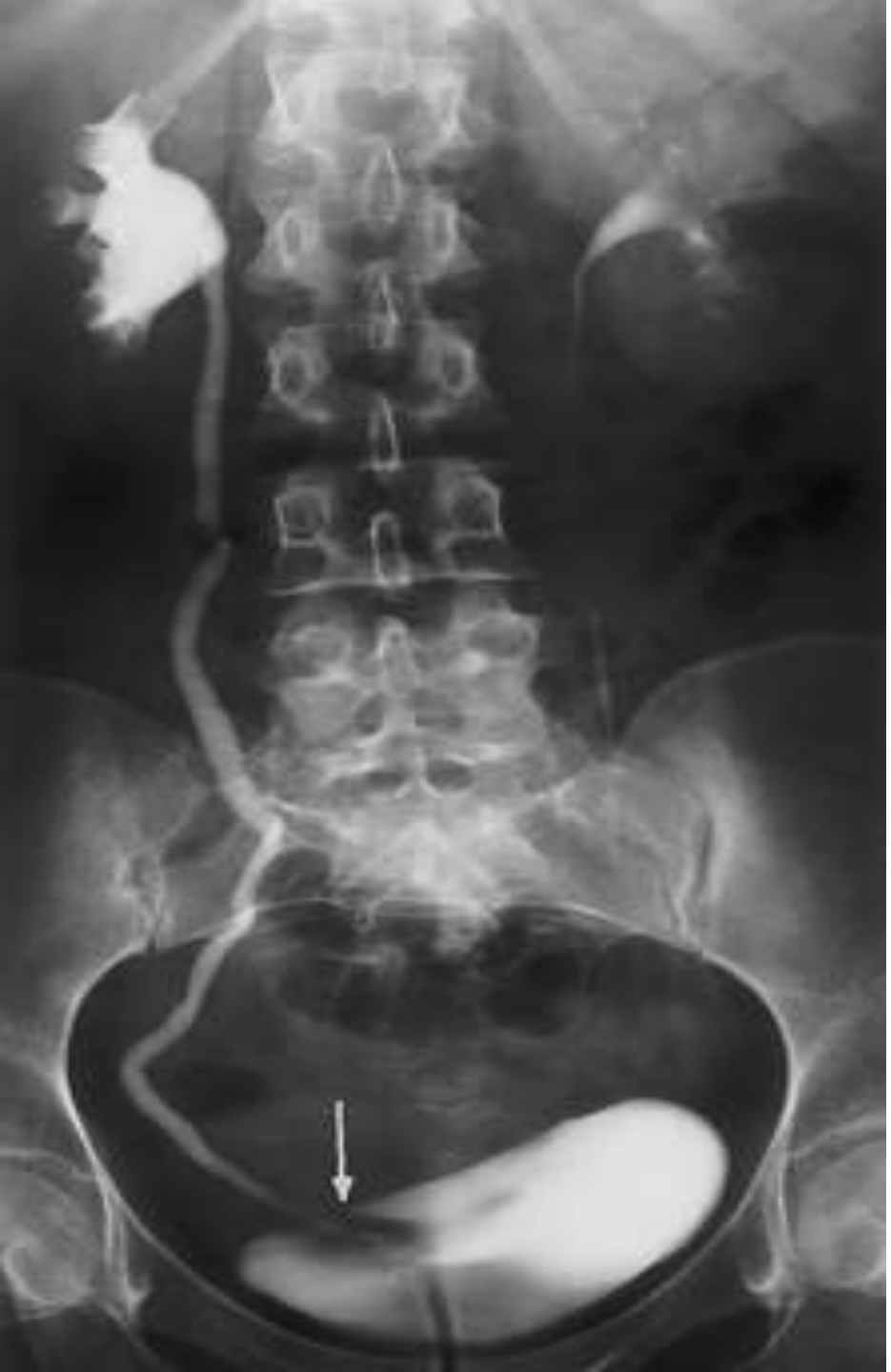
Ureter

- Segmental nonvisualization of ureter due to peristalsis
- Persistence column of contrast along course of ureter on several image indicate **obstruction :**

collecting system dilatation



Stone at right UV junction , edema interureteric ridge (normal < 3mm)

Ureteric course

- From renal pelvis , lateral to psoas m.
- About L3 pass ventral to psoas m.
- Upper RP course , pass along lateral ½ of transverse process of upper lumbar vertebrae
- Cross anterior to iliac vessel (medial)
- Pelvic course , parallel inner margin of iliac bone and enter bladder at UV junction

Abnormal ureteric course

- Medial deviation of ureter :

  * Overlying pedicle, medial to pedicle

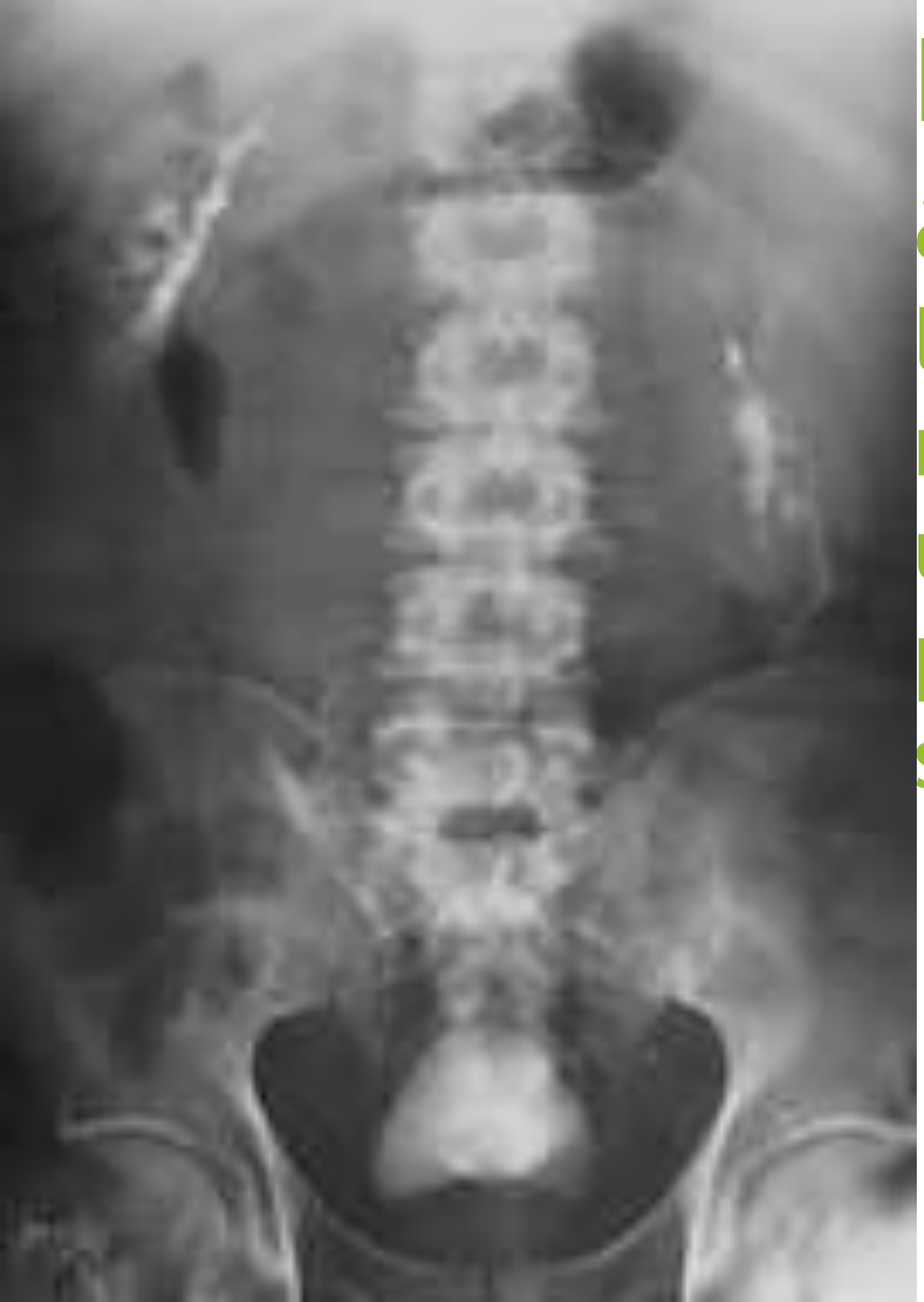
  * Separation of ureter <5 cm

- Lateral deviation :

  * Ureter lie >1cm beyond tip of

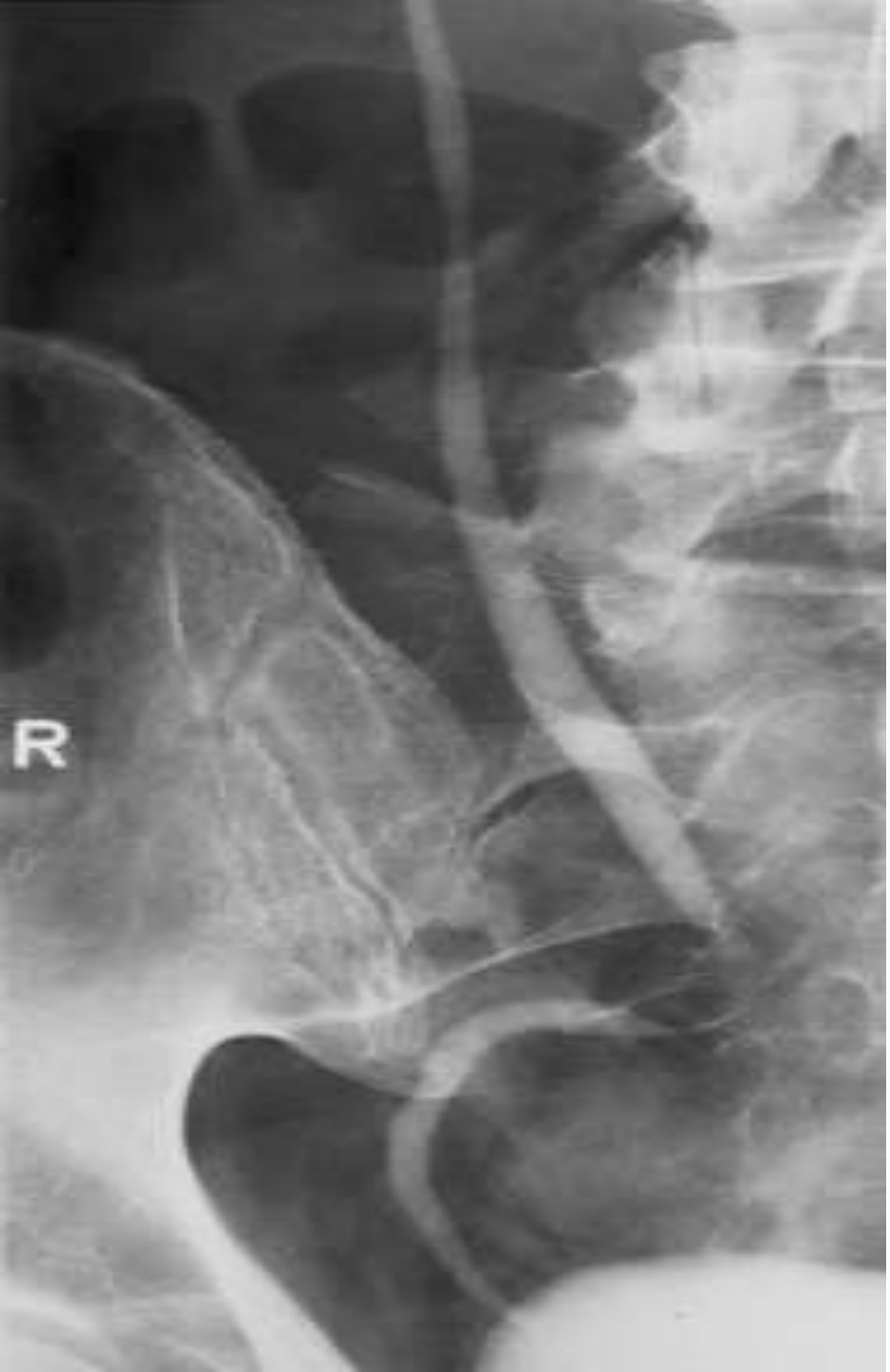
    transverse process

- Abrupt changes in ureteric course



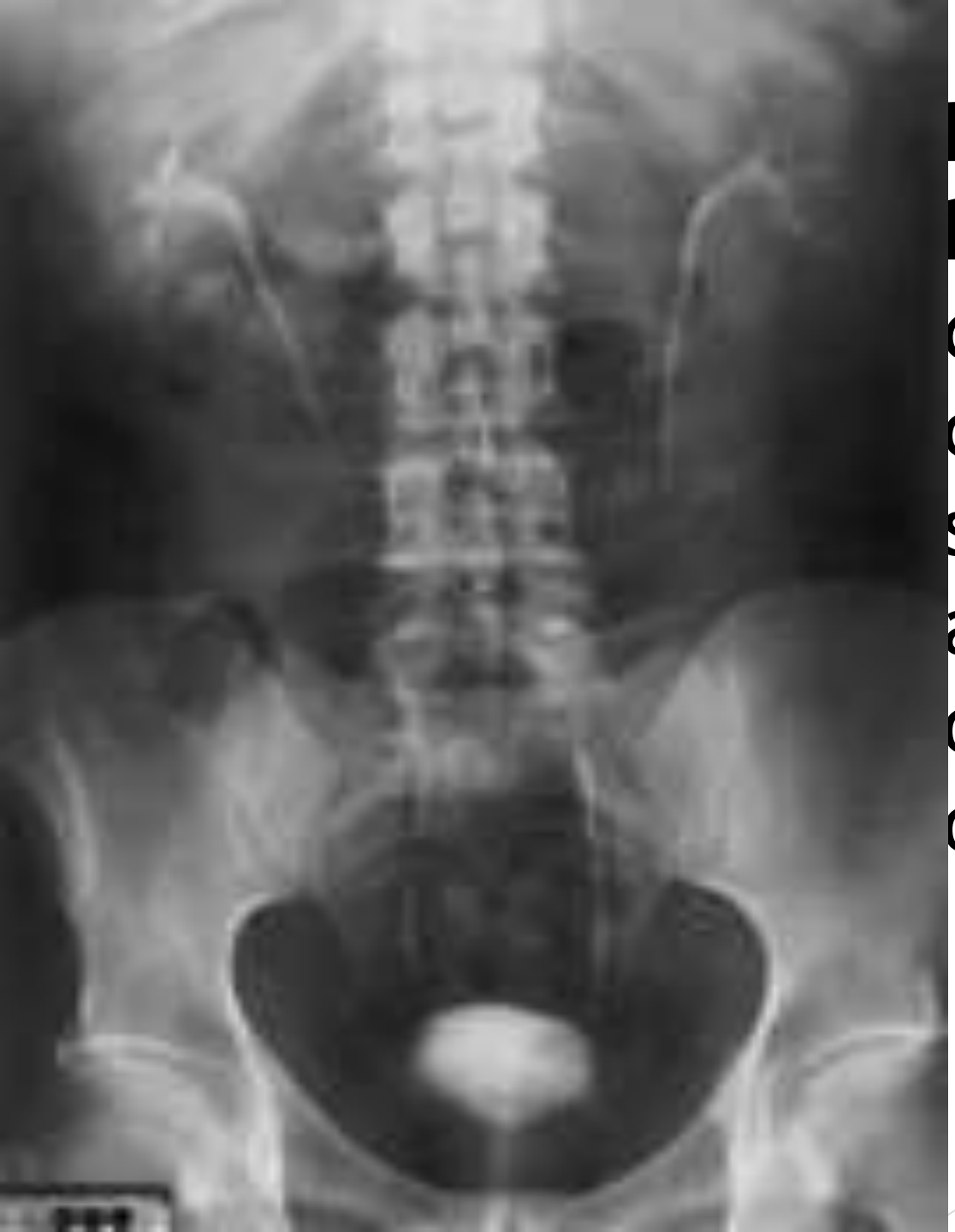
RP and iliac adenopathy ;

lateral proximal
medial distal
ureteral deviation
pear bladder
splenomegaly



Internal iliac aneurysm ; acute medial deviation of right ureter

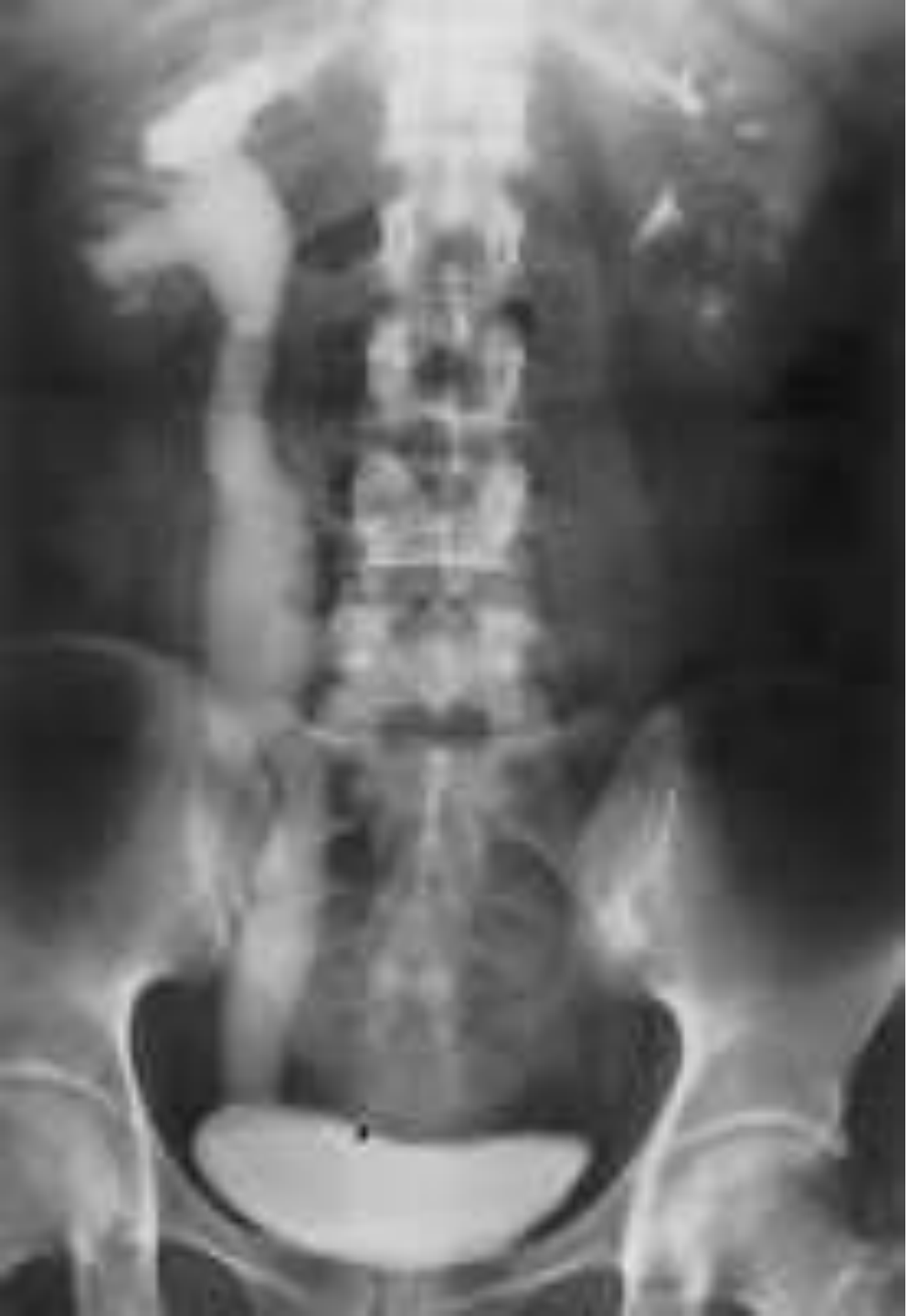
Circumcaval ureter ; reverse J hydronephrosis



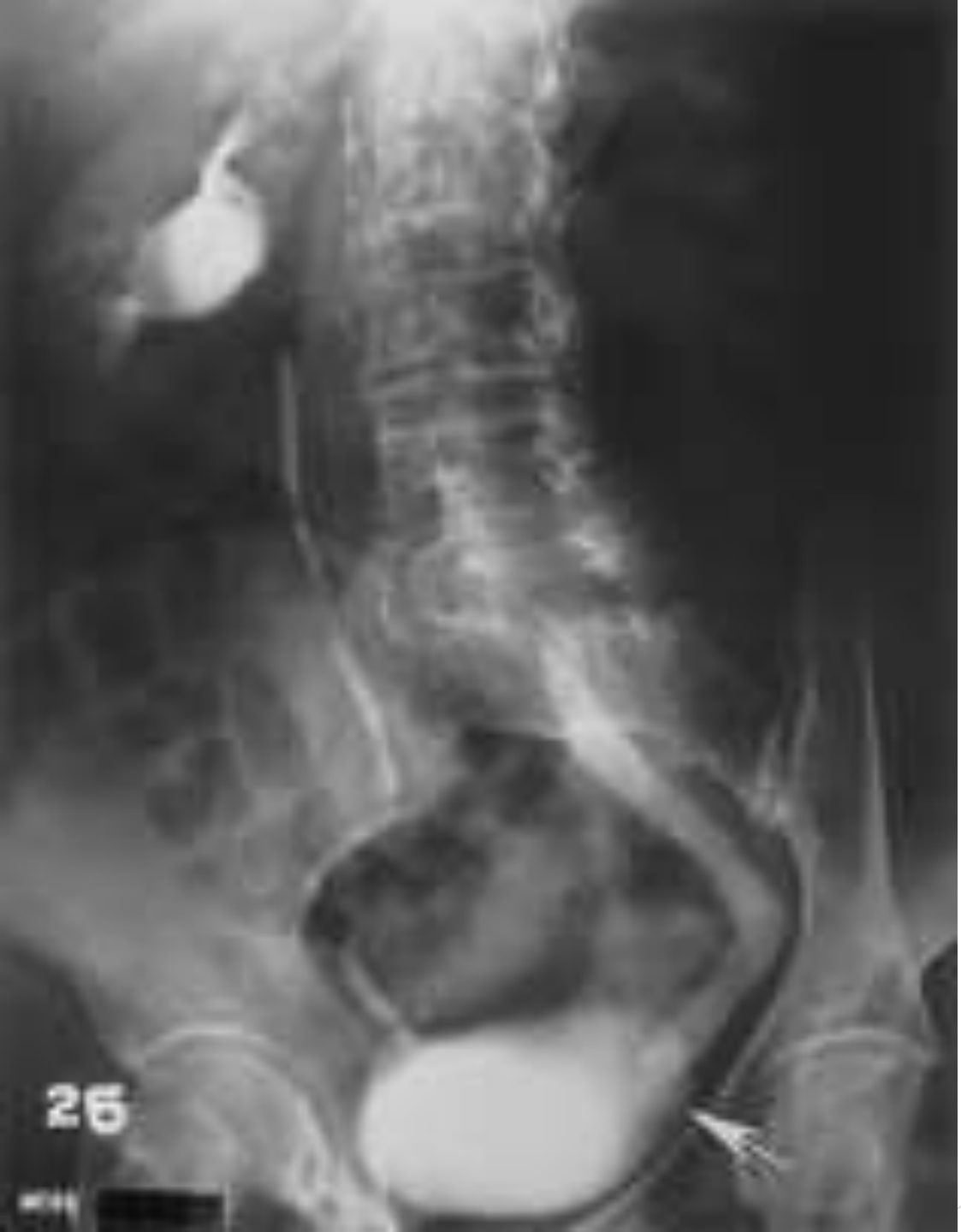
Psoas muscle hypertrophy: distal ureter central locate straightened abrupt transition of mid ureter over belly of m.

Ureteric diameter

- Diameter > 8 mm consider dilatation :
  * Obstruction
  * Ureterocele
  * Nonobstructive dilatation ,
    high urine flow
    (fluid diuresis , DI)
  * Reflux
  * Inflammatory process



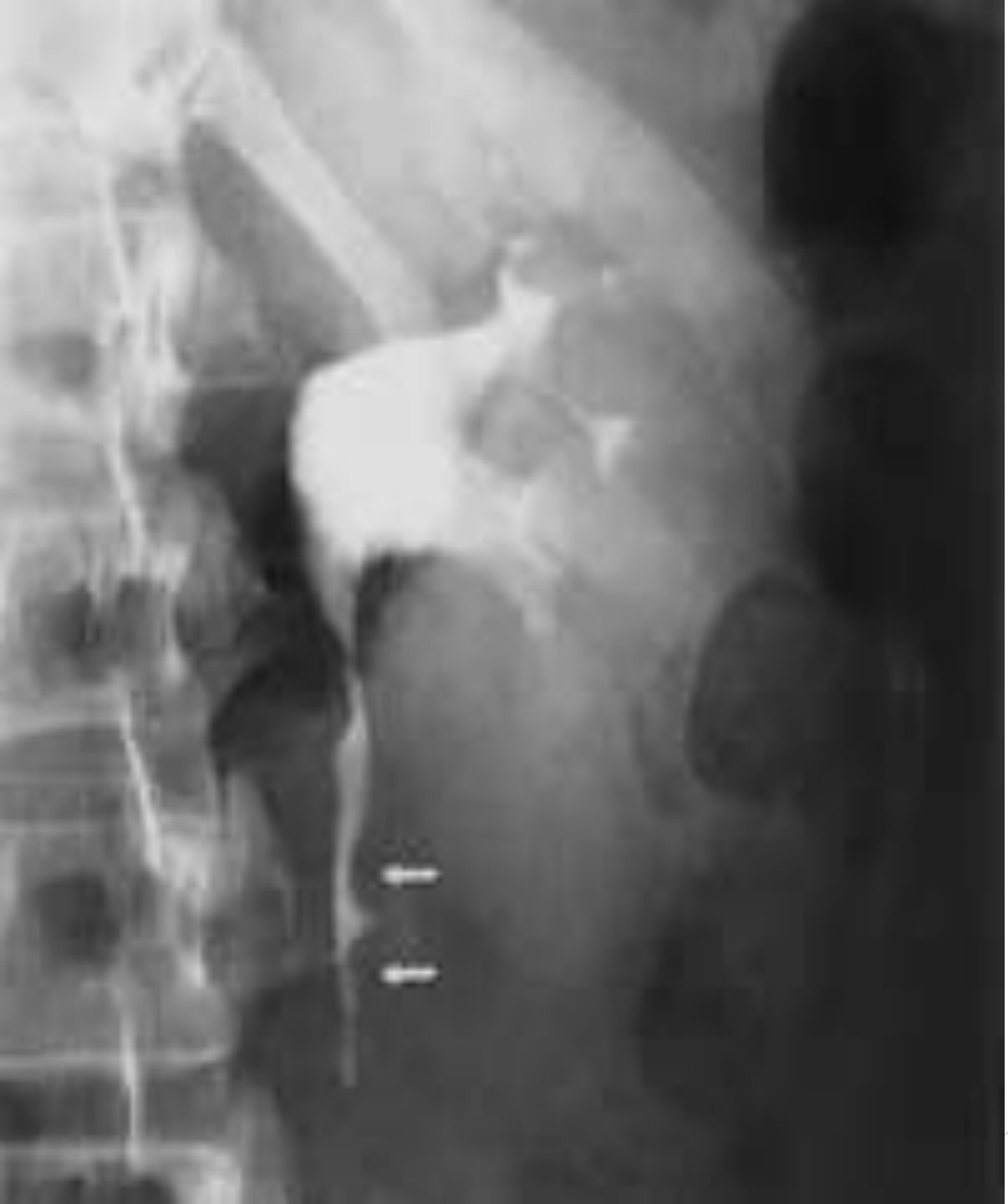
Orthotopic ureterocele ,
cobra head
ureteral dilatation



Megaureter ; dilatation distal 1/3 ureter taper narrow at UV junction

Ureter

- Normal peristalsis
- Anatomic narrowing :
  * UPJ junction
  * Iliac vs transition
  * UV junction
- Vascular impression of gonadal vein , prominent in female



Ureteric nothching
extrinsic vascular narrowing gonadal vein

Ureter

- **Ureteral pseudodiverticula** :

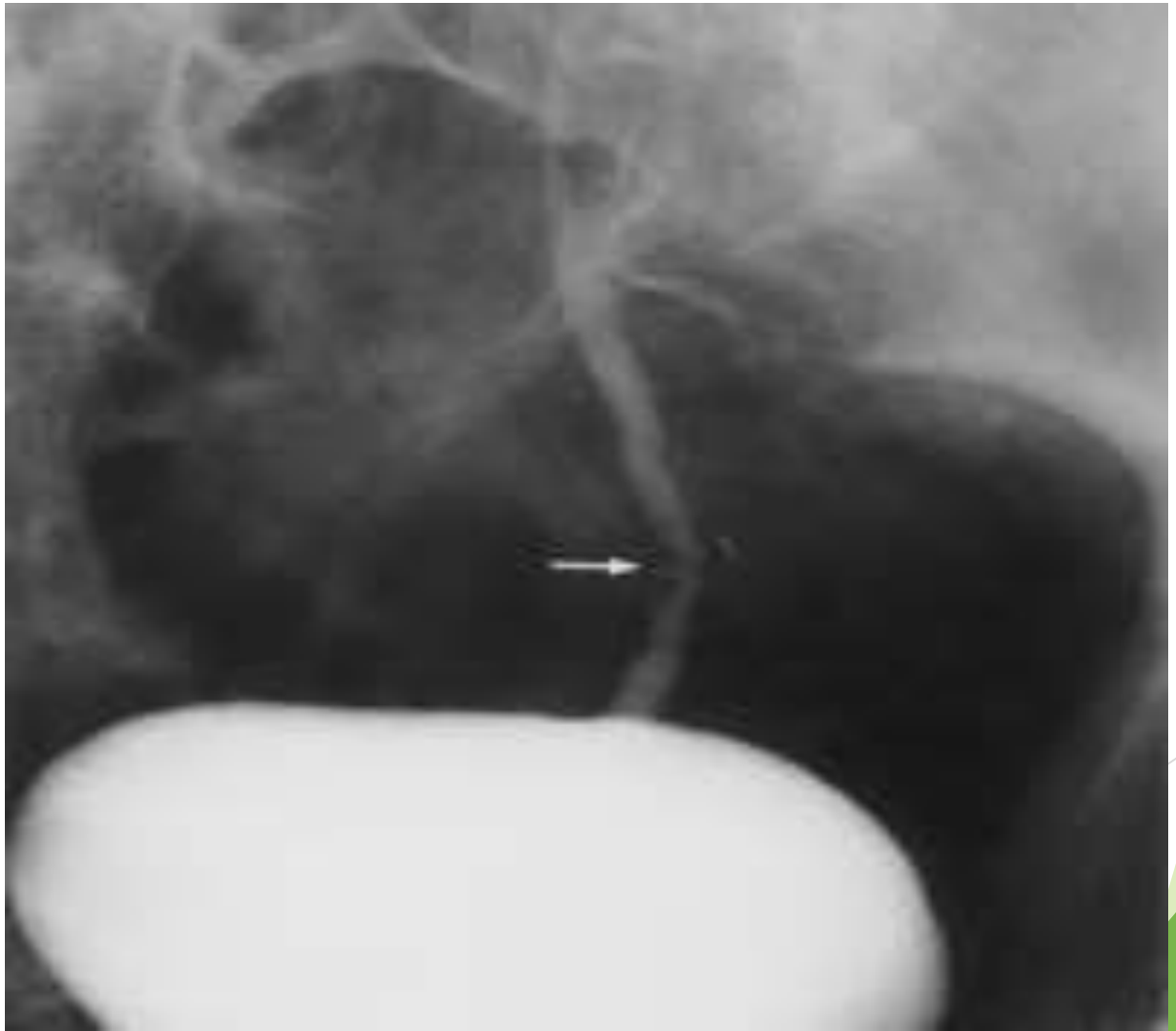
  narrow with outpouching ureteric wall

  increase of TCC , especially in bladder

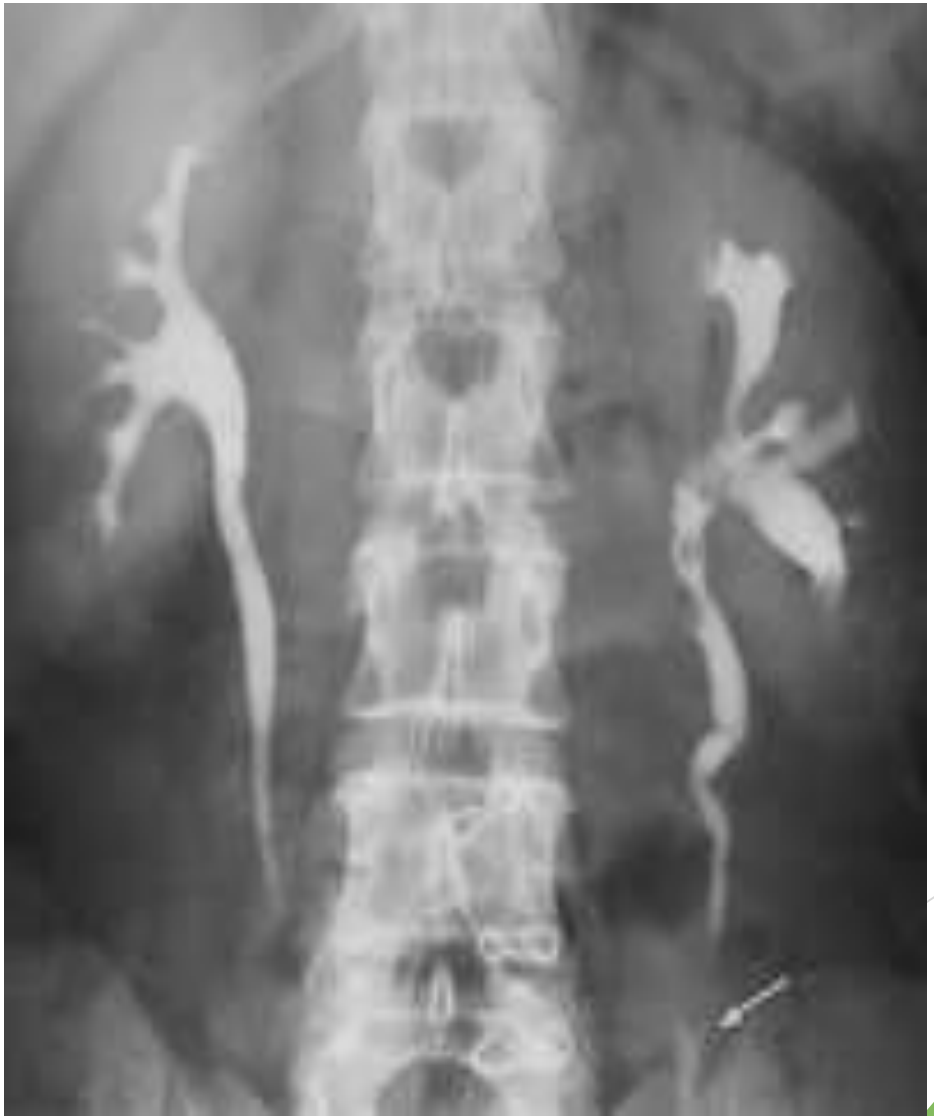
- **Ureteric filling defect** :

  TCC , patient present with hematuria

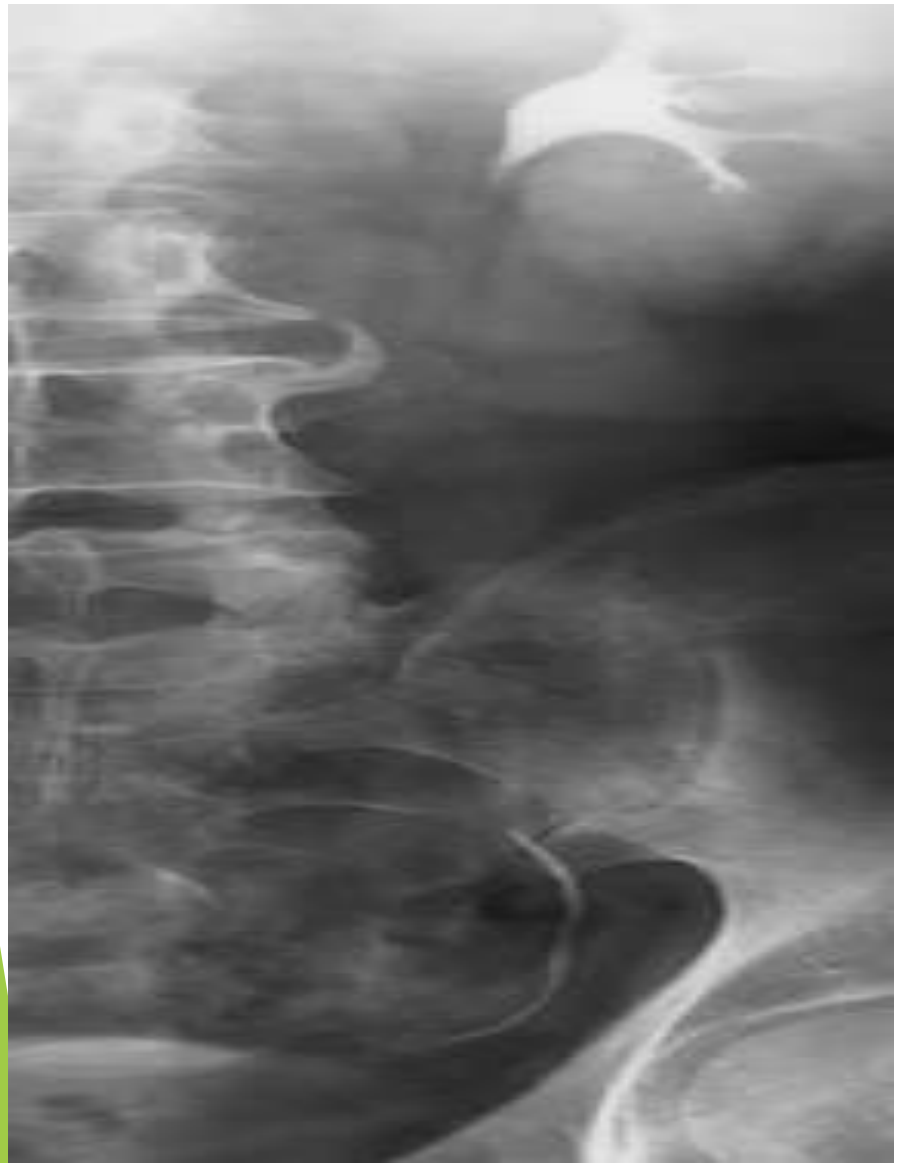
Ureteral pseudodiverticula, narrow **risk of TCC , especially bladder**

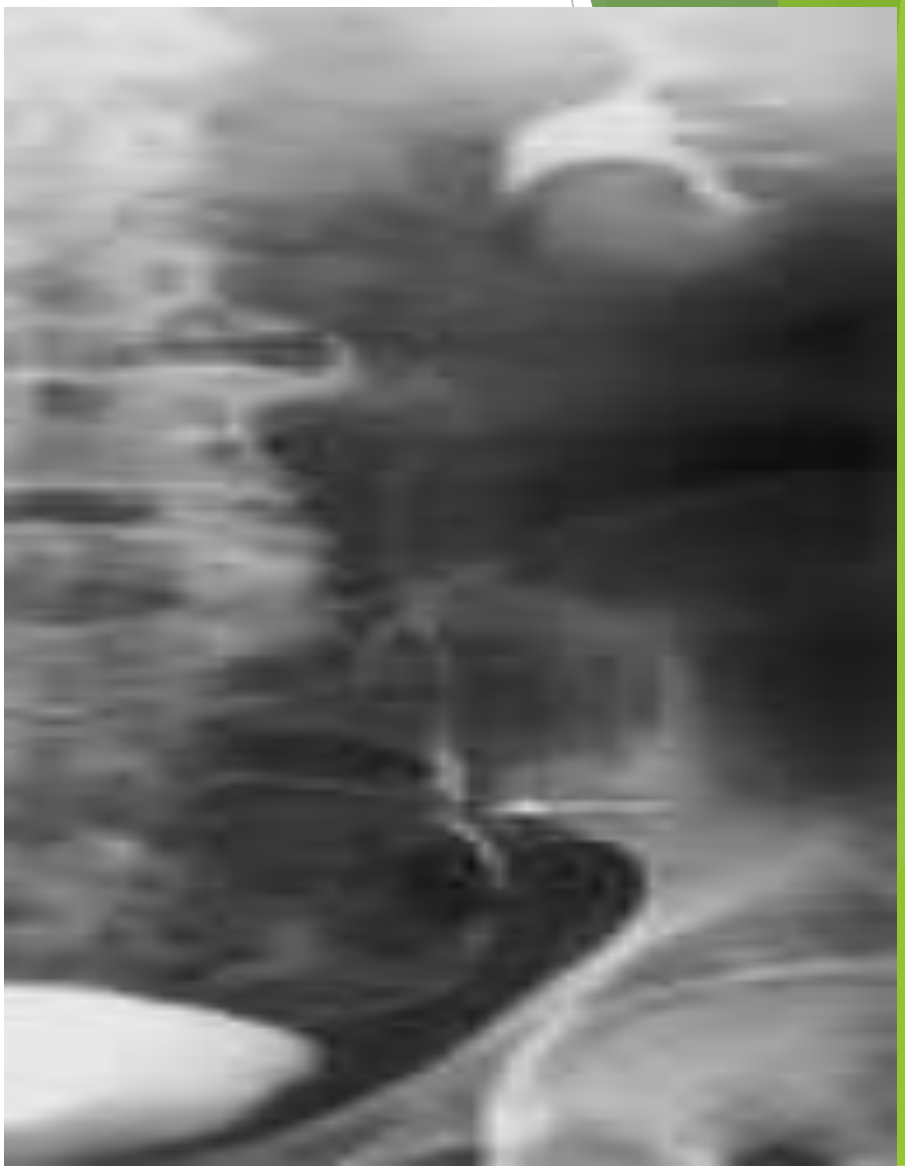


TCC left renal pelvis and ureter goblet filling defect lower ureter



TCC distal ureter with filling defect on fluorocopy , persist hematuria





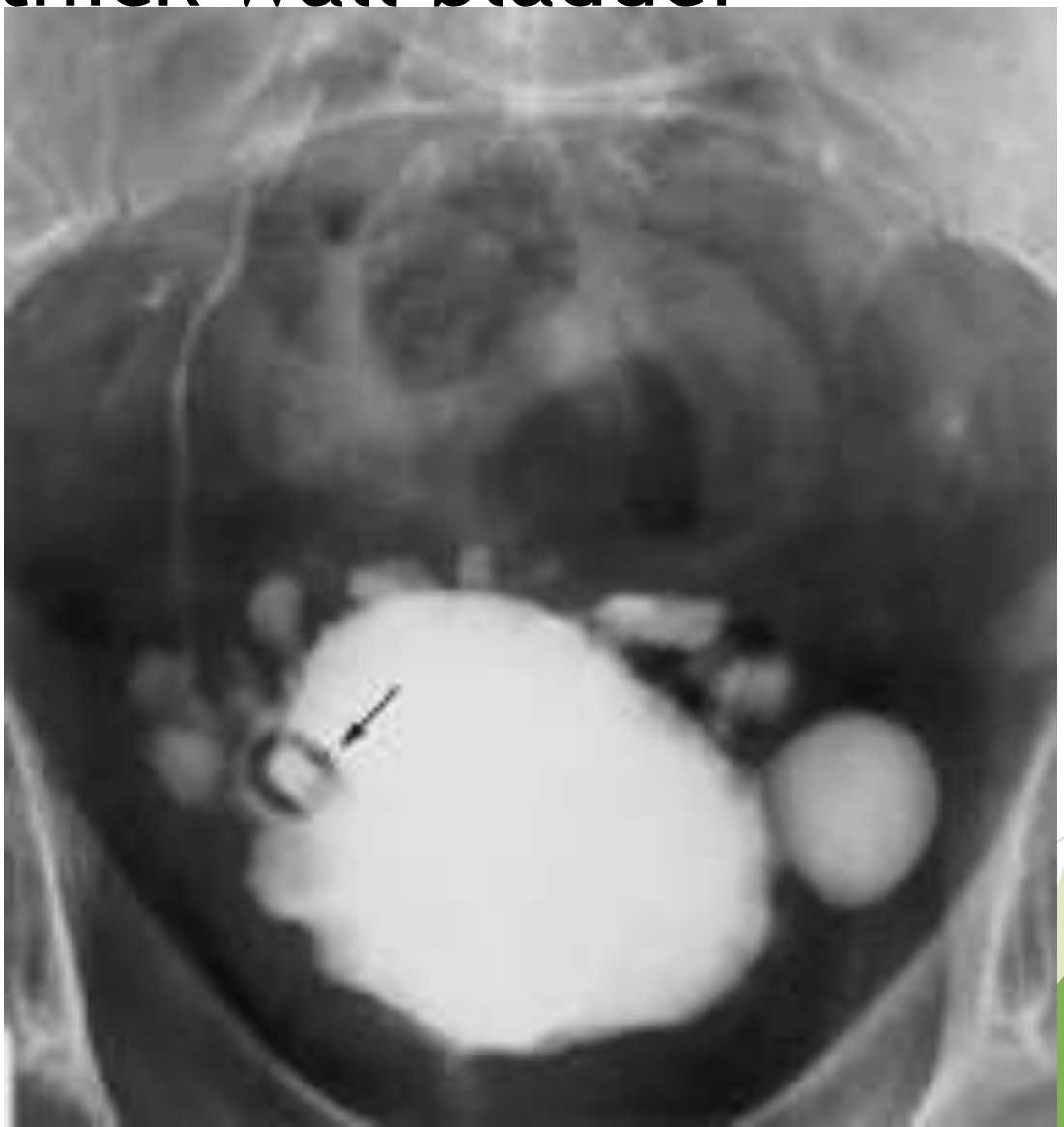
Bladder image

- 15-30 min or delay film distend lumen

  evaluate the bladder , wall thicken
- Post void film may be helpful for evaluation mucosal lesion

Hemorrhagic cystitis; lobulate irregular thick wall bladder

Neurogenic bladder ; bladder diverticula, irregular thick wall bladder

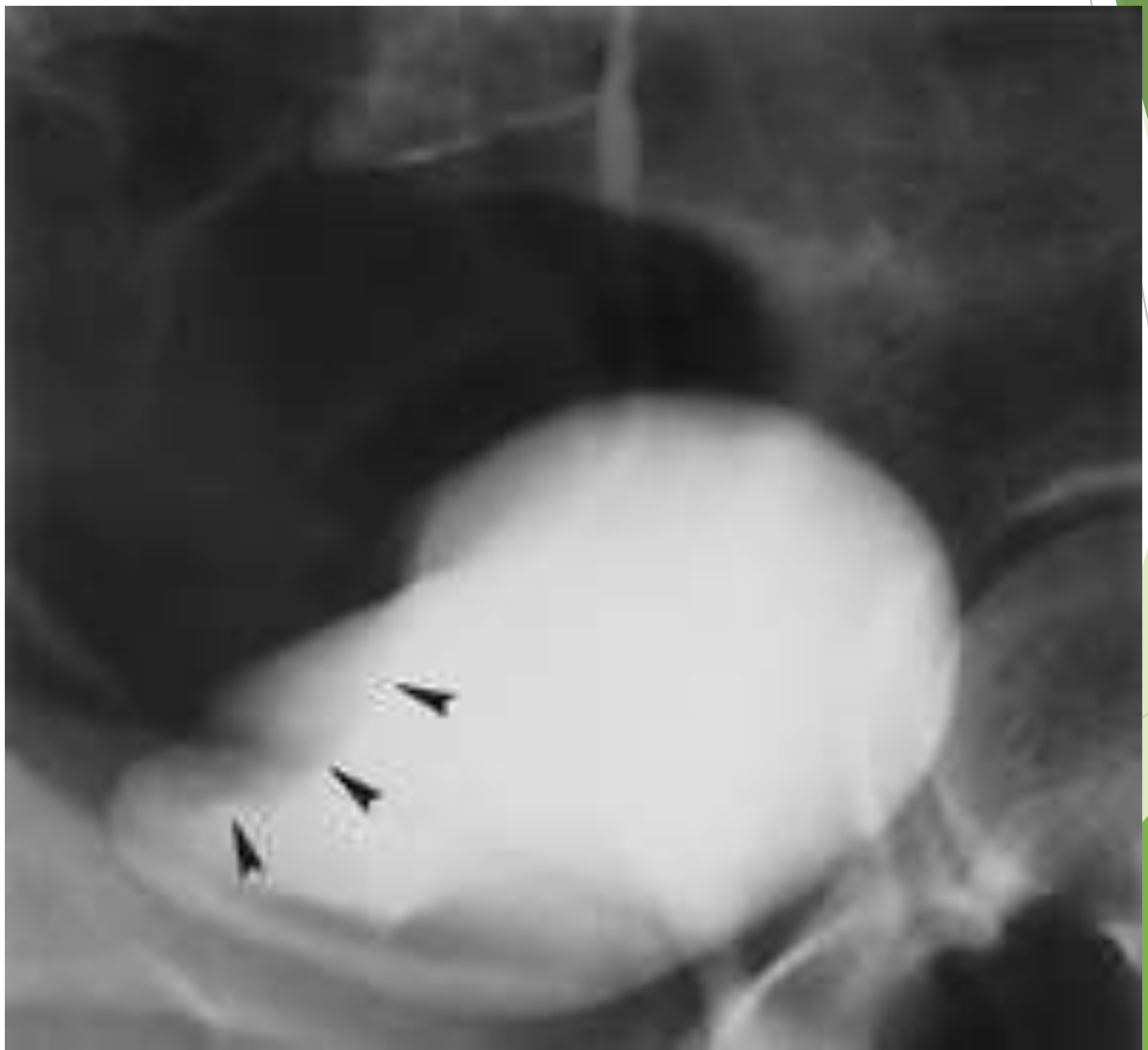


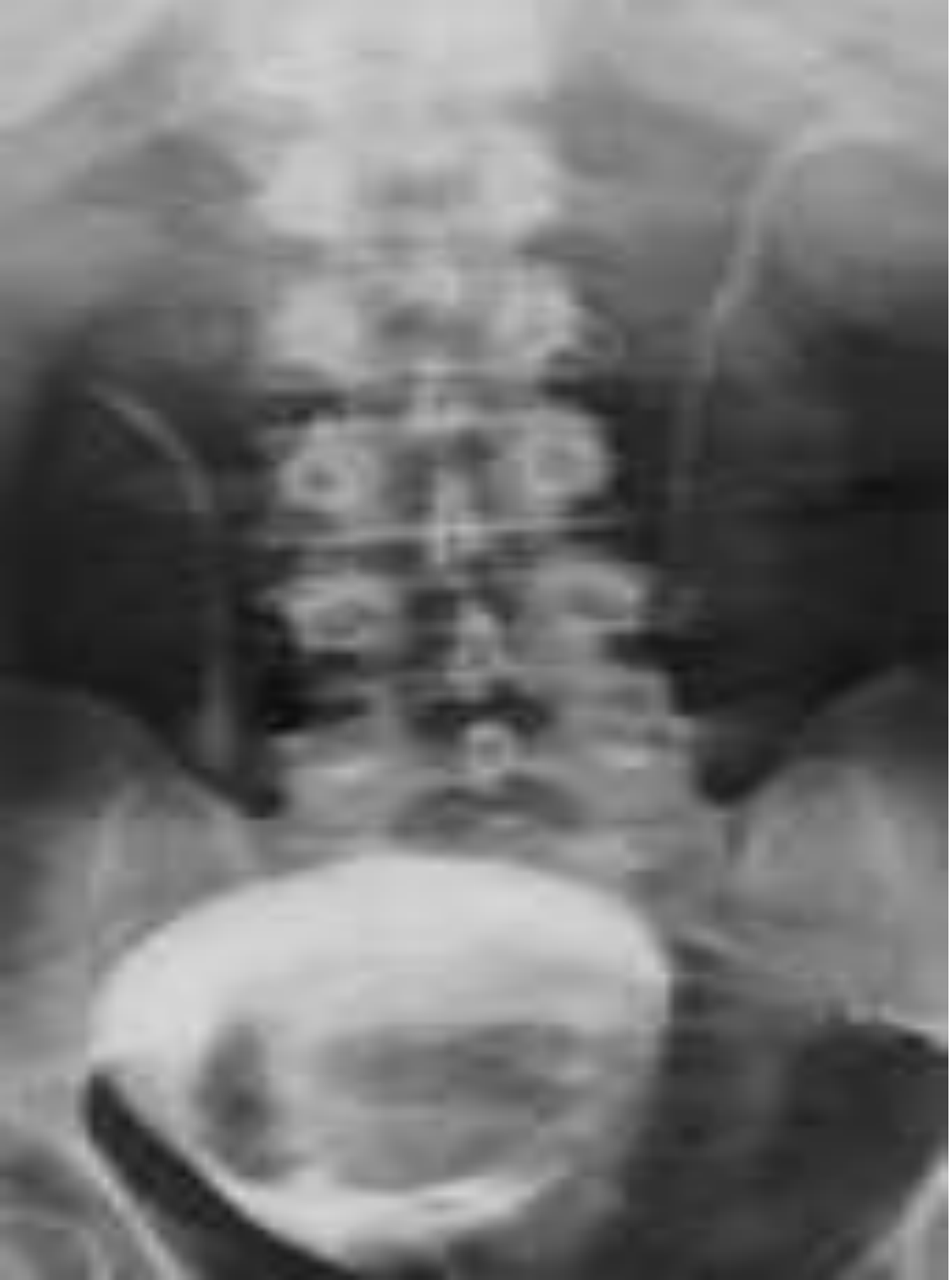
Bladder

- Bladder is tether only at the lower aspect of anatomic pelvis

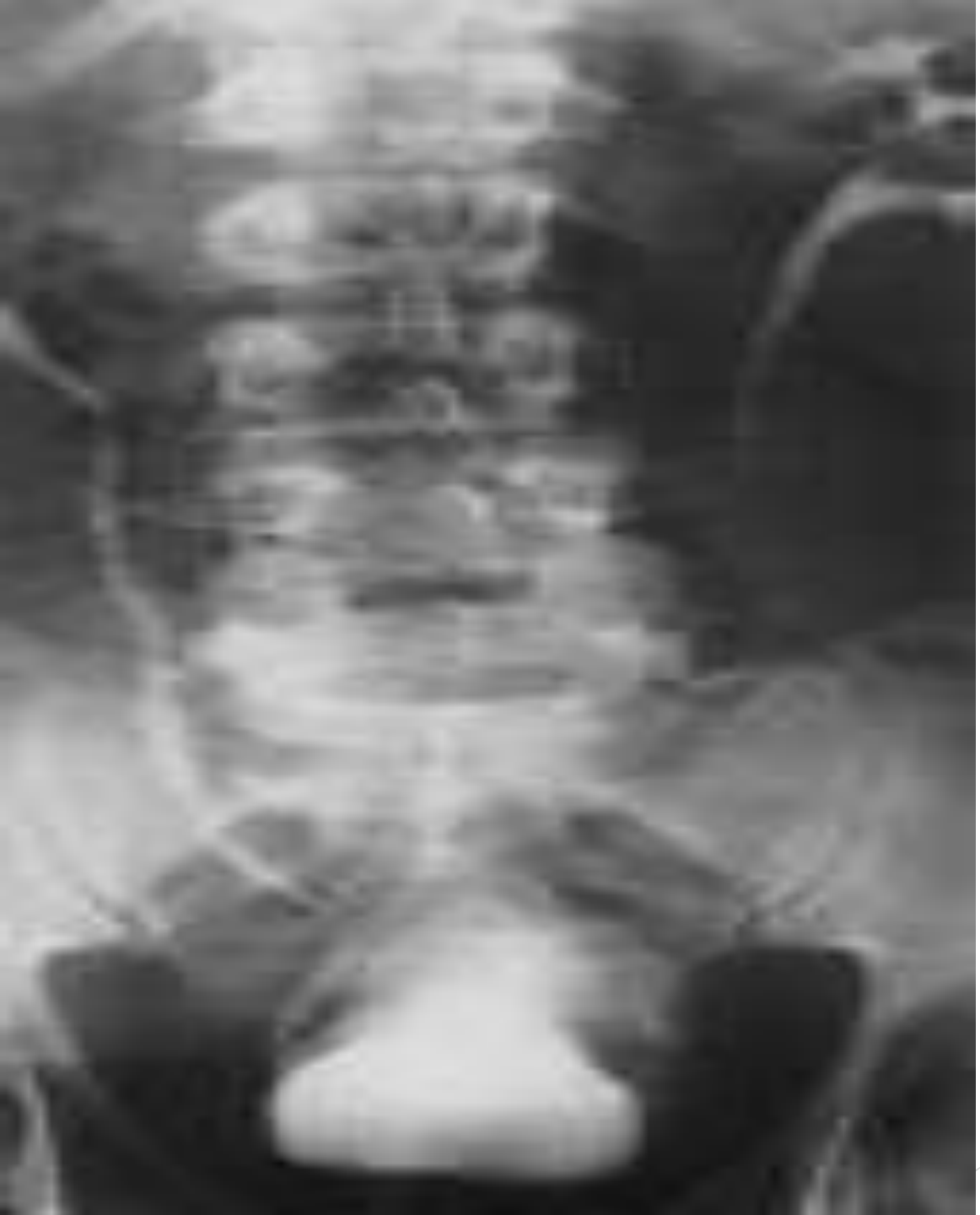
- Position and appearance can be significant distort by
  - * Mass (intrinsic , extrinsic)
  - * Hematoma
  - * Pelvic lipomatosis

Ovarian cyst ; smooth impression posterolateral aspect of bladder





Pelvic trauma hematoma
pear deviate, elongate bladder , blood clot in lumen



Pelvic lipomatosis

medial deviation of ureter

distortion of bladder

Bladder outlet obstruction

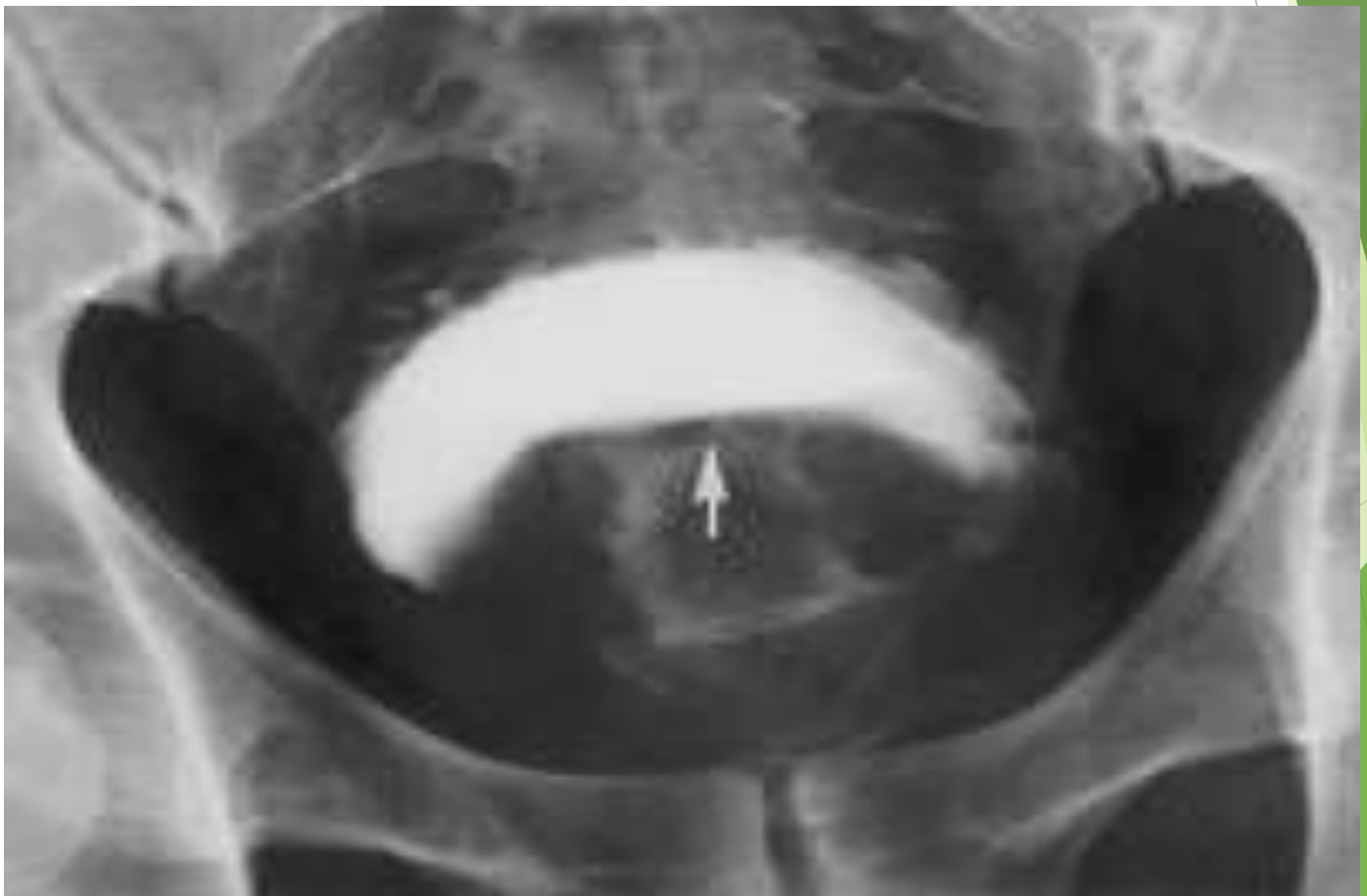
- Bladder base defect (prostatic disease) with bladder wall irregular thickened ,

  contour abnormality with cellule or diverticulum formation

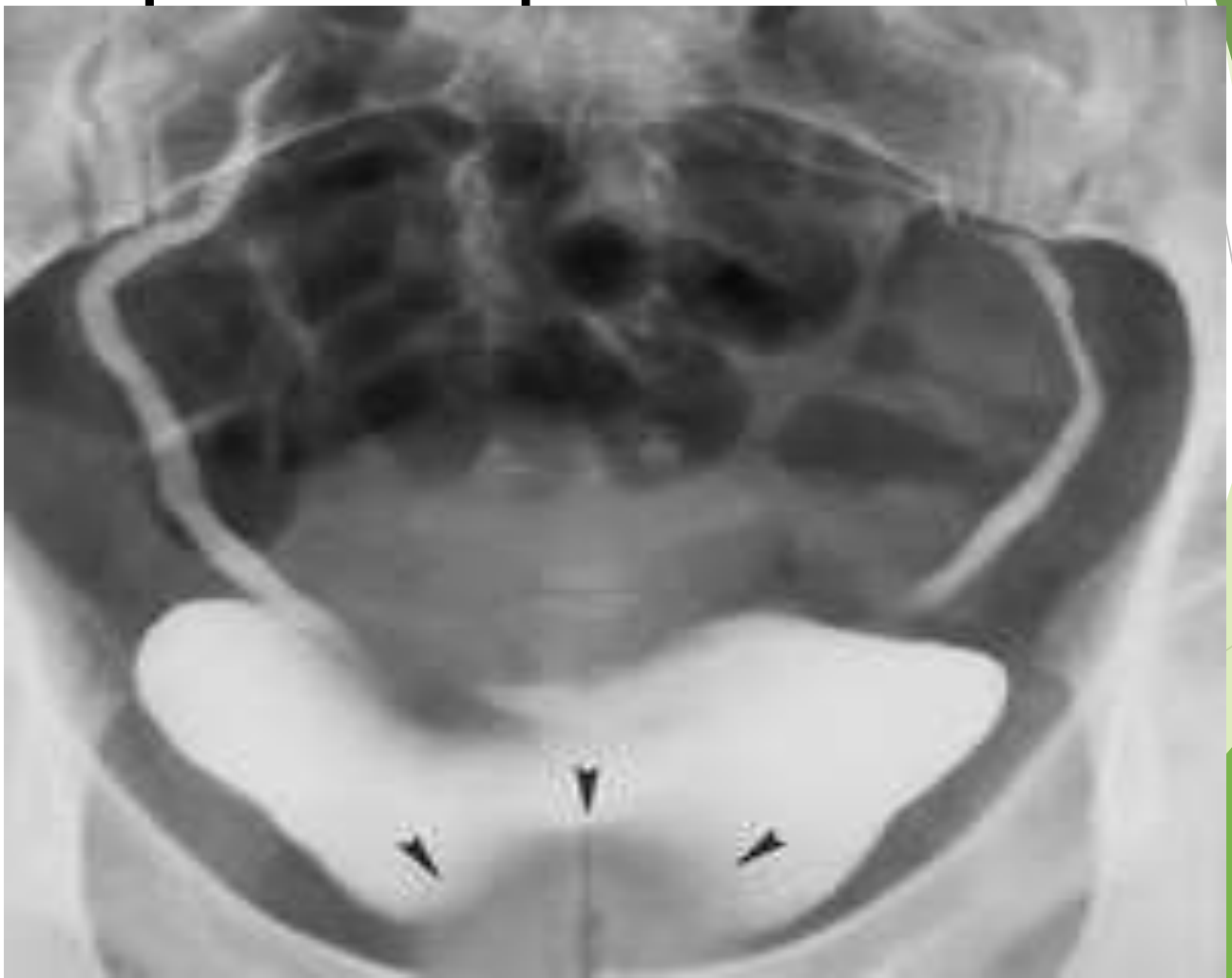
* Cellule – early herniation of bladder mucosa

  usually as wide as tall

Prostatic enlargement ;
bladder base defect with bladder outlet obstruction, thickened wall , cellule



Anterior vaginal wall mass , bladder base , **female prostate defect**
uterine superior impression

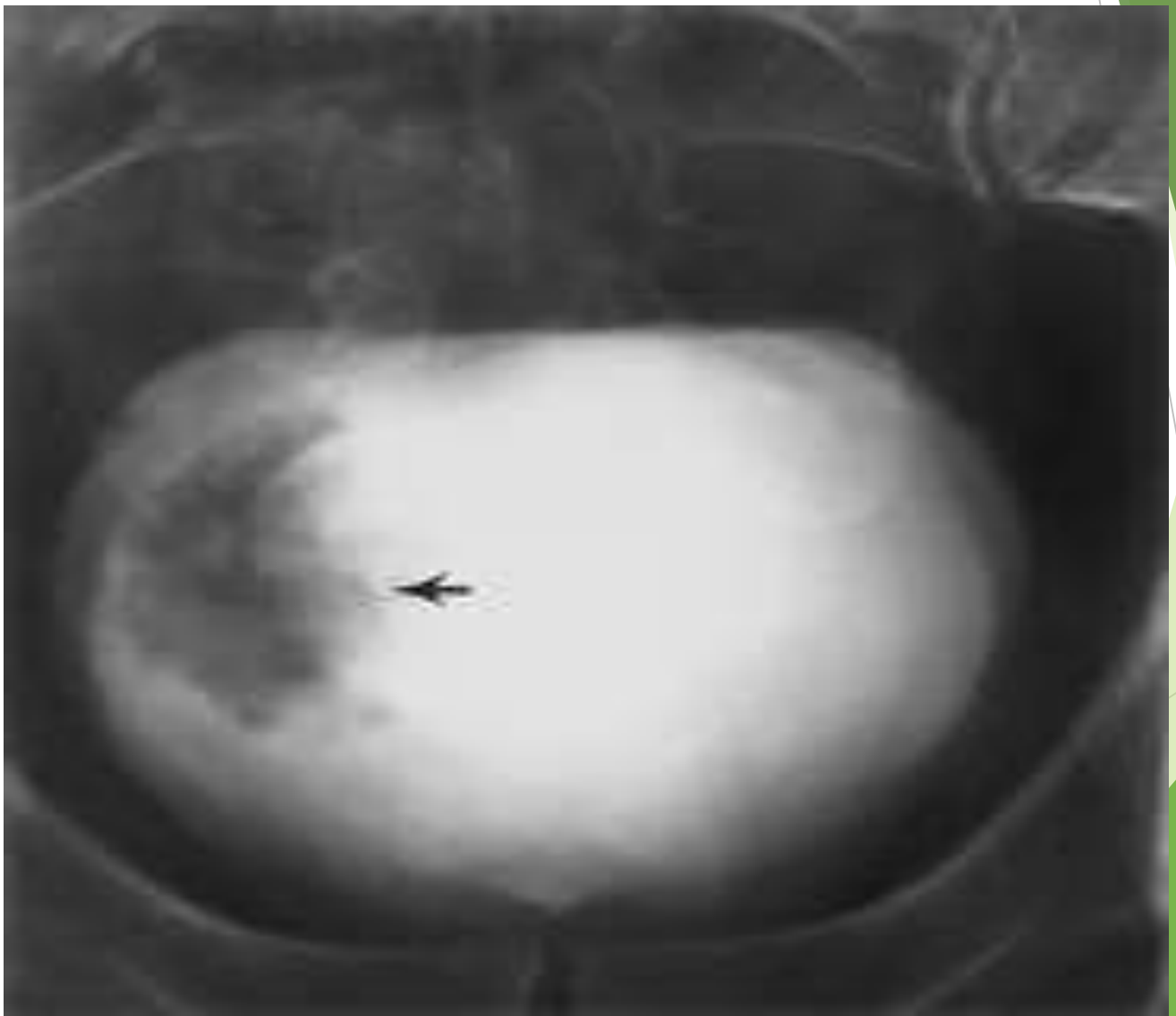


Bladder

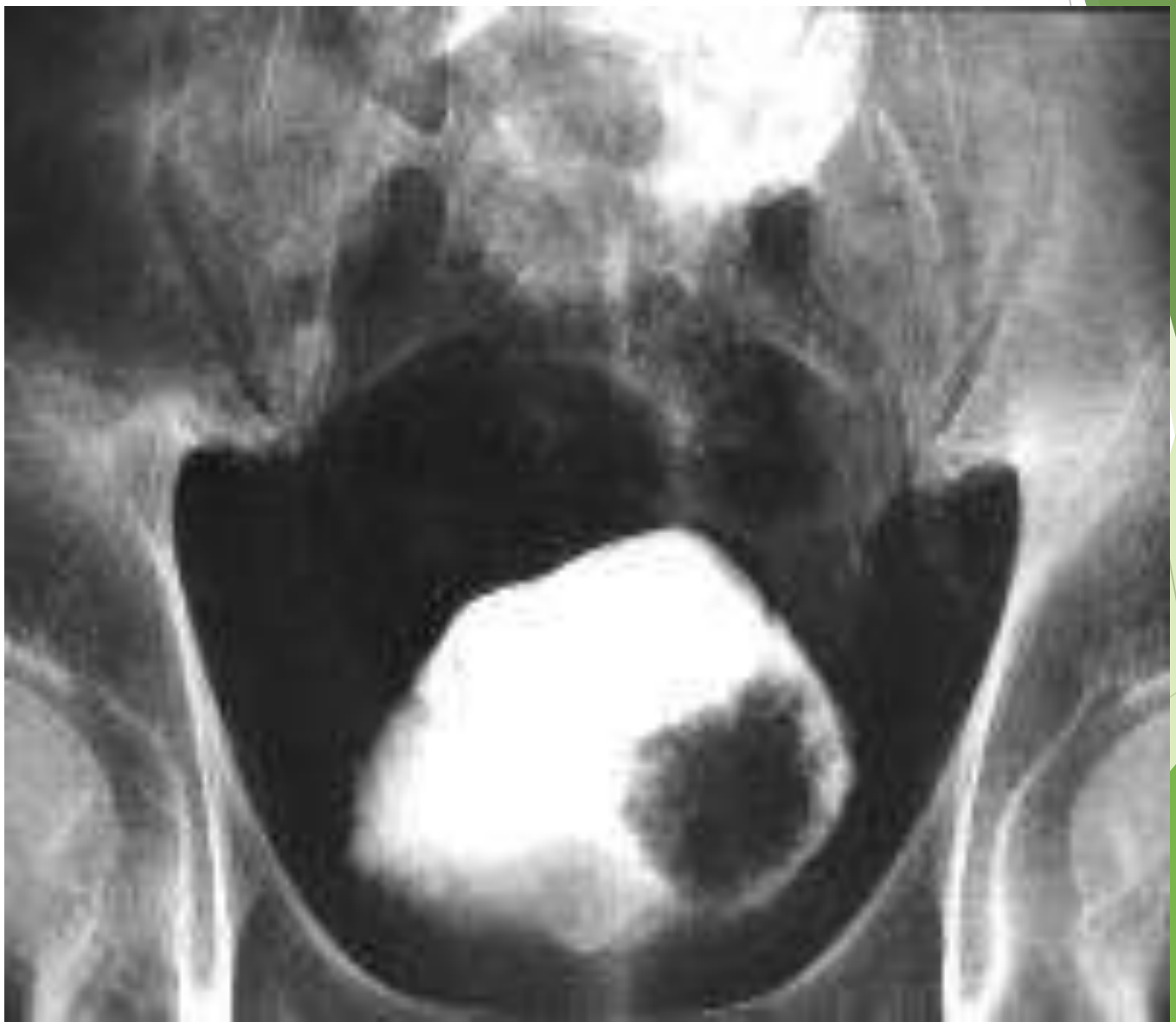
- Early filling image and post void film :

  most sensitive image for evaluate filling defect

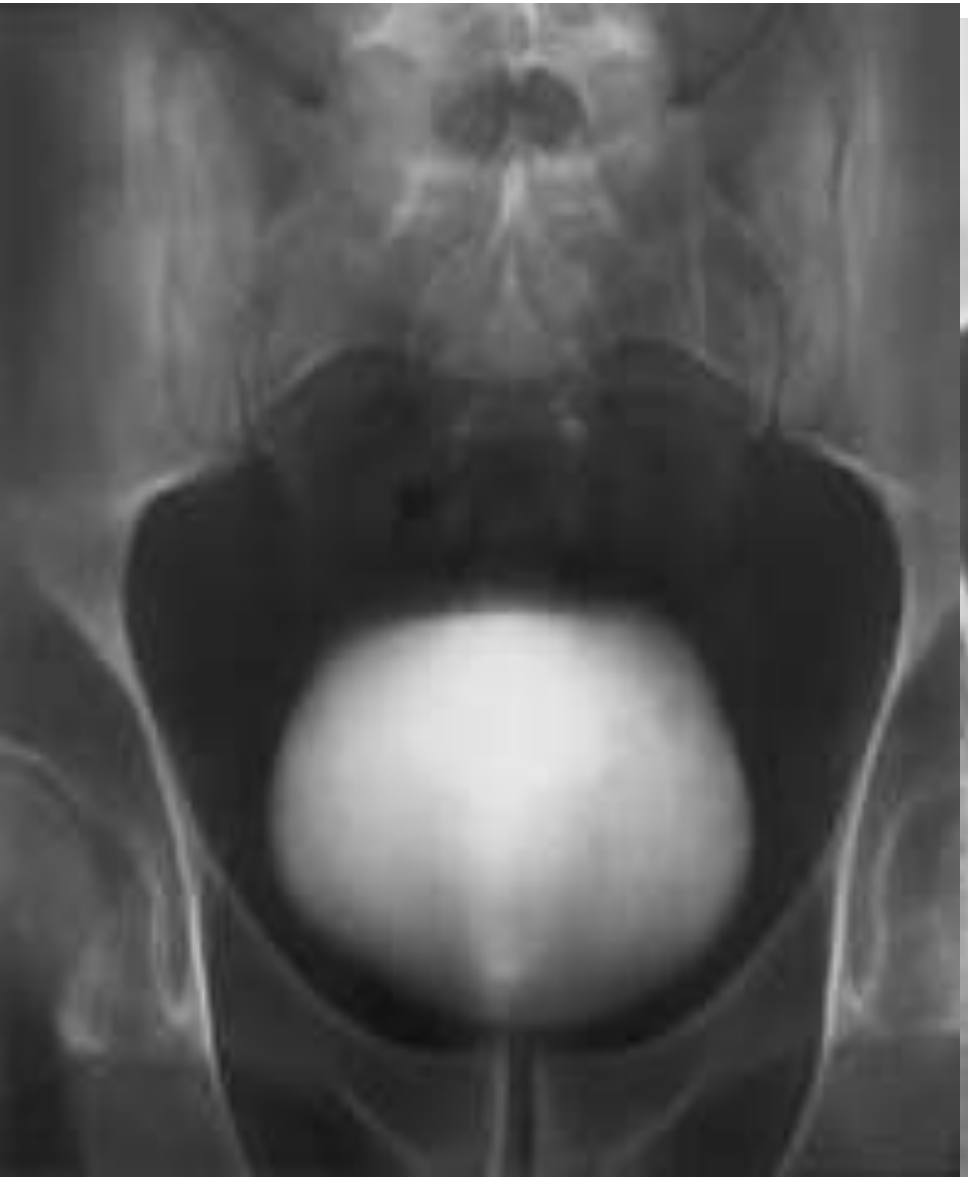
Bladder transitional cell CA;
irregular filling defect , stipple sign

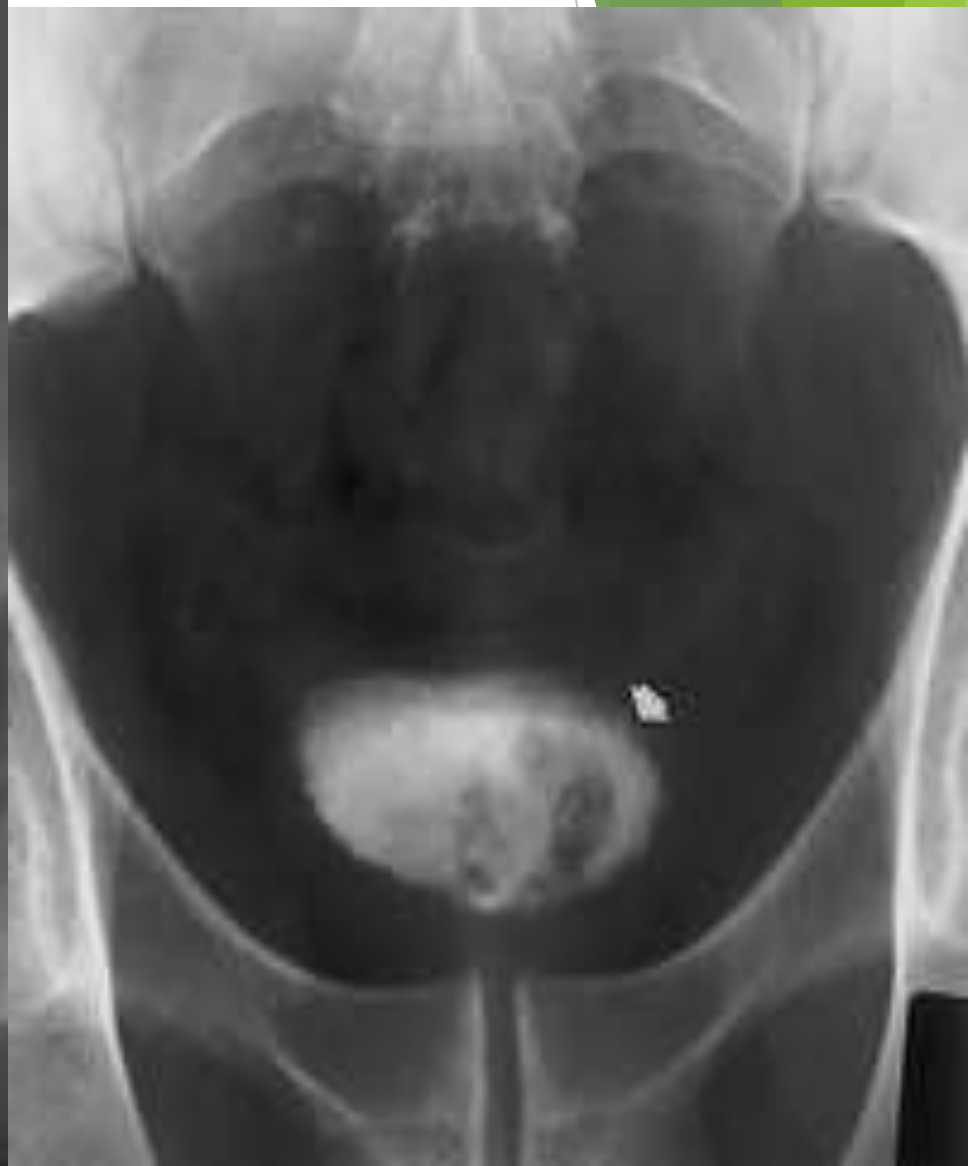


TCC Urinary bladder



TCC ; visible in postvoid film





Conclusion

- Tailored urographic study allow

  *Optimal visualization of urinary tract

  *Provide diagnostic detail

- Important :

  * Good technique

  * Understanding limitation

  * Basic rule of interpretation

  * Correlate with other imaging modality