





# **Cardinal features**

- Blunt or penetrating trauma
- May follow transurethral bladder procedures
- May not be recognized at time of injury
- Hematuria is an almost universal finding

- Blunt trauma (86%):
- Motor vehicle accident, especially if wearing a seatbelt
- Pelvic fracture: shearing force of injury may tear bladder
- Penetrating trauma (14%):
- Gunshot wound
- OP, especially transurethral procedures

### Common causes

- Easy acronym to identify cause: IS IT?
- I = latrogenic:
  - cystoscopy, laparoscopy, Intra-abdominal or vaginal surgery, catheterization

#### S = Spontaneous:

catheterization, bladder augmentation, or known bladder dysfunction

I = Intoxicated: alcohol abuse history with any one of the following three findings; inability to void, hematuria, or a history of trauma

#### T = Traumatic: blunt trauma, pelvic fx, proximal femoral fx, and penetrating wound of abdomen or back

 Frequency of bladder rupture mechanism: latrogenic 14%
Spontaneous <1%</li>
Intoxicated 2.9%
Trauma 82%

- 60-85% are caused by blunt trauma (motor vehicle accident: seatbelt; pelvic fx: shearing force)
- 15-40% are caused by penetrating injury (gunshot; OP)

### Rare causes

- Migration and erosion of foreign materials: drains, IUD, urinary catheters
- Spontaneous rupture: pre-existing bladder pathology (e.g. chronic retention); most likely associated with minor blunt trauma
- Serious causes
- Major trauma.

## Symptoms & Signs

- May initially be asymptomatic
- Difficulty in passing urine
- Lower abdominal pain
- Shoulder tip pain: due to diaphragmatic irritation if intraperitoneal urine collects under diaphragm

 Classic triad for bladder injury: Suprapubic or perineal pain and tenderness
Difficulty or inability to void - low urine output
Hematuria: almost universal finding; >95% cases

## Questions to ask

Accident?

Mechanism of injury

- Have you had any recent surgery on your bladder or prostate?
  A recent resection of prostate or bladder tumor may have caused bladder perforation
- Have you passed urine since the accident? If patient has been able to pass urine, severe bladder or urethral injury is less likely

## Order of tests

- Urinalysis
- Complete blood count (CBC)
- Creatinine and blood urea nitrogen (BUN) estimation
- Retrograde urethrogram
- Abdominal and pelvic CT scan
- Cystoscopy

# Order of therapies

- Minor: urinary catheterization
- Major: open repair, and may be fatal in some cases

# Prevention

- In general, prevention of bladder injury in the community is not possible
- For patients undergoing surgical procedures in which bladder injuries may occur, such injuries are best prevented by careful surgical technique

# Goals

- Early identification of bladder injury with minimum of delay
- Identification of any coexisting injuries

