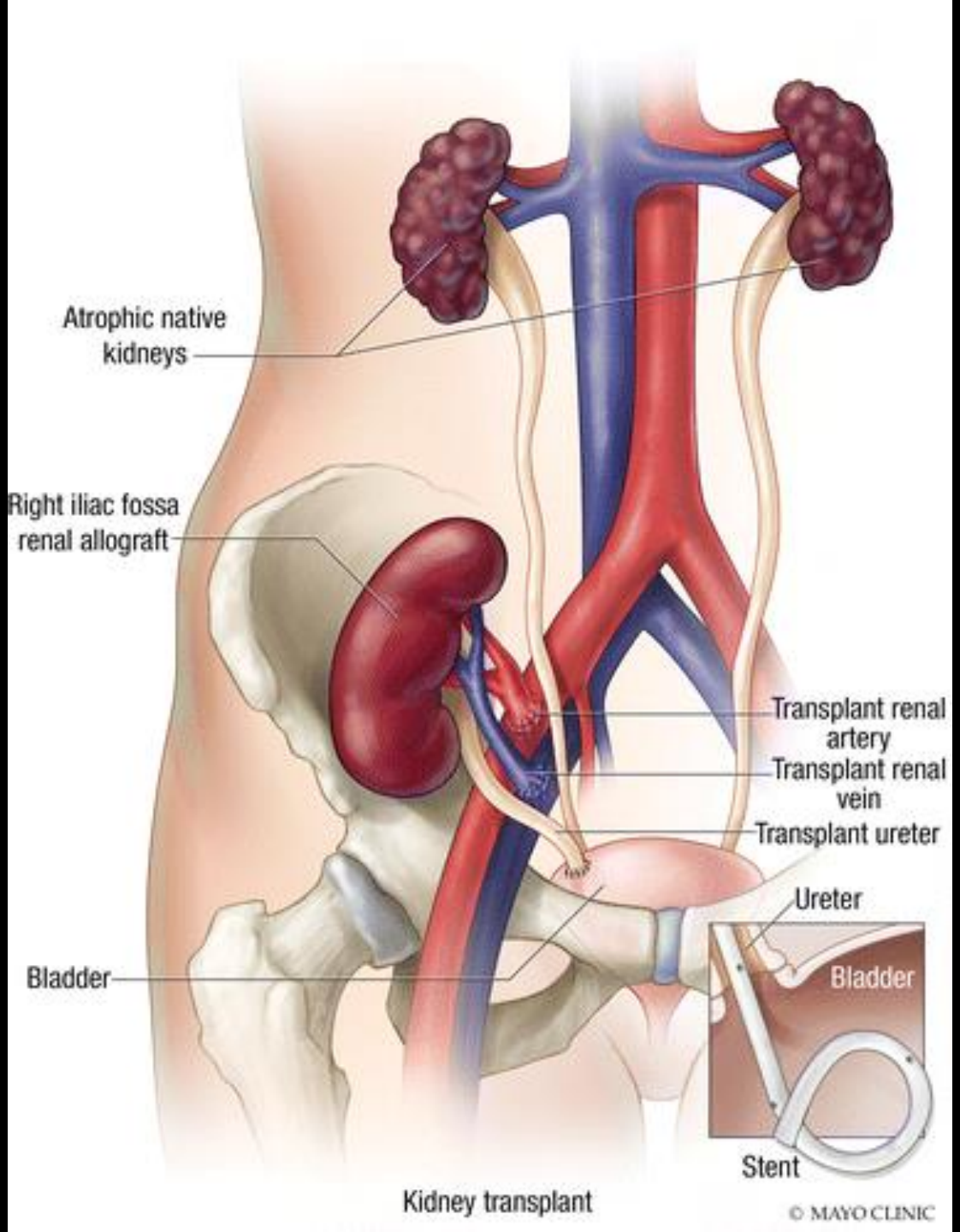
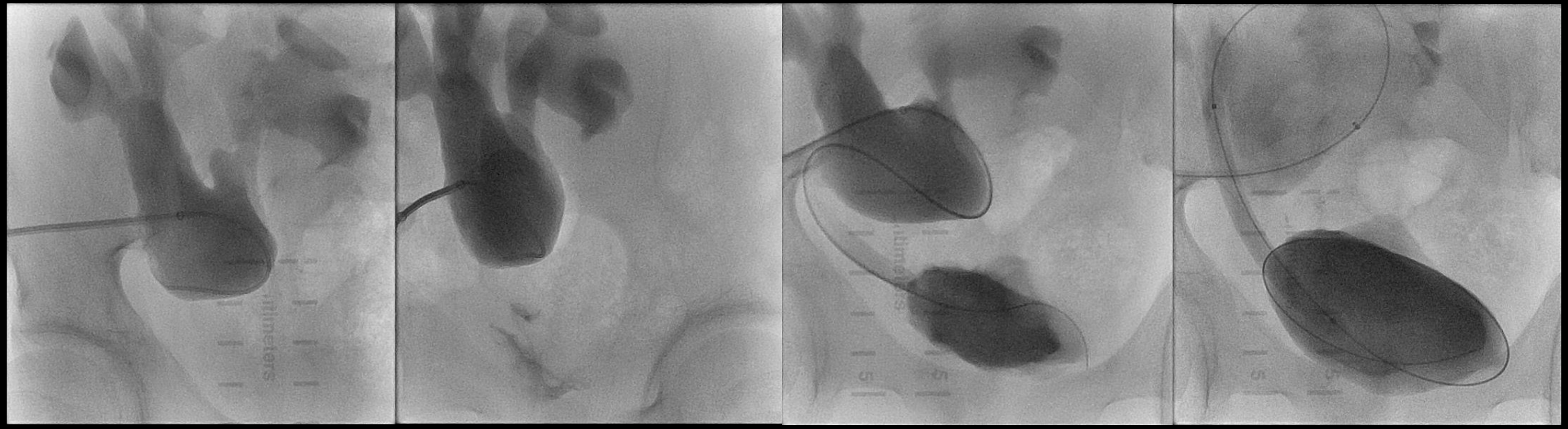
ORTHIA


Atrophic native kidneys
Right iliac fossa renal allograft
Transplant renal artery
Transplant renal vein
Transplant ureter
Ureter
Bladder
Bladder
Stent
Kidney transplant
© MAYO CLINIC




Επεμβατικά Ουροποιητικού

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Αναπληρωτής Καθηγητής Επεμβατικής Ακτινολογίας