Case Report

Initial management of genitourinary trauma at the triage

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Background

A 3 to 10% of patients with multiple trauma have GU involvement. 10 to 15% of trauma patients with abdominal injuries have GU involvement. Most common in young males. The renal injuries constitute 45% of all GU injuries followed by ureteral injuries constitute 5%, bladder injuries constitute 40% and urethral injuries constitute 10% to the GU tract.

Keywords: CT Cystogram; Penetrating injuries; Hematuria ; Bladder Injury

1. Introduction

1.1. Classification

- Blunt Injury
- Penetrating Injury

Initial Assessment	Resuscitation
ATLS Protocols	Oxygen
Primary Survey and stabilization	IV Fluids
ABCDE	Blood Transfusion

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Blunt Injury	Penetrating Injury
RTA	Stab Injury
Fall	Gunshot Injury
Sports Injury	Bull Gore Injury
Assault	

Secondary Survey: Detailed head to Toe examination after primary survey and resuscitation

1.2. Detailed History

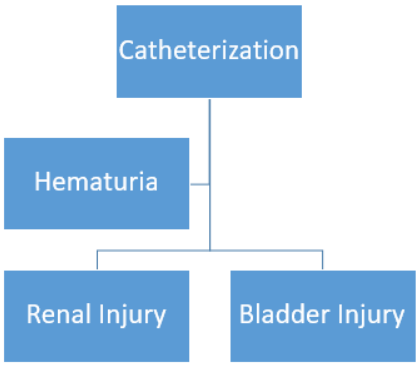
- Mode of Injury
- Pain and other symptoms
- Voiding history
- Color of The Urine

1.3. Past History

- Any previous Urological Surgery /Disease

- Any Congenital Anomalies
- CKD

1.4. Approach toward of genitourinary trauma



2. Catheterization

- Gentle with adequate lubrication
- Preferably 18/16Fr Foley

2.1. Outside Catheterization

- Colour of The Urine
- Ascertain about the position of the catheter

2.2. Investigation

CECT Abdomen with CT Cystogram

2.3. Renal Injuries

- The most commonly injured genitourinary organs from external trauma
- Blunt and Penetrating injuries

- Motor vehicle accidents
- Falls from heights
- Assaults

2.4. Physical Examination

- Indications of possible renal injury:
- Flank hematoma
- Abdominal or flank tenderness
- Rib fractures flank
- Ipsilateral rib fracture can increase the incidence of significant renal trauma threefold

2.5. Hematuria

- The degree of hematuria and the severity of the renal injury do not consistently correlate
- Although critical to the initial evaluation of traumatic urinary tract injury, the presence or absence of hematuria should not be the sole determinant

2.6. Renal Imaging

- Contrast-enhanced CT is the gold standard for genitourinary imaging in renal trauma

TABLE 50-1 American Association for the Surgery of Trauma Organ Injury Severity Scale for the Kidney

GRADE*	TYPE	DESCRIPTION
I	Contusion	Microscopic or gross hematuria, urologic studies normal
	Hematoma	Subcapsular, nonexpanding without parenchymal laceration
II	Hematoma	Nonexpanding perirenal hematoma confined to renal retroperitoneum
	Laceration	<1 cm parenchymal depth of renal cortex without urinary extravasation
III	Laceration	>1 cm parenchymal depth of renal cortex without collecting system rupture or urinary extravasation
IV	Laceration	Parenchymal laceration extending through renal cortex, medulla, and collecting system
	Vascular	Main renal artery or vein injury with contained hemorrhage
V	Laceration	Completely shattered kidney
	Vascular	Avulsion of renal hilum, devascularizing the kidney

*Advance one grade for bilateral injuries up to grade III.

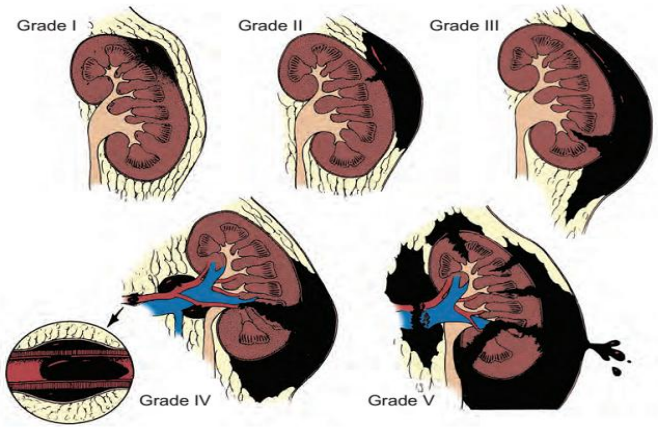
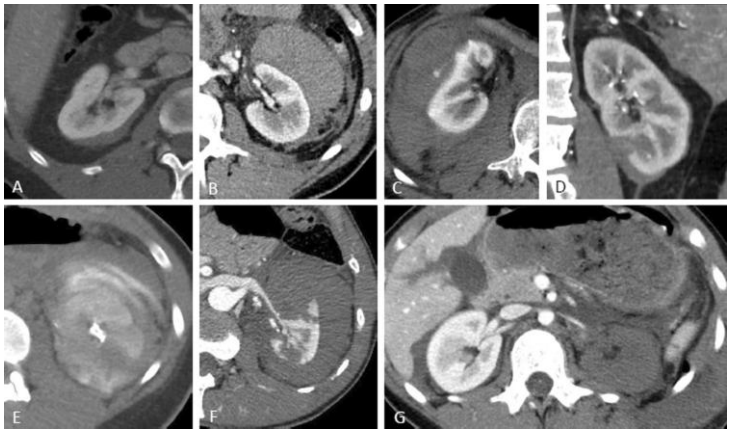


Figure 50-1. Classification of renal injuries by grade (based on the organ injury scale of the American Association for the Surgery of Trauma [based on Moore EE, Shackford SR, Pachter HL, et al. Organ injury scaling: spleen, liver, and kidney. J Trauma 1989;29:1664–6.]).

2.7. CT Imaging



3. Management

- Non-operative management in grade I to III renal injuries, regardless of mechanism
- Surgical Exploration in Grade IV and V renal injuries

3.1. Bladder Injuries

- Rarely isolated injuries—80–94% of patients have significant associated non urologic injuries
- The most common associated injury is pelvic fracture - 83% to 95% of bladder injuries
- Bladder injury in only 5–10% of pelvic fracture

4. Clinical Signs

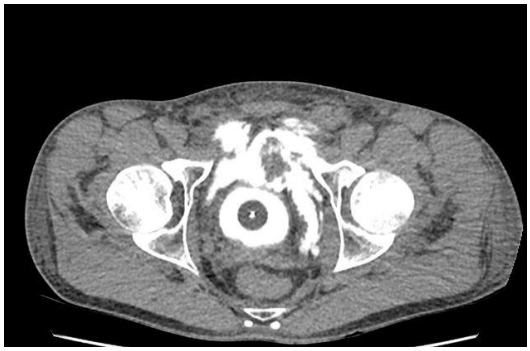
- Gross Hematuria
- Suprapubic pain and tenderness
- Low urine output
- Clots in bladder
- Free fluid in peritoneum
- Abdomen distension and ileus

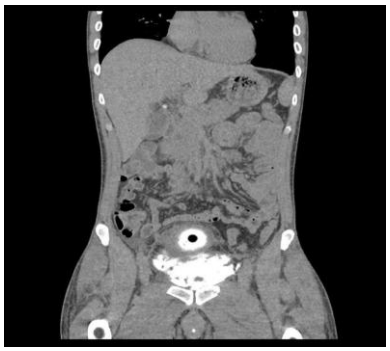
Imaging: CECT Abdomen with Cystogram

4.1. Types of Bladder Injuries

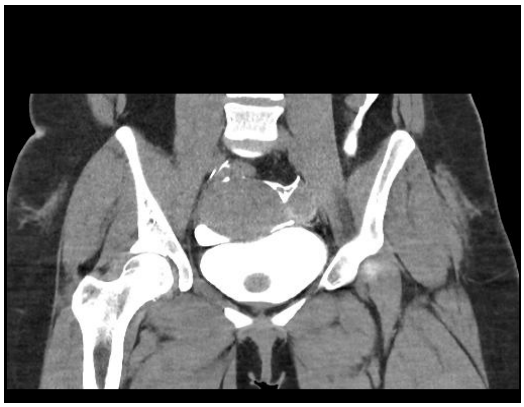
- Extra peritoneal Bladder Injury
- Intraperitoneal Bladder Injury

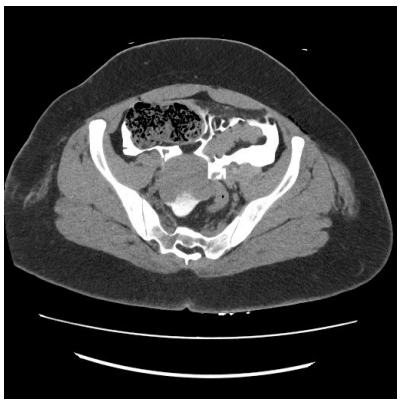
Extra peritoneal Bladder Injury





Intraperitoneal Bladder Injury





5. Management

- Conservative management for uncomplicated extraperitonel bladder injuries
- All penetrating or intraperitoneal injuries should be managed by immediate operative repair

6. Urethral Injuries

6.1. Posterior Urethral Injuries

- Urethral disruption injuries typically occur in multisystem trauma
- Fracture of the anterior pelvic ring or pubic diastasis are almost always present when urethral disruption is encountered

6.2. Diagnosis

- Triad of blood at the meatus, inability to urinate, and palpably full bladder.
- Classic findings, such as a “highriding” prostate or a “butterfly” perineal hematoma, may frequently be absent.

6.3. SPC

- Immediate suprapubic tube placement remains the standard of care in men with posterior urethral injuries

6.4. Anterior Urethral Injuries

- Anterior injuries are most often isolated
- Most occur after straddle injury and involve the bulbar urethra

6.5. Clinical Signs

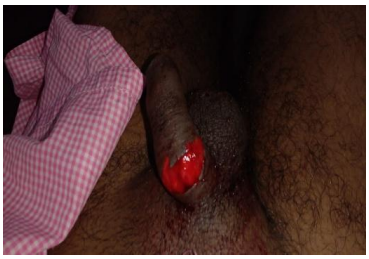
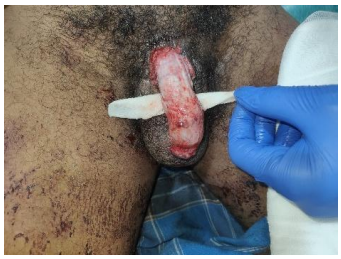
- Blood at the meatus, perineal hematoma, gross hematuria, and urinary retention.
- In severe trauma, Buck fascia may be disrupted, resulting in blood and urinary extravasation into the scrotum.

6.6. Initial Management

- Initial suprapubic cystostomy is the standard of care for major straddle injuries involving the urethra.

Genital Injuries	Penile Injury	Scrotal Injury
Young Males	Laceration	Laceration
RTA	Contusion	Contusion
Work Spot Injury	Avulsion	Avulsion
Sports Injury	Crush Injury	Testicular Rupture

7. Penile Injury

7.1. Initial Management

- Control Bleeding
- Catheterize and rule out Urethral Injury
- USG Scrotum for Testis viability




Conclusion

- Always follow ATLS protocols
- Local examination (Abdomen and Ext Genitalia)
- Catheterization
- Hematuria – Suspect Renal/Bladder Injury
- The degree of hematuria and the severity of the renal injury do not consistently correlate.