URINARY TRACT IMAGING

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Pyelography may also be performed : ← بس ما بتهمونا كثير

- retrograde through a catheter inserted into the distal ureter,
- or it may be performed antegrade after percutaneous access to the renal upper collecting system (e.g. through a percutaneous nephrostomy).

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* أهم اشي ال MRI , CT , X-ray , ultra-sound } مهمة للعملي

- ultra-sound → dilatation in ureter
- X-ray → لأنه بال X-ray ال uric acid → rarely lucent بيبين
- CT → ال composition of stones بيبين فيها أكثر اشي

Sacralization :: is when the lowest lumbar vertebra (L5) becomes abnormally attached to the sacrum.

Lumbarization :: is when top of the sacrum (S1) can be separated from the sacrum and the lumbar spine appears to have 6 vertebrae, not 5

Urinary tract investigation

lucent → lytic leasion in bones ← lung بالرئة

lucent → black

opaque → أبيض

Plain film: Plain X-ray

- Renal calculi or calcification
- Stones in the ureters
- Bladder calcifications and calculi
- Bone abnormality or metastasis

lumbar, Pelvic, sacro-iliac joint (old age)

hyper-density sclerotic leasion in Pelvic & spine ← Hx of Prostate CA

Plain film(KUB):

- **The kidneys, ureters, bladder (KUB) radiograph** is optimized for assessment of the urogenital system, and should not be confused with the AP supine abdomen view.

- **Patient position**
- the patient is supine, lying on their back, either on the x-ray table (preferred) or a trolley
- patients should be changed into a hospital gown, with radiopaque items removed (e.g. belts, zippers, buttons, ECG electrodes)
- the patient should be free from rotation; both shoulders and hips equidistant from the table/trolley
- the x-ray is taken on full inspiration
  - this causes the diaphragm to contract, hence compressing the abdominal organs, allowing all renal contents to be visualized on a single image

الطب والجراحة لجنة

Urinary tract calculi

Renal stones	Plain film
1. Stones composed **Calcium (majority about 90 %)**	(radio-opaque) .
2. Stones composed of **Uric acid**	not visible (radiolucent)
3. Stones composed of **Cystine**	minimally dense (Semi-opaque)

الطب والجراحة لجنة

Urinary tract calculi / continuation

What is the initial imaging test usually ordered to find urinary tract stones ?

- ✓ **Plain radiograph (KUB)**, because the majority of stones are radio-opaque
- ✓ Other calcifications may be confused with urinary tract stones such as a phlebolith in the pelvis , which is a venous calcification , often with a lucent center .

lytic

sclerotic

Scotty dog eye sign

most common lytic leasion

in lumbar bone

men

* most common sclerotic leasion

prostate CA

hyper-vascularized (Mets)

← in pedicles

female → breast ...

* بنبدأ بال X-ray → most common

← لأنها sensitive for calcium (opaque)

← وأحيانا ما بتبين ال stone اذا كان
→ emergency
→ very small
→ radiation for external genitalia

CT (Without CM) → already radio-dense

US
↳ صعب اذا كامل
Partial construction

KUB

* is an X-ray performed for the purpose of examining the urinary system and its surrounding structures.

* symmetry of Pubis (ray) مبين
↳ or stone in back urethra → بتلاقيها المريض urinary retention

X-ray

* لازم يكون ال diaphragm مبين (not pubic)

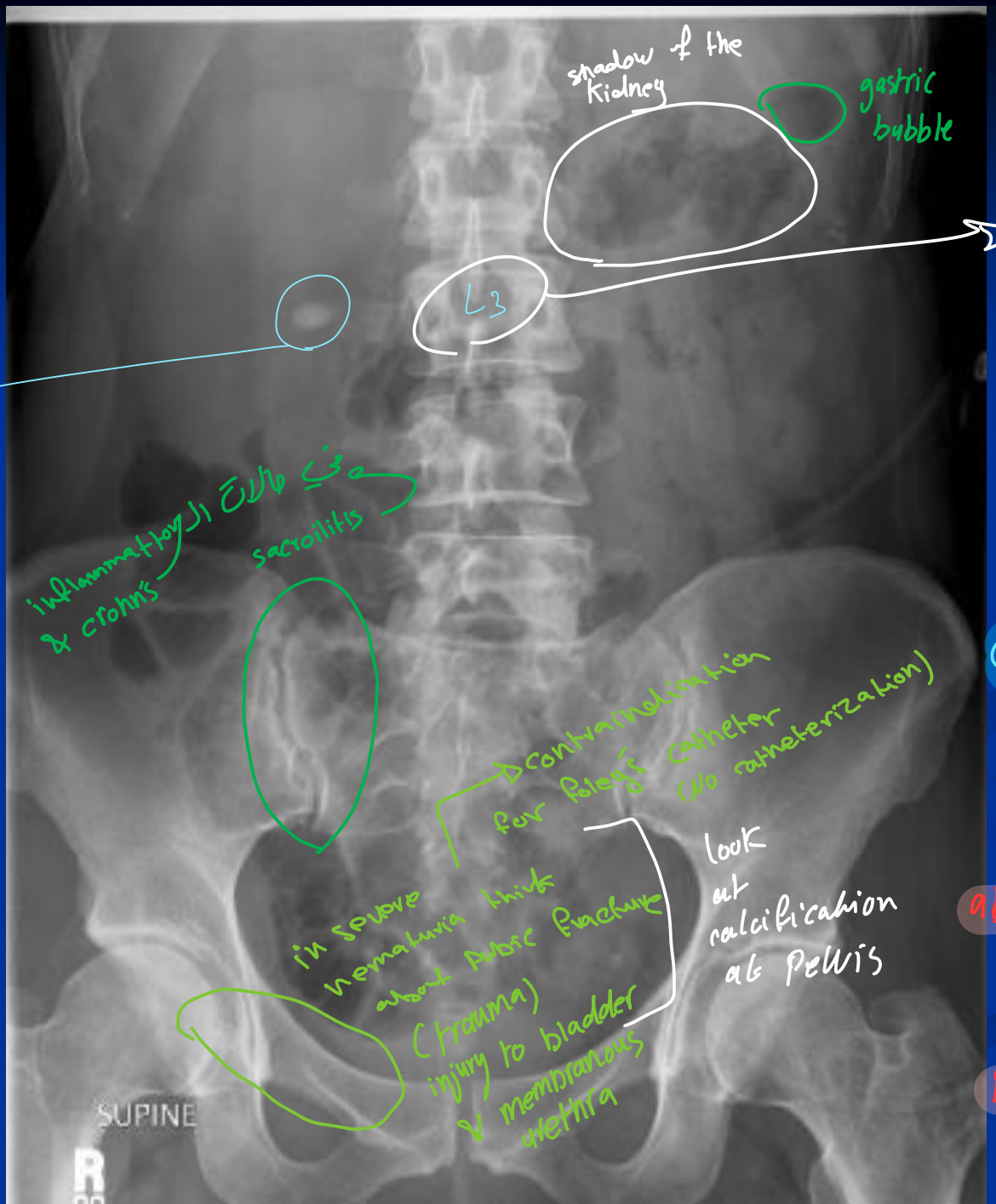
* Perforated viscous

* gas in abdomen

#normally ureter cant be seen on plain abdomen except in IVU.
#ureters can be seen above the transverse processes of lumber V.

KUB

→ look for symmetry for symphisis Pubis



* shadow of the kidney

→ cause of peri-nephric fat (out-line)

→ black by X-ray

Kidney normally oblique

in horse shoe → abnormally (vertical)

abscess → fistula

CS → vagino-vasical fistula

Post-op

feces & gases ← "أكياس"

overlapping renal shadow.

severe renal colic or Trauma ← اذا اجاني المريض

emergency

--- laxatives ← بعطيه و بخليه

history of stone formation .. ← الا اذا كان

بعطيه و بخليه. ← gases & feces من ال كشان اتخلص

Preparation

---

if there is calcification in ureter or pelvic cavity region

(cronich diseases) secondary infertility or DM ← فلاقيه من خلال ال

TB (calcification in fallopian tube, vas-deferense ...

stone ال يكون فوق / central lucency ← من هنا ؟ stone in distal of ureter is كيف نميزهم

more dense

or in vasico-urethral junction

* in Eagyption Patient بيلهارسيا → history of haematuria ?

mucosa & sub-mucosa of urinary bladder ← bilhasiares بلهارسيا

→ (ascending) → calcification in vasico-urethral function (block) → renal impairment

haemodialysis ← (failure)

Ultrasound of the urinary tract

- Ultrasoud is one of the most valuable investigations of the urinary tract and the investigation of choice in children.

↓ radiation (more safe & less expensive

- It is very effective in evaluating renal size, masses, renal obstruction, bladder residual volume and prostatic size.

early investigation important

→ in small size think about renal artery stenosis (hypertension) 90% idiopathic

- non-invasive procedure useful in distinguishing the etiology for renal failure
- It is critical for ruling out obstruction

Ultrasound of the urinary tract

❖ **Preferred procedure in:**

1- pregnant women

2- patients allergic to IV contrast.

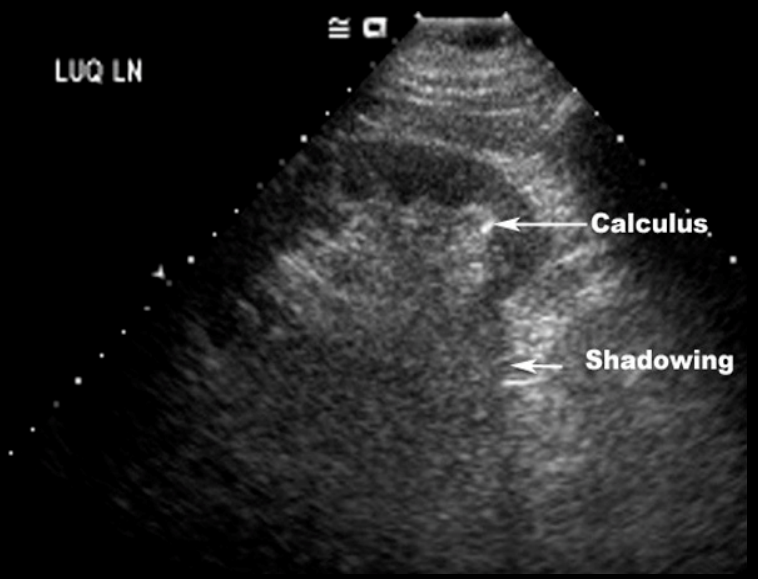
❖ Not dependent on the composition of stones and detects **uric-acid stones** as well as **calcium stones.**

❖ **Stones** are seen as **highly echogenic foci** and often **produce distal acoustic shadowing** .

❖ Detects hydronephrosis

❖ Generally good sensitivity .

❖ Ureteral stones are difficult because of overlying gas



isoechoic

liver

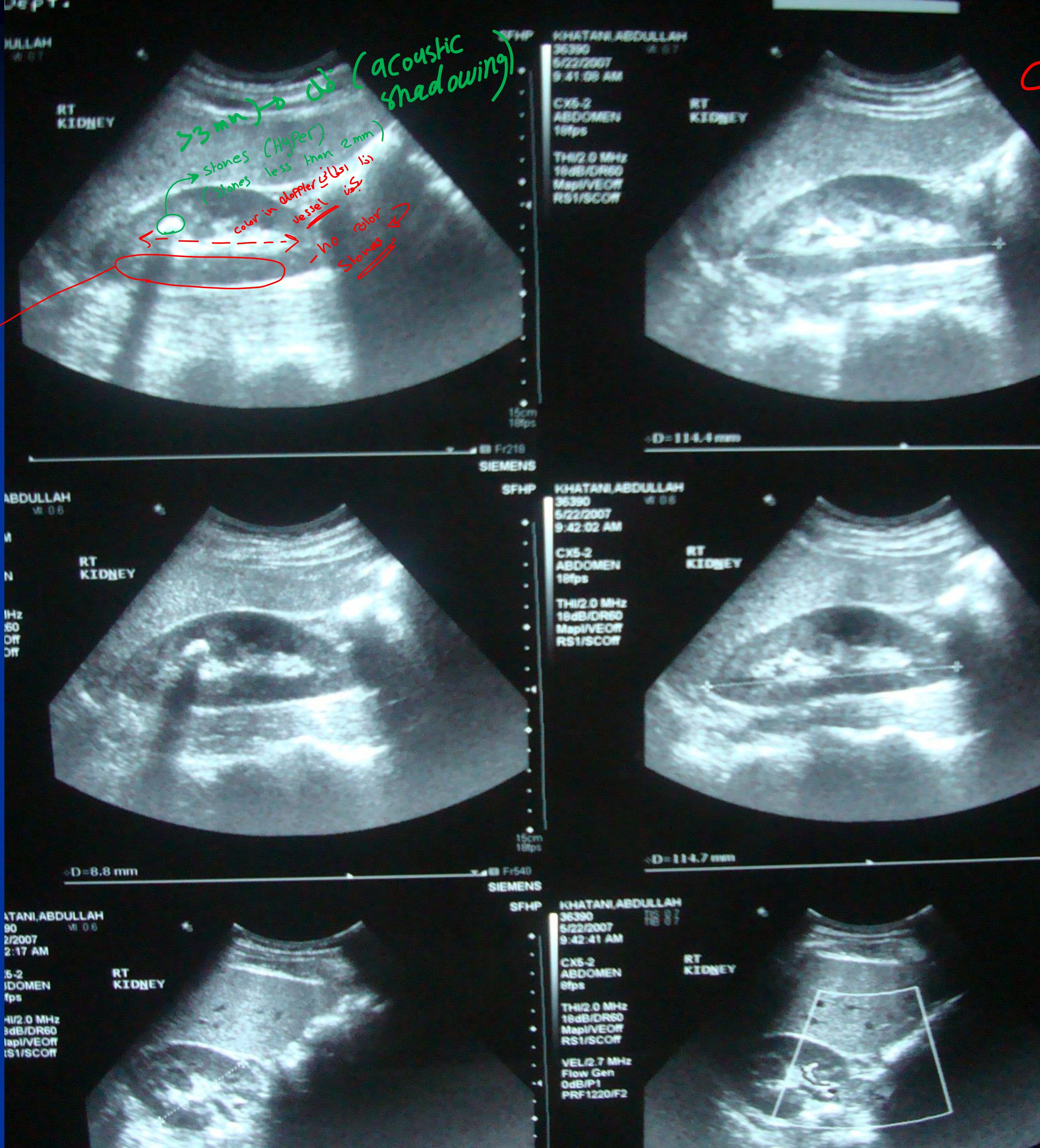
black → hypo echoic
white → hyper

equensity → less than liver, spleen

renal sinus normally تحتوي على fat → hyper

عكس ال CT

انحباس البول → anechoic fluid



حسب الهدى تبعه

Kidney أقل من liver
سواد أكثر (hypo)

iso → liver, spleen

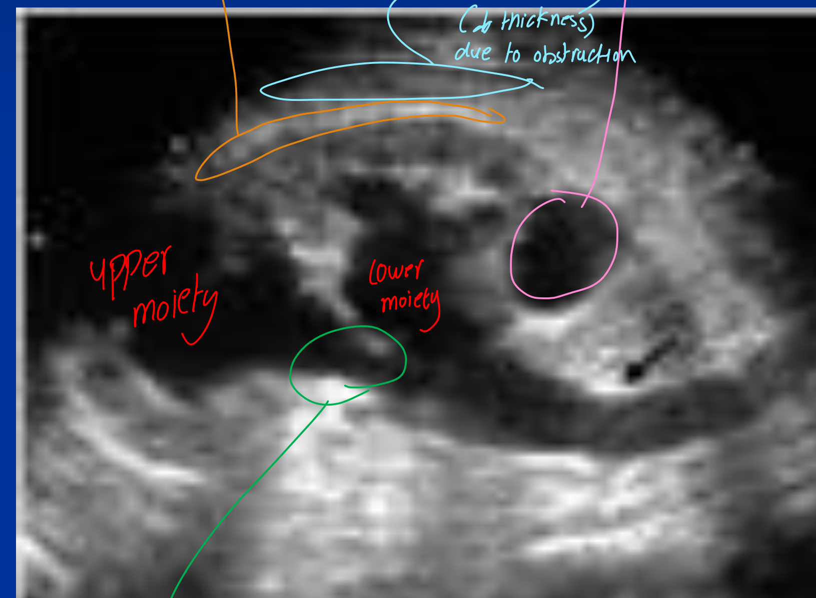
if kidney hyperechoic
- DM
- hypertension
- systemic disease
- sarcoidosis
(failure, impairement)

doppler for renal artery stenosis

Blood flow to kidneys can also be evaluated with doppler US

low obstruction

no fat in sinus, بدل ال fluid

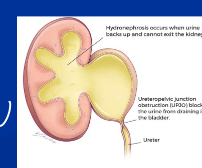


dilated collecting system

→ hydronephrosis

Ureteropelvic junction (UPJ) obstruction

تضيق خلقي



→ most common cause is stones, stenosis

فيه mass

DUPLEX KIDNEY

2 separate pelvicalyceal systems and 2 renal moieties form a single kidney.

+/- complete or partial duplication of the ureter.

Occurs when a kidney forms in 2 parts.

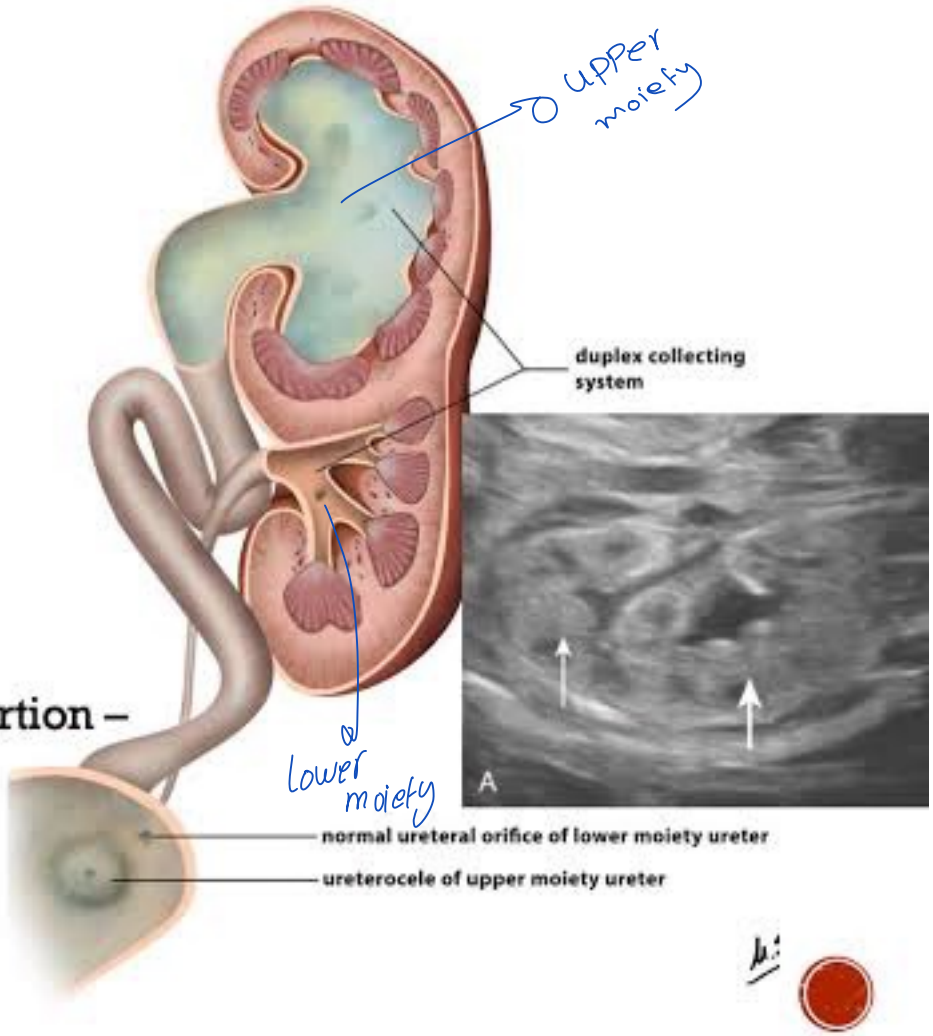
Weigert-Meyer rule = Drooping Lilly

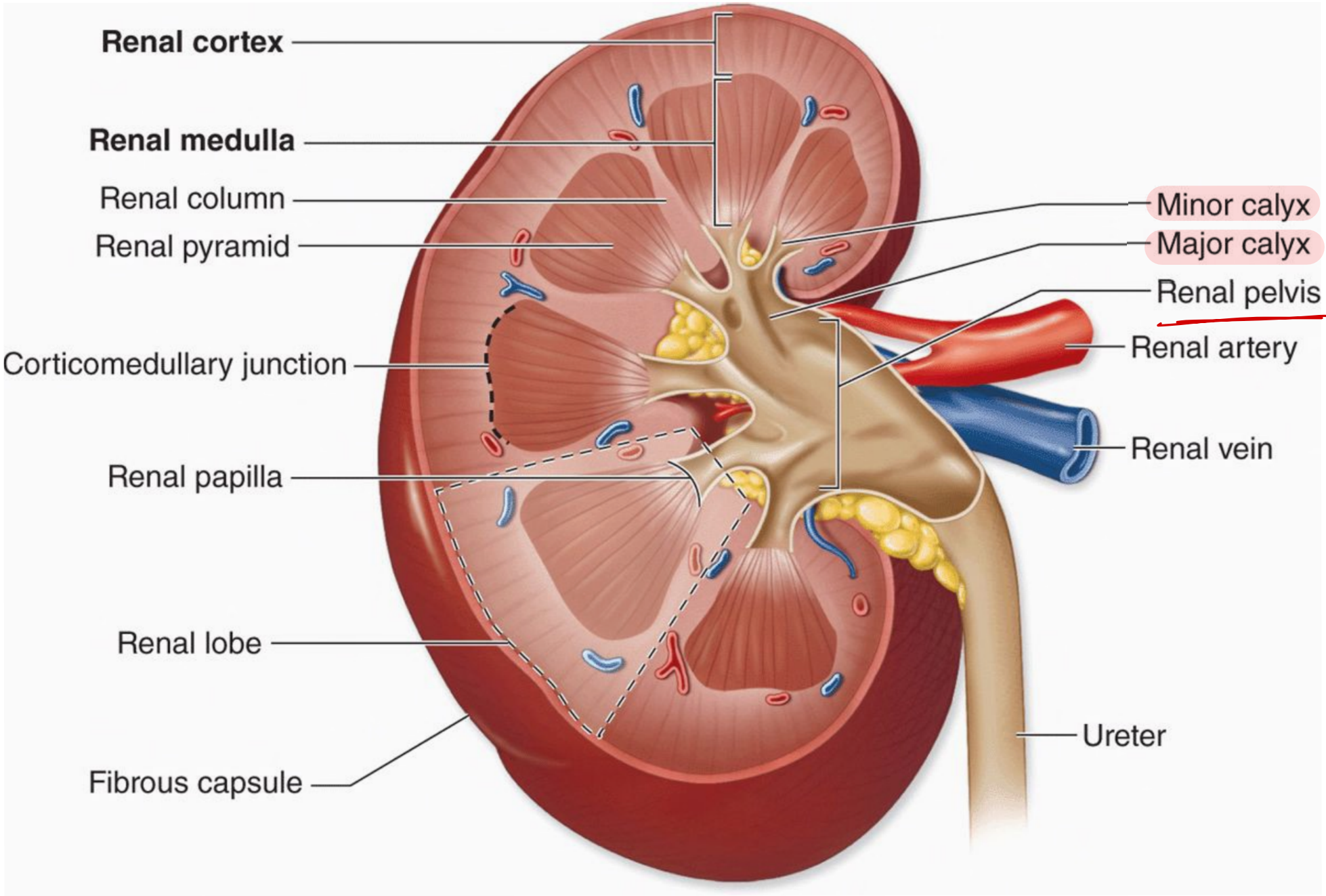
Upper moiety – ectopic ureter insertion with **ureterocele – obstruction**

Lower moiety – normally positioned ureter insertion – **reflux**

Ectopic ureters can insert

- Males – urethra
- Females - vagina




Renal cortex
Renal medulla
Renal column
Renal pyramid
Corticomedullary junction
Renal papilla
Renal lobe
Fibrous capsule
Minor calyx
Major calyx
Renal pelvis
Renal artery
Renal vein
Ureter

simple cyst

Solid from cystic نميز

shadow

fluid (black)

location مقطع

cortical

or

cortico medulla

or

medullary

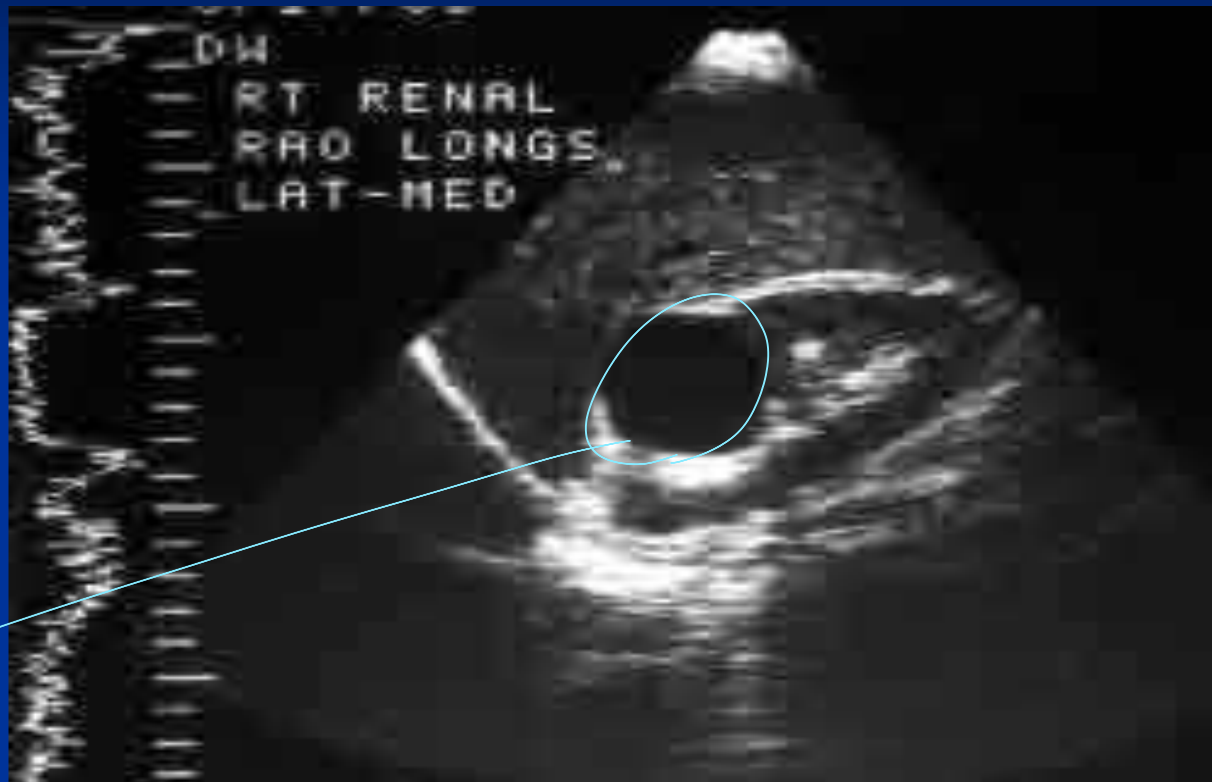
or

Para-pelvic

hydronephrosis

aspiration

polycystic disease



water

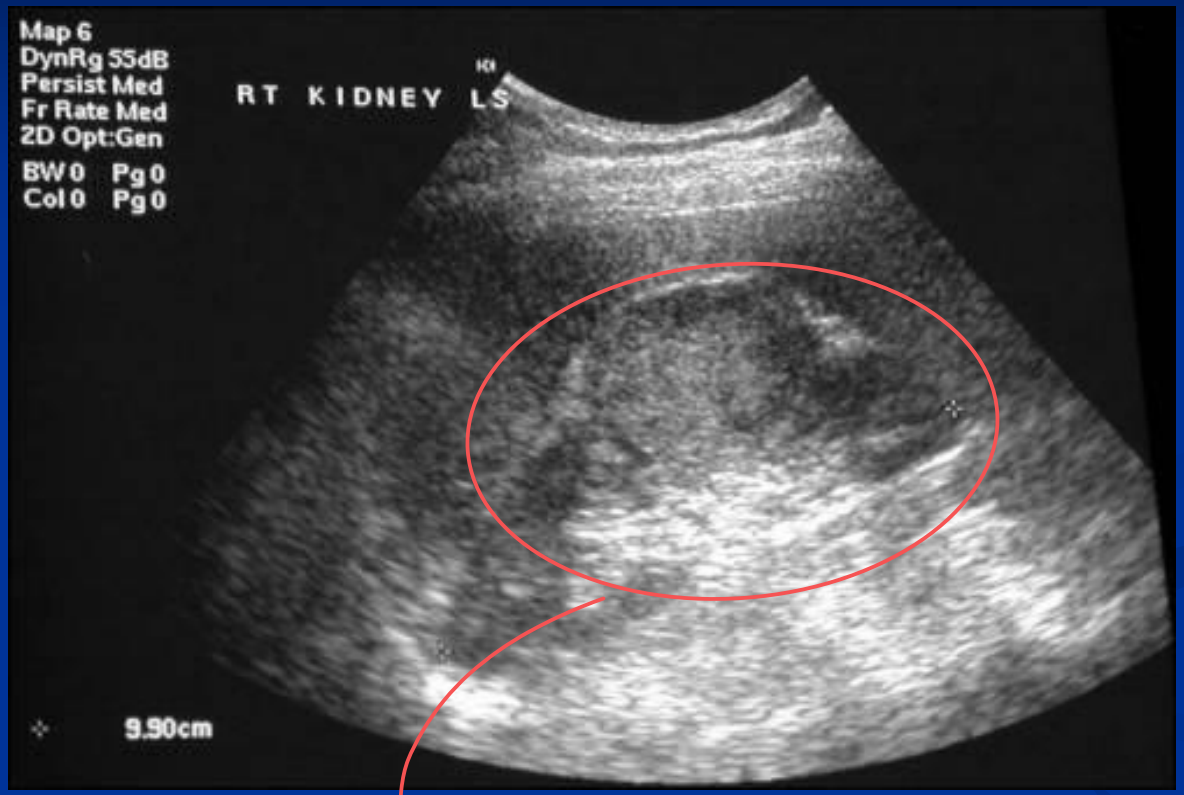
become it is unequiqe

liver density اذا نفس ال

solid

Soft tissue Mass → iso-echoic

↳ considered Malignant → then CT — CM
— no CM

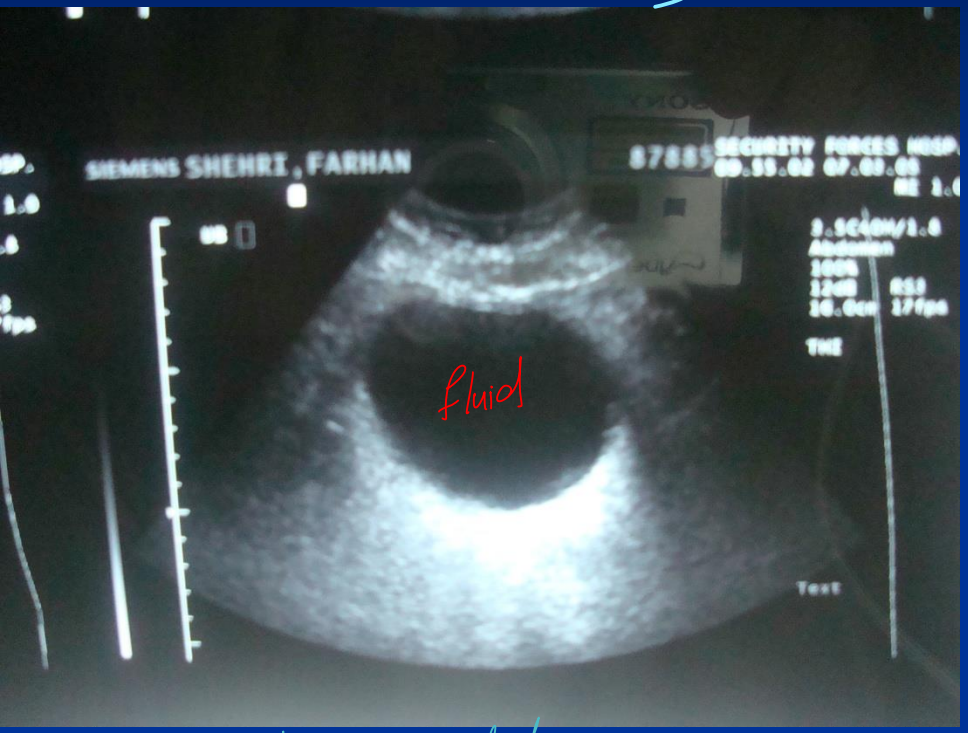


solid become iso echoic

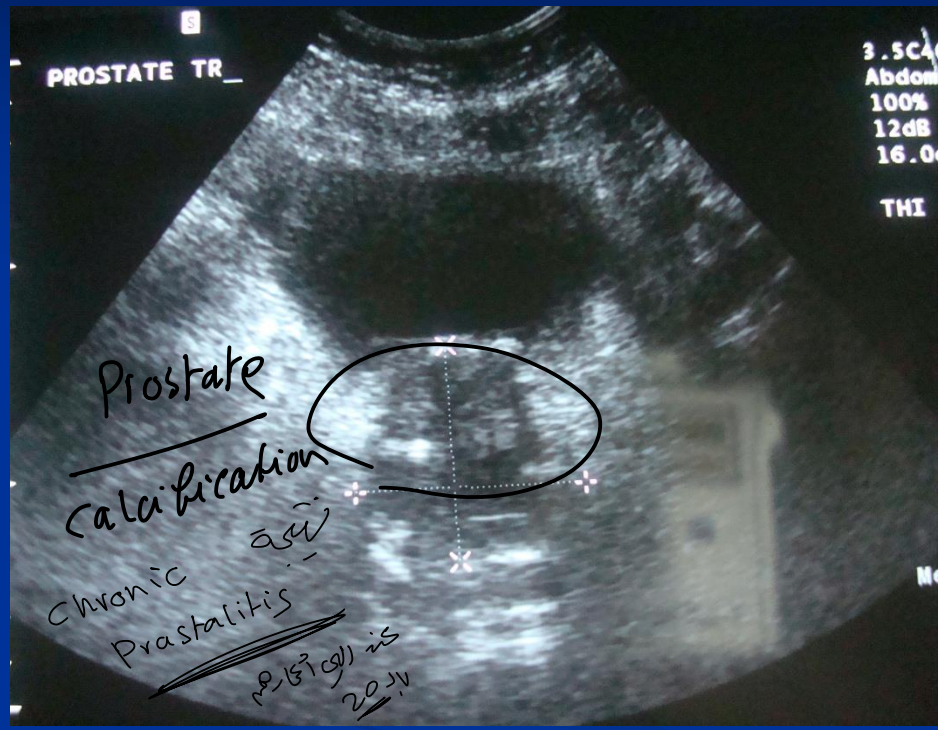
Severe back pain → Prostate CA

- old age

wall of urinary bladder ..



urinary bladder



if there is mass, but the patient to the opposite site to see if it fixed or mobile.

Prostate full تكون bladder

for Prostate assessment

distal illium

is a quick non-invasive technique for diagnosis of Urolithiasis .

CT of the urinary tract

Urolithiasis refers to the presence of calculi anywhere along the course of the urinary tract.

CT is excellent modality for assessment of:

- Renal masses.
- Obstruction. → at first without contrast → because may lead to renal impairement.
- Retroperitoneal disease.
- Staging of renal and bladder neoplasms.
- Tumor invasion into the renal vein or IVC
- Evaluation after trauma or surgery.

When should MRI be used to evaluate the kidneys ?

- When a renal mass or abscess is suspected but itravenous contrast cannot be administered, because of either contrast allergy or abnormal renal function, in this case MRI can be performed.
- Gadolinium, the contrast agent for MRI, can be safely administered in such circumstances.

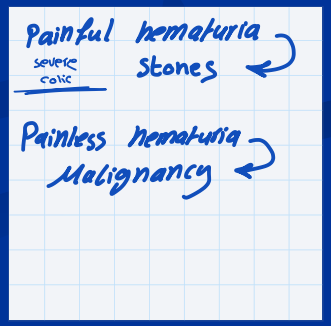
Intravenous urography (IVU)
Intravenous pyelography (IVP)

Is a radiological procedure used to visualized abnormalities of the urinary system, including the kidneys, ureters, and bladder by using intravenous contrast.

Indication:

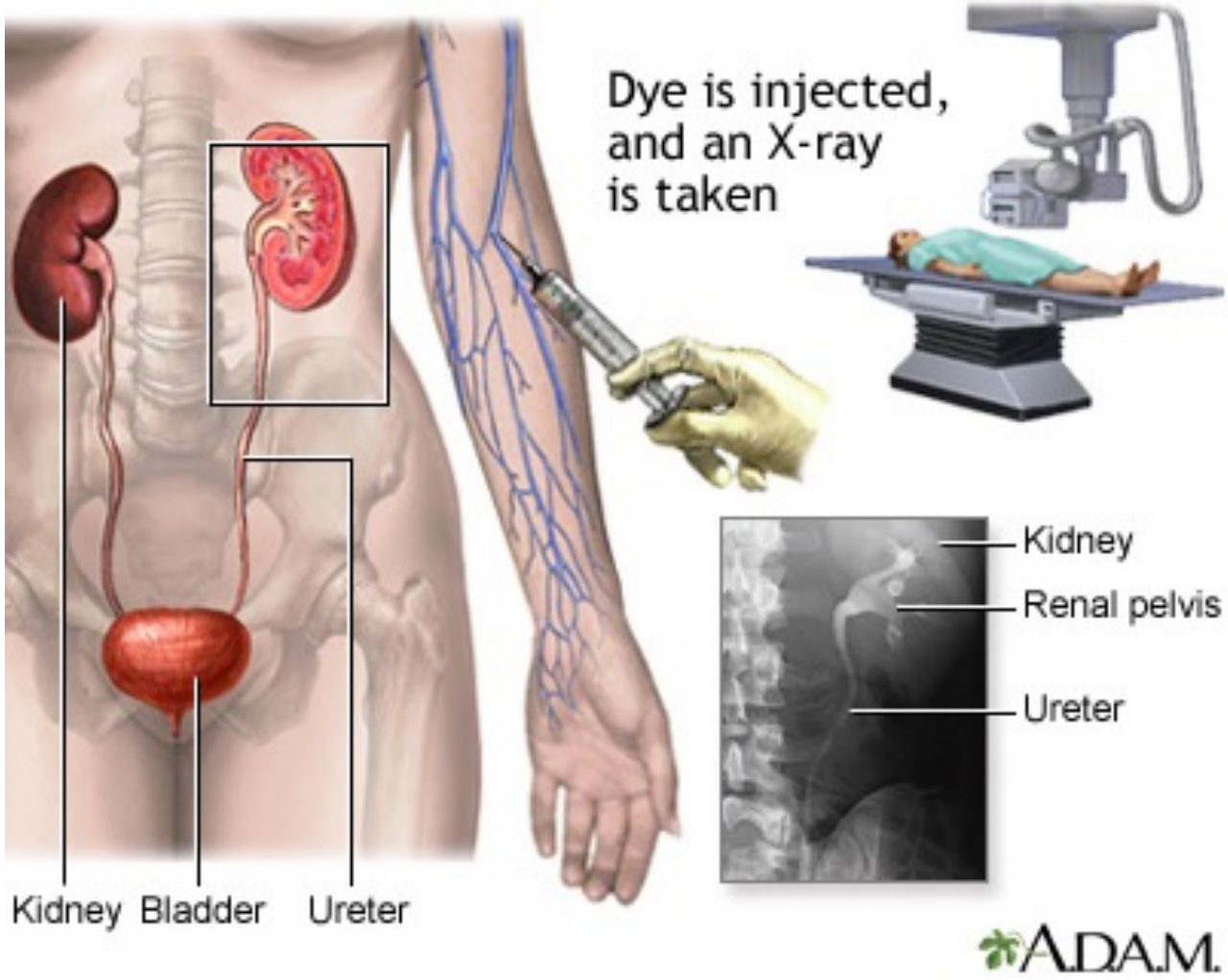
- Haematuria
- Renal colic or calculi
- Suspected stone in the ureters
- Renal trauma

or trauma
most painful haematuria due to stones
Kidney shattered, contured



An IVU test can show if cancer is growing in any part of your urinary system.

The cancer will show up as a blockage or an irregular outline on the wall of the bladder or ureter.



IVU /continuation

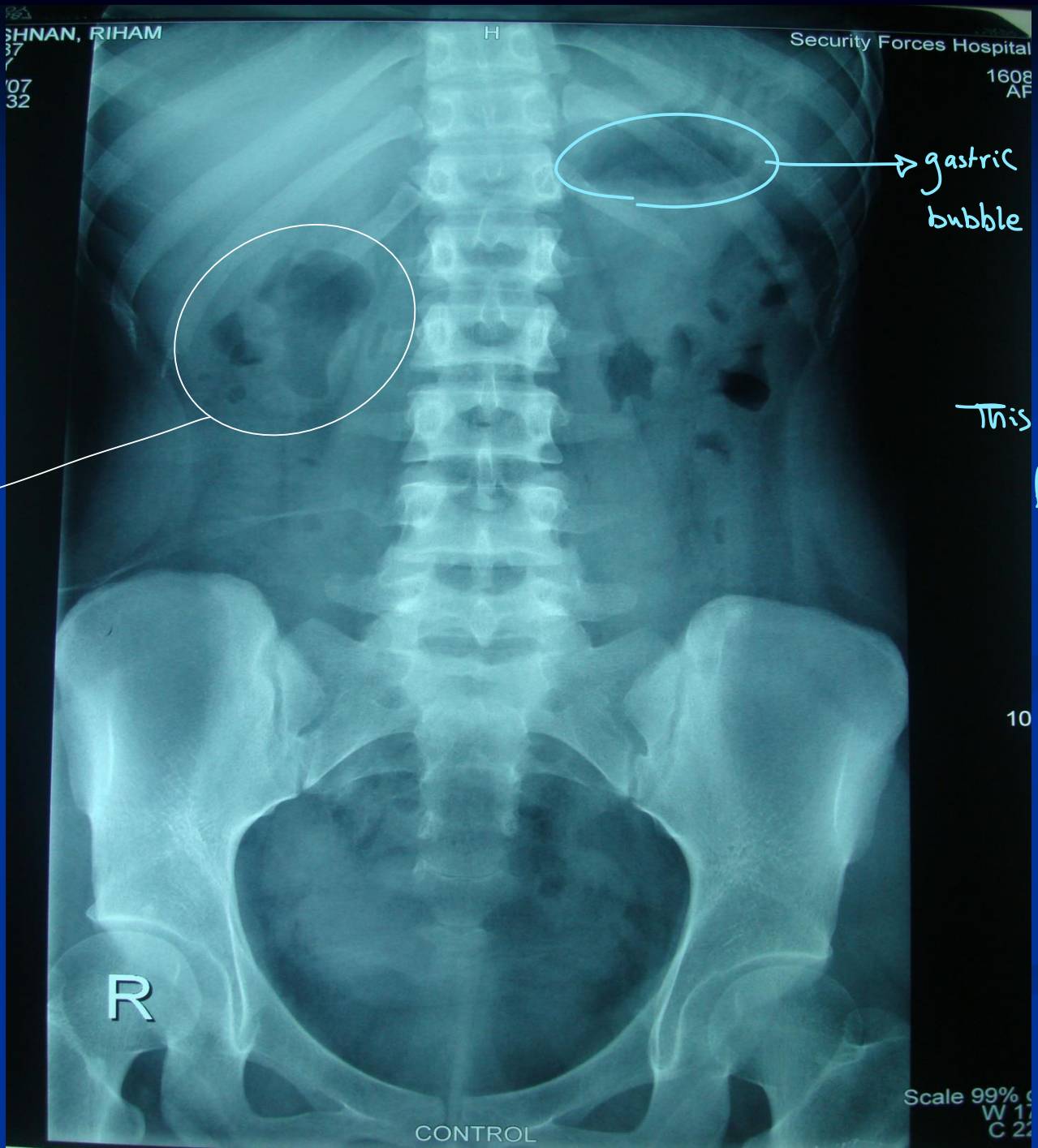
- After a preliminary control film of the abdomen, 50ml of contrast medium is injected intravenously.
- Contrast is excreted by glomerular filtration.
- Films after 5, 10, and 15 minutes are taken and reveal contrast in the pelvi-calyceal systems, ureters, and in the bladder.
- Post-micturition film is taken to assess bladder residual volume.
- Renal obstruction may require a delayed films.

scattered الـ in ligation (↓ Poor quality)

dose ← body weight الـ

* small kidney, but well-formed → congenital hypoplastic kidney
  → artery stenosis

KUB without CM

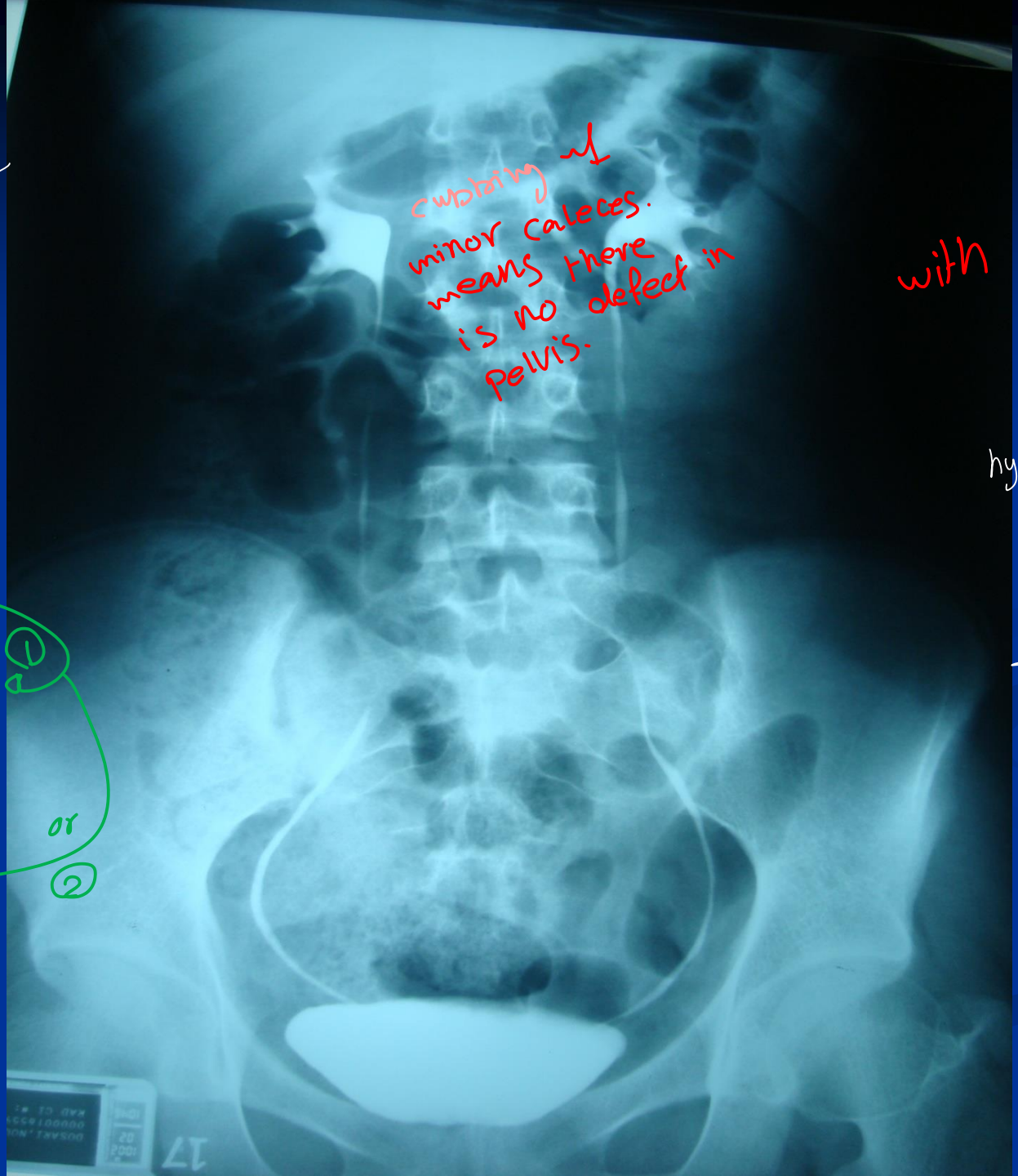


gastric bubble

normal kidney shadowing

This Pre-Contrast film to rule out stones

KUB
after CM

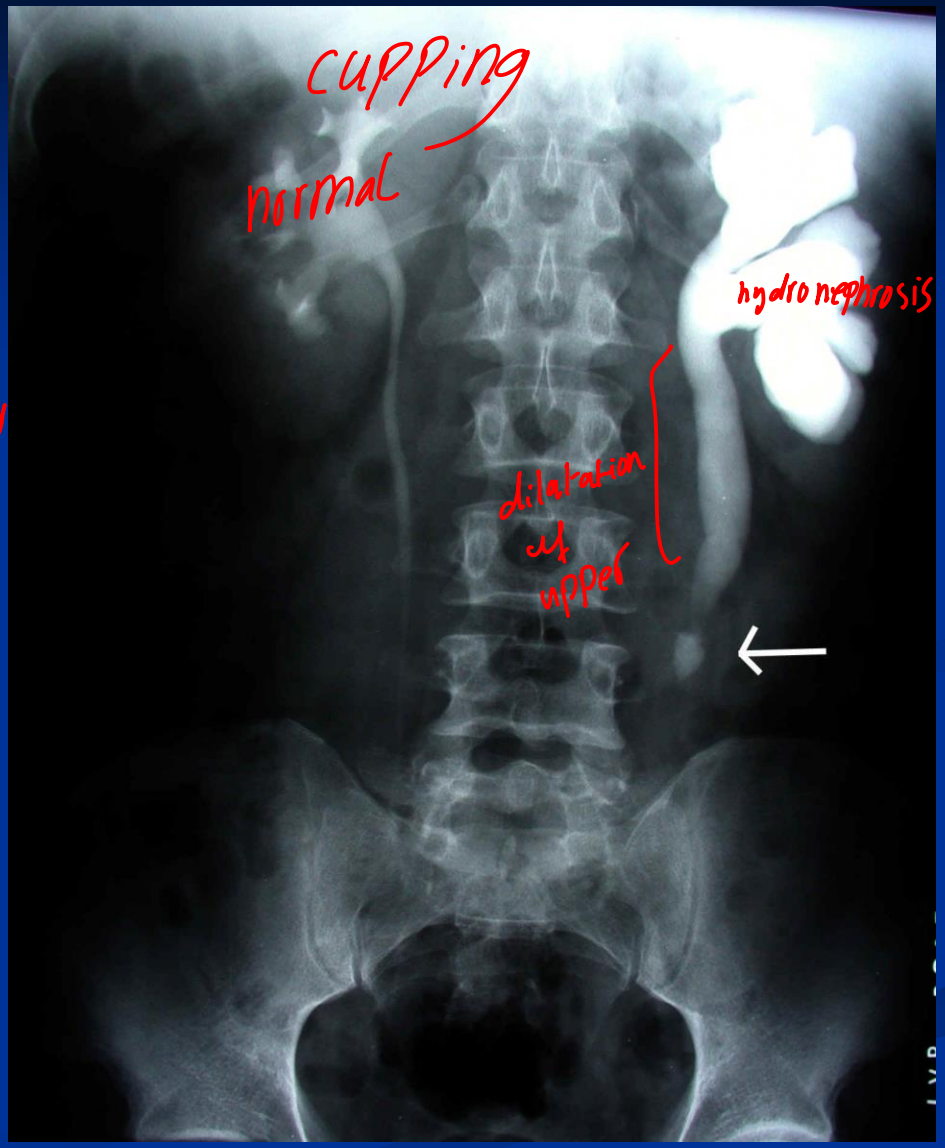


with Contrast

* اذا بدي أعرف hydronephrosis اذا فيه or not
↓
minor calices عم اذا تتلمع
↓
dilated or not
cubbing

* احيانا فيه مناطق ما بشوفها بال ureter
لانها بتكون مغطية بال gas & feces
Peristalsis (sPasm)


this is control
film we found
stone so no
give contrast
LEFT


cupping
normal
hydronephrosis
dilatation
of
upper

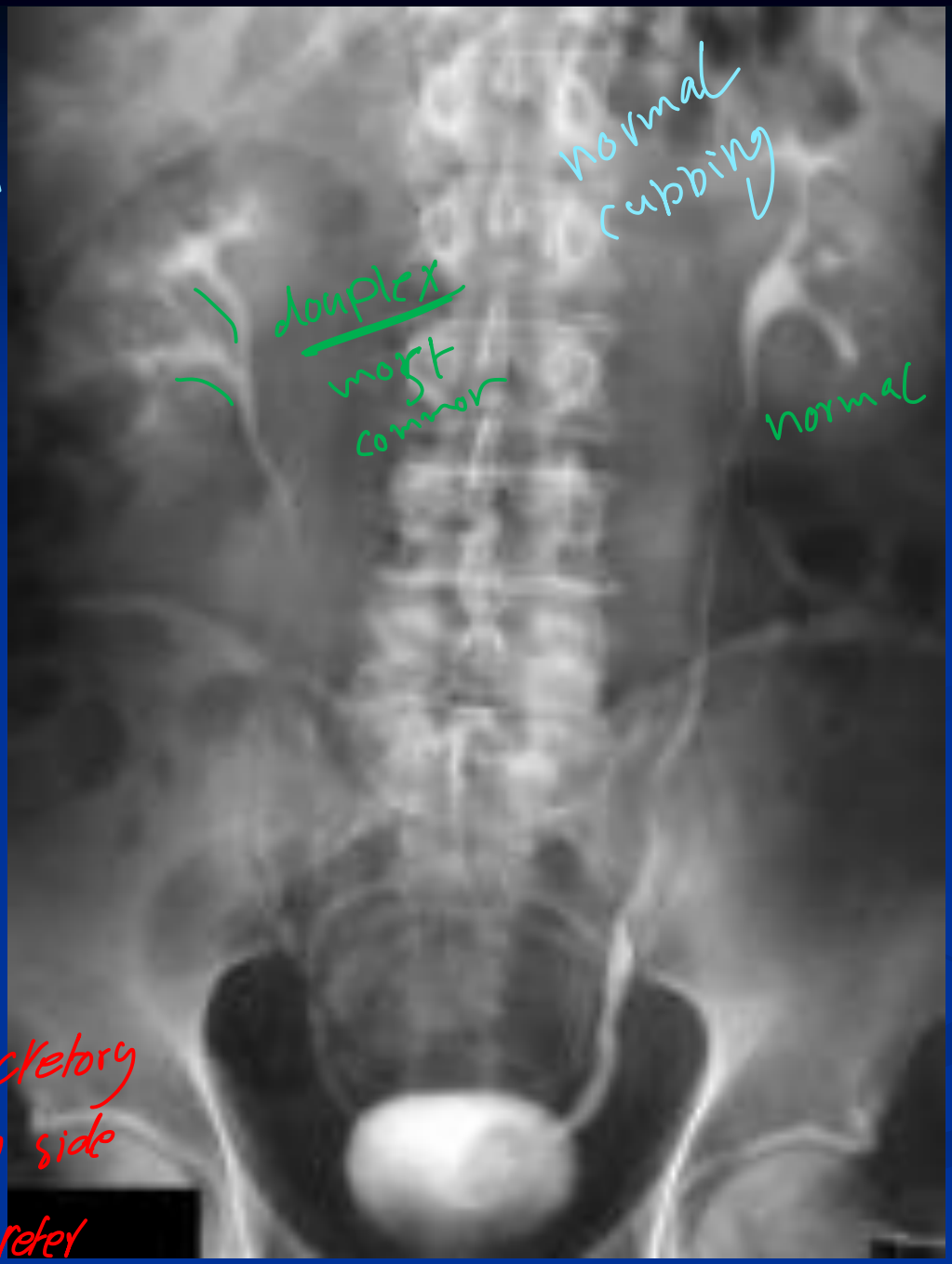
Control Film

KUB

- old age

incomplete duplication

not separate ureter



complete if duplicated

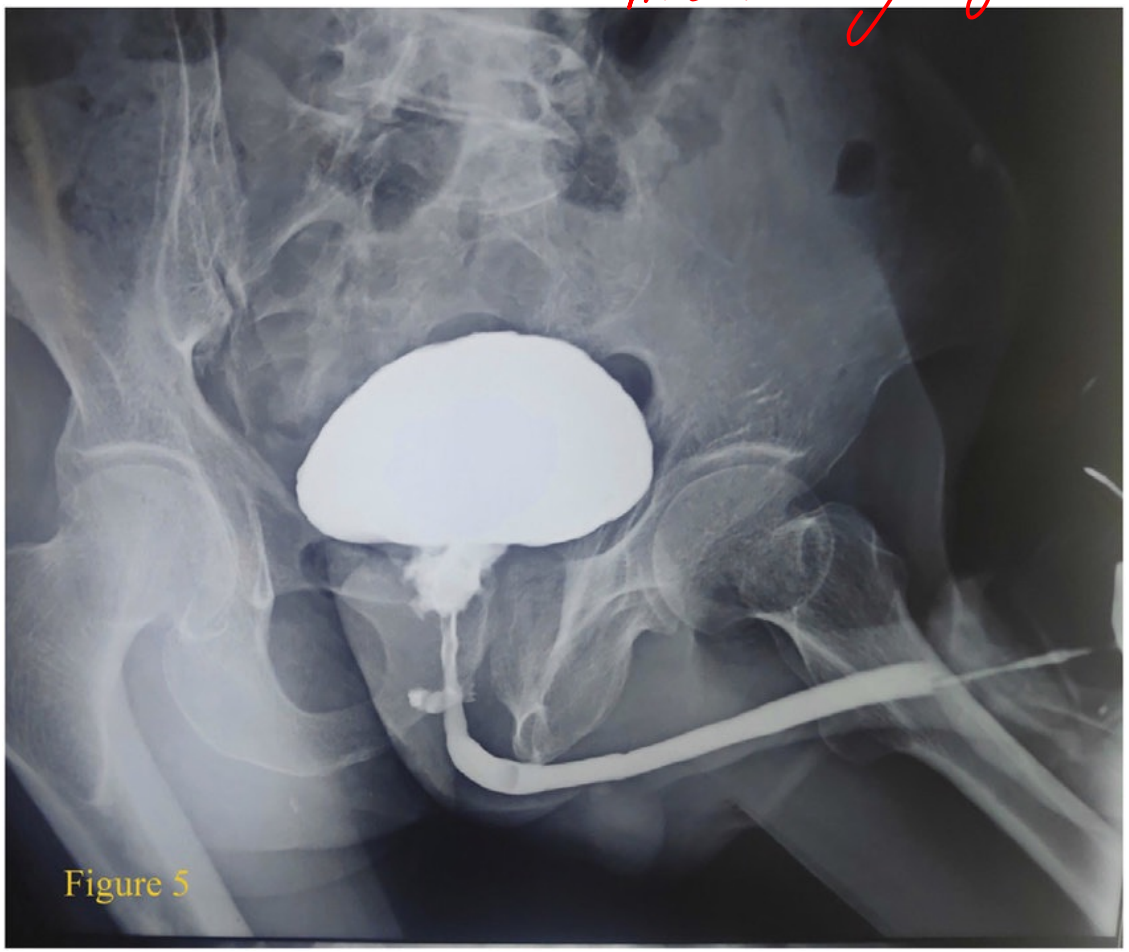
1 Co normal excecretory function of both side

2 Co normal both ureter

Micturating cystogram

- Is the study of the urinary bladder and urethra with contrast medium.
- The bladder is filled with contrast via a urethral catheter. Films of the bladder are obtained.
- After removal of the catheter, patient is asked to void and films are taken during micturation to assess the bladder neck and urethra, as well as reflux.
- Examination of the urethra in oblique position is necessary, particularly in suspected posterior urethral valves in infants and small children, as they are usually only demonstrated during micturation.

micturating cystourethro-gram

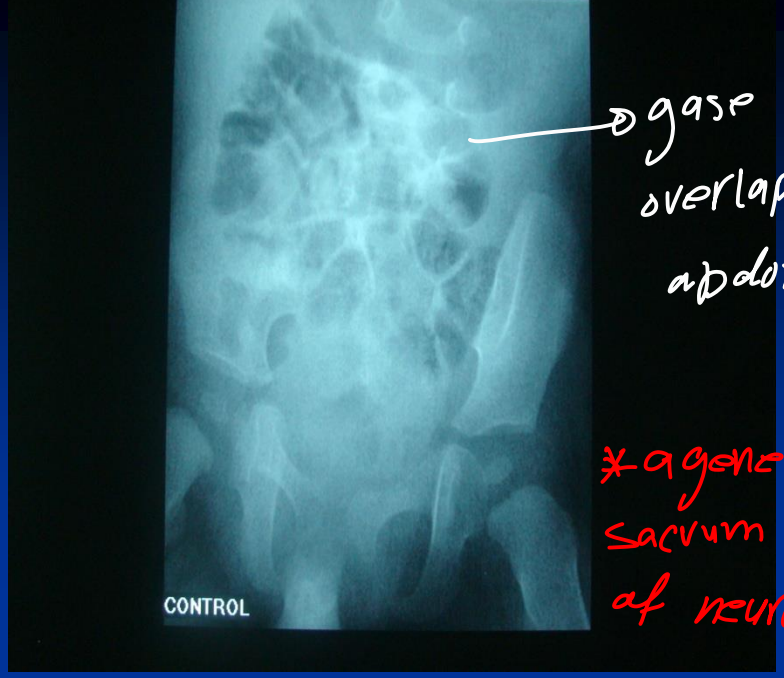


What is a MCUG?

A MCUG is a special X-ray test which looks at how well your child's bladder works when they pass urine (wee). The test can examine how the bladder stores the wee and how it empties through the urethra.

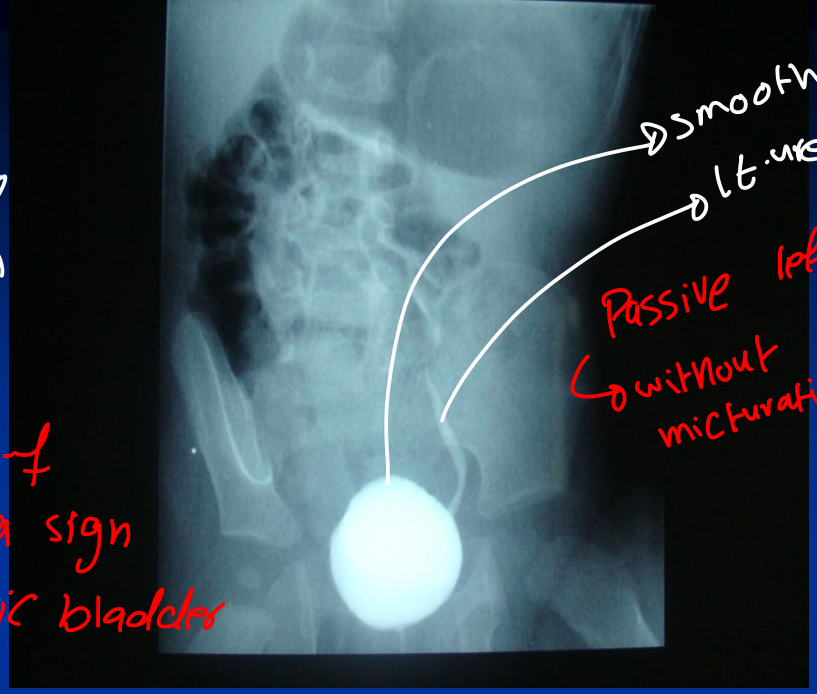
In fossa navicularis

* Trauma, congenital abnormality of urethra, bladder, neurological disorders in old ages



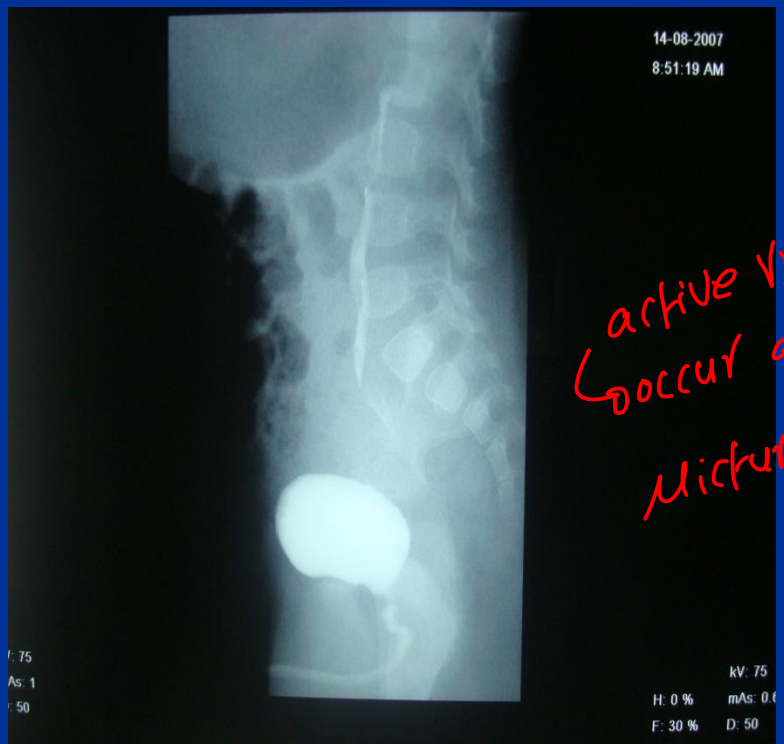
gase overlapping abdomen

*agenesis of sacrum is a sign of neurogenic bladder

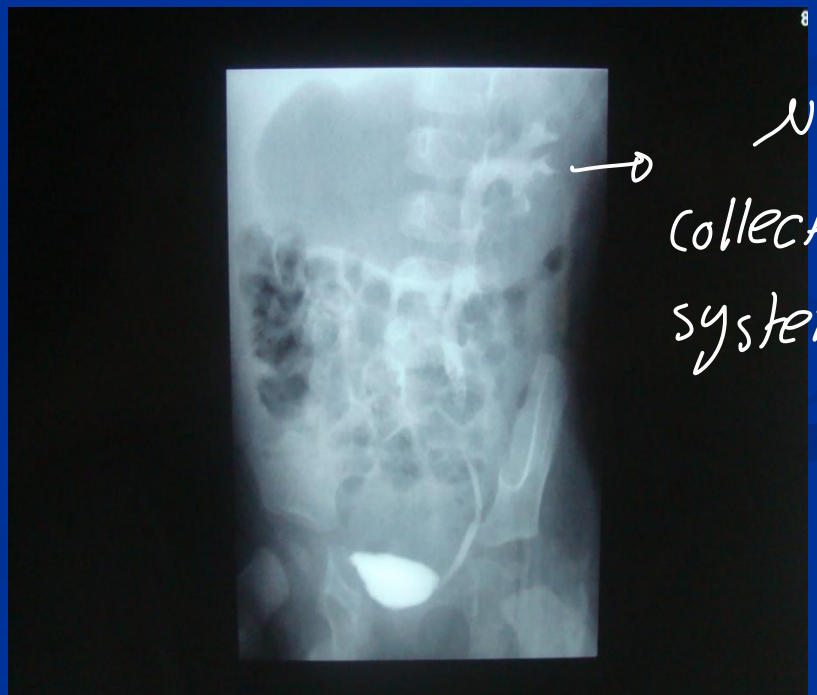


smooth lt. ureter dilation

Passive reflux without micturation



active reflux occur during micturation



N ↑ collecting system

thickness of the renal الـ سُمك عامل كان اذا

اذا بحسب الـ degree

operation

adhesions ^

→ Anti-biotic

→ severe dilatation + tourtisity at ureter → **5** degree

→ Just dilatation → **4** degree

→ without dilatation → **3**

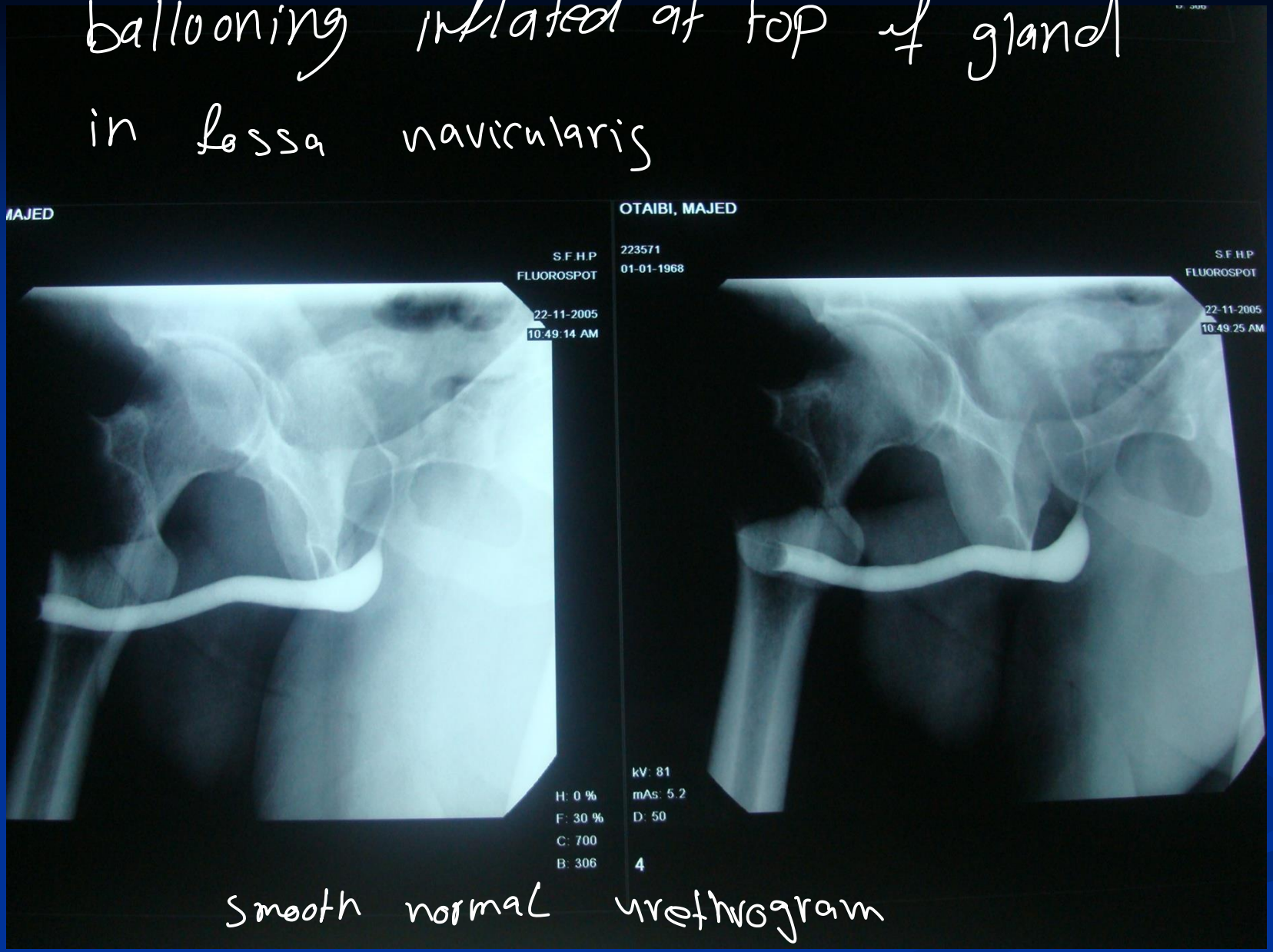
→ limited to ureter → **1**, **2**

upper / lower

Urethrogram

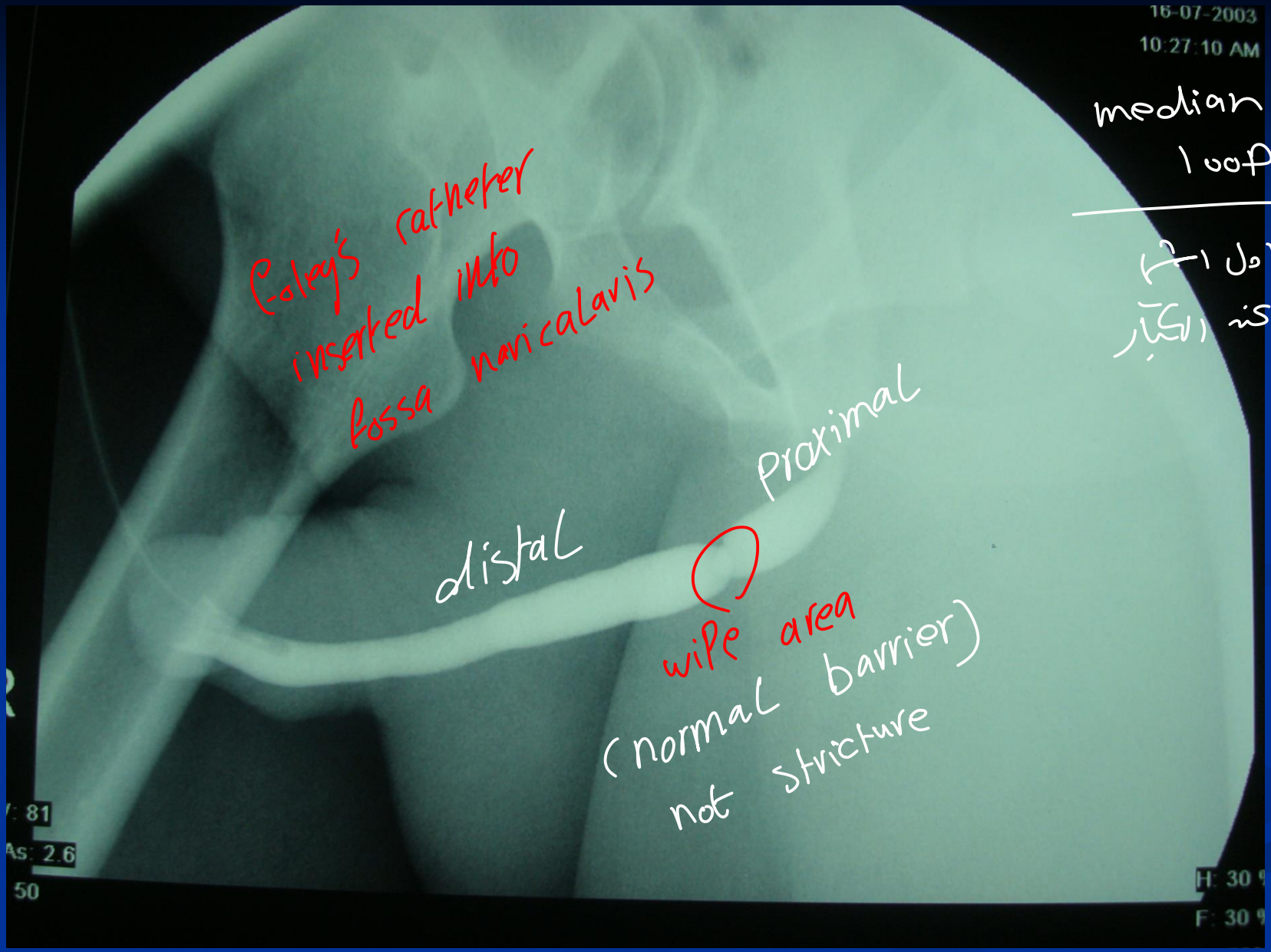
- The adult male urethra can be studied by ascending urethrogram.
- Contrast is injected through foley catheter inserted into the meatus, and its balloon inflated with 1 to 2ml of sterile water placed in the navicular fossa.
- Films are taken to the urethra in oblique position during contrast injection.
- The most common indication for urethrogam is urethral strictures.

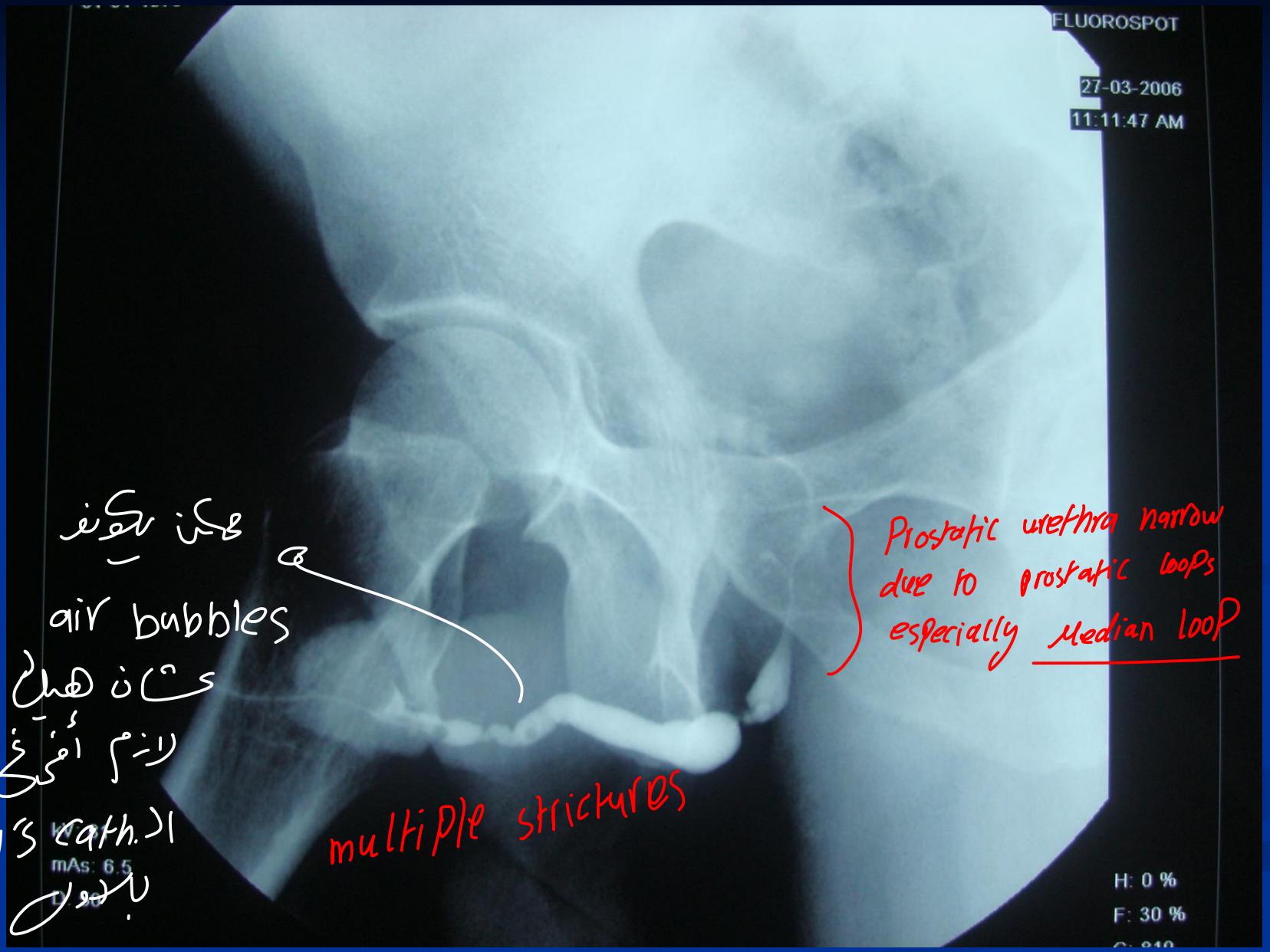
ballooning inflated at top of gland in fossa navicularis



Smooth normal urethrogram

No strictures


16-07-2003
10:27:10 AM
median
loop
Foley's catheter
inserted into
fossa navicalaris
distal
Proximal
wipe area
(normal barrier)
not stricture


FLUOROSPOT
27-03-2006
11:11:47 AM
ممكن يكون
air bubbles
حتى هيك
لازم أفتح
Foley's cath. الـ
بالبول من
الهواء.
multiple strictures
Prostatic urethra narrow
due to prostatic loops
especially Median loop
mAs: 6.5
H: 0 %
F: 30 %

Congenital renal anomalies

1- **Unilateral renal agenesis**

2- **Renal hypoplasia**

the kidney is small but perfectly formed

3- **Duplex kidney**

Is the commonest renal anomaly with avariable degree of duplication ranging from minor changes of duplication in the renal pelvis , to a total duplication (complete) of the renal pelvis and ureters.

Congenital renal anomalies/2

4- Renal Ectopia

- ✓ Refers to a birth defect in which a kidney is located in an abnormal position usually in the pelvis
- ✓ The ectopic kidney is frequently malrotated and small in size.

5- Crossed fused renal ectopia

- ➢ One kidney is displaced across the midline and fused to the other normal kidney .
- ➢ The ureteric orifice lie in a normal position .

Congenital renal anomalies / 3

6- **Horse shoe kidney** not oblique

- Is a fusion anomaly in which the lower poles of the kidneys fuse across the midline .
- The connective tissue may be functioning or non functioning (fibrous tissue)
- In horseshoe kidney , there is increased incidence of infection and stone formation.

normal
capping
caleces

external Pelvis

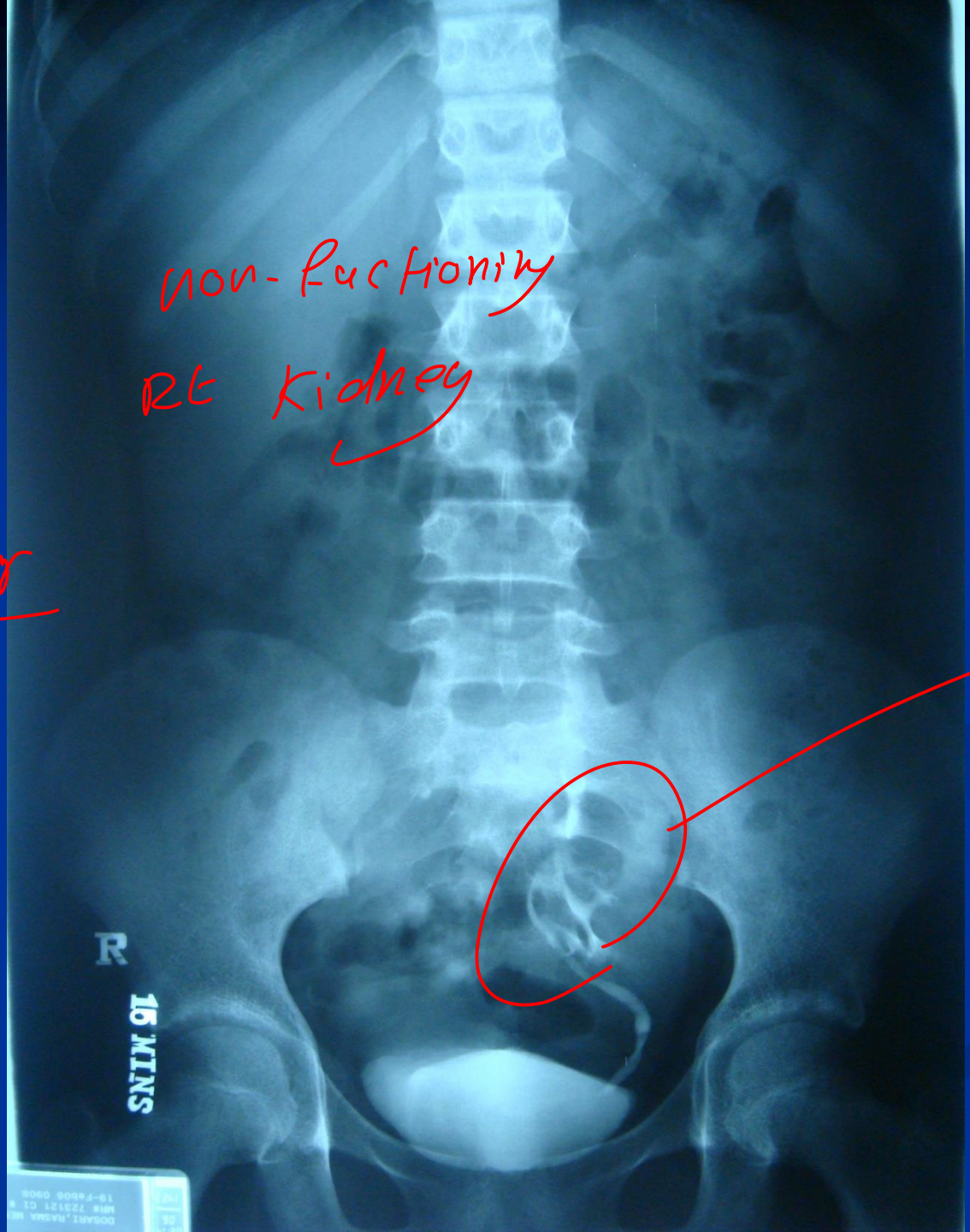
NO PUJO

Prone
Position

بنزل
contrast
to ureter

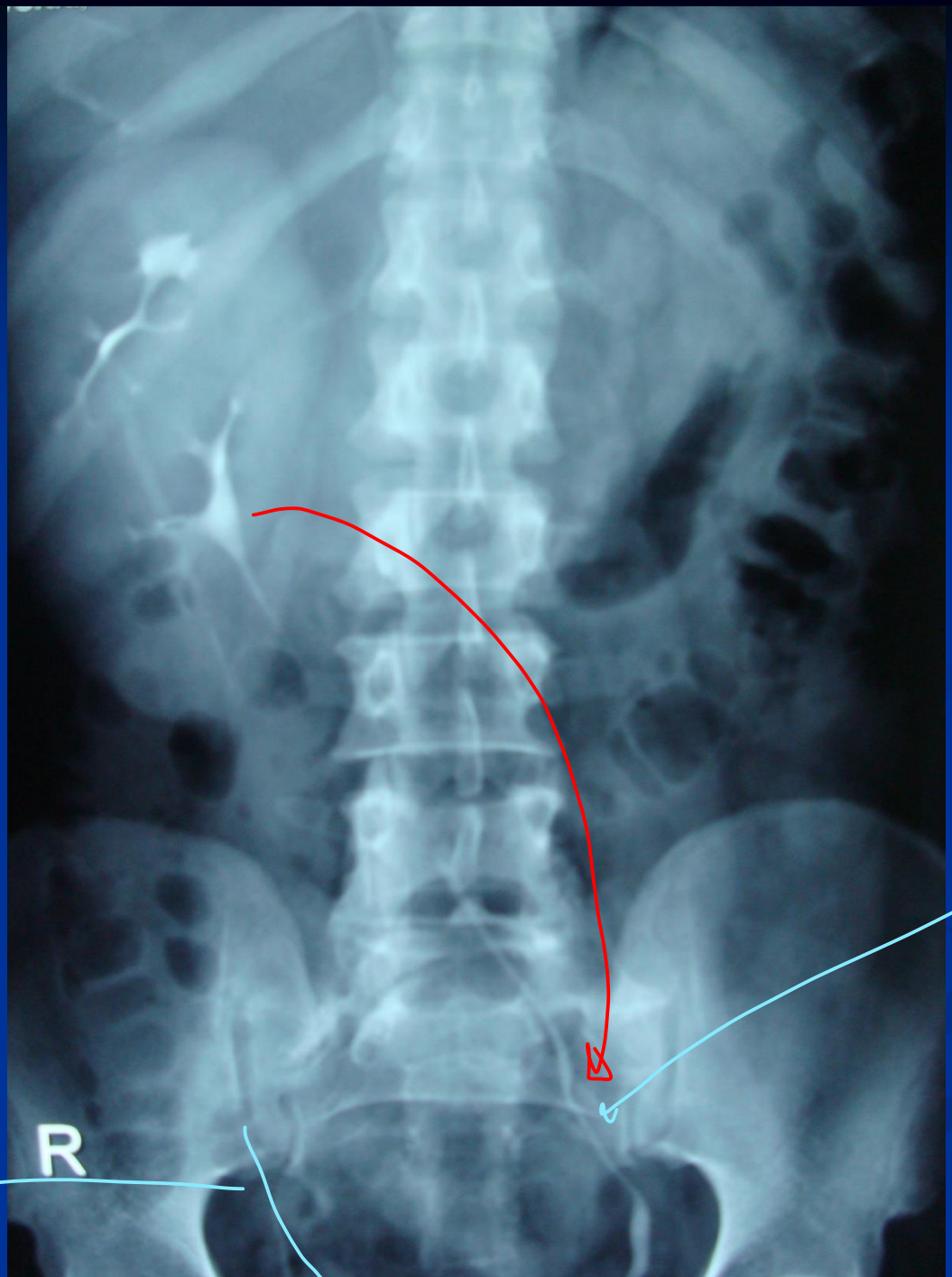
IVU

contrast in bladder



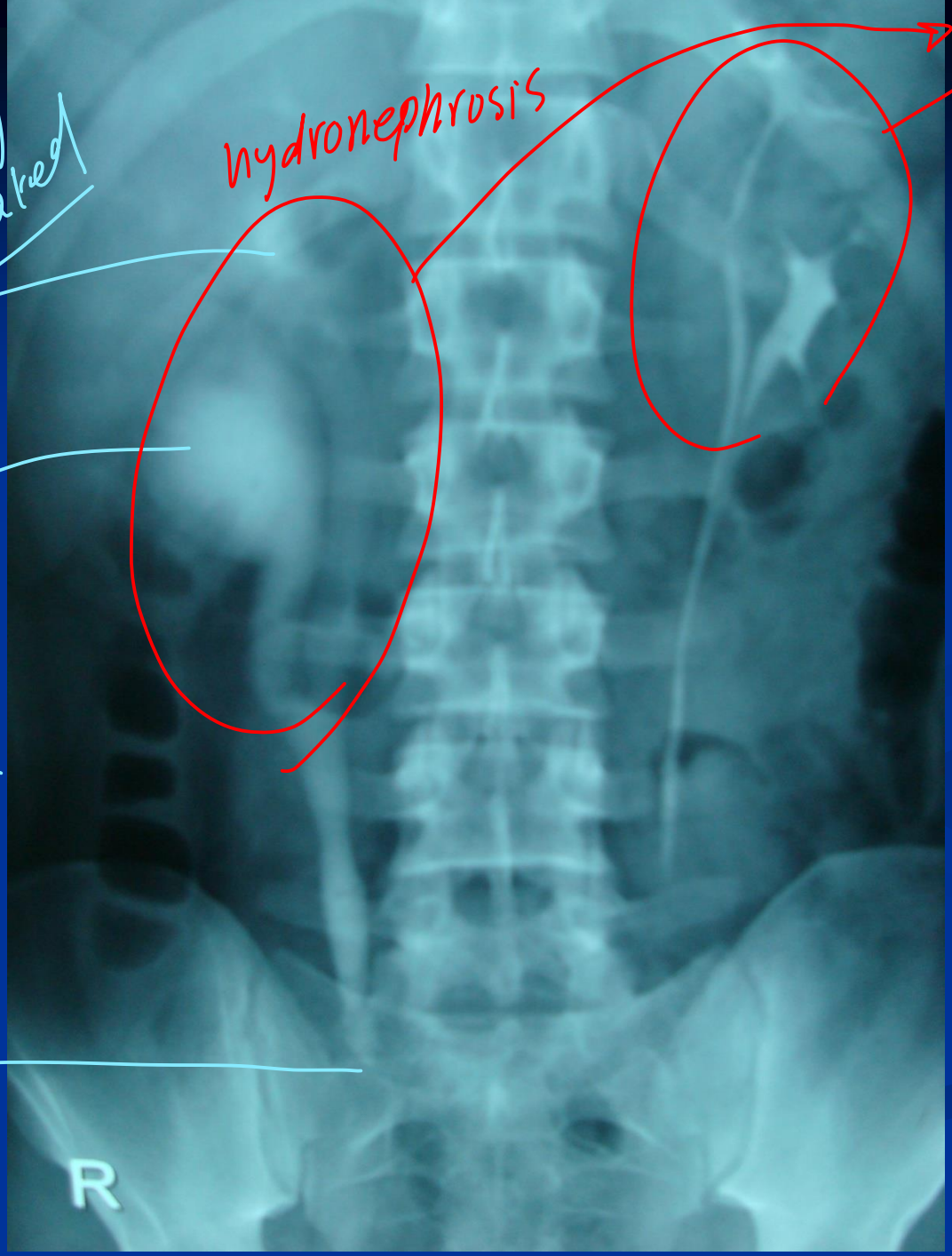
IVU / contrast

KUB / no contrast

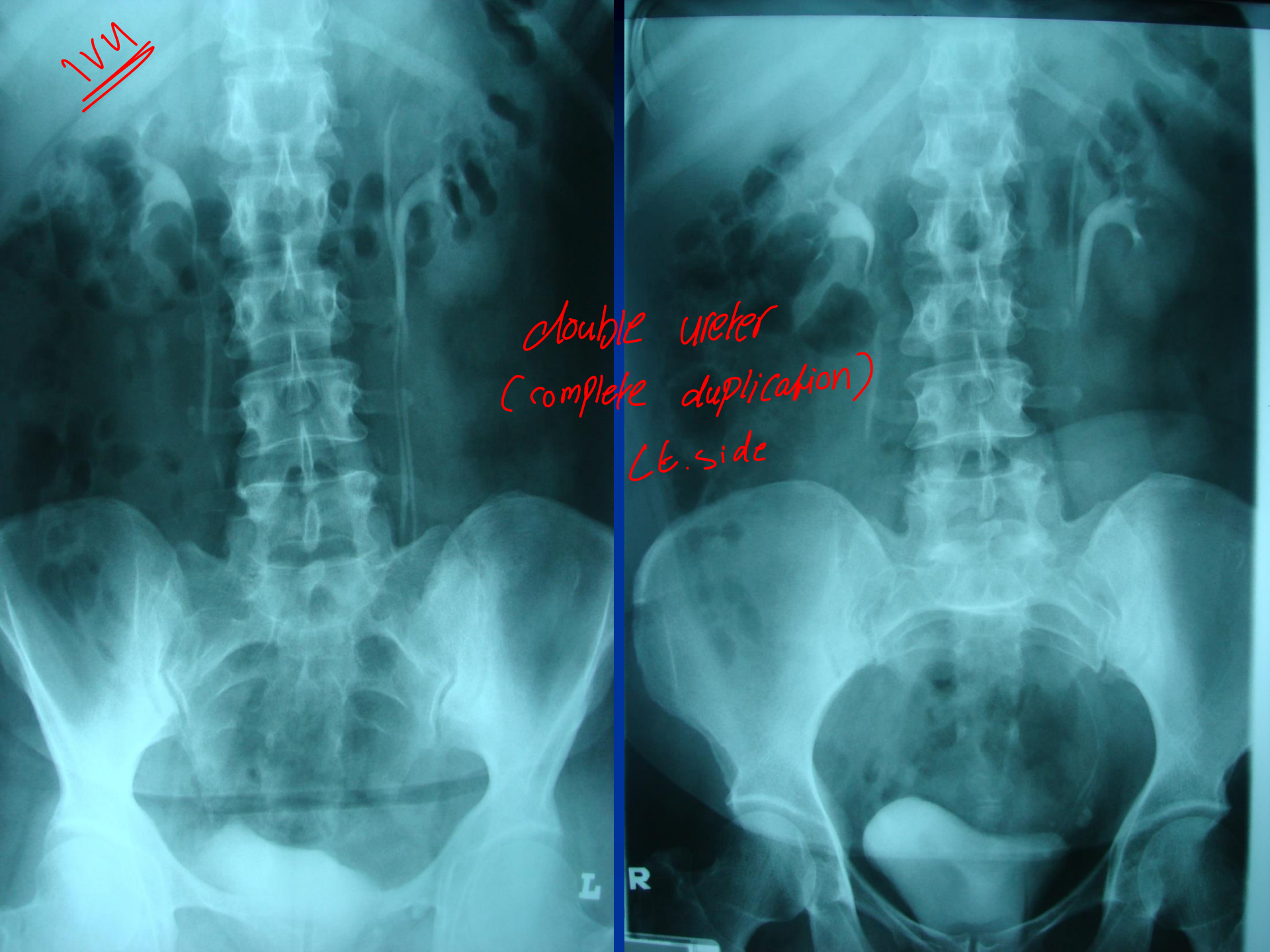


distal ureter

other ureter crossed


Upper moiety dilated
dilated ureter
low obstruction
hydronephrosis
Incomplete duplication
Normal function
No dilatation
R


IVU
duplex kidney
upper moiety
lower moiety
dilated
Prone
Position
single
ureter
R


double ureter
(complete duplication)
Lt. side
L
R


Horse-shoe Kidney
if no CM stones
with CM
10cm

Horse shoe Kidney

Misdiagnosed with hydronephrosis

Urinary tract calculi

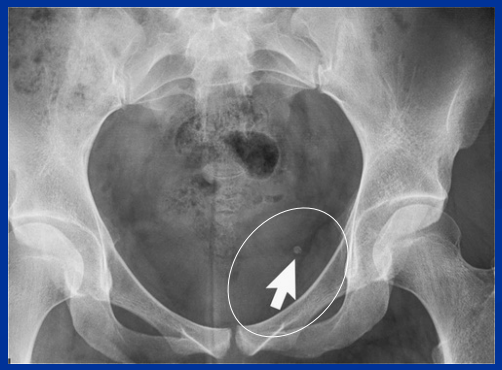
- The majority of renal stones are composed of calcium (about 90 %) and are visible on plain film (radio-opaque) → أبيض
- Stones composed of uric acid are not visible on plain film (radiolucent) . → أسود
- Stones composed of cystine are minimally dense on plain film (semi-opaque) .

Urinary tract calculi / continuation

What is the initial imaging test usually ordered to find urinary tract stones ?

- ✓ Plain radiograph (KUB), because the majority of stones are radio-opaque
- ✓ Other calcifications may be confused with urinary tract stones such as a phlebolith in the pelvis , which is a venous calcification , often with a lucent center .

small local, usually rounded, calcification within a vein



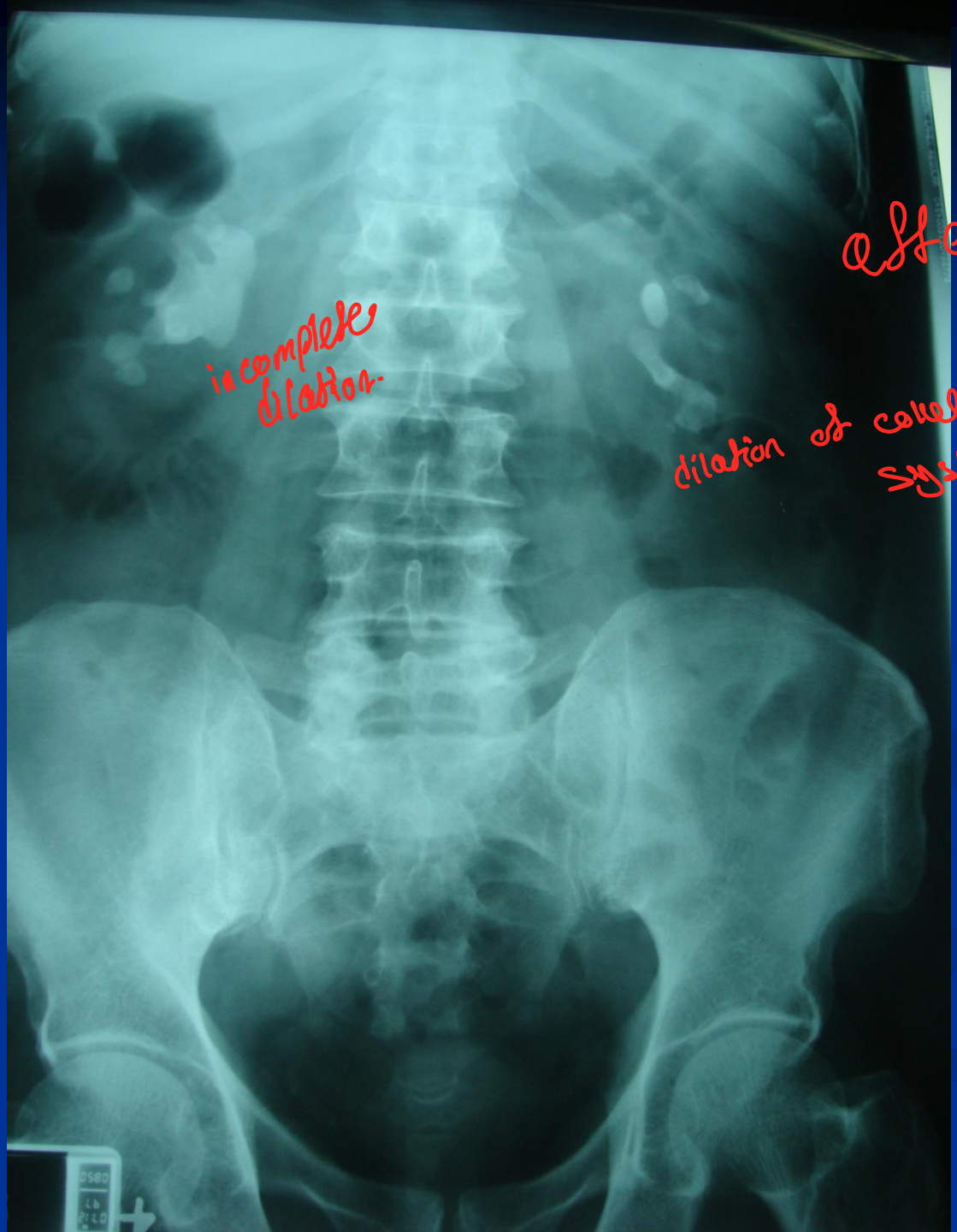
Control film

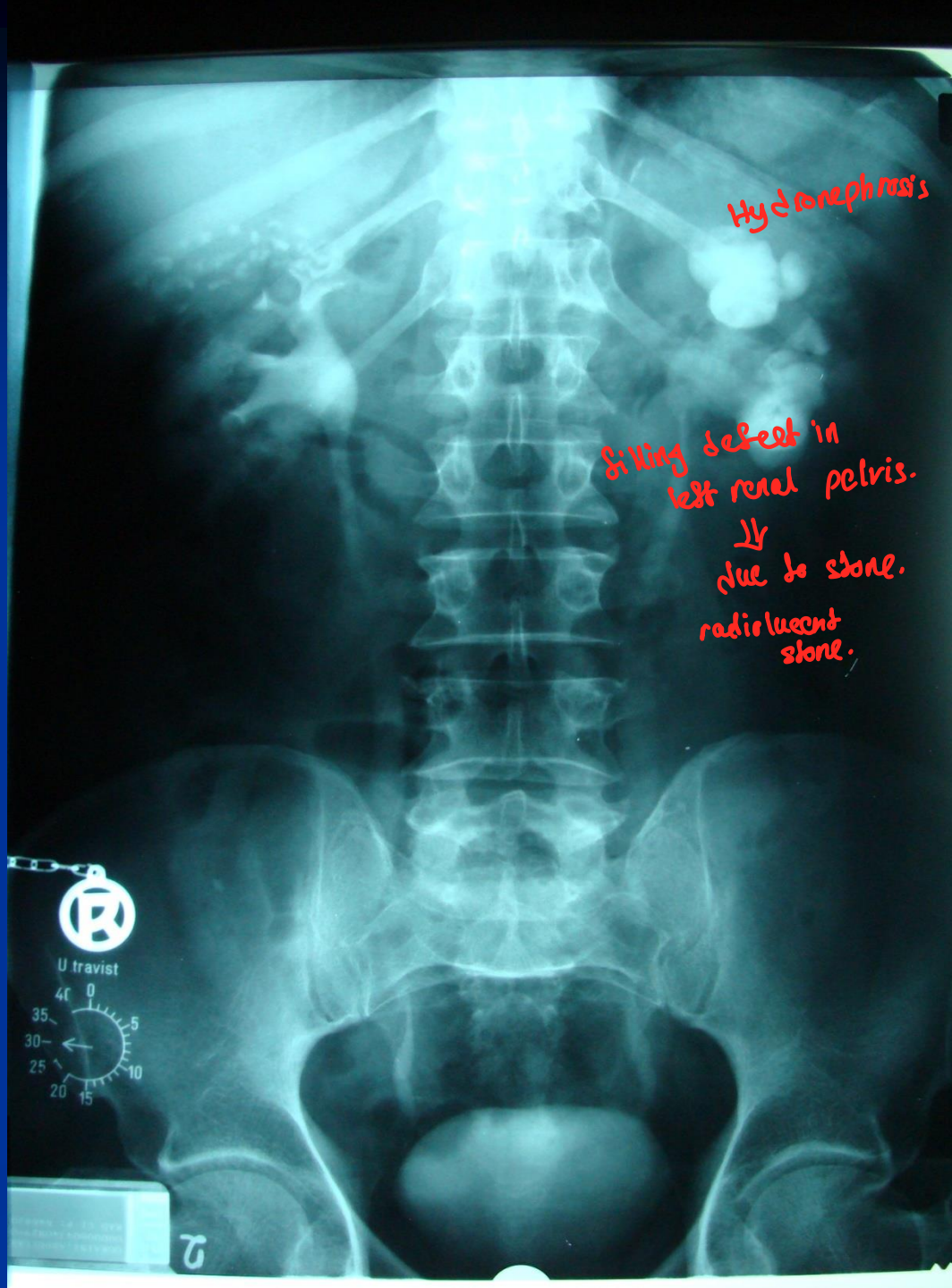

R

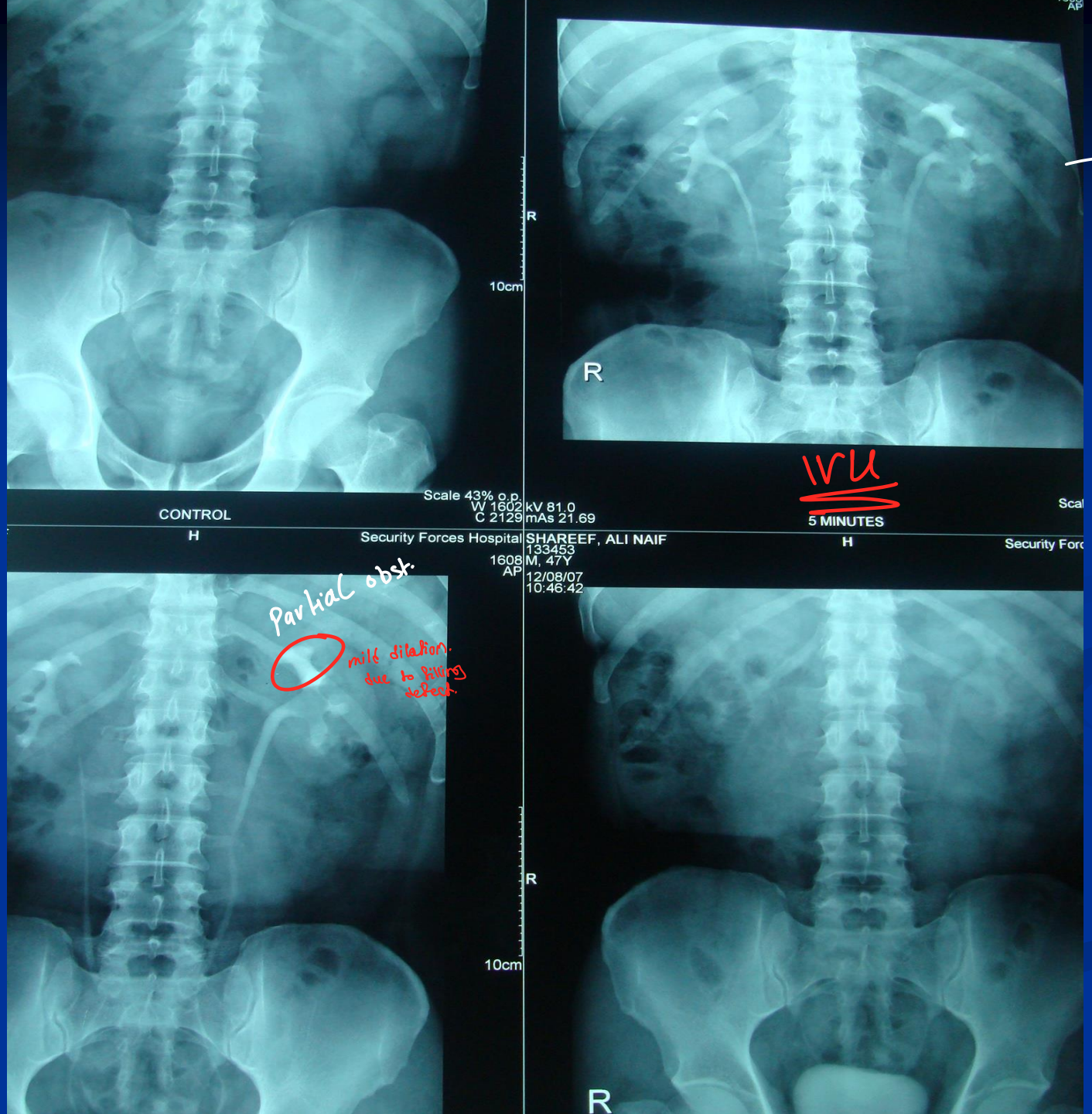

staghorn stone
Control Film
Ultravist
40
35
30
25
20
15
10
5
CONTROL

KUB showing staghorn stone

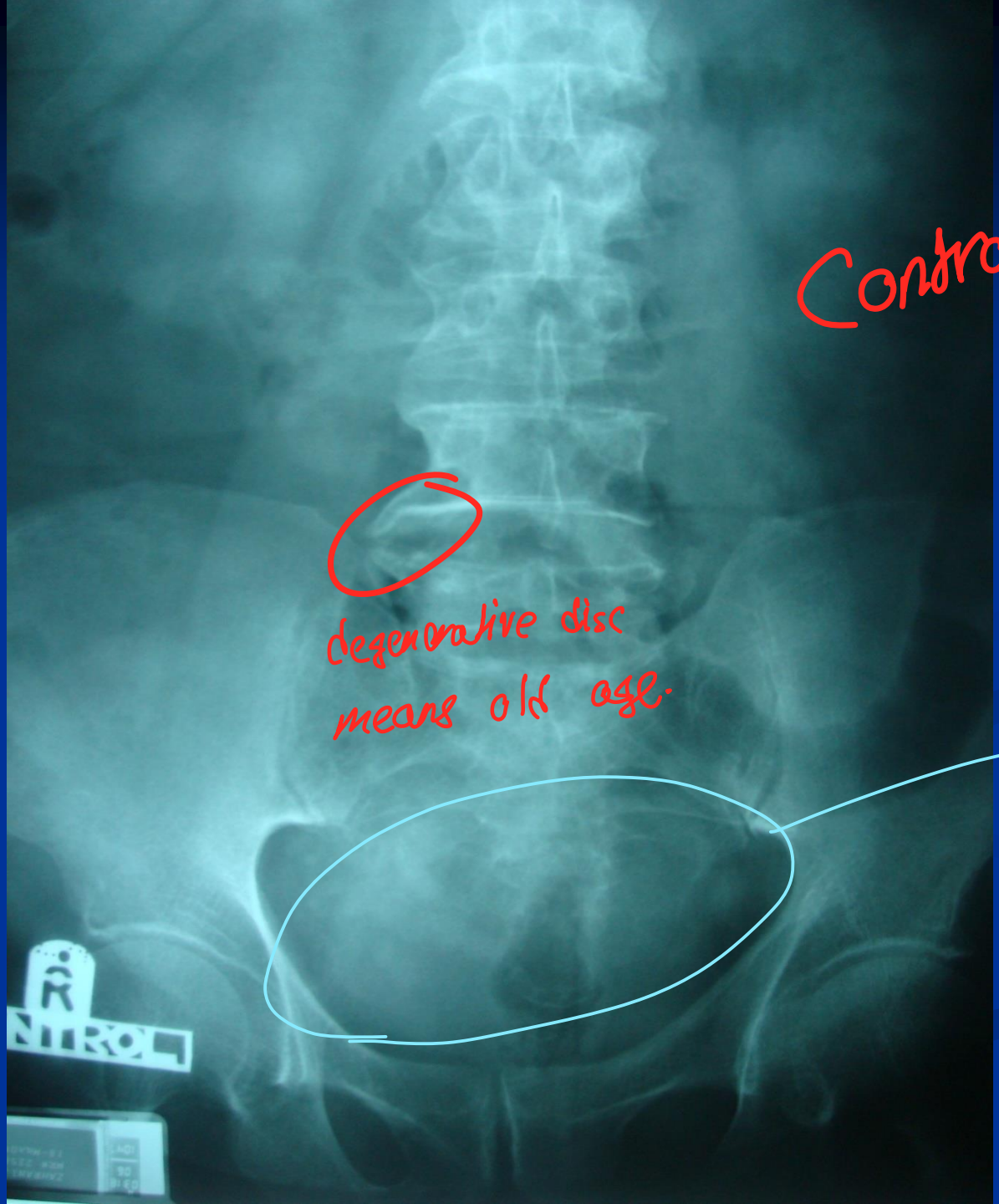
staghorn stone ليش سموه بهذا الاسم لانه الهه
بروزات يشبهن قرون هذا الحيوان (حيوان الايل او الضبي)


after contrast.
incomplete dilation.
dilation of collecting system.


Hydronephrosis
filling defect in
left renal pelvis.
LV
due to stone.
radiolucent
stone.
U travist

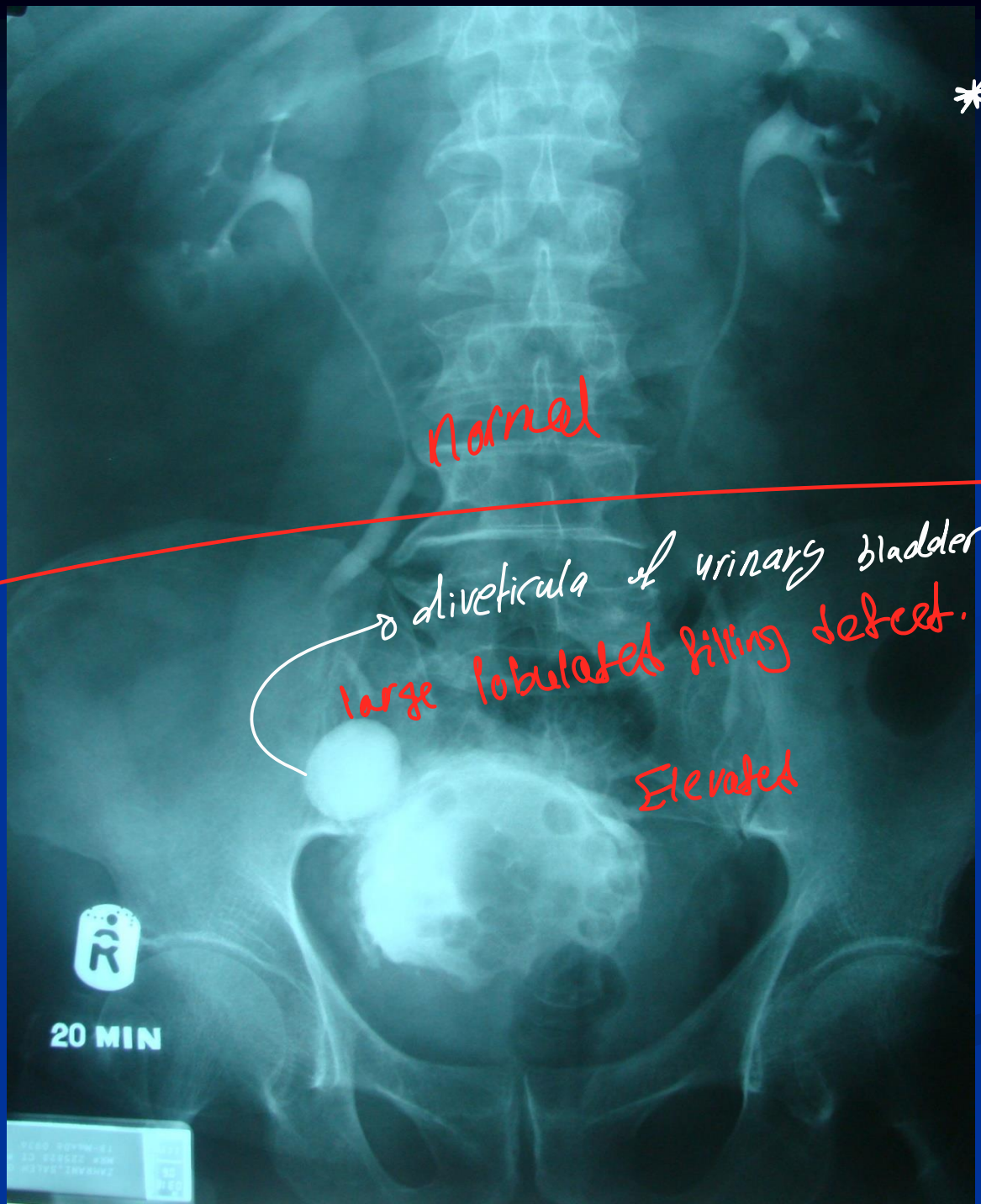

CONTROL
H
Scale 43% o.p.
W 1602
C 2129
kV 81.0
mAs 21.69
Security Forces Hospital
1608
AP
SHAREEF, ALI NAIF
133453
M, 47Y
12/08/07
10:46:42
10cm
R
IVU
5 MINUTES
Partial obst.
mild dilation due to filling defect
Mild hydronephrosis

KUB


Control film
degenerative disc
means old age.
radio-
opaque
shadow
filling
Pelvis

Male Patient

elevation the base of urinary bladder



*hypertrophy mostly in Medial coop.

Normal

diverticula of urinary bladder (over-Powlchin)

large lobulated filling defect.

Elevated

cystoscopy

biopsy

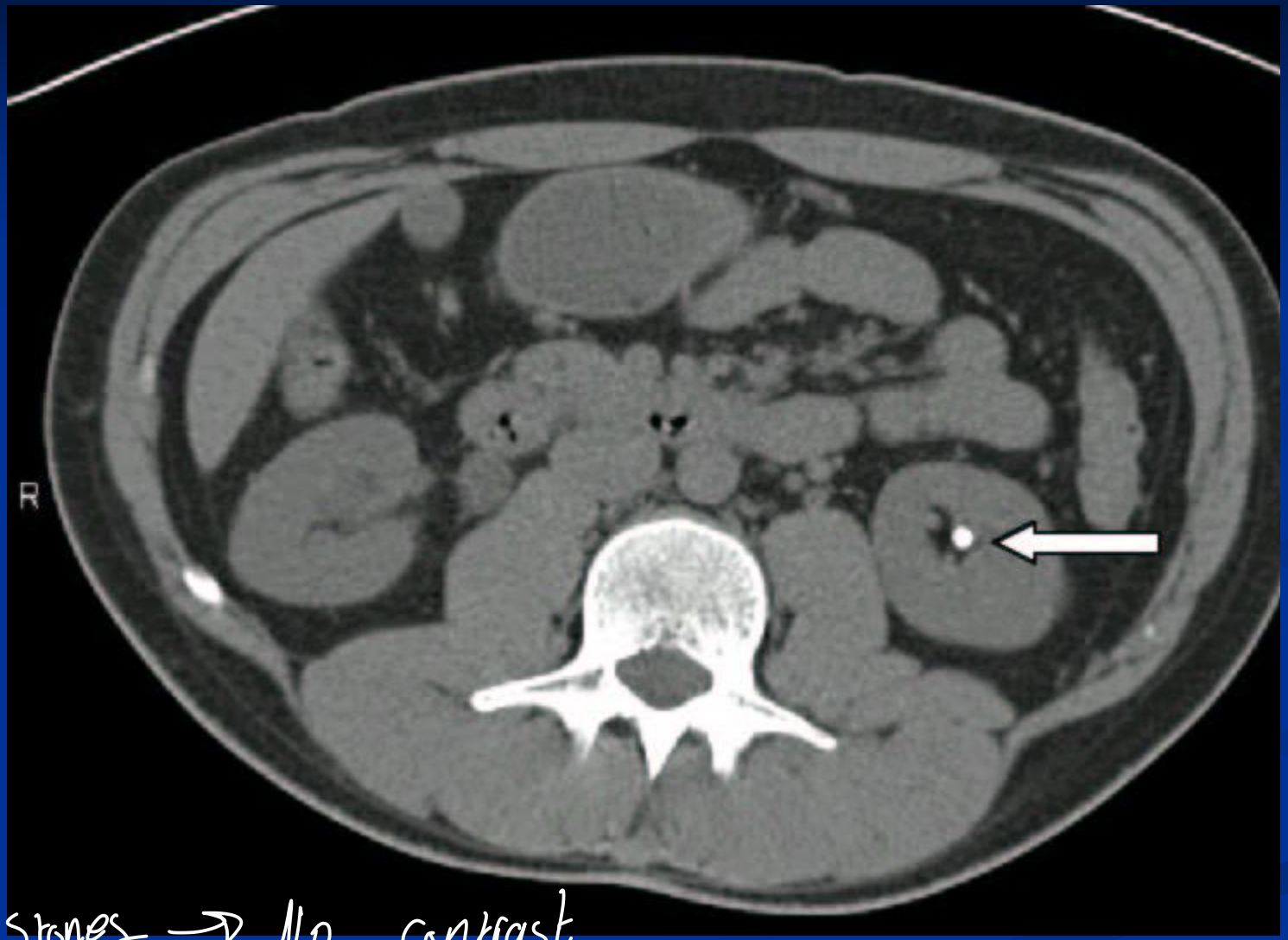
Urinary tract stones and CT

What is the most sensitive radiological test for urinary tract stone ?

CT , performed without contrast, is highly sensitive for detecting urinary tract stone.

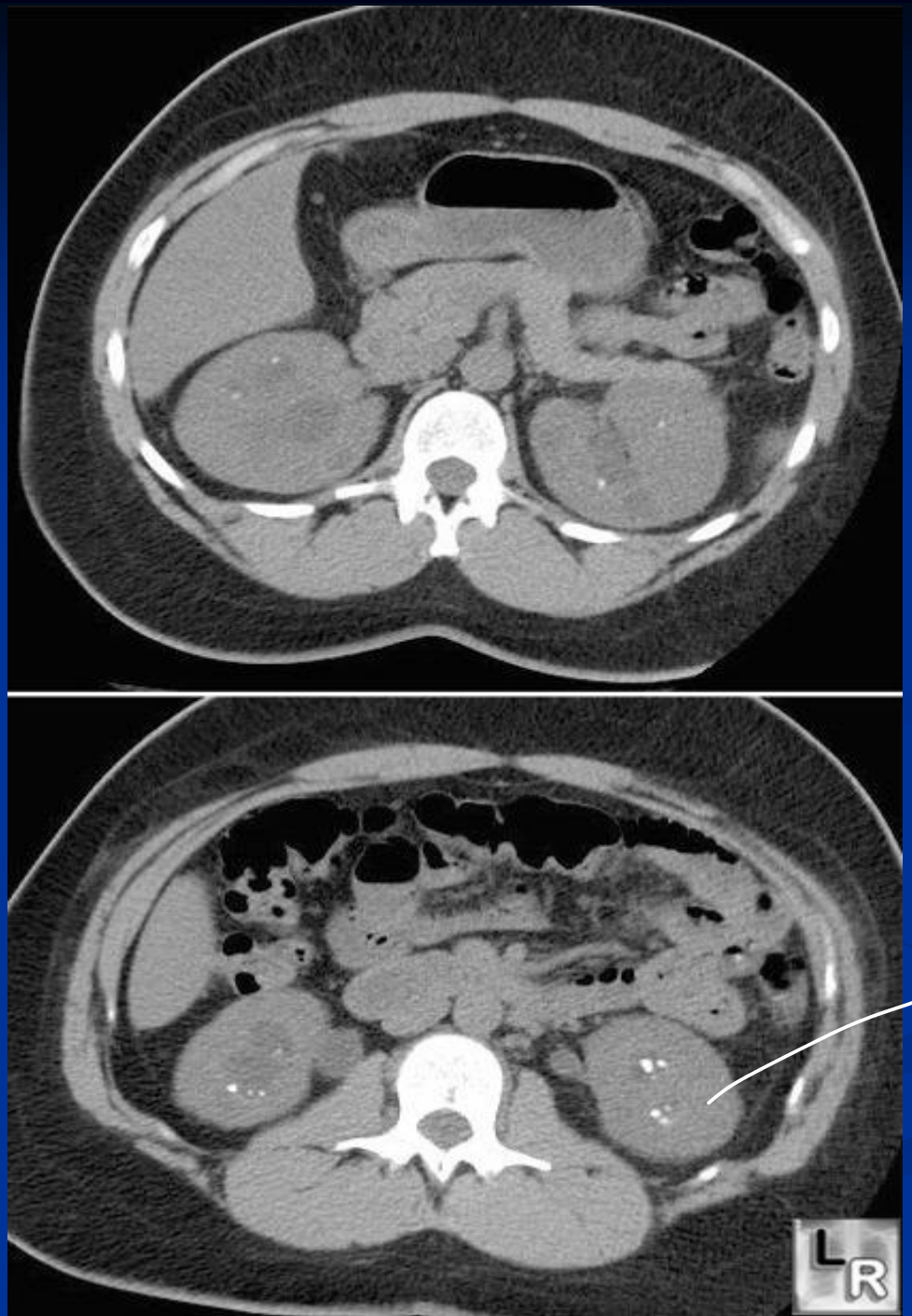
Are any urinary tract stones radiolucent on CT ?

No , virtually all urinary tract stones , regardless of their composition are visible on CT .



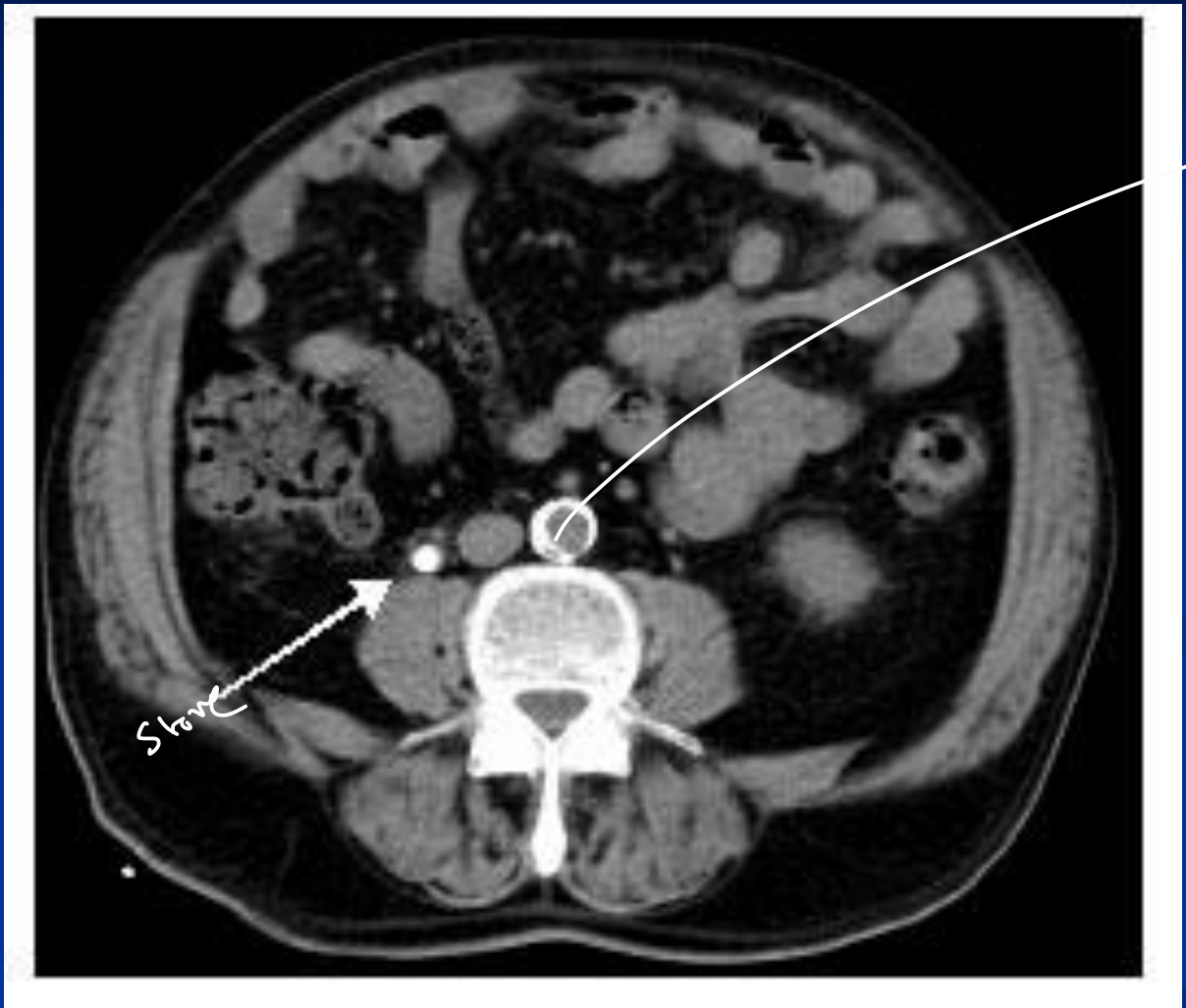
in stones → No contrast

in tumors → ✓

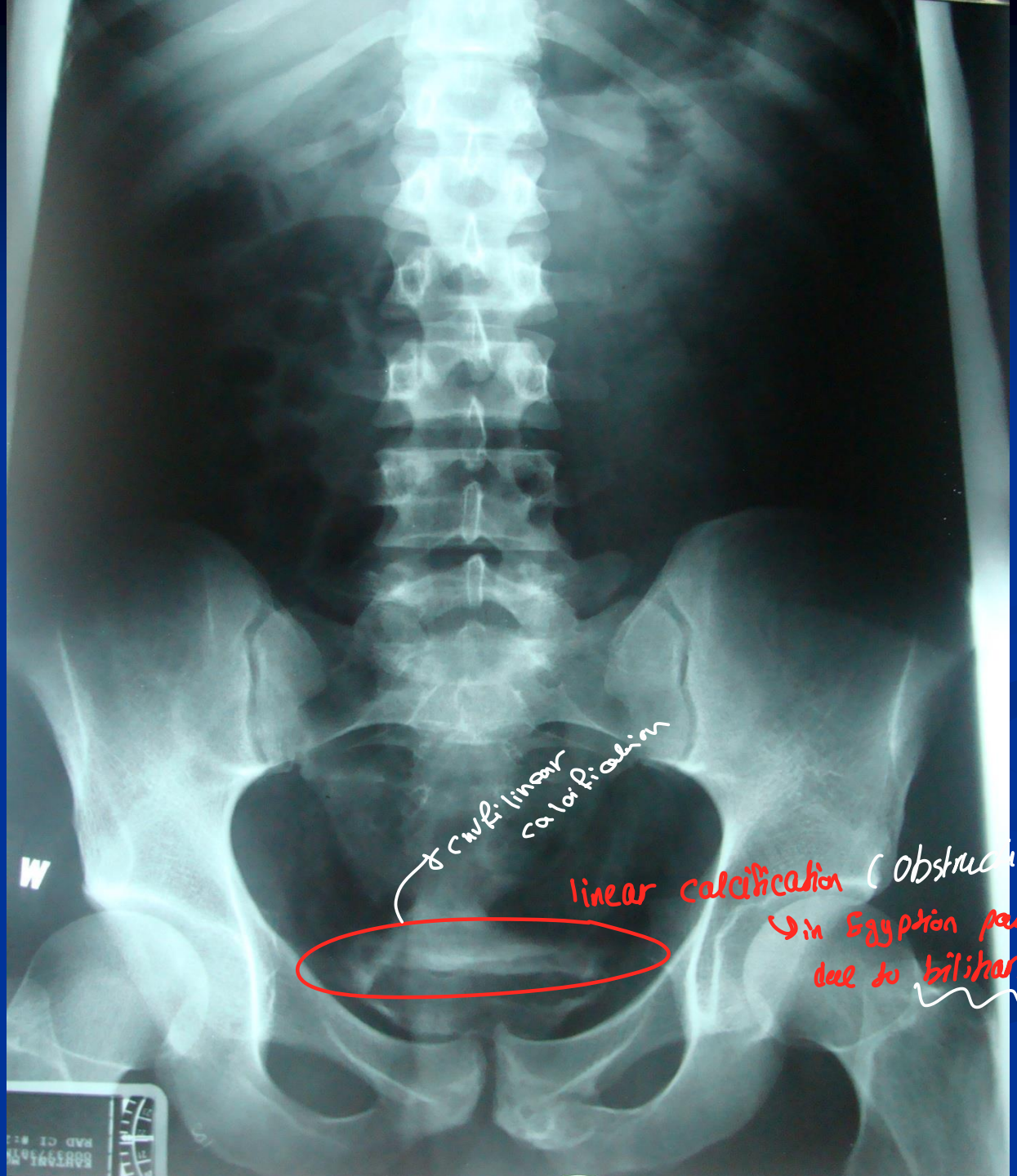


Medullary sponge Kidney

Multiple stones



Aortic calcification in aging


curvilinear calcification
linear calcification (obstruction vesico-urethral)
↳ in Egyptian patients mostly due to bilharsiazis.

KUB

URINARY OBSTRUCTION

- Obstruction of the renal tract may occur at many sites.
- The most common causes are:
  - Urinary tract stones.
  - Urinary tract strictures.
  - Urinary tract tumors.
  - Prostatic hypertrophy or cancer.

Urinary obstruction / 2

Why is it important to recognize renal obstruction ?

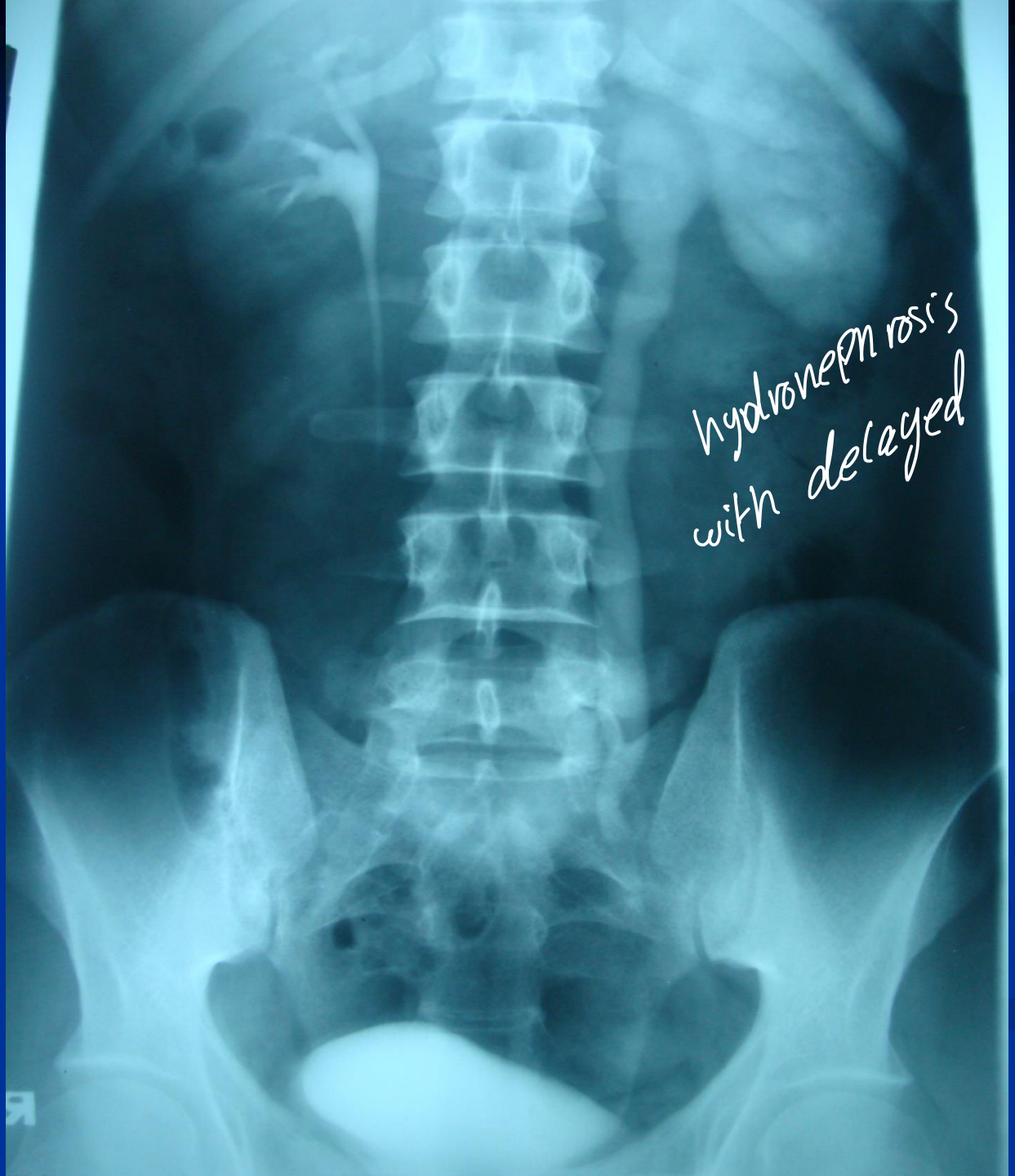
- Because over time, obstructed kidneys may lose function permanently.

What is the best initial imaging test for suspected renal obstruction ?

- Ultrasound. It is relatively inexpensive, save, and effective. The cause of obstruction also may be identified.

Contrast Film

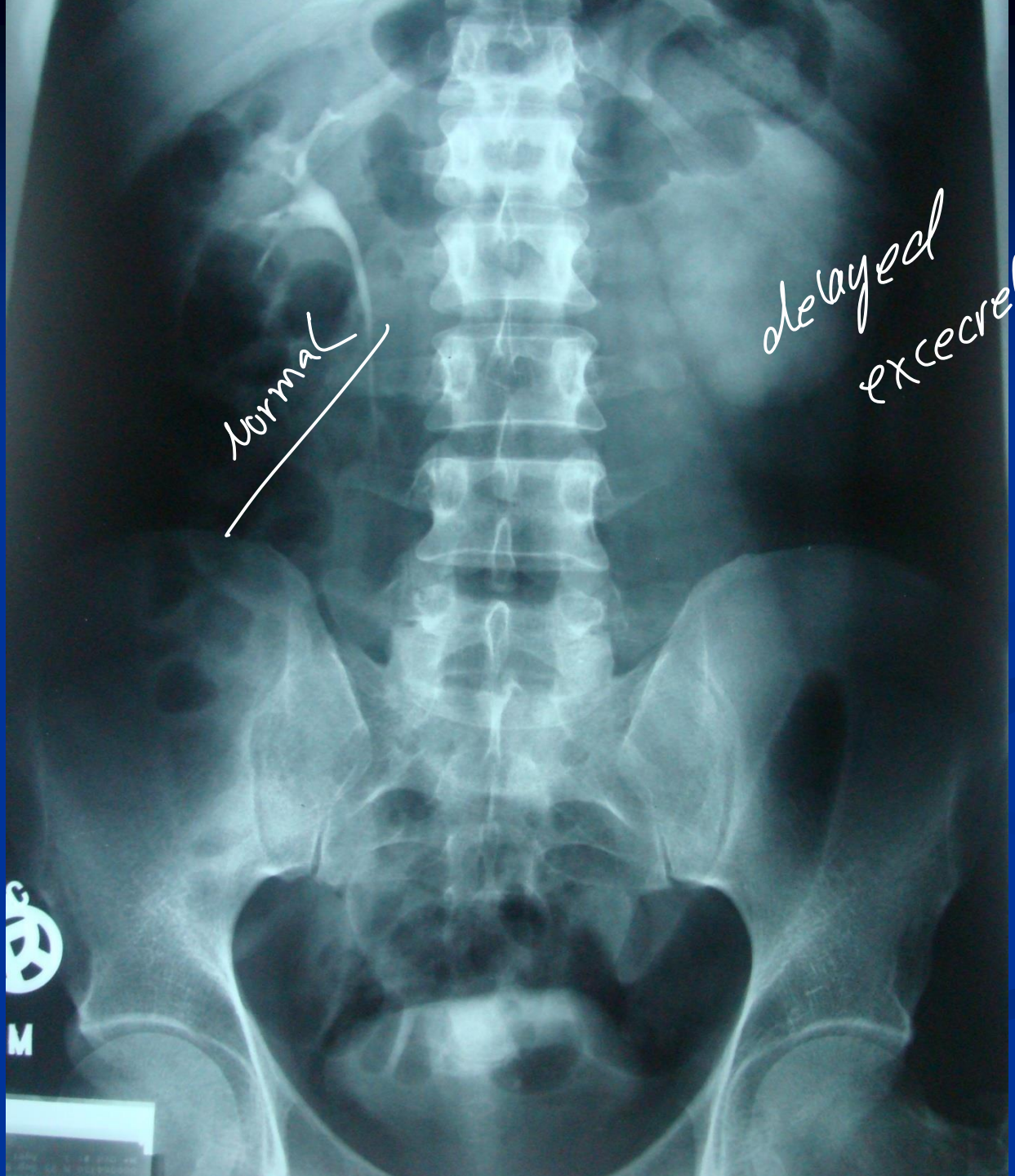
Normal



after contrast

Post CS ligation

Control film


Normal
delayed excecretory

delayed film

low obstruction

Benign renal lesions

What is the most common renal mass ?

The most common mass is a simple cyst.

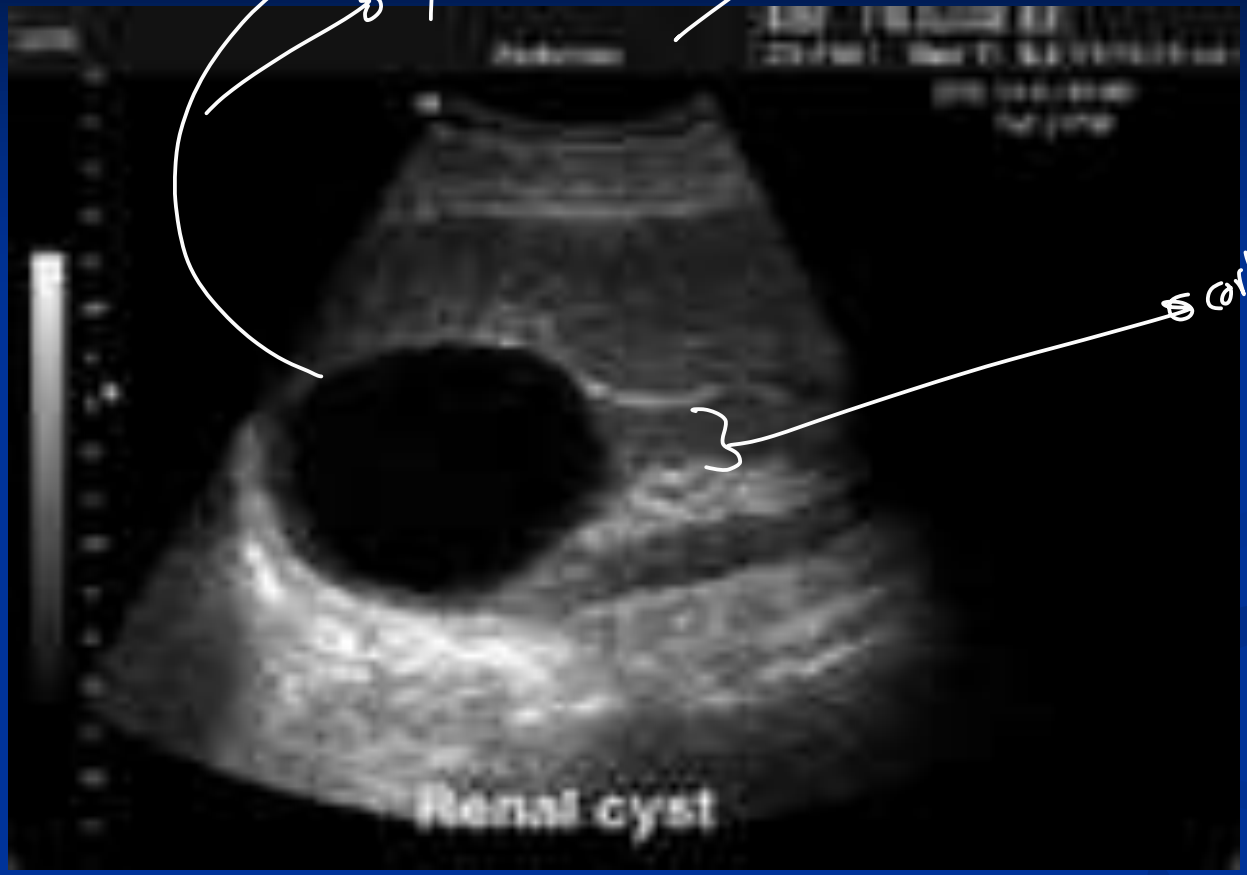
- They are more common in older patients and are found in approximately 50% of the population over 50 years of age.
- They are usually cortical in position and an incidental finding.

Benign renal lesions /2

- What is the best way to confirm that a renal mass is a simple cyst ?

  Ultrasound.

- The ultrasound appearance of a simple cyst is that of a well-defined round mass with very thin wall, smooth margin and no internal echoes.


well- defined
No internal echoes
cortex of kidney
Renal cyst

Thickness


displacement to Rt

Polycystic kidneys disease

- Adult polycystic kidney disease is a congenital renal parenchymal disorder.
- Usually both kidneys are involved.
- In some cases, there is associated cysts in the liver and more rarely in the spleen and pancreas.

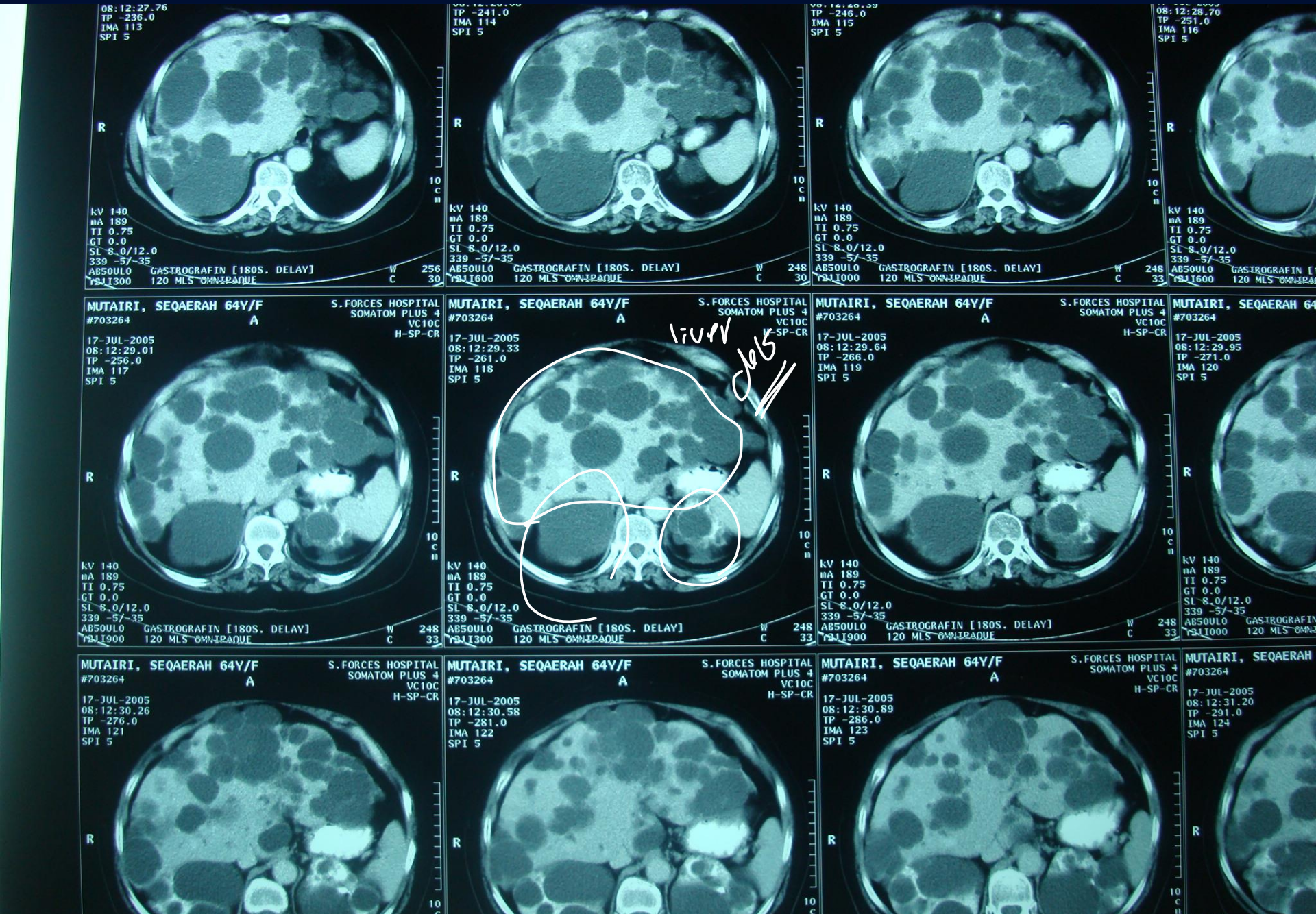
family Hx. renal impairment PHTN → Multiple cyst, unilateral → Multi cystic
bi → Poly

Polycystic kidney disease / 2

renal failure

Radiological features on Ultrasound and CT:

- Kidneys are enlarged with lobulated contours. (protruded outside kidney.)
- The renal parenchyma is replaced by multiple cysts of varying size, causing distortion of the collecting system.
- Spontaneous hemorrhage into some of the cysts may occur.


MUTAIRI, SEQAERAH 64Y/F
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08:12:29.33
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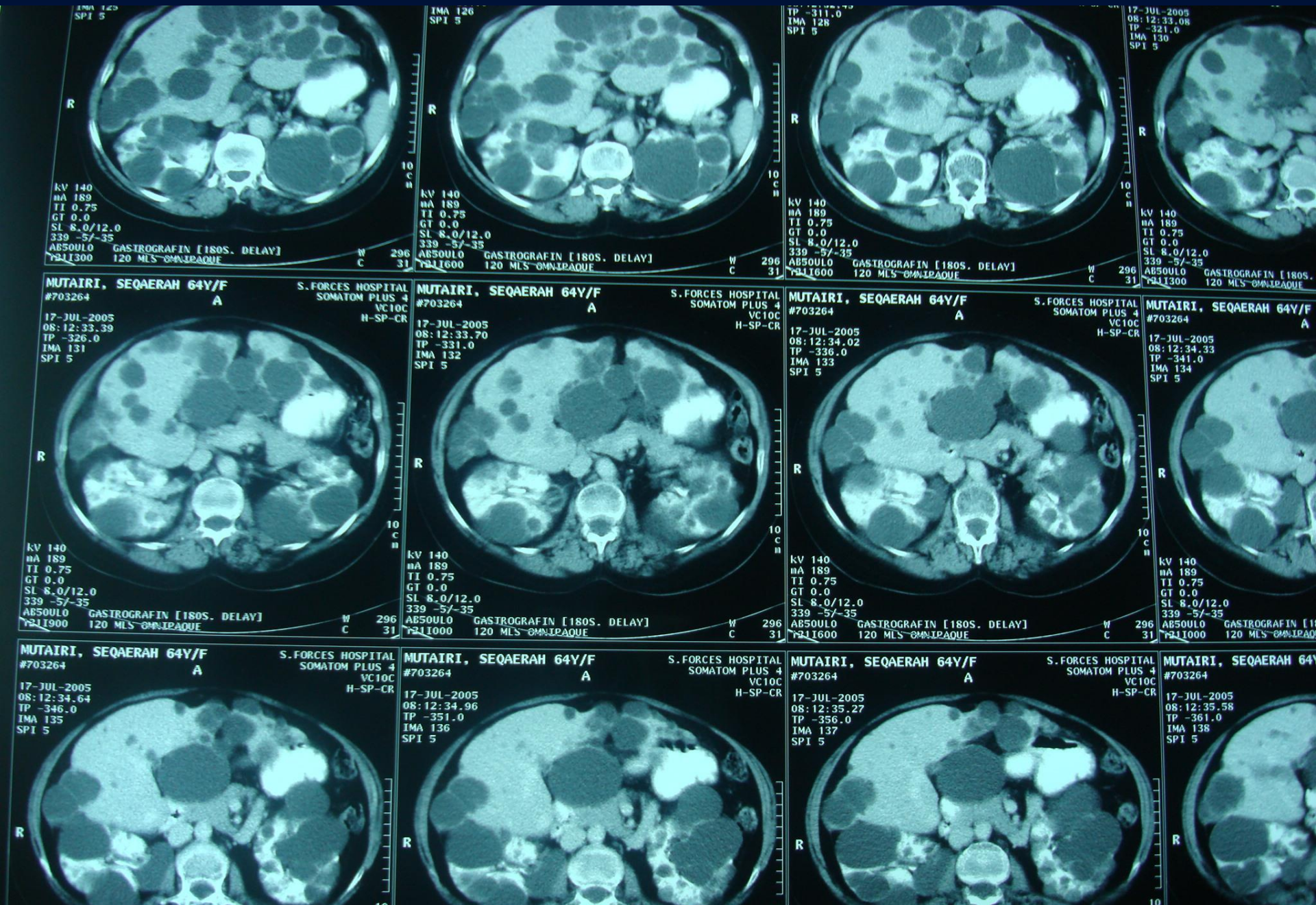
IMA 118
SPI 5
kV 140
mA 189
TI 0.75
GT 0.0
SL 8.0/12.0
339 -5/-35
AB50ULO GASTROGRAFIN [180S. DELAY] W 248
C 33
liver
clots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#703264
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H-SP-CR
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IMA 131
SPI 5
MUTAIRI, SEQAERAH 64Y/F
#703264
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S.FORCES HOSPITAL
SOMATOM PLUS 4
VC10C
H-SP-CR
17-JUL-2005
08:12:33.70
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SPI 5
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#703264
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H-SP-CR
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SPI 5
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#703264
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17-JUL-2005
08:12:34.33
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IMA 134
SPI 5
MUTAIRI, SEQAERAH 64Y/F
#703264
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S.FORCES HOSPITAL
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H-SP-CR
17-JUL-2005
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SPI 5
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#703264
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SOMATOM PLUS 4
VC10C
H-SP-CR
17-JUL-2005
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TP -351.0
IMA 136
SPI 5
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#703264
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SOMATOM PLUS 4
VC10C
H-SP-CR
17-JUL-2005
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TP -356.0
IMA 137
SPI 5
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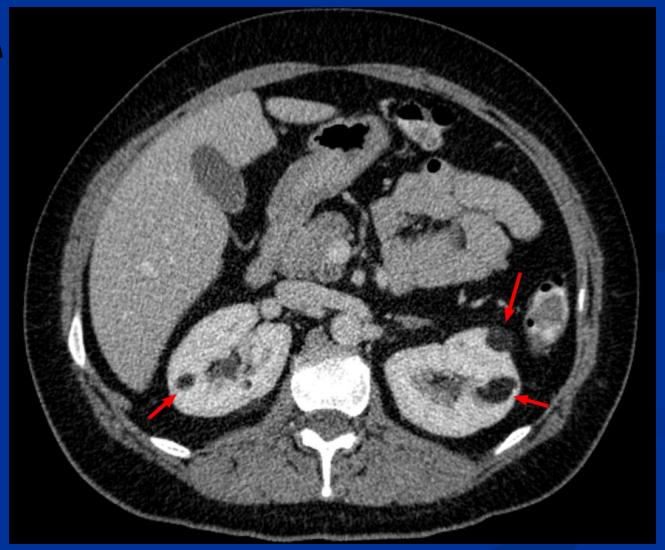
#703264
17-JUL-2005
08:12:35.58
TP -361.0
IMA 138
SPI 5
kV 140
mA 189
TI 0.75
GT 0.0
SL 8.0/12.0
339 -5/-35
ABSOULO GASTROGRAFIN [180S. DELAY]
120 MLS OMNIPAQUE
W 296
C 31

Benign renal tumors

The most common benign renal tumors are:

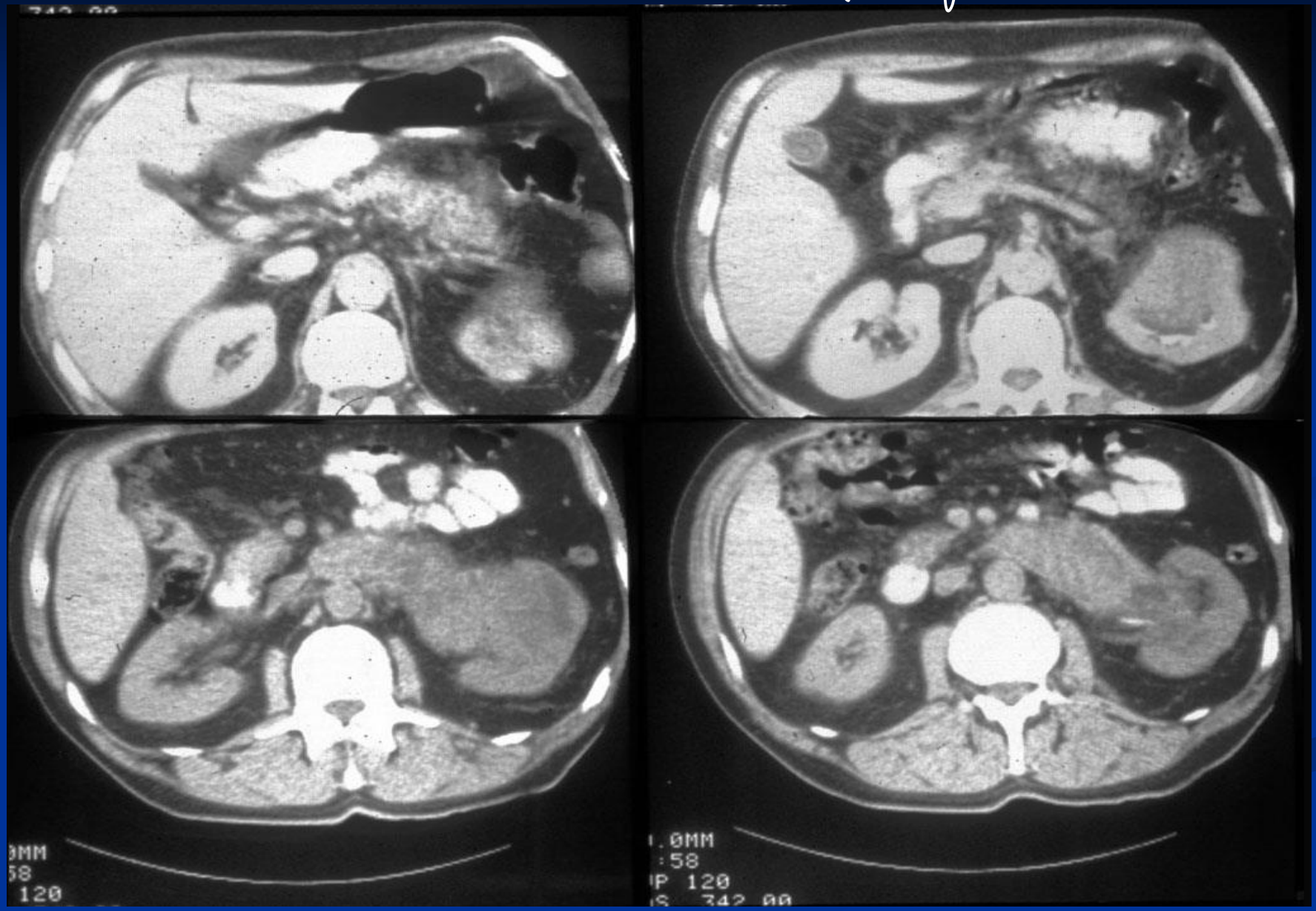
- Angiomyolipoma
- Adenoma

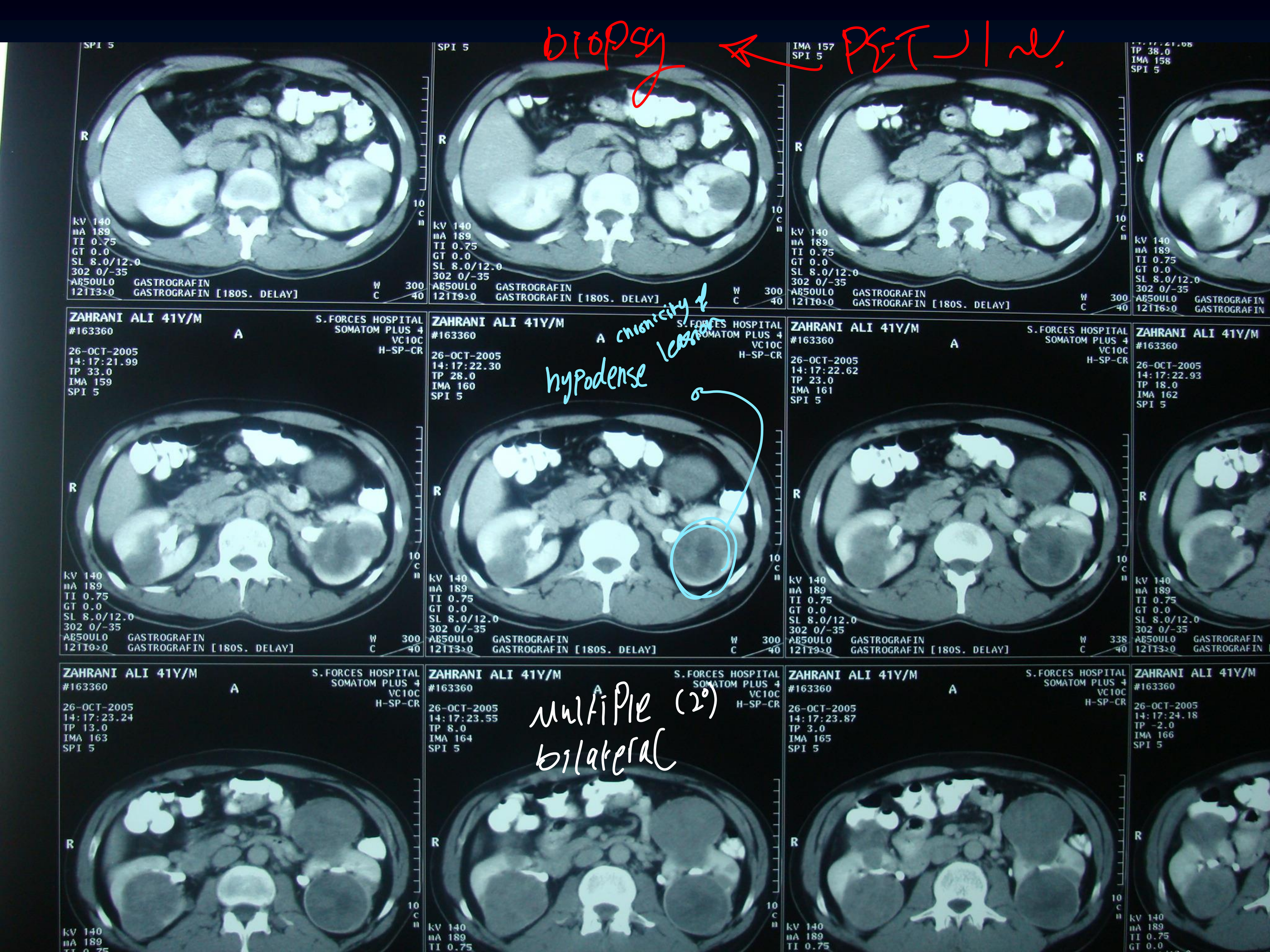


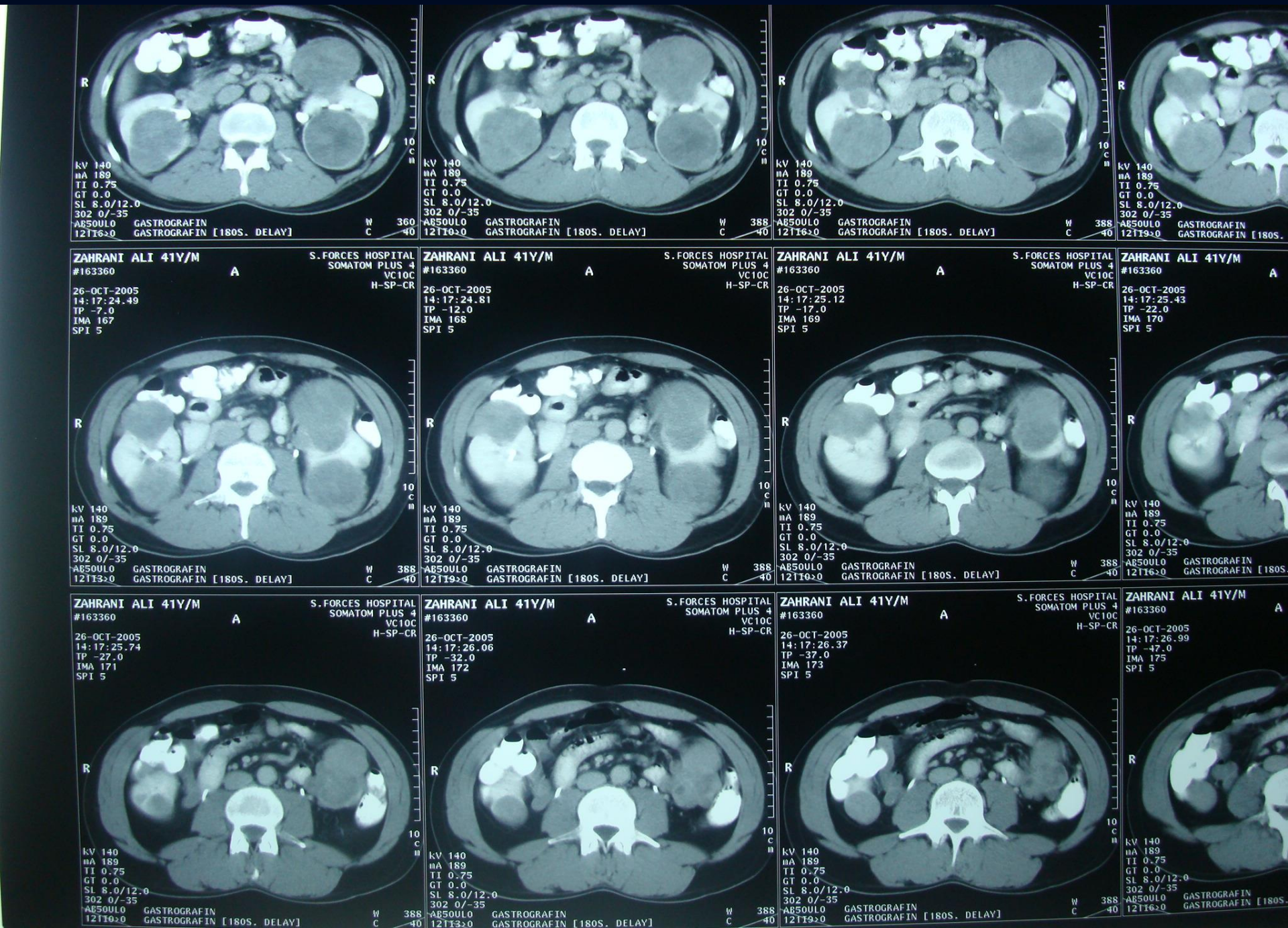
Malignant renal tumors

- Renal cell carcinomas (RCC) or Hypernephroma: account for 85% of renal tumors.
  - Are bilateral in 4% of cases.
  - Von Hippel- Lindau disease is associated with RCC in one third to one half of patients.
  - Patients with polycystic kidney disease and chronic renal failure may also be associated with RCC.
- Transitional cell carcinoma: are relatively rare and represent 7% of all renal tumors.

enhancement ← hypervasularized




biopsy
PET scan
hypodense lesion
chronicity ?
multiple (2°)
bilateral
ZAHRANI ALI 41Y/M
#163360
S.FORCES HOSPITAL
SOMATOM PLUS 4
VC10C
H-SP-CR
26-OCT-2005
14:17:21.99
TP 33.0
IMA 159
SPI 5
kV 140
mA 189
TI 0.75
GT 0.0
SL 8.0/12.0
302 0/-35
AB50UL0
GASTROGRAFIN
GASTROGRAFIN [180S. DELAY]
W 300
C 40
ZAHRANI ALI 41Y/M
#163360
26-OCT-2005
14:17:22.30
TP 28.0
IMA 160
SPI 5
ZAHRANI ALI 41Y/M
#163360
26-OCT-2005
14:17:22.62
TP 23.0
IMA 161
SPI 5
W 338
C 40
ZAHRANI ALI 41Y/M
#163360
26-OCT-2005
14:17:22.93
TP 18.0
IMA 162
SPI 5
ZAHRANI ALI 41Y/M
#163360
26-OCT-2005
14:17:23.24
TP 13.0
IMA 163
SPI 5
ZAHRANI ALI 41Y/M
#163360
26-OCT-2005
14:17:23.55
TP 8.0
IMA 164
SPI 5
ZAHRANI ALI 41Y/M
#163360
26-OCT-2005
14:17:23.87
TP 3.0
IMA 165
SPI 5
ZAHRANI ALI 41Y/M
#163360
26-OCT-2005
14:17:24.18
TP -2.0
IMA 166
SPI 5


ZAHRANI ALI 41Y/M
#163360
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H-SP-CR
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SPI 5
kV 140
mA 189
TI 0.75
GT 0.0
SL 8.0/12.0
302 0/-35
AB50ULO GASTROGRAFIN W 360
12II6>0 GASTROGRAFIN [180S. DELAY] C 40
ZAHRANI ALI 41Y/M
#163360
A
S.FORCES HOSPITAL
SOMATOM PLUS 4
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H-SP-CR
26-OCT-2005
14:17:24.81
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IMA 168
SPI 5
kV 140
mA 189
TI 0.75
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SL 8.0/12.0
302 0/-35
AB50ULO GASTROGRAFIN W 388
12II9>0 GASTROGRAFIN [180S. DELAY] C 40
ZAHRANI ALI 41Y/M
#163360
A
S.FORCES HOSPITAL
SOMATOM PLUS 4
VC10C
H-SP-CR
26-OCT-2005
14:17:25.12
TP -17.0
IMA 169
SPI 5
kV 140
mA 189
TI 0.75
GT 0.0
SL 8.0/12.0
302 0/-35
AB50ULO GASTROGRAFIN W 388
12II0>0 GASTROGRAFIN [180S. DELAY] C 40
ZAHRANI ALI 41Y/M
#163360
A
26-OCT-2005
14:17:25.43
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SPI 5
kV 140
mA 189
TI 0.75
GT 0.0
SL 8.0/12.0
302 0/-35
AB50ULO GASTROGRAFIN
12II6>0 GASTROGRAFIN [180S.
ZAHRANI ALI 41Y/M
#163360
A
S.FORCES HOSPITAL
SOMATOM PLUS 4
VC10C
H-SP-CR
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SPI 5
kV 140
mA 189
TI 0.75
GT 0.0
SL 8.0/12.0
302 0/-35
AB50ULO GASTROGRAFIN W 388
12II0>0 GASTROGRAFIN [180S. DELAY] C 40
ZAHRANI ALI 41Y/M
#163360
A
S.FORCES HOSPITAL
SOMATOM PLUS 4
VC10C
H-SP-CR
26-OCT-2005
14:17:26.06
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IMA 172
SPI 5
kV 140
mA 189
TI 0.75
GT 0.0
SL 8.0/12.0
302 0/-35
AB50ULO GASTROGRAFIN W 388
12II3>0 GASTROGRAFIN [180S. DELAY] C 40
ZAHRANI ALI 41Y/M
#163360
A
S.FORCES HOSPITAL
SOMATOM PLUS 4
VC10C
H-SP-CR
26-OCT-2005
14:17:26.37
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SPI 5
kV 140
mA 189
TI 0.75
GT 0.0
SL 8.0/12.0
302 0/-35
AB50ULO GASTROGRAFIN W 388
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ZAHRANI ALI 41Y/M
#163360
A
26-OCT-2005
14:17:26.99
TP -47.0
IMA 175
SPI 5
kV 140
mA 189
TI 0.75
GT 0.0
SL 8.0/12.0
302 0/-35
AB50ULO GASTROGRAFIN
12II6>0 GASTROGRAFIN [180S.

IVU

intraluminal irregular filling defect (tumor)