

Injuries to the GU tract

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Renal trauma

Blunt 80-90%

most are contusions

rapid deceleration

rib / vertebral fractures

polytrauma

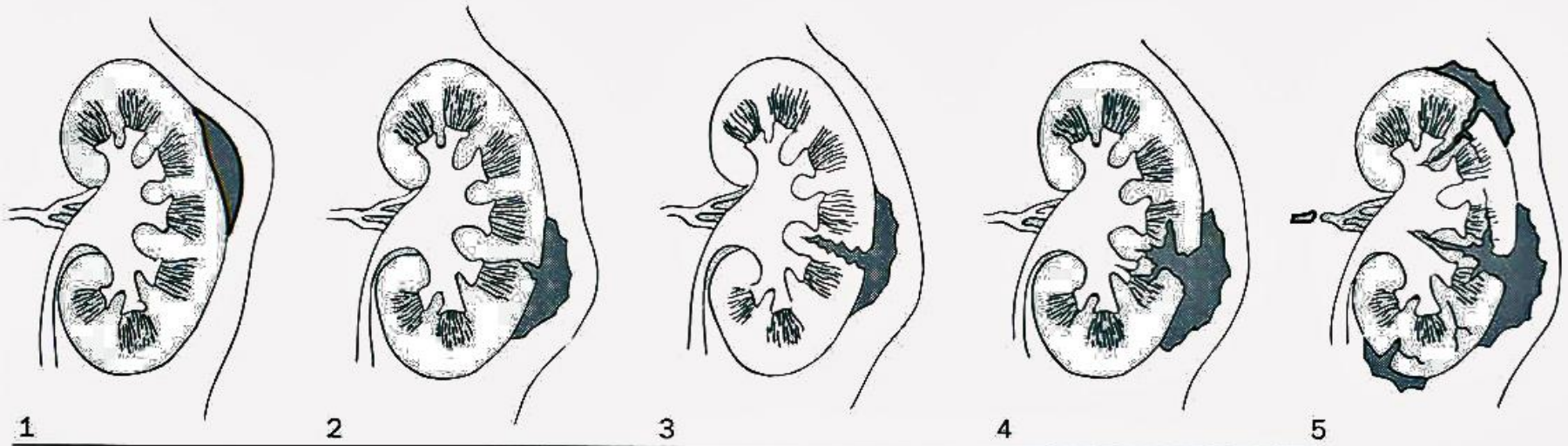
bike / motorcycle

Penetrating 10-20%

gunshot wounds

stab wounds

Trauma renis - grade



Renal injury - diagnosis

Case history (mechanism, known renal abnormalities)

Physical examination (thorax flank, abdominal tenderness)

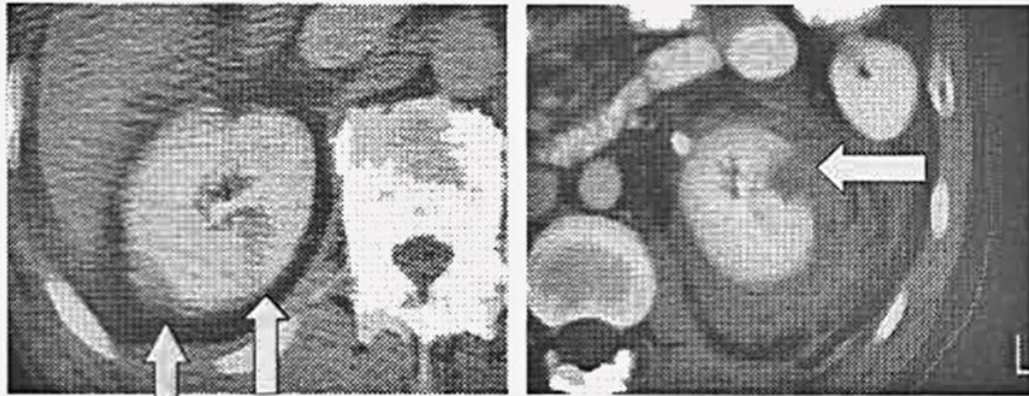
Urine analysis

haematuria may not correlate!

Radiographic evaluation



Grade 1 & Grade

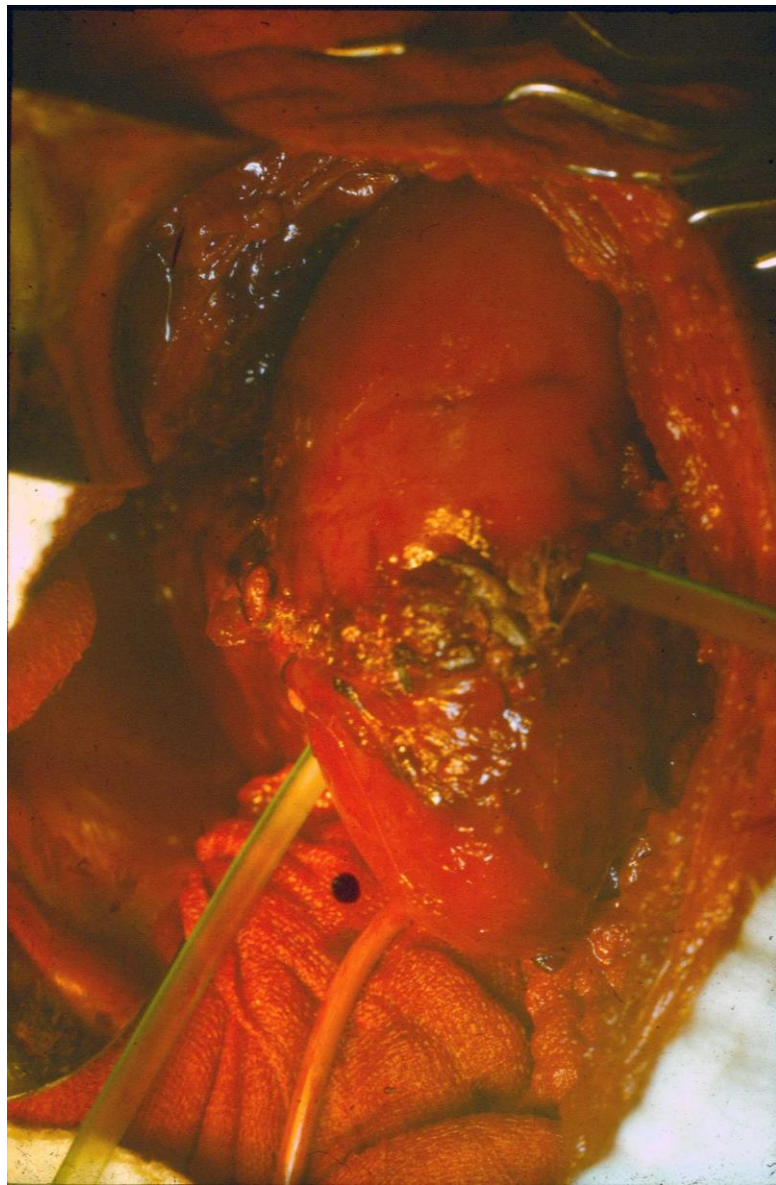


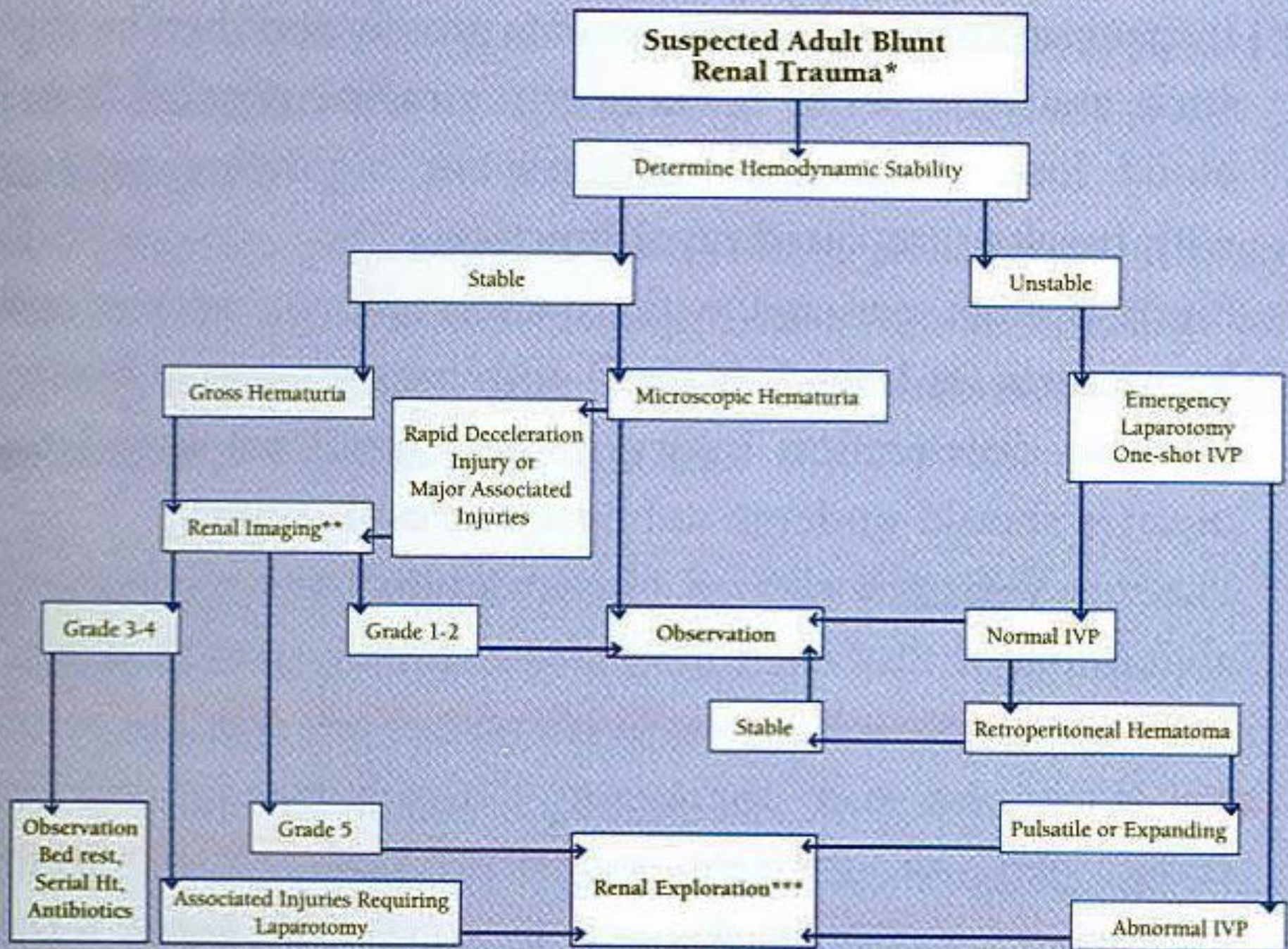
Contusion

Subcapsular hematoma

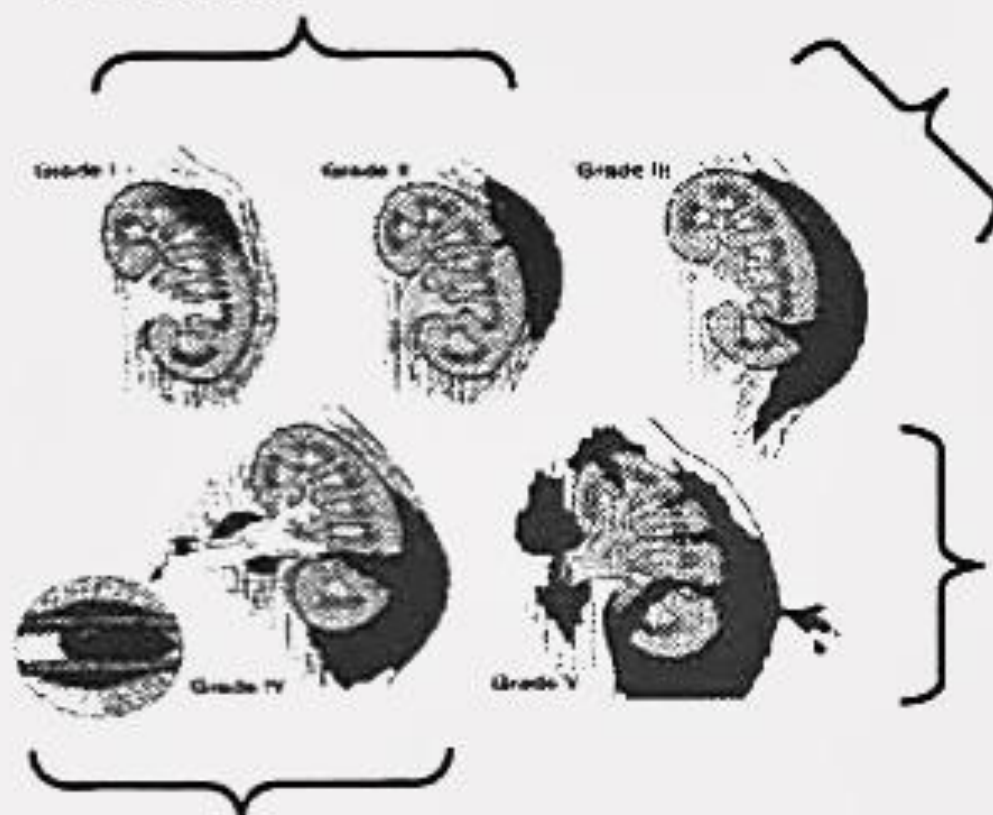
Grade 3







Nonoperative Treatment In all Cases



Nonoperative unless:

- Coexisting intraperitoneal injuries require surgery
- Uncontrolled bleeding

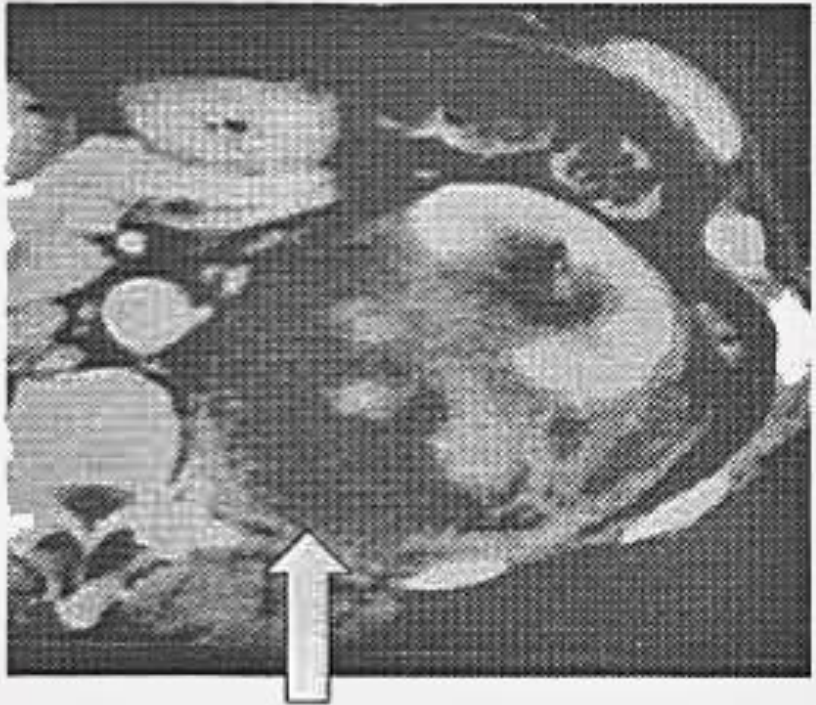
Operative Treatment In all Cases:

- Nephrectomy in most
- Rare exceptions exist

Nonoperative unless:

- Coexisting intraperitoneal injuries require surgery
- Uncontrolled bleeding: angioembolization or surgery
- Ongoing urinary extravasation: ureteral stenting
- Injury to solitary kidney or bilateral injuries

Control



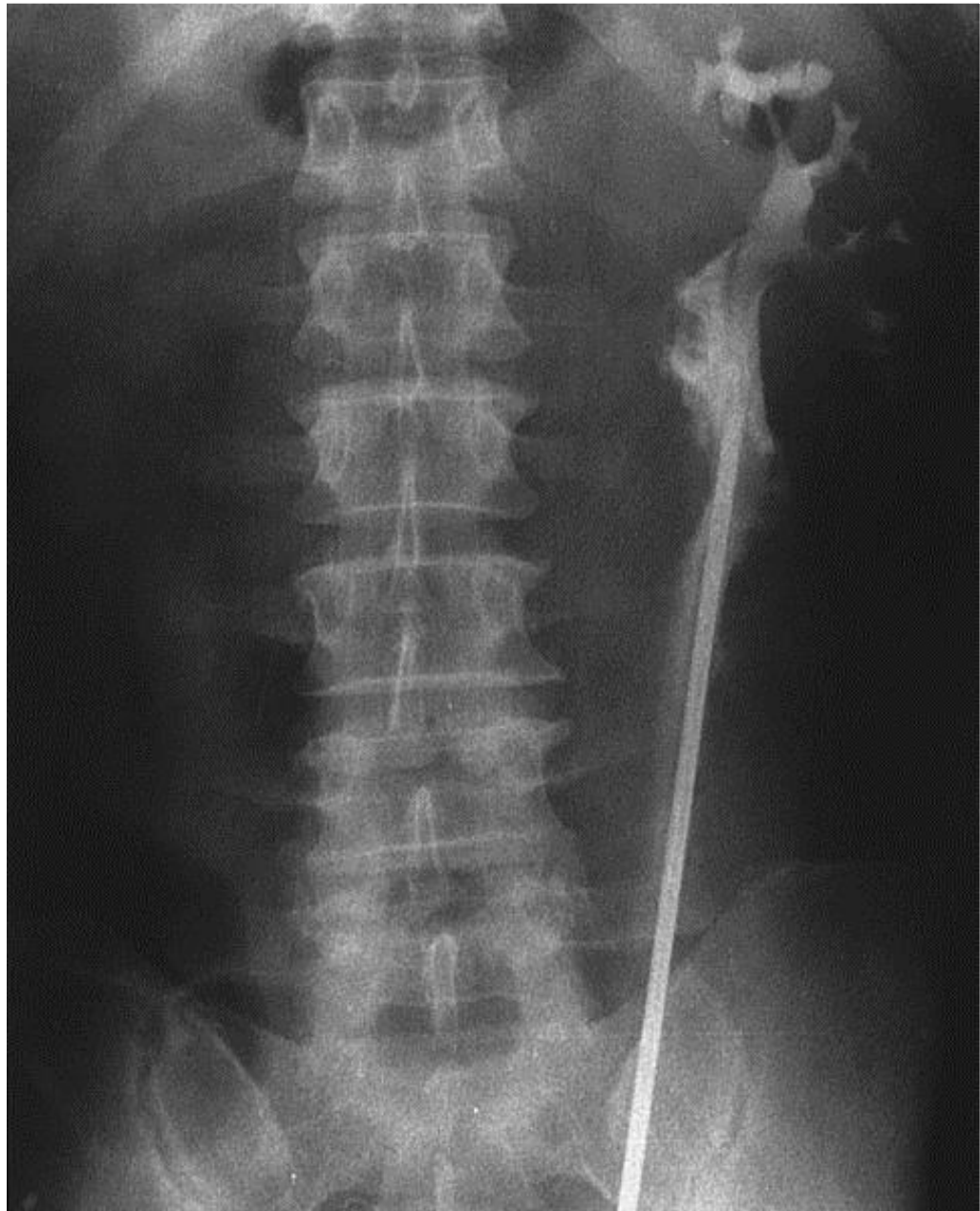
Abscessus

Ureteral trauma

$\frac{3}{4}$ iatrogenic

$\frac{3}{4}$ lower third

Diagnosis intraoperativ
 postoperativ
 late complications



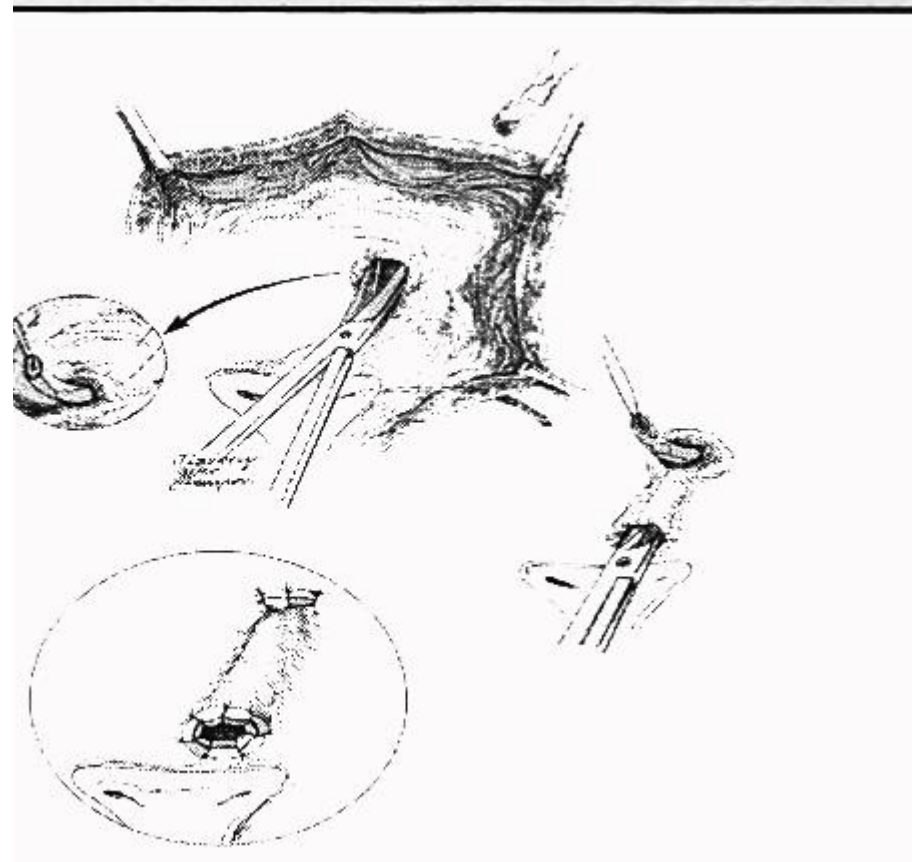


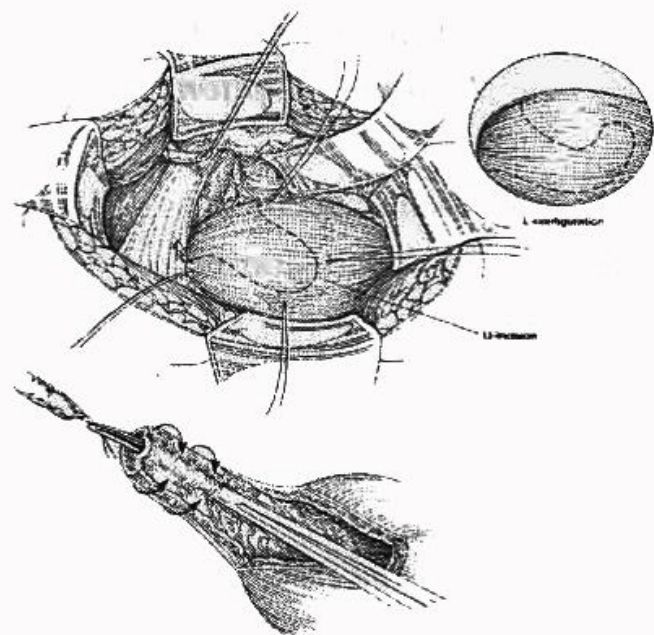
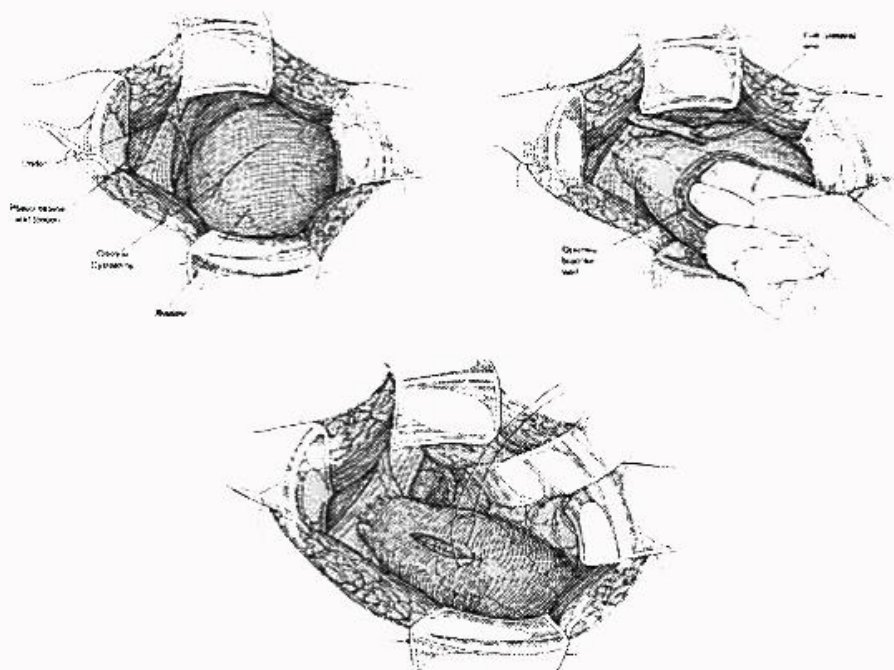


Surgical Repair

Principles

- Adequate debridement
- Ureteral mobilization
- Creation of a tension free anastomosis
- Isolation from associated injuries
- Urinary diversion

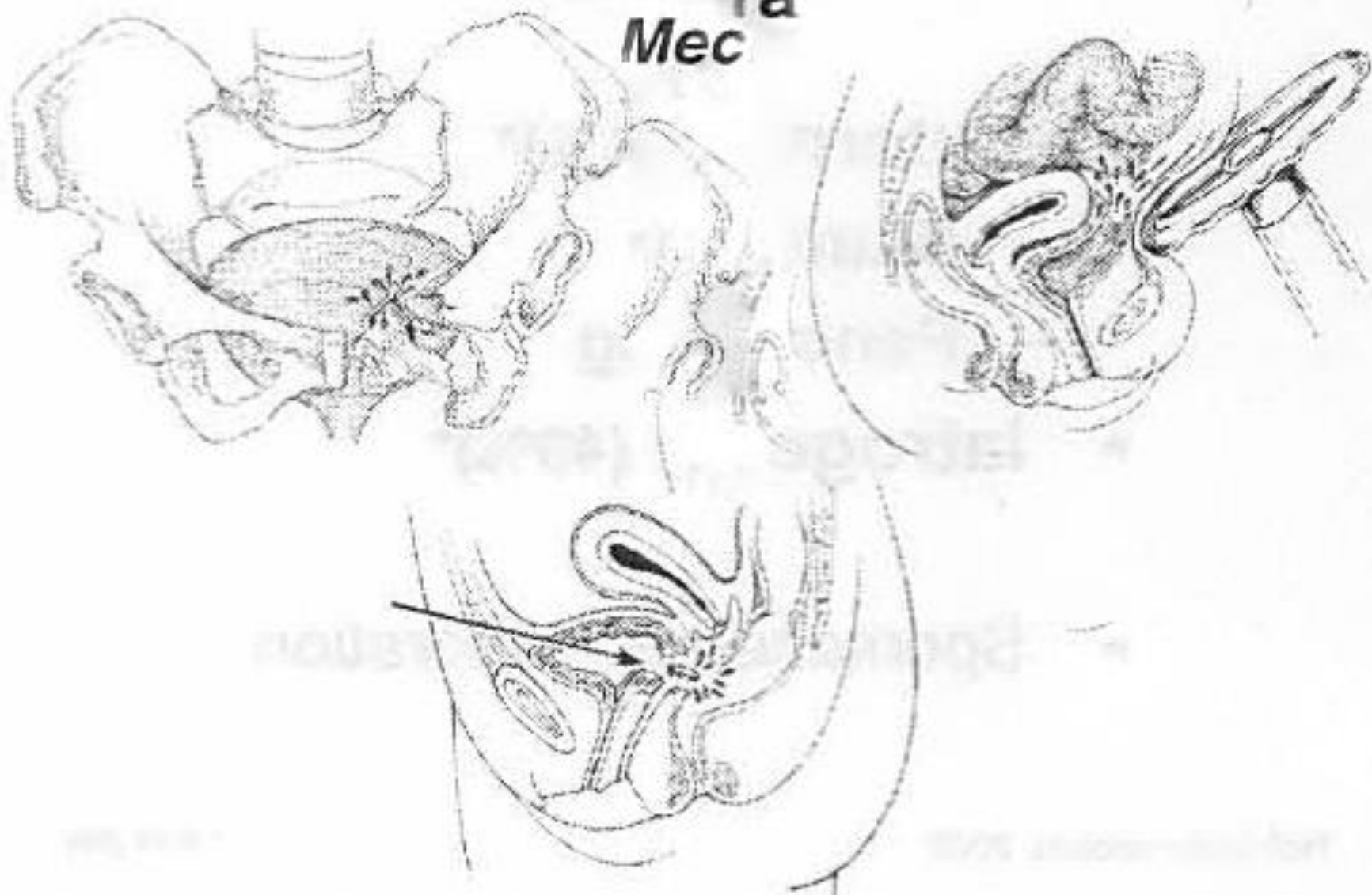




External Bladder Trauma

Mechanism

Trauma
Mechanism



Bladder trauma

Sites of Associated injuries Blunt Trauma

Pelvis	97%
Long bones	50%
CNS	28%
Chest	28%
Spleen	19%
Small bowel	19%
Liver	13%
Colon	13%
Kidney	13%
Urethrae	13%

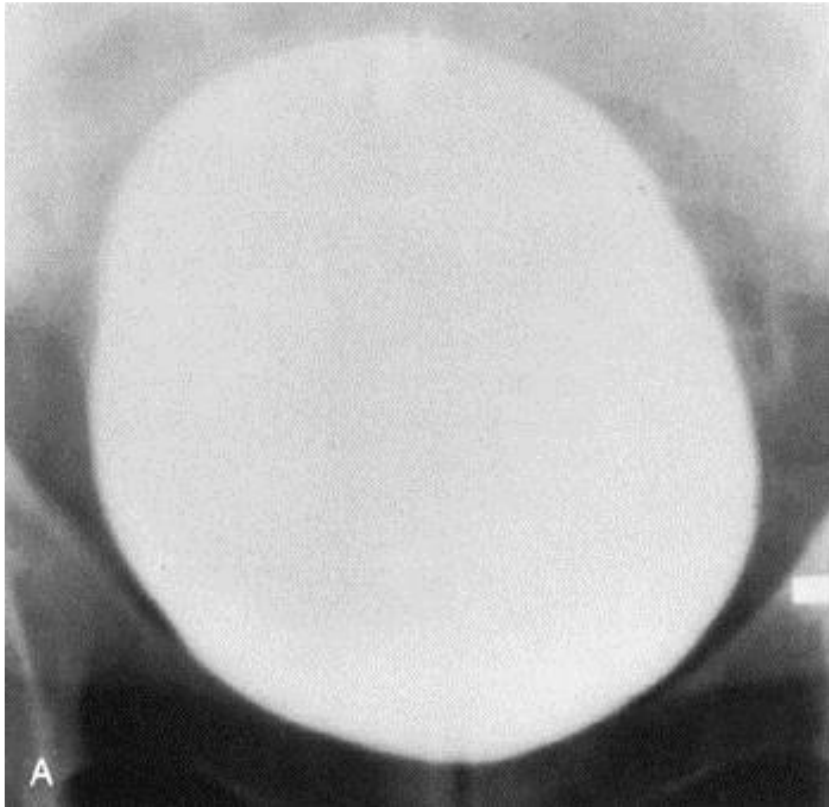
Bladder Injury Classification

- Contusion: bruising of the mucosa or muscularis; intact muscular wall
- Extraperitoneal Rupture: direct laceration by compression or bony spicule
- Intraoperitoneal Rupture: compression injury

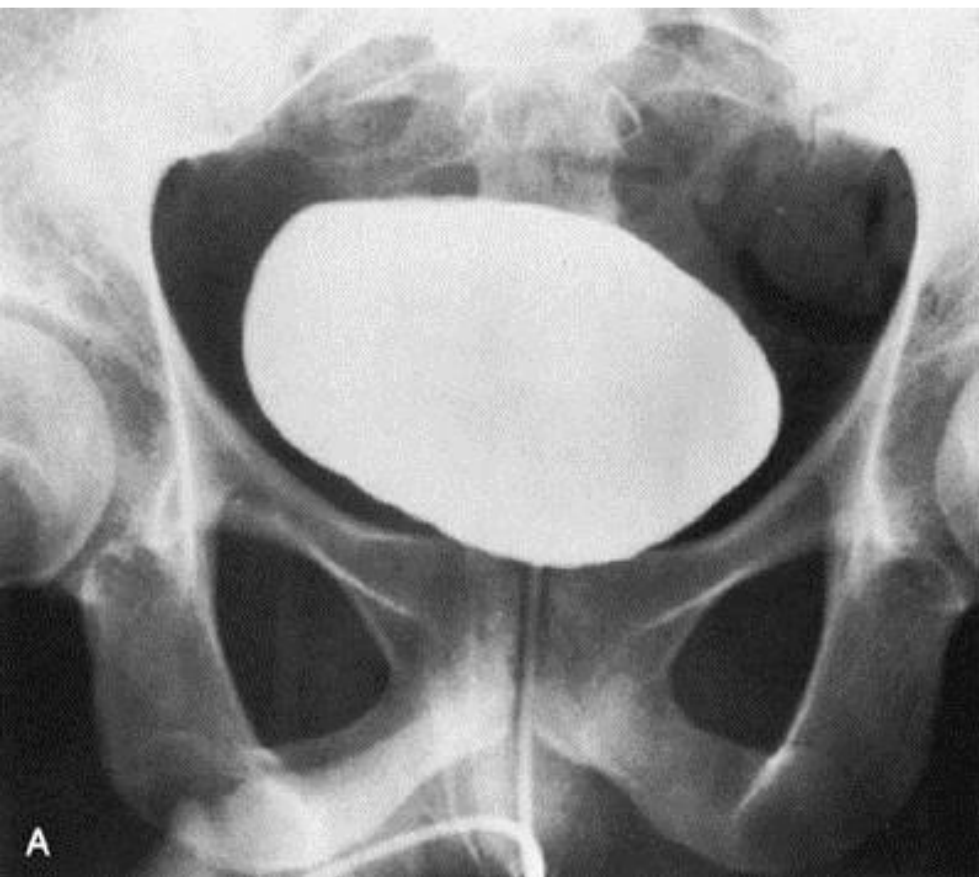
Clinical Presentation

51 Pts (All mechanism)

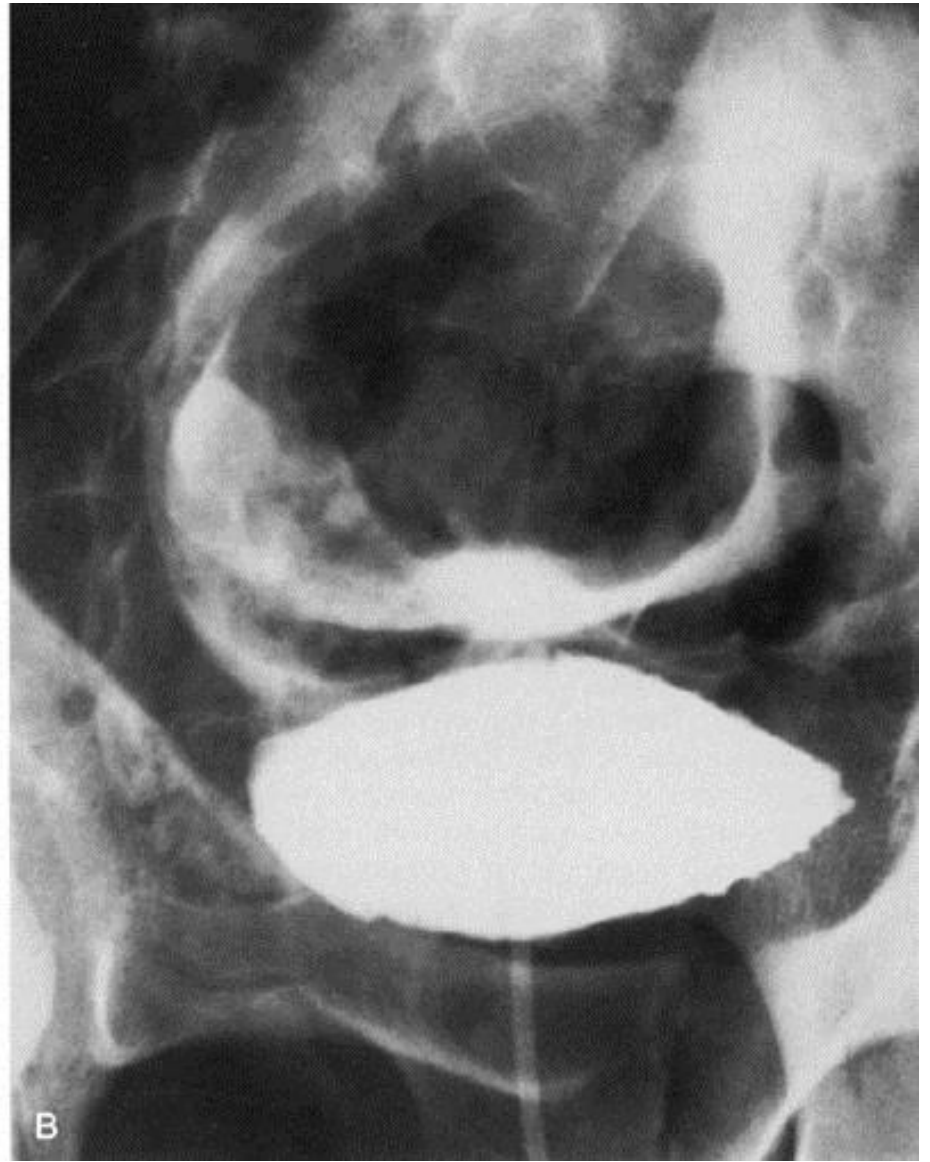
Gross hematuria	82%
Abdominal tenderness	62%
Shock	48%
Abdominal distension	38%
Open wound	28%
Unstable pelvis	24%
Microscopic hematuria	18%
Blood at the meatus	12%



Extraperitoneal bladder injury



Extraperitoneal bladder injury-1



Intraperitoneal bladder injury

Management

Penetrating

Surgical exploration and repair

Blunt or iatrogenic

Contusions:

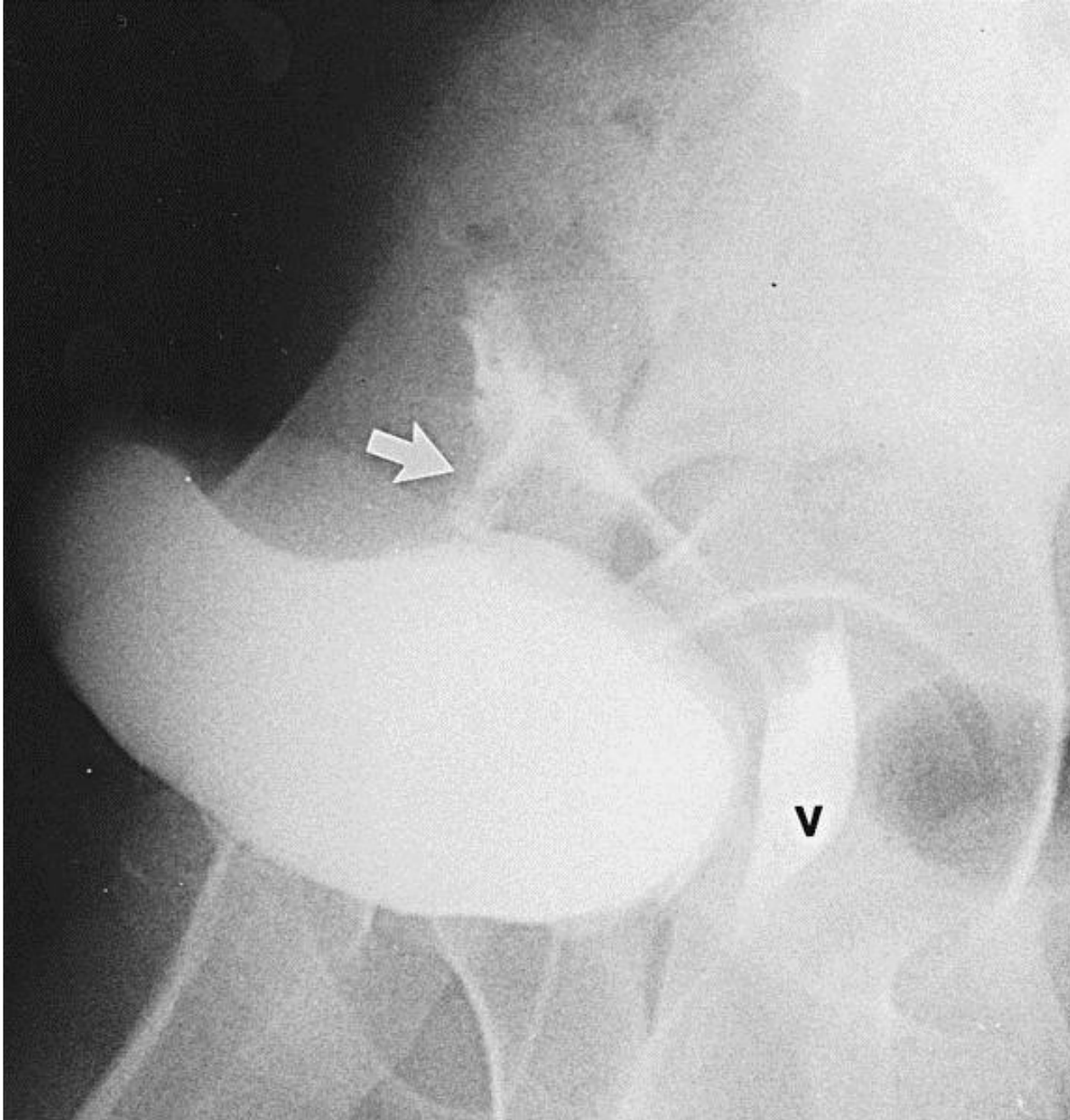
Catheter drainage

Intraperitoneal Rupture:

Surgical repair

Extraperitoneal Rupture:

Catheter drainage
or Surgical repair



Fistula vesico-uterina p.sect. caesar

Urethral injuries

Penetrating
Blunt injuries
iatrogenic
pelvic bone fracture

Diagnosis

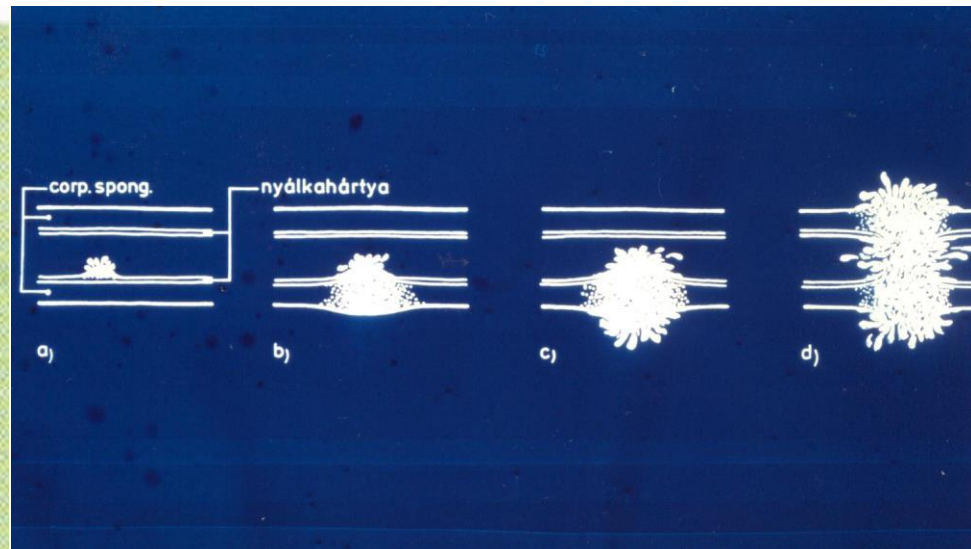
blood at meatus
haematuria
dysuria
haematoma
urethrography
no catheterisation



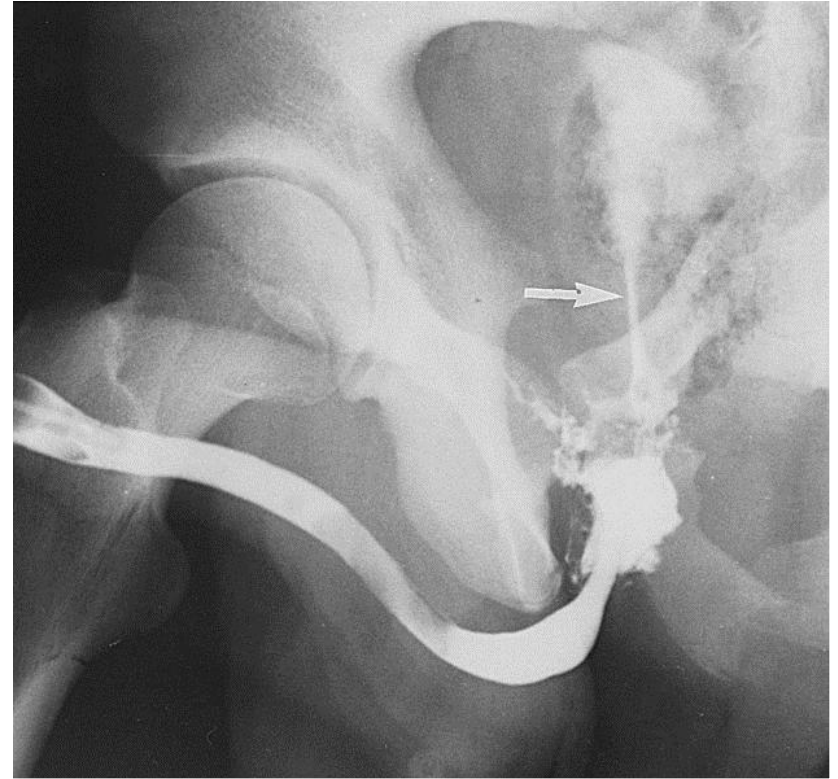
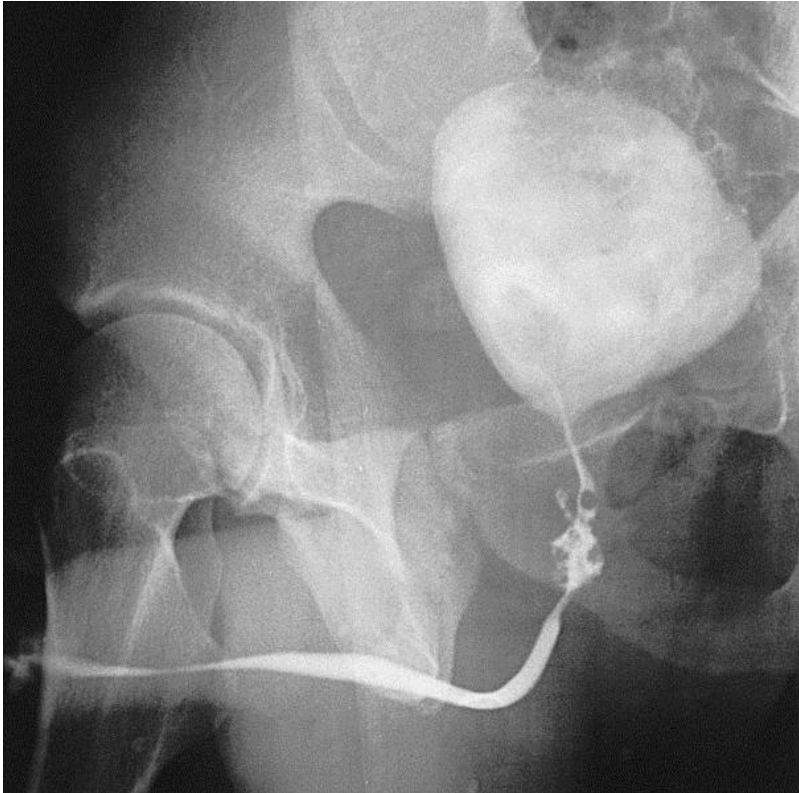
Table 4: Injury severity scale for the Urethra*

Group	Description
1	Contusion - Blood at the urethral meatus; normal urethrogram
2	Stretch injury - Elongation of the urethra without extravasation on urethrography
3	Partial disruption - Extravasation of contrast at injury site with contrast visualized in the bladder
4	Complete disruption - Extravasation of contrast at injury site without visualization in the bladder; <2 cm of urethral separation
5	Complete disruption - Complete transection with >2 cm urethral separation, or extension into the prostate or vagina

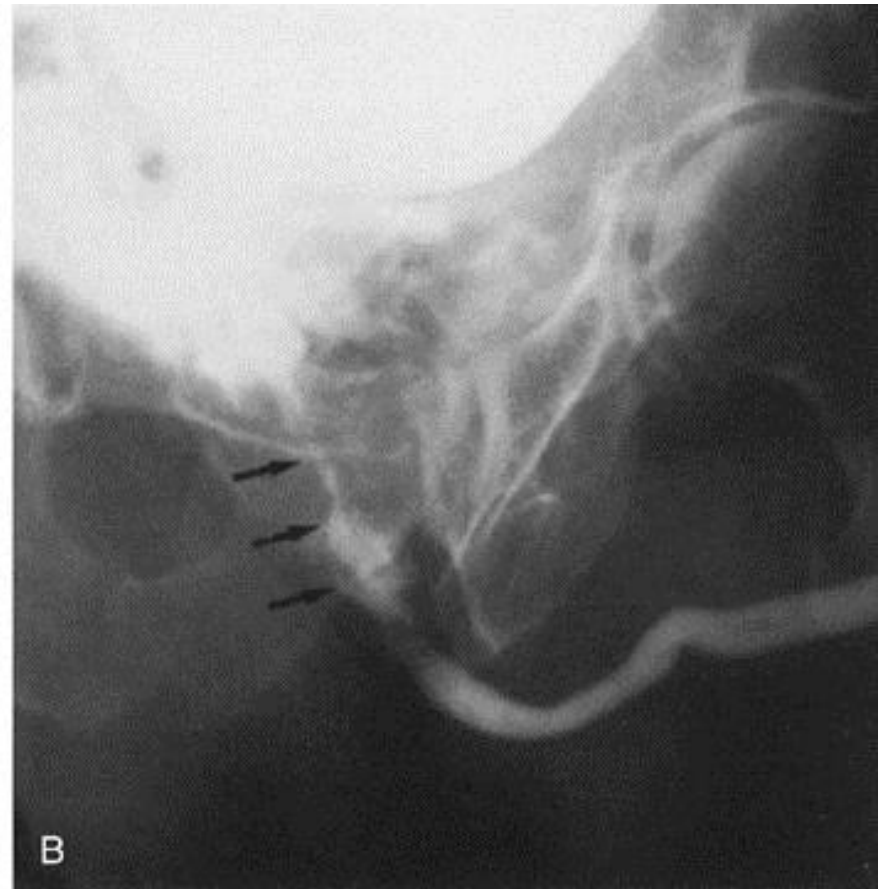
* Adapted from the AAST.



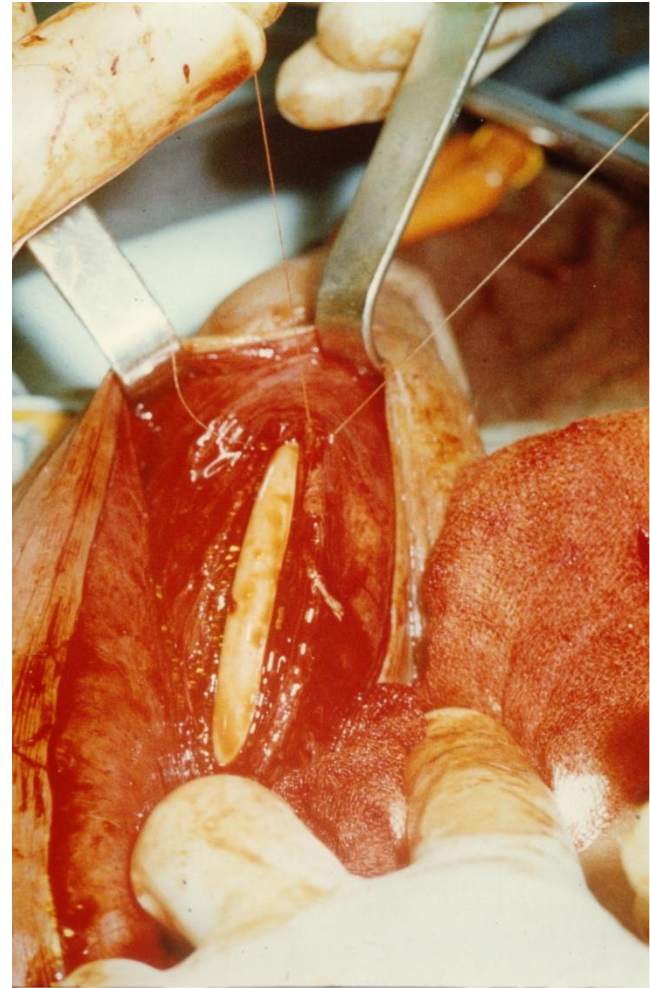
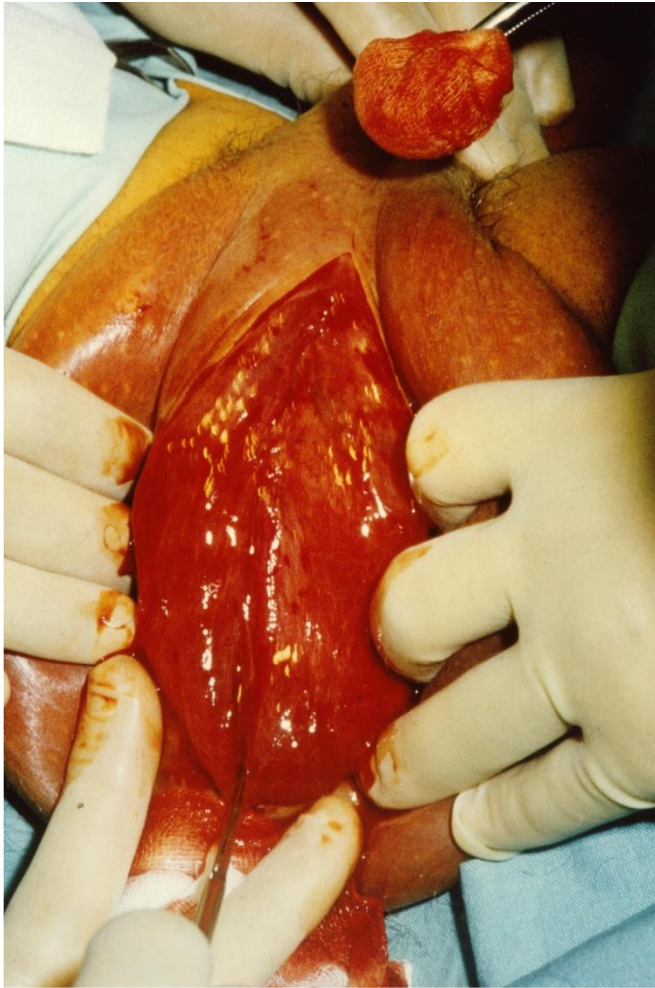
Ruptura partialis urethrae

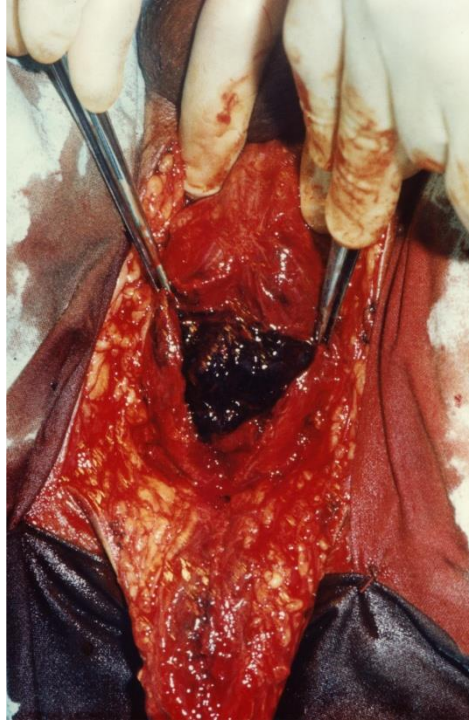


Membr. urethr. rupt. - complet



Ectropionisatio urethrae



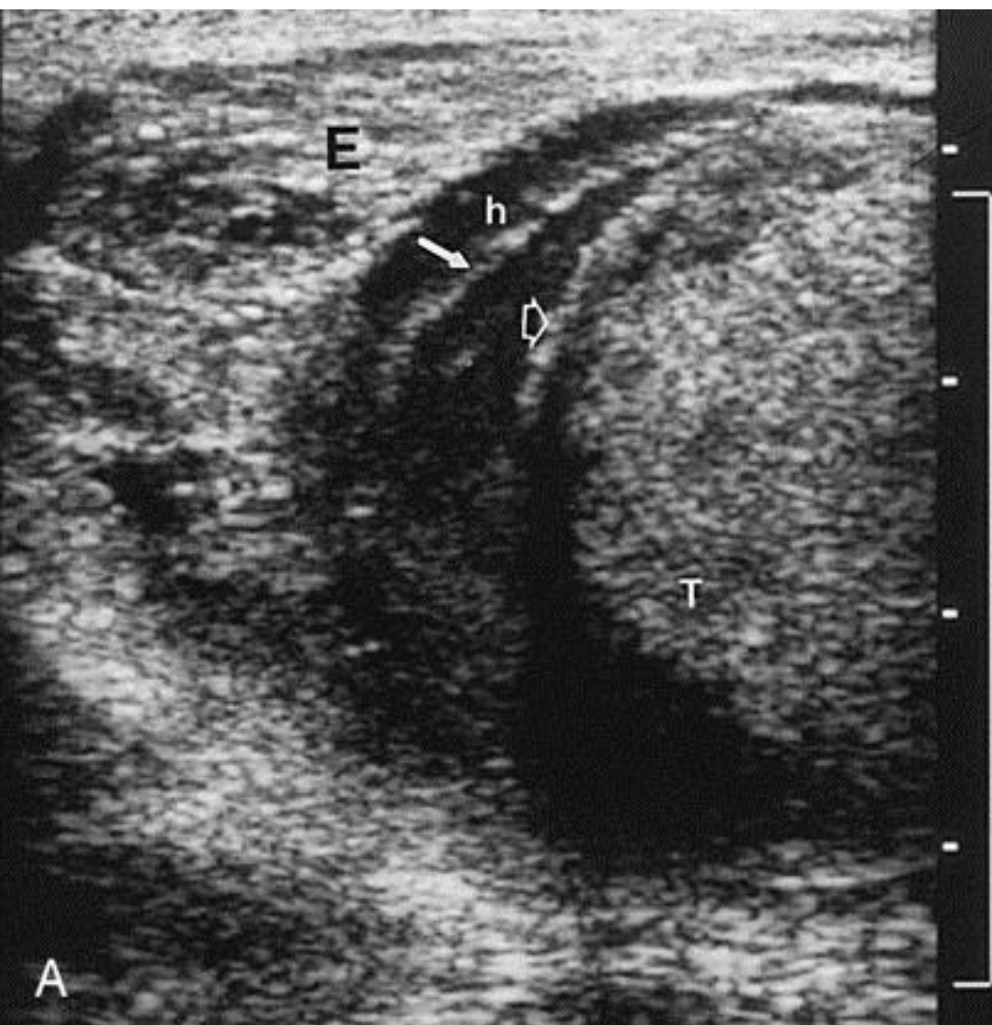


Ruptura totális urethrae

Anastomosis







Testicular rupture with disruption of the tunica vaginalis