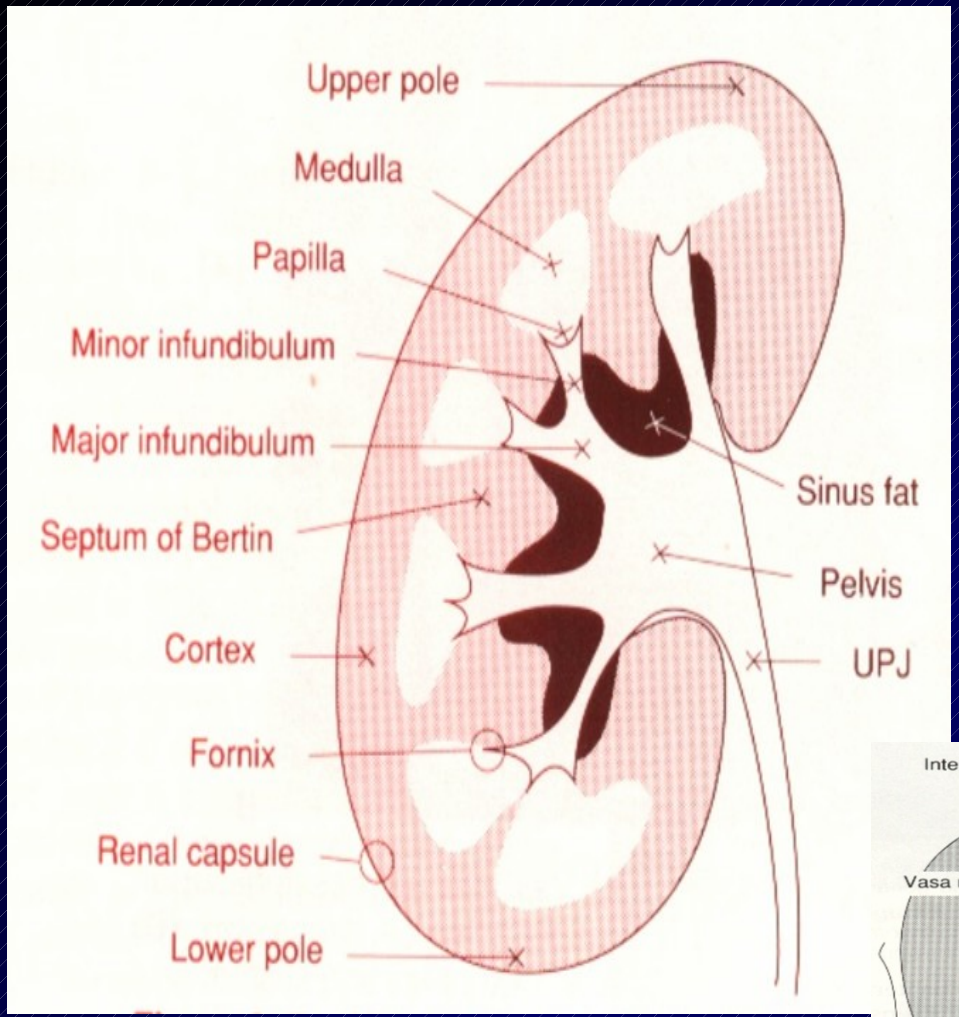
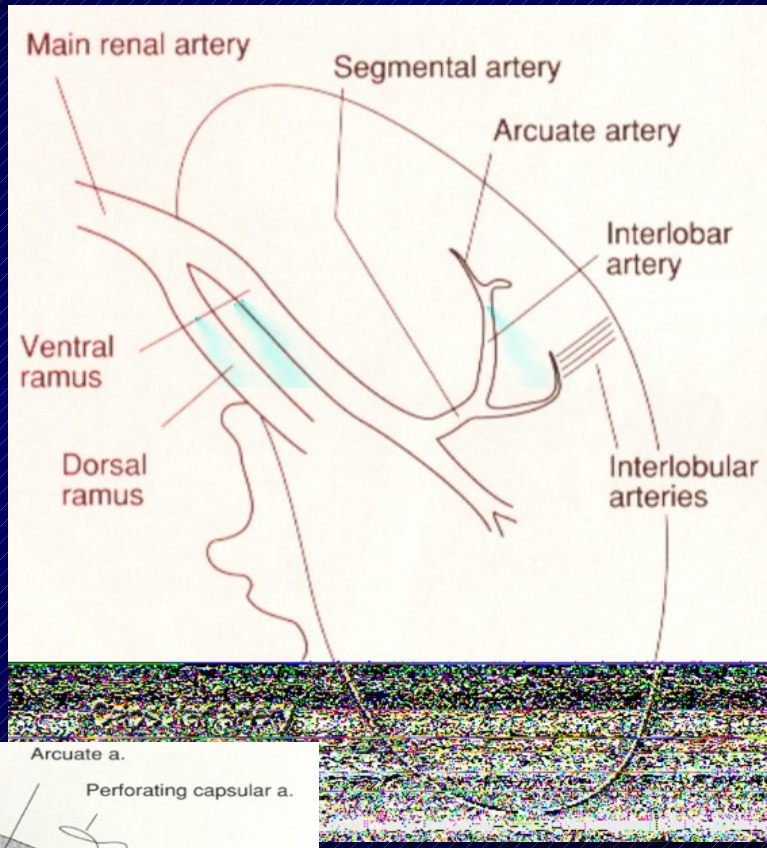
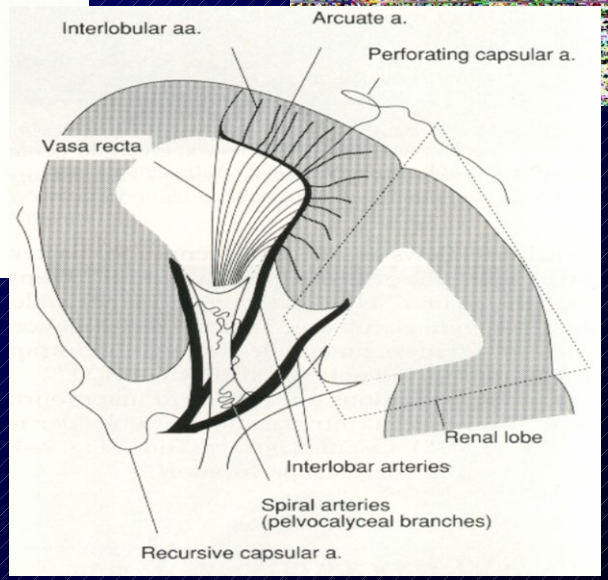
Uroradiology

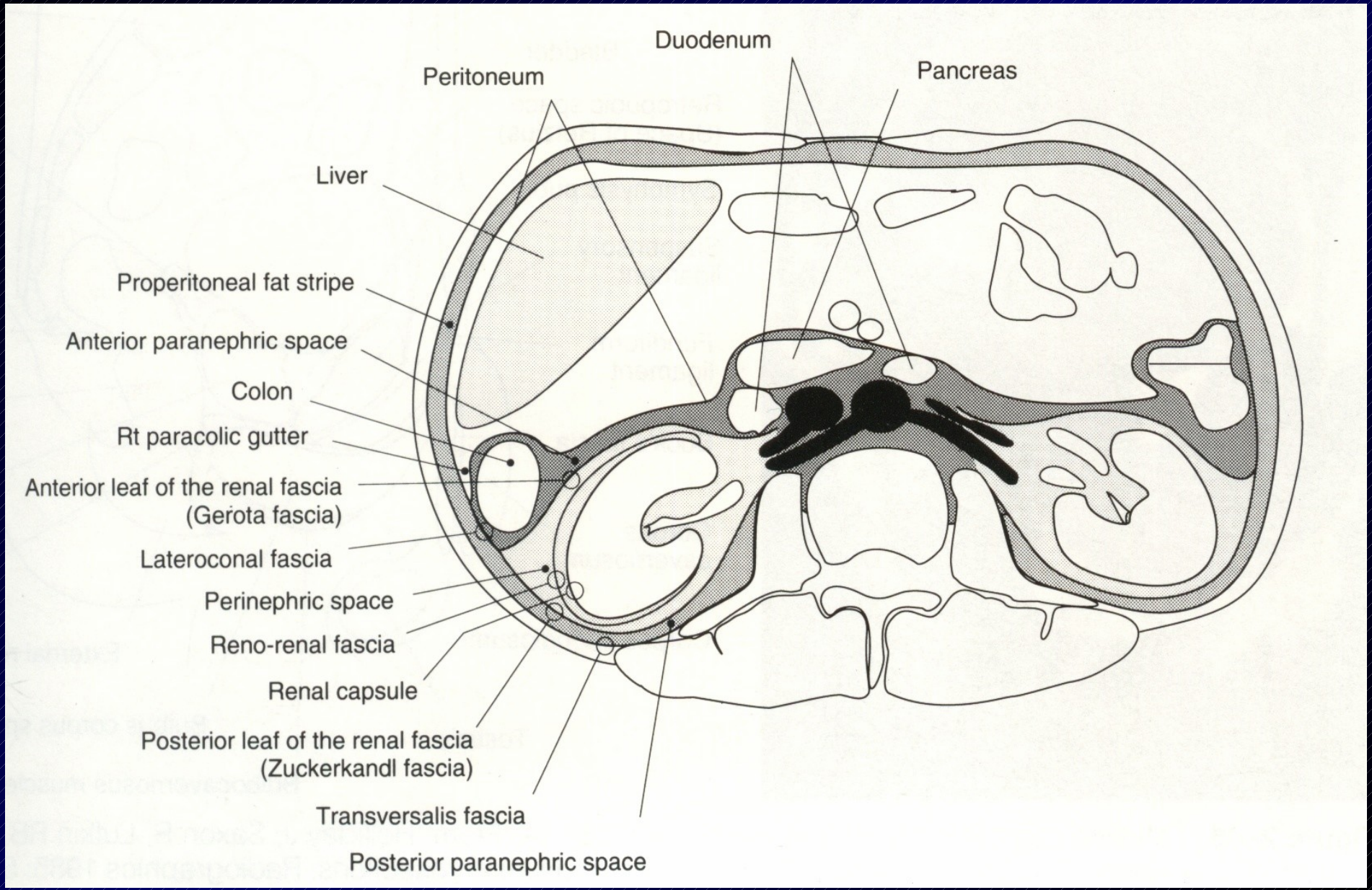
What do we depict:

- uropoetic system and surrounding structures, some parts of genital systém (those with close relation with uropoetic syst.)
- morfology and partially function


Upper pole
Medulla
Papilla
Minor infundibulum
Major infundibulum
Septum of Bertin
Cortex
Fornix
Renal capsule
Lower pole
Sinus fat
Pelvis
UPJ


Main renal artery
Segmental artery
Arcuate artery
Interlobar artery
Ventral ramus
Dorsal ramus
Interlobular arteries


Interlobular aa.
Arcuate a.
Perforating capsular a.
Vasa recta
Renal lobe
Interlobar arteries
Spiral arteries
(pelvocalyceal branches)
Recursive capsular a.


Duodenum
Peritoneum
Pancreas
Liver
Properitoneal fat stripe
Anterior paranephric space
Colon
Rt paracolic gutter
Anterior leaf of the renal fascia
(Gerota fascia)
Lateroconal fascia
Perinephric space
Reno-renal fascia
Renal capsule
Posterior leaf of the renal fascia
(Zuckerkandl fascia)
Transversalis fascia
Posterior paranephric space

Basic pathological changes

- CONGENITAL ANOMALIES
- ECTOPIAS
- VASCULAR DISEASES
- INFLAMMATORY DISEASES
- NEFROCALCINOSIS
- UROLITHIASIS
- OBSTRUCTIVE UROPATHY
- EXPANSIVE PROCESSES
- PROSTATE DISEASES (HYPERPLASIA, TUMORS, INFLAMMATIONS)
- TRAUMA
- TESTICULAR, EPIDIDYMAL , URETHRAL DISEASES, ABNORMALITIES OF PENIS VESSELS
- ADRENAL GLAND DISEASES
- RETROPERITONEAL TUMORS

Imaging methods

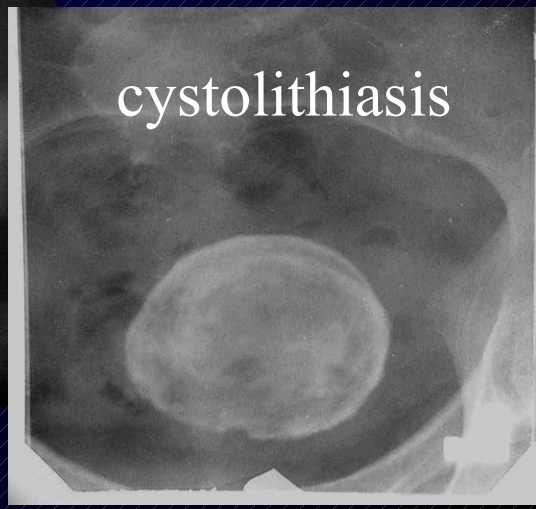
- plain film (KUB X-ray)
- US
- IVU
- CUG, MCUG
- CT
- Angiography (DSA)
- Direct pyelography
- MR
- HSG

Plain film (KUB)

- X-ray (similar absorption coefficient of soft tissue structures, different: calcifications, gas)
- soft technique
- Th11- symphysis pubis
  - *positional changes, size, shape of kidneys*
  - *psoas muscles*
  - *stones, calcifications*
  - *bone structures*
  - *first step of each contrast examination (to compare pre-contrast and post-contrast scans)*

calycolithiasis

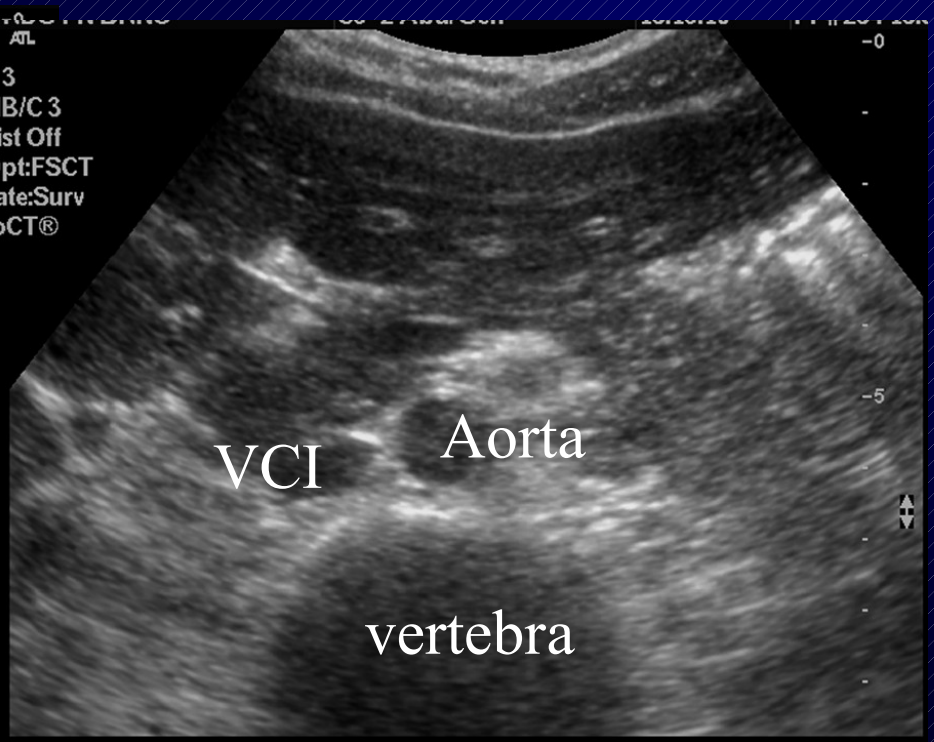
bladder ectasia



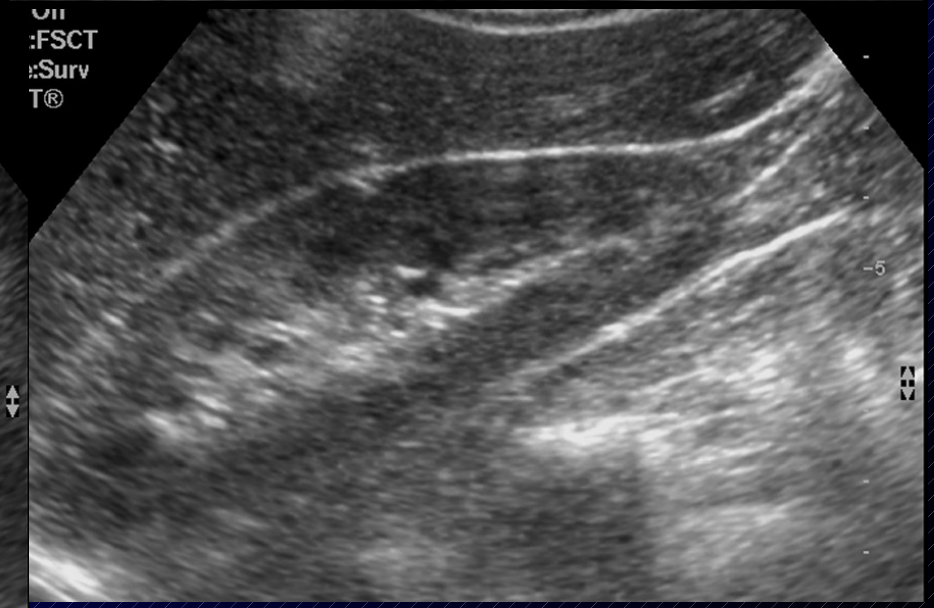
cystolithiasis

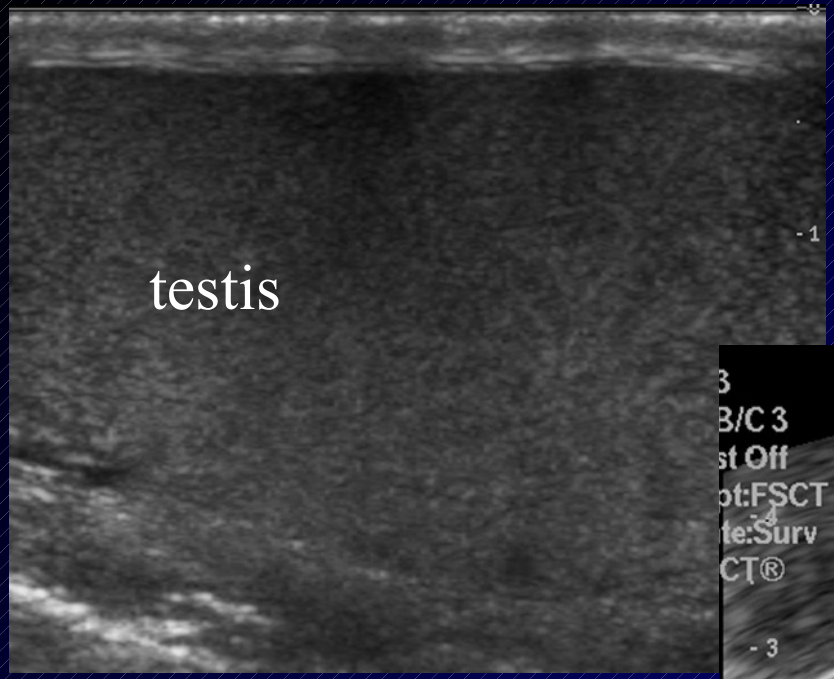
US

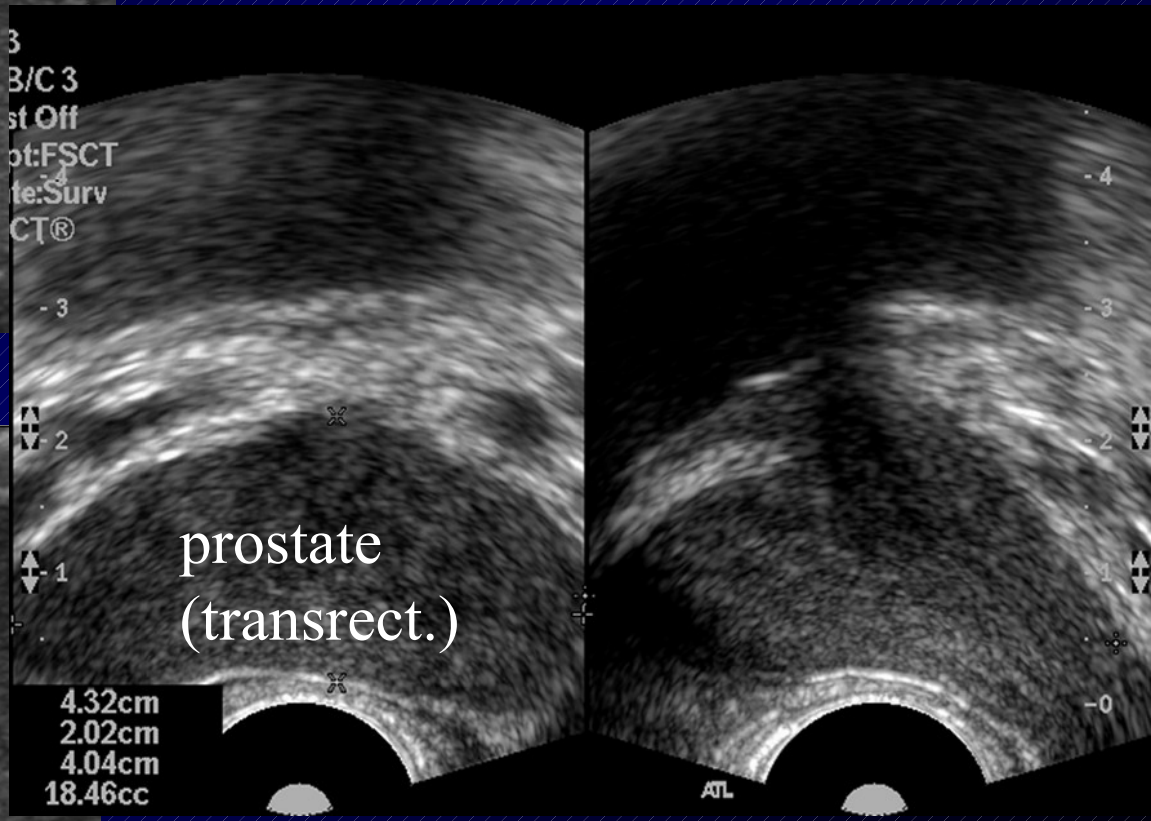
- ultrasound energy produces a cyclic mechanical pressure wave through soft tissue
- + no known harmful effects associated with the medical use of sonography - widespread clinical use
- + cheap, easily avalilable, quite high efficacy
- - depends on experience of examinator and the quality of US machine
- different types of probes (including endocavitary)
- *morphology of kidneys, bladder, surrounding structures, perfusion (aa. renales)*
- *prostate gland (abdominal, transrectal US), scrotum, penile arteries…*
- *interventions*


VCI
Aorta
vertebra

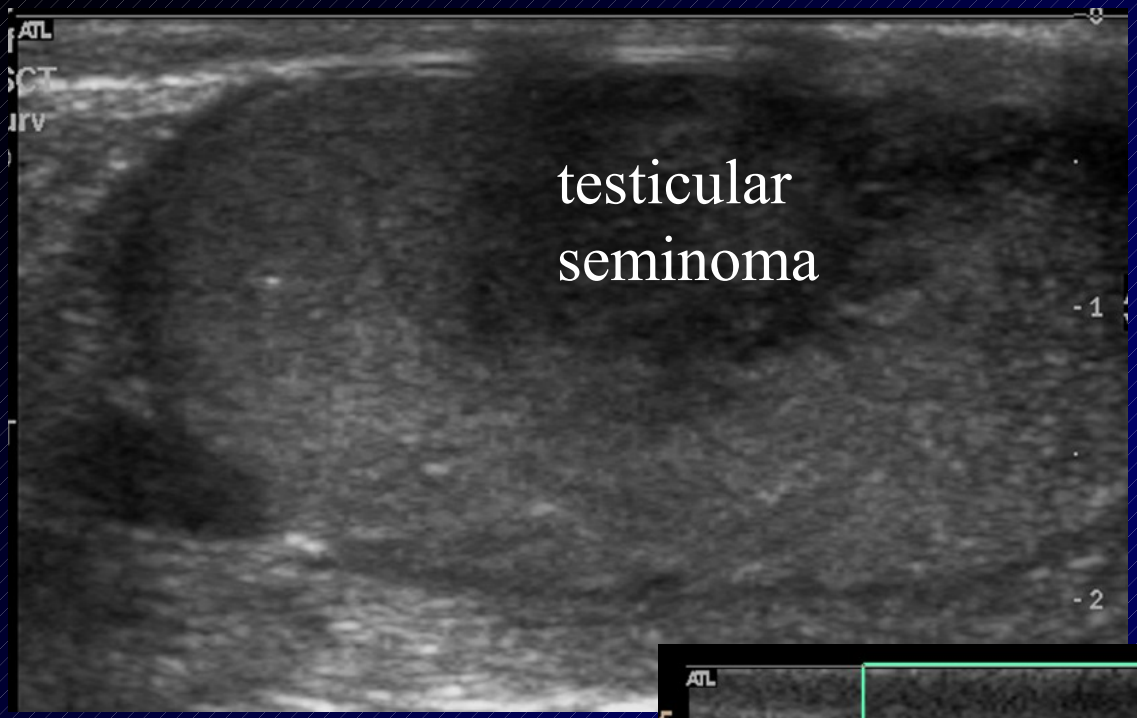

m.m.
prostate

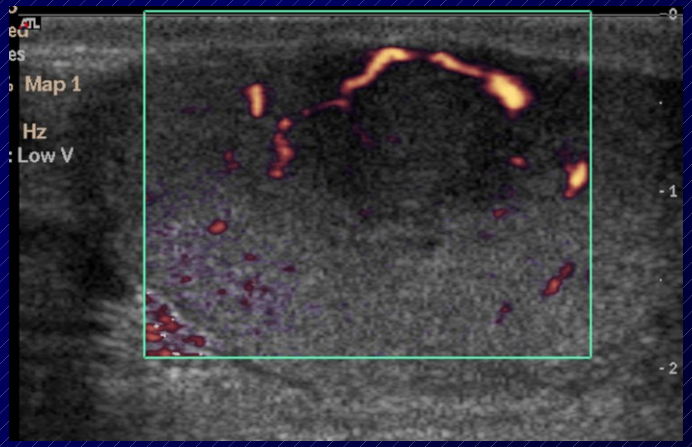


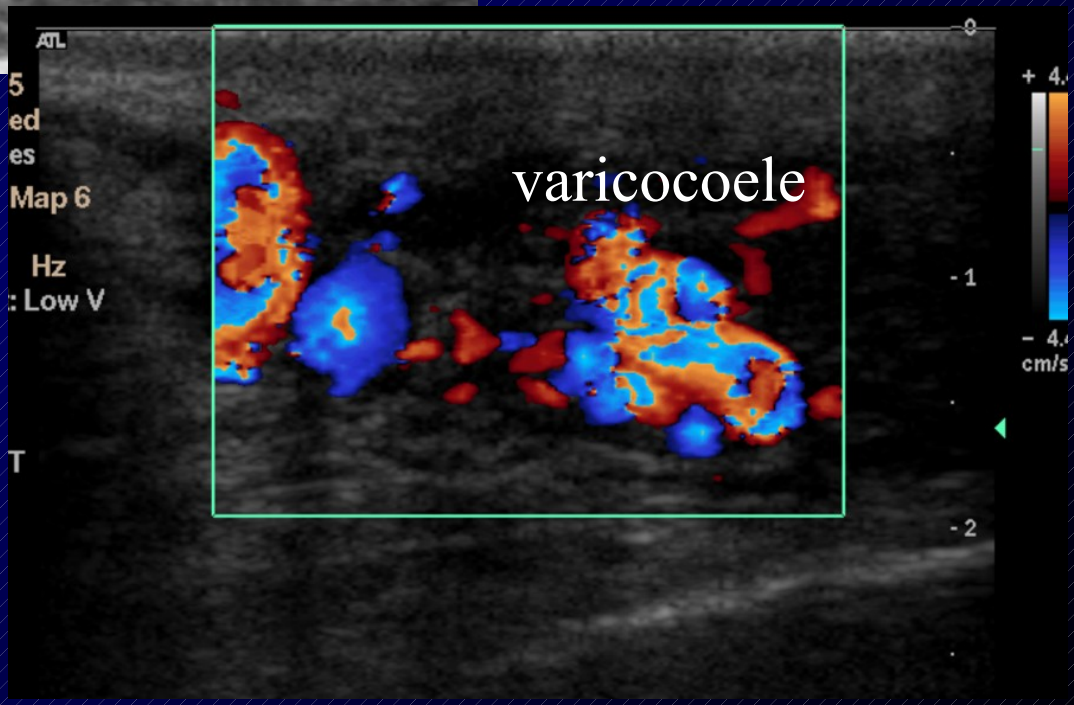

testis


B/C 3
st Off
ot:FSCT
te:Surv
CT®
prostate
(transrect.)
4.32cm
2.02cm
4.04cm
18.46cc
ATL


epididymis

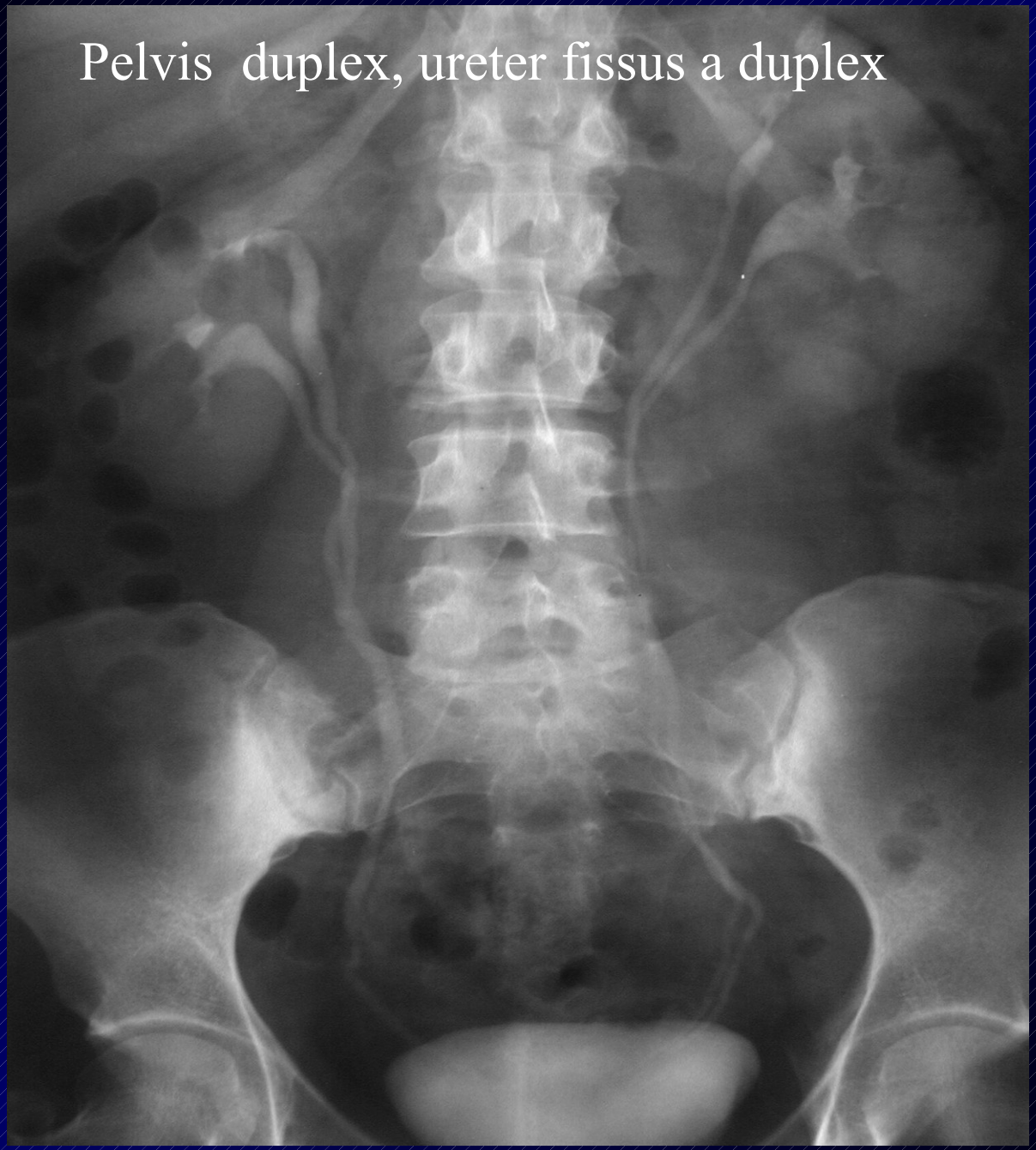

testicular
seminoma


Map 1
Hz
Low V

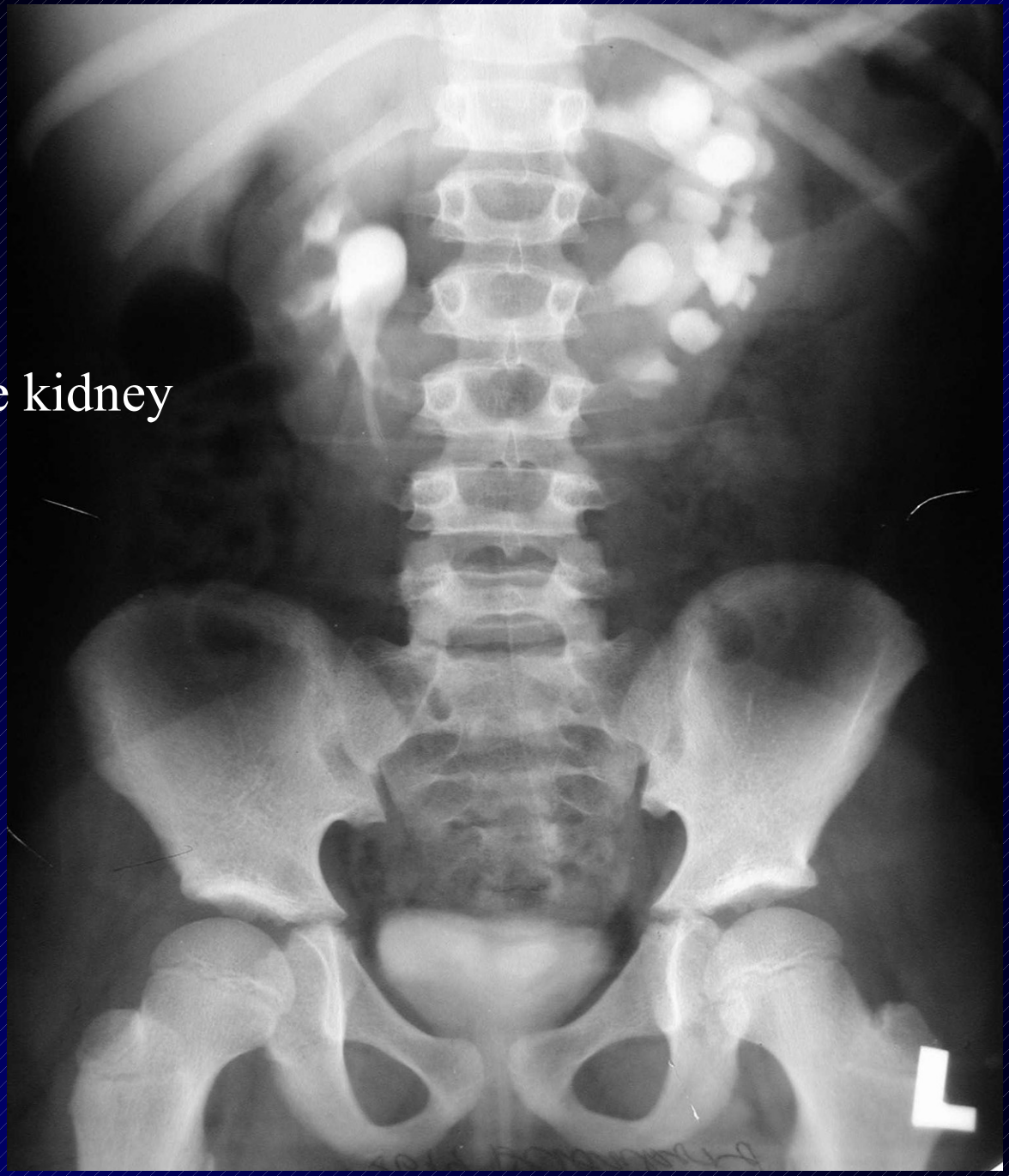

Map 6
Hz
Low V
varicocoele
cm/s

Intravenous urography

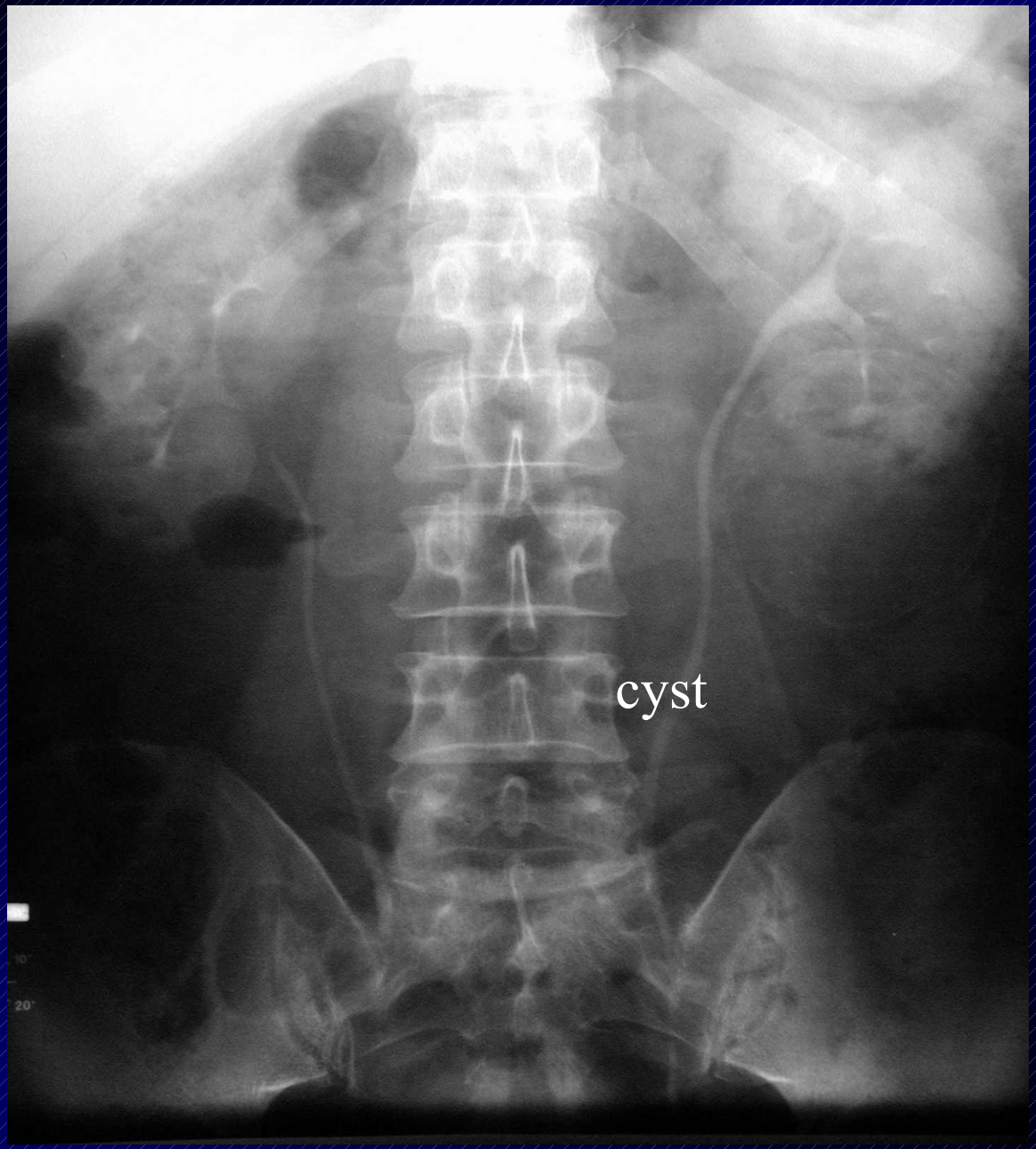
- kidneys, ureters, bladder
- + whole urotract, collecting system, calcifications, obstruction, low price
- - depends on renal function, parenchymal lesions non-distinguishable, surrounding structures (in AP direction)
- some indications, more preferred CT
- *congenital anomalies, altered drainage, calcifications, calculi, mucous abnormalities (papiloCa)*

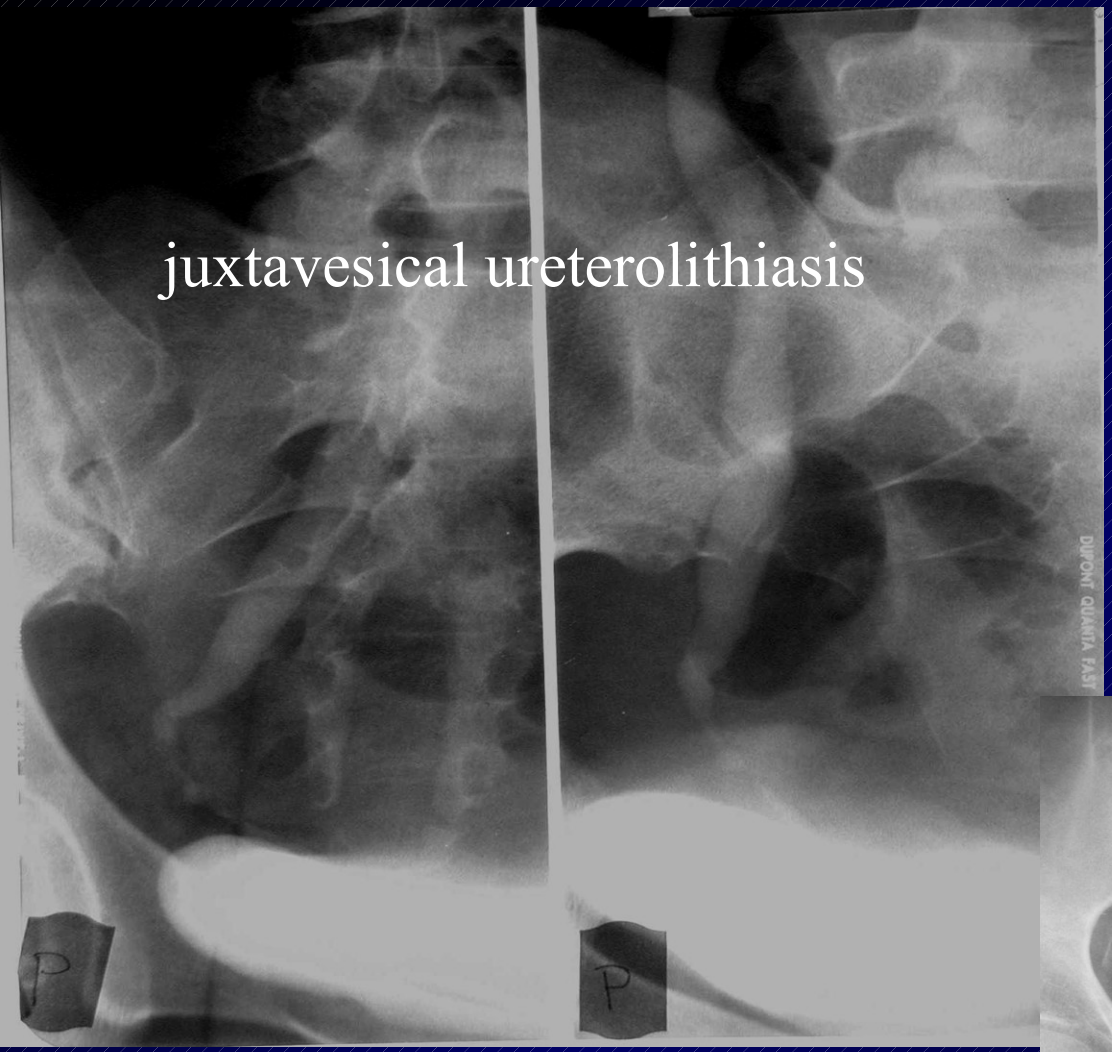

Pelvis duplex, ureter fissus a duplex

horseshoe kidney

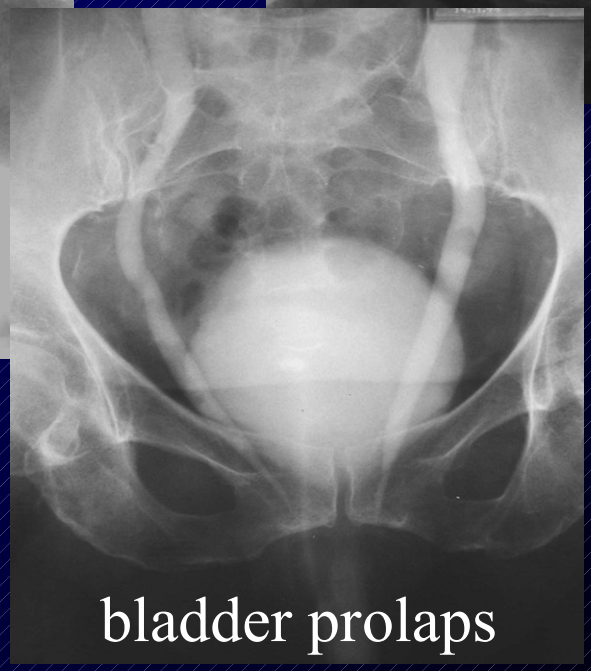



congenital
dystopia


cyst


juxtavesical ureterolithiasis


ureterocoele


bladder prolaps


ureterolithiasis- distal

prostate hyperplasia, bladder diverticula, ureteritis cystica

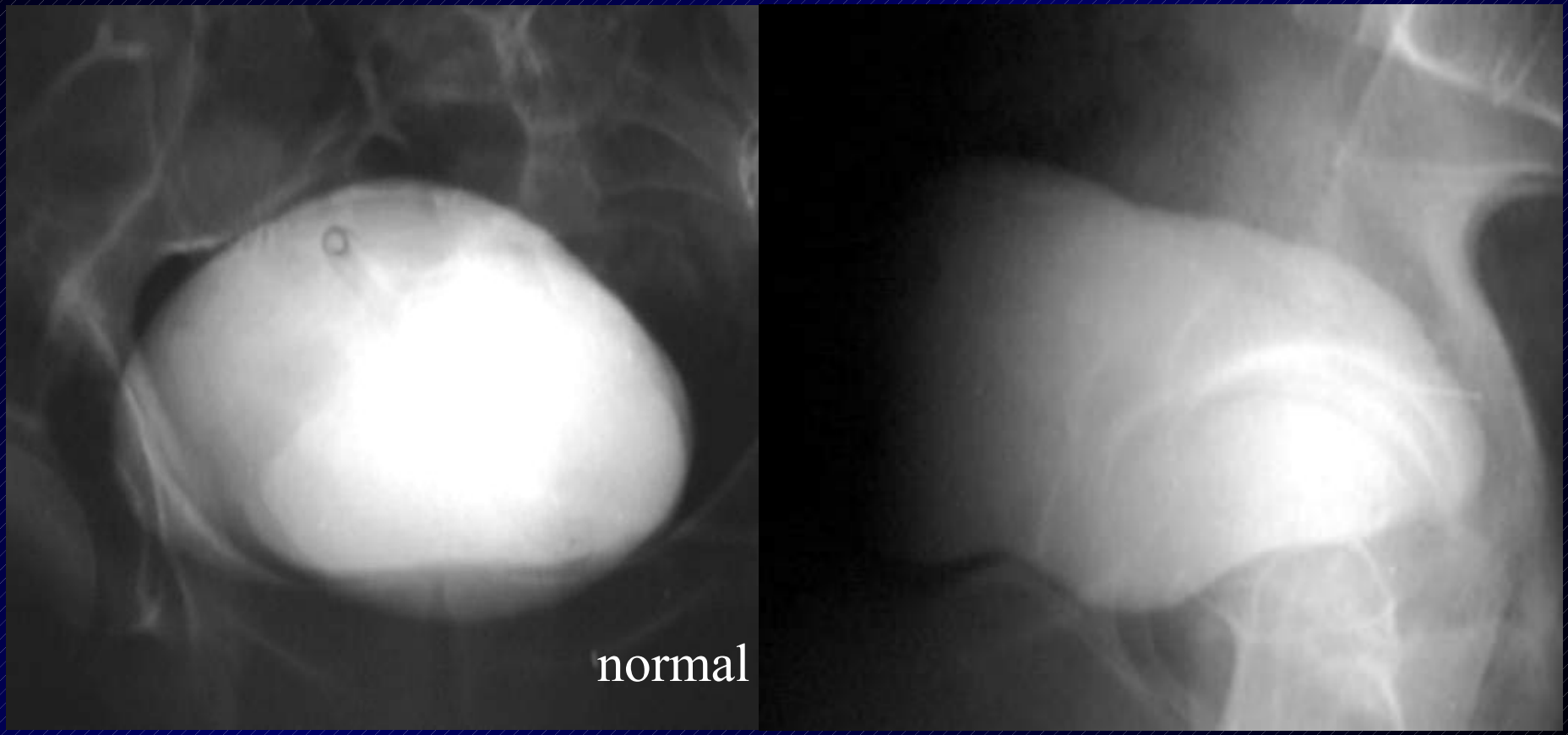

Hydronefrosis, megaureter


JJ stent

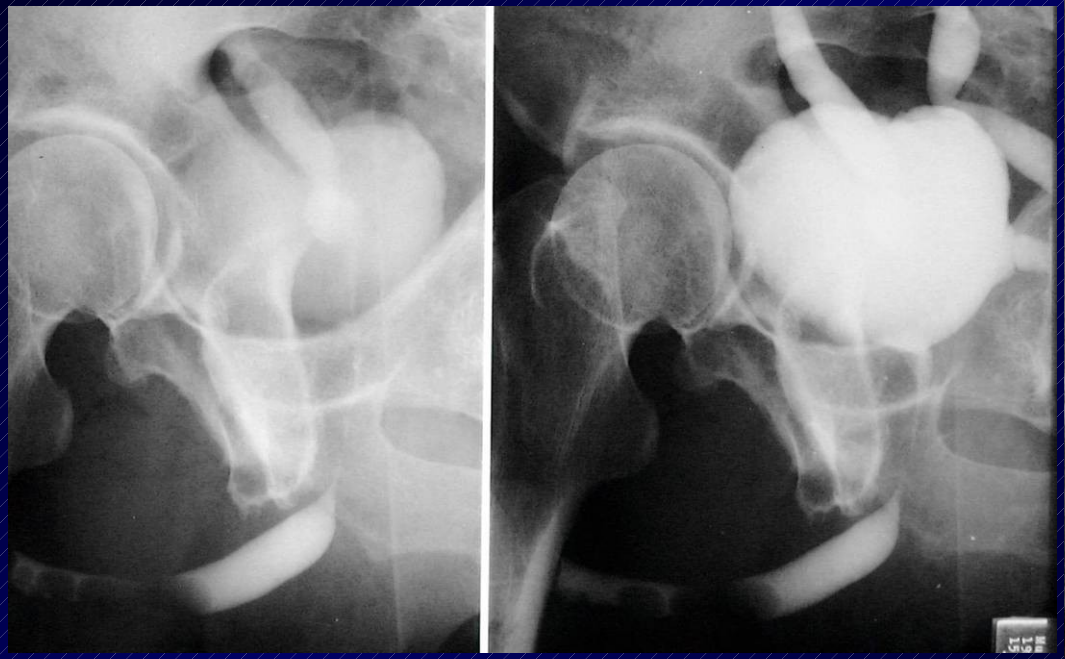
CUG,MCUG

- **A)** examination of urethra and bladder (morfology, pathologic conditions – diverticles, leak, expansions, VUR…(US , cystoskopy)
- **B) Men** – retrograde and miction CUG – morfology and patologies of urethra *(strictures , diverticula, TU, trauma)*

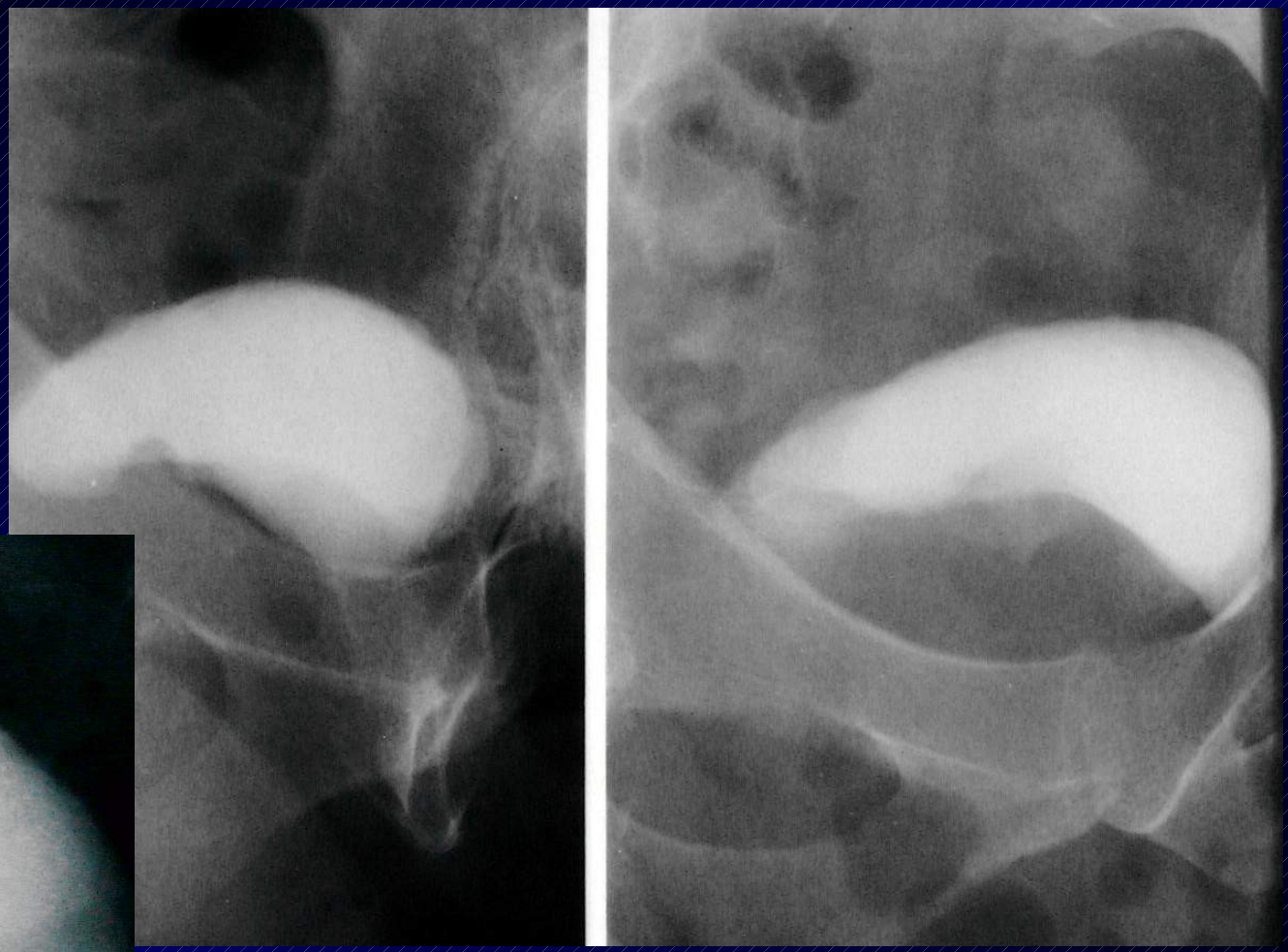
  Women – chain CUG (specif. anatom. configuration - *stress. inkontinence*)

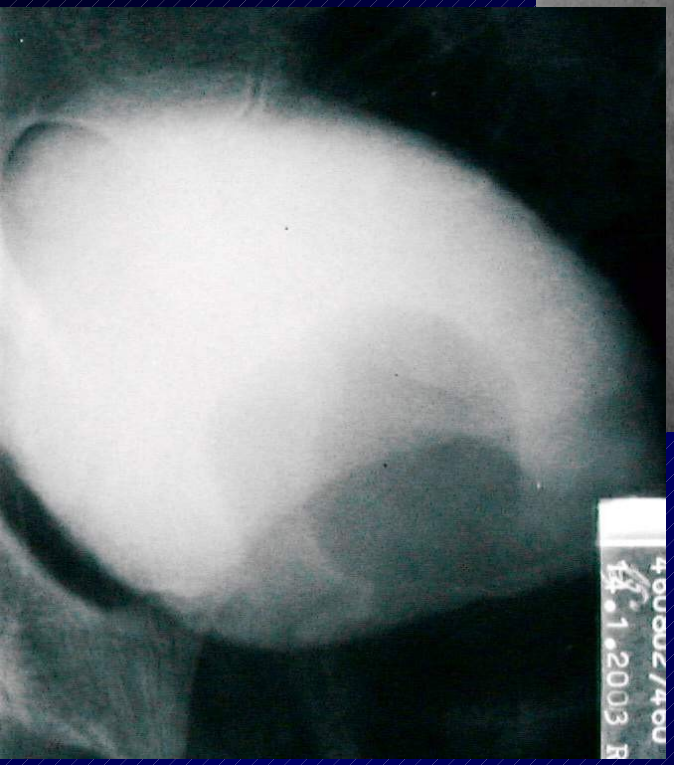

normal

VUR



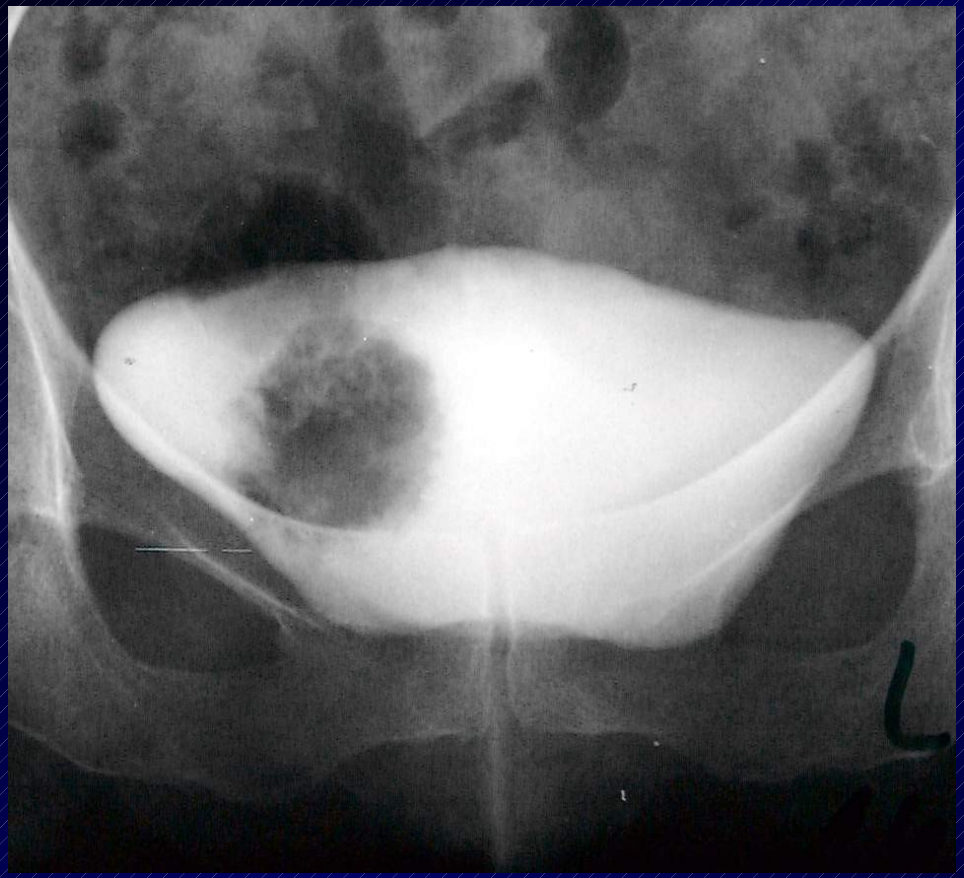
diverticula





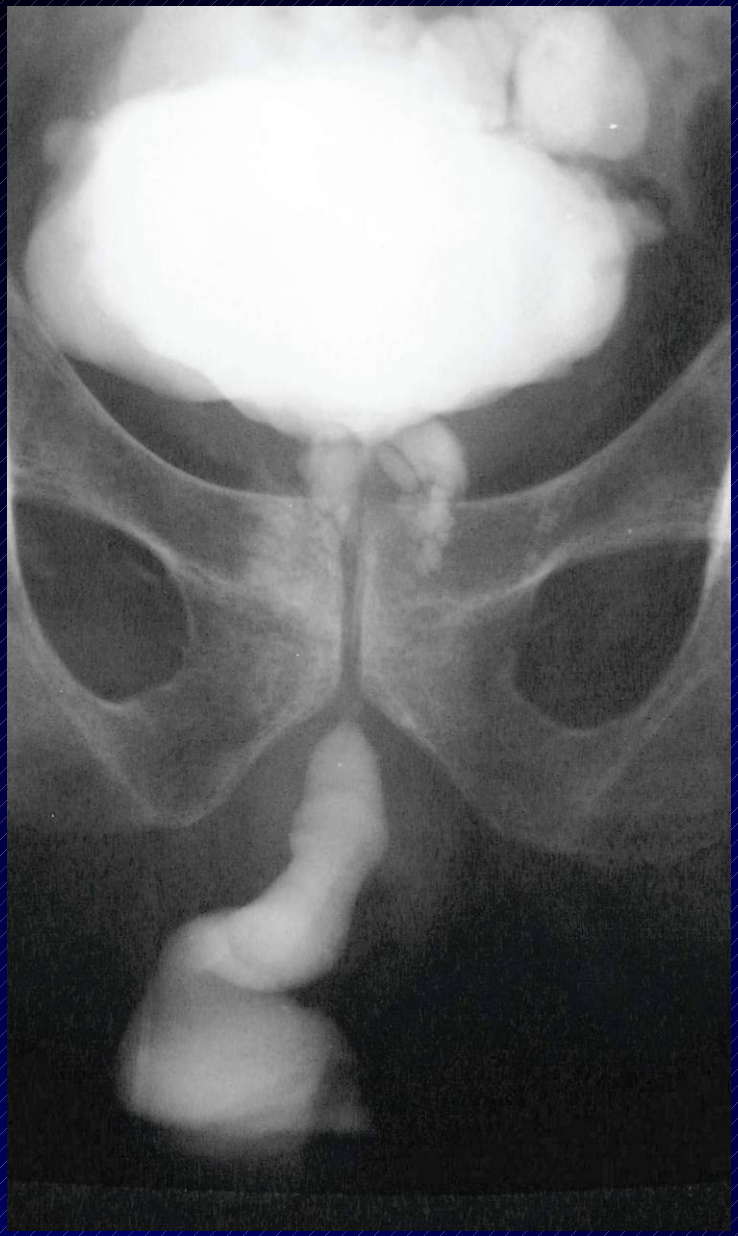
BPH

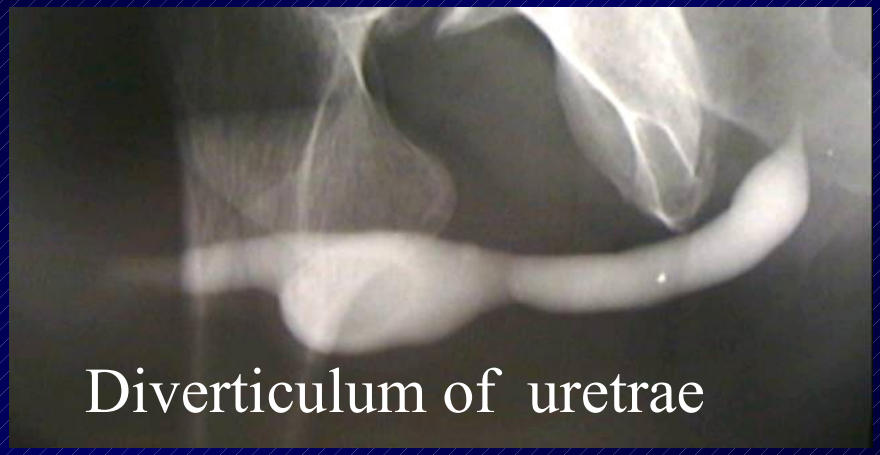
Carcinoma

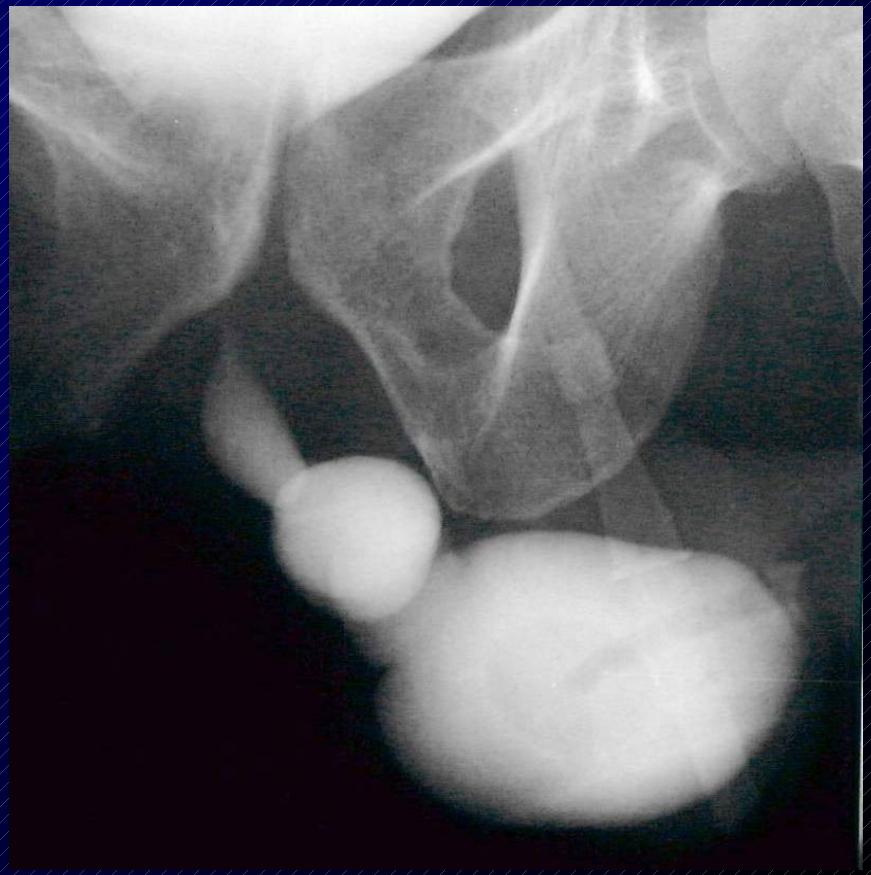



traumatic rupture

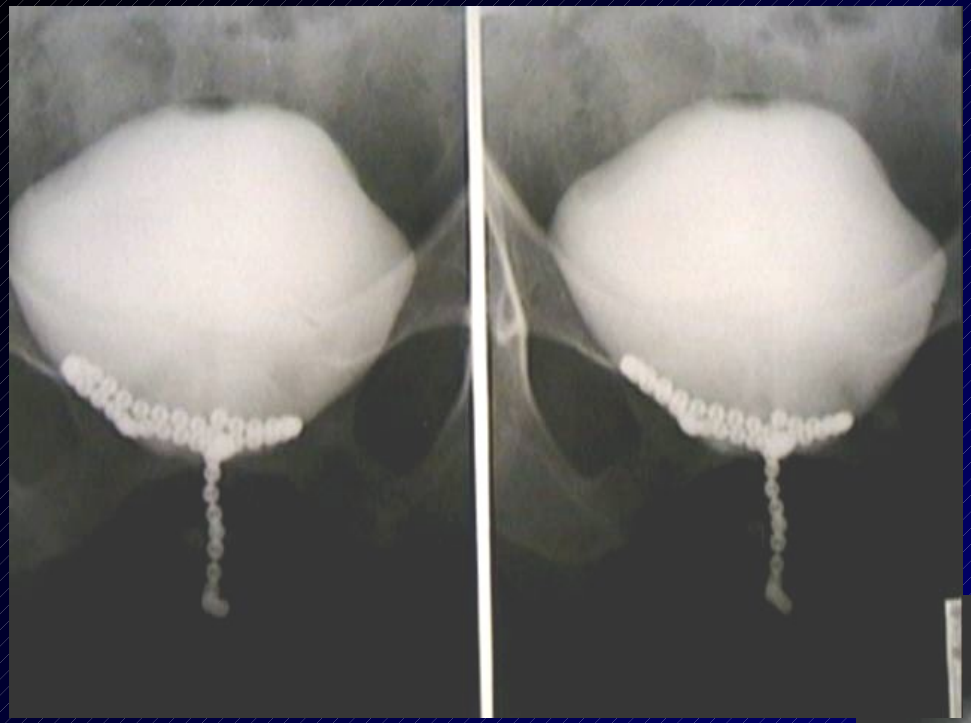

miction phase CUG



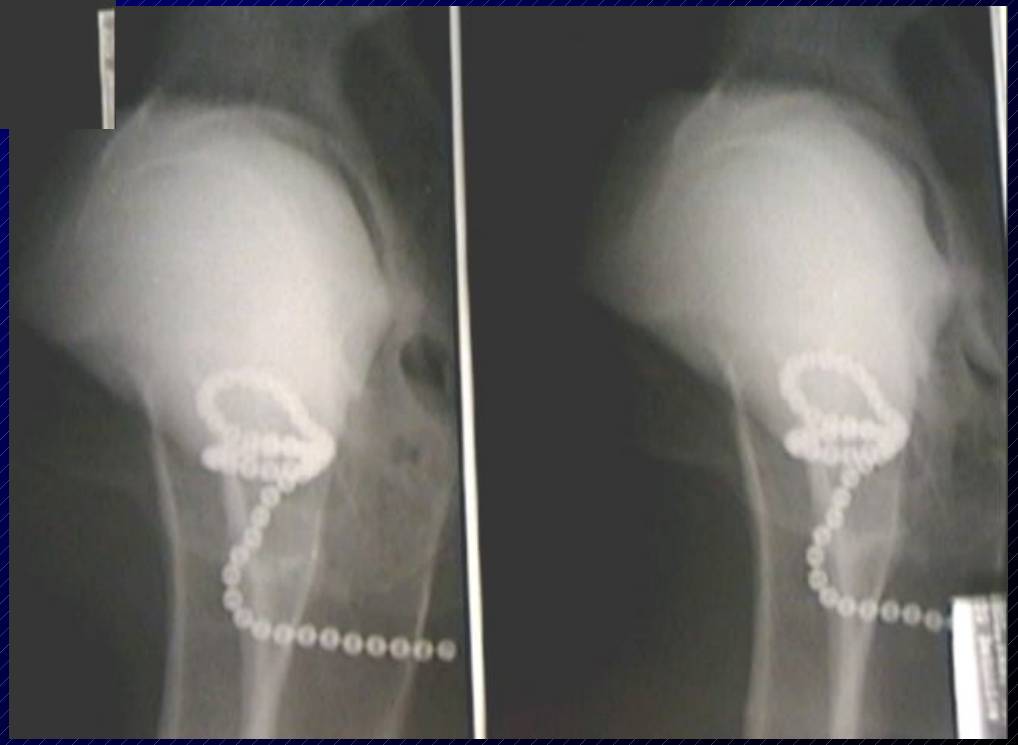

Diverticulum of uretrae



Stenosis



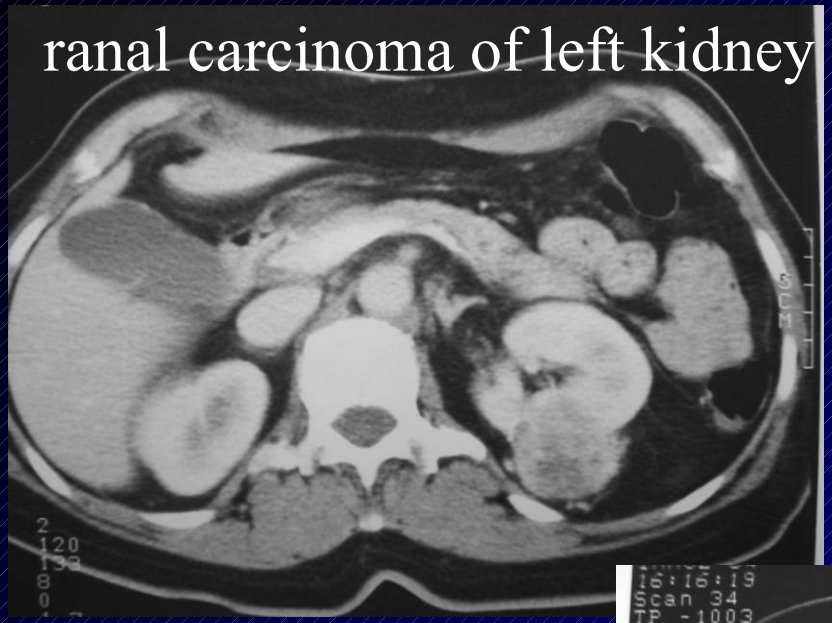
chain CUG . stress type of incintinence



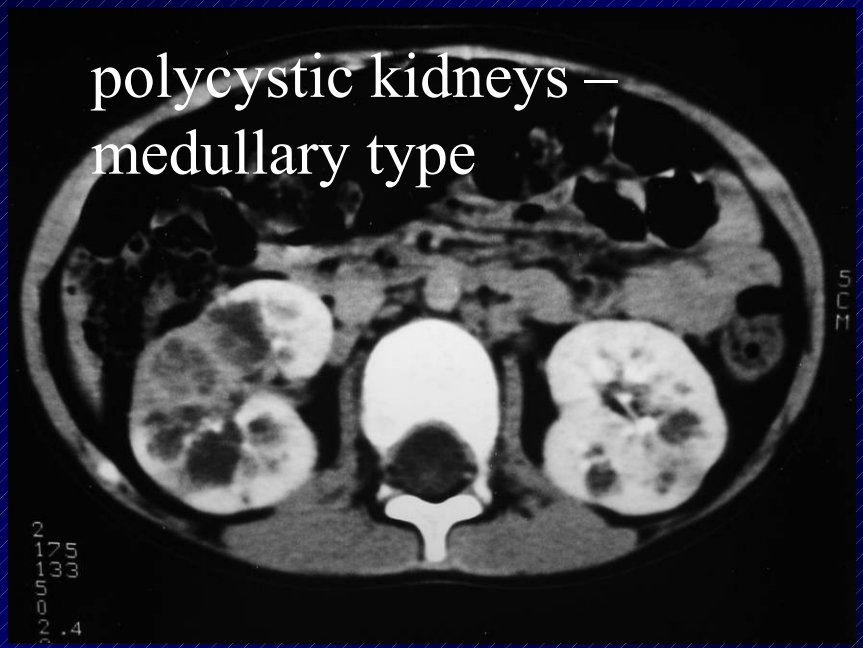
CT

- we can see whole urotract, also surrounding structures, suprarenal glands
- Nativ + postcontrast (coritcomedullary, parenchymatous, excretory phase)
- *kidneys, adrenal glands, ureters, bladder, prostate, seminal vesicles, surrounding structures, trauma*

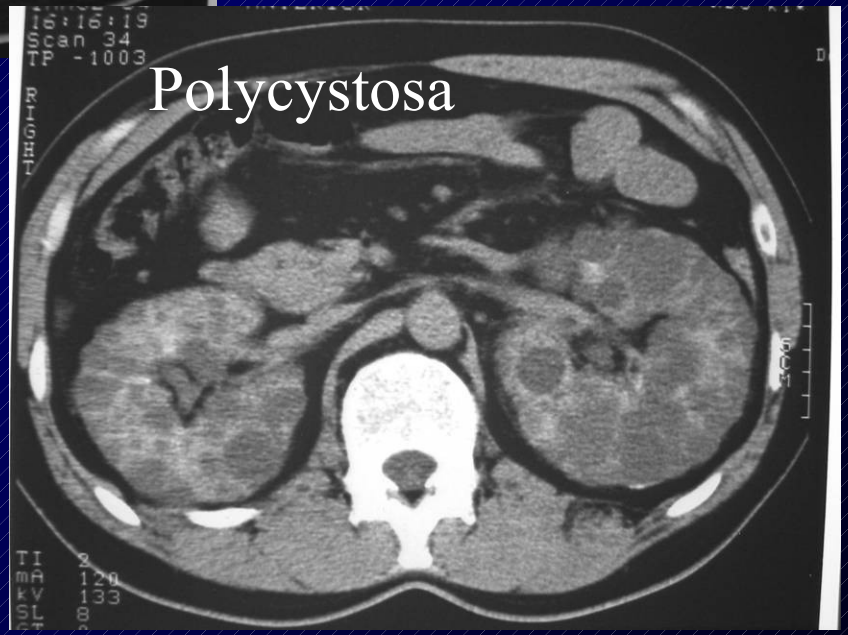
ranal carcinoma of left kidney



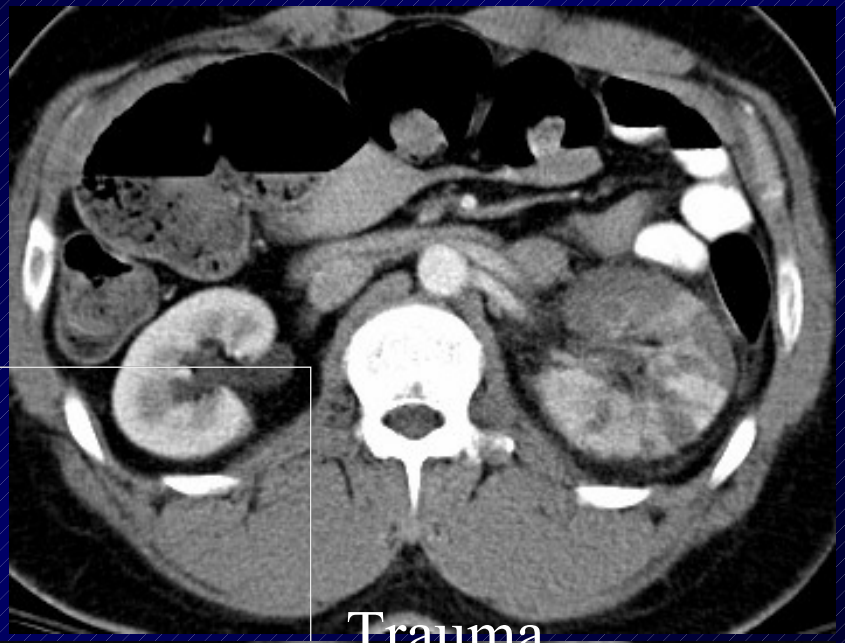
polycystic kidneys – medullary type



Polycystosa



Dist. ureterolithiasis



Trauma

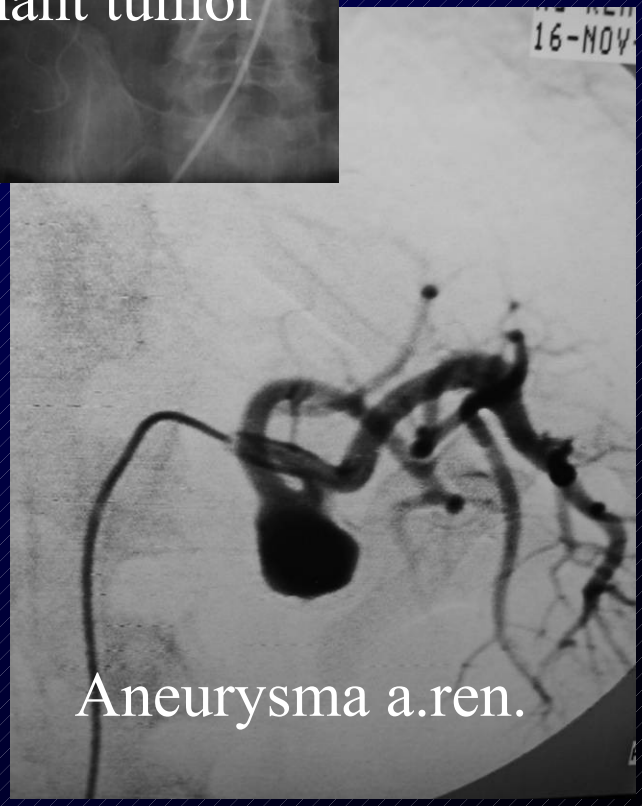
traumatic bladder rupture

Angiography

- Seldinger method (abdominlal, slective)
- not for diagnose (US, CT , MR angio)
  – for some special therapy
- Interventions (angioplasty, embolisations)
- before surgery (anomalies, resections)

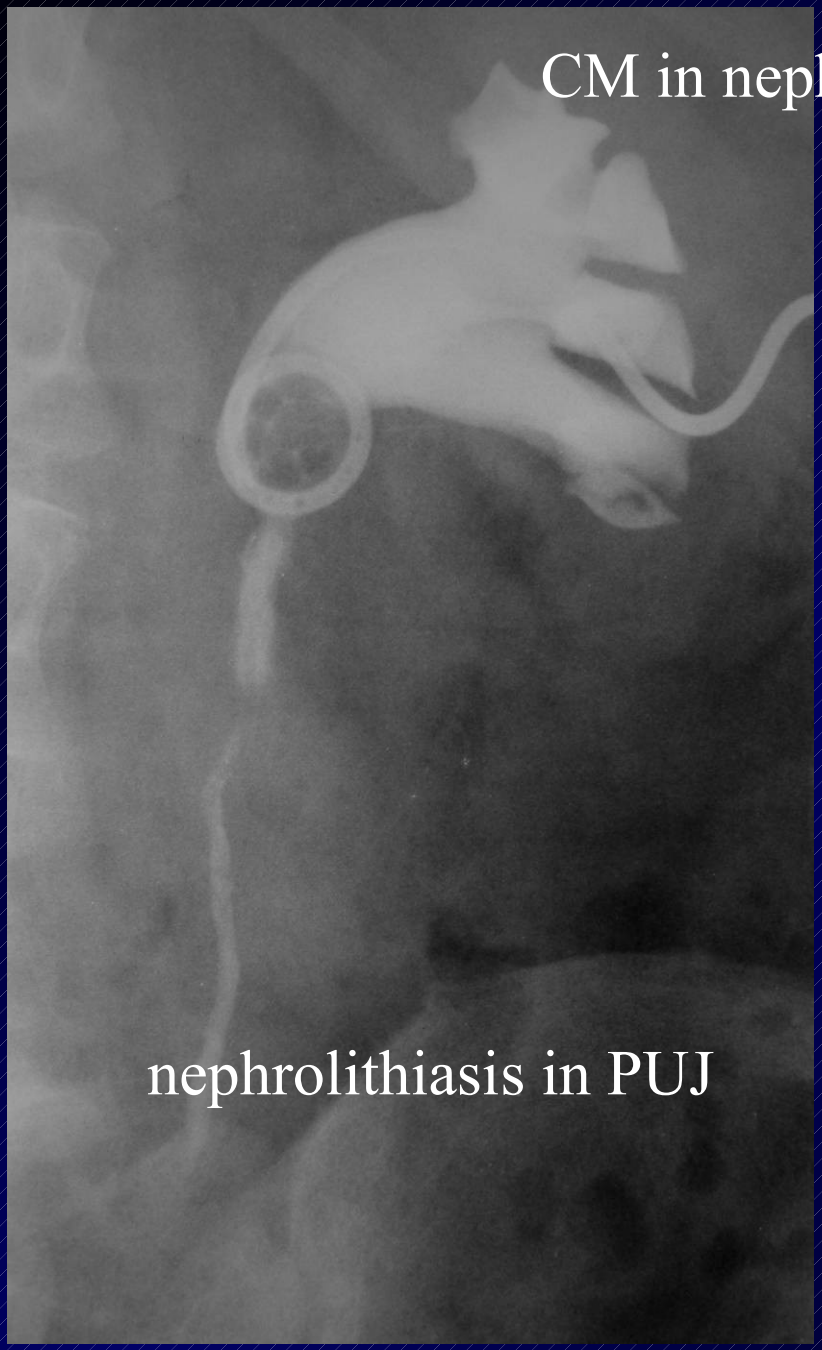

malignant tumor


cyst


16-NOV
Aneurysma a.ren.

Direct pyelography

- directly into urotract – invasive method
- retrograde filling - asc. (via urethra) or antegrade (via nephrostomic catether)
- similar image to IVU, but non-dependent on renal function
- risk of parenchymal or vascular reflux!



nephrolithiasis in PUJ

CM in nephrostomic drain

MR

- CM possible, but not needed
- pelvis, bladder, prostate, uterus
- MR angio
- availability is worse

Hysterosalpingography

- uterus, tuba uterina
- anatomy, penetrance of CM through tubae
- CM into cervix – peritoneal cavity
- *main indication: infertility*
- aseptic cautions