



Trauma

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introduction

- ▶ Traumatic injury is a term which refers to physical injuries of sudden onset and severity which require immediate medical attention.
- ▶ The Golden Hour of Trauma:
 - Period immediately following trauma in which rapid assessment, diagnosis, and stabilization must occur.

Types of Traumatic injuries

▶ Blunt

- ▶ shearing
- ▶ Direct compression
- ▶ MVC
- ▶ Pedestrians vs car
- ▶ Fall

▶ penetrating

- ▶ Gunshot or stab

▶ burn



Case Scenario

M 18-year-old male , unrestrained driver in MVC vs. tree

I None reported

S Vitals not reported

T Prolonged extrication; transported to ED by ambulance; O₂ by mask; fluids via single IV; spinal motion restricted on long spine board



How you would approach this patient



Primary Survey

- Initial assessment and resuscitation of vital functions. Prioritization is based on ABC's of trauma care.



➤ **Airway (With cervical spine precautions):**

- Asses patency of airway
- Use jaw thrust or **chin lift with head tilt** initially to open airway
- Clear foreign bodies (suction)
- Insert oral or nasal airway when necessary
- Obtunded/unconscious patients = intubated
- Surgical airway = Cricothyroidotomy used when unable to intubate.

- **Indication of intubation:** ABCDE
- Airway protection
- Breathing insufficiency
- Controle PaO₂ and PaCO₂
- Disaster reduction
- Event





Rapid sequence intubation: 9 Ps

- Preparation
- Positioning with C spine precaution
- Preoxygenation 3 min to maintain sat 100%
- Pressure on cricoid
- Pre medication
- Put the patient on sleep
- Paralytic
- Pass the tube
- Placement assessment

Breathing and Ventilation

- Inspect, Auscultate, & Palpate the chest

- **Ensure Adequate ventilation & identify & treat injuries that may immediately impair ventilation:**
 - ✓ Tension pneumothorax
 - ✓ Flail chest & Pulmonary Contusion
 - ✓ Massive Hemothorax
 - ✓ Open Pneumothorax





Circulation

- ▶ HR, BP, pulses on all limbs.
- ▶ Place two large-bore peripheral (14- or 16- gauge) IVs.
- ▶ Draw blood at time of IV placement
- ▶ Assess circulatory status (capillary refill, pulse, skin color)
- ▶ Control of life-threatening hemorrhage using direct pressure.





Source of bleeding

- ▶ Chest
- ▶ Abdomen
- ▶ Pelvic
- ▶ Long bone
- ▶ external




Disability

- ▶ Rapid neurologic exam
- ▶ Establish pupillary size & reactivity & level of consciousness using the Glasgow Coma Scale.



RESPONSE	SCORE
Eye opening	
No eye opening	1
To pain	2
To speech	3
Spontaneously	4
Best verbal response	
None	1
Incomprehensible sounds	2
Inappropriate words	3
Patient confused	4
Patient oriented	5
Best motor response	
None	1
Extensor response to painful stimulus	2
Flexion to painful stimulus	3
Withdraws from pain	4
Localizes to pain stimulus	5
Obeys commands	6





Exposure/Environment control

- ▶ Completely undress the patient.
- ▶ Prevent hypothermia.
- ▶ Log rolling.



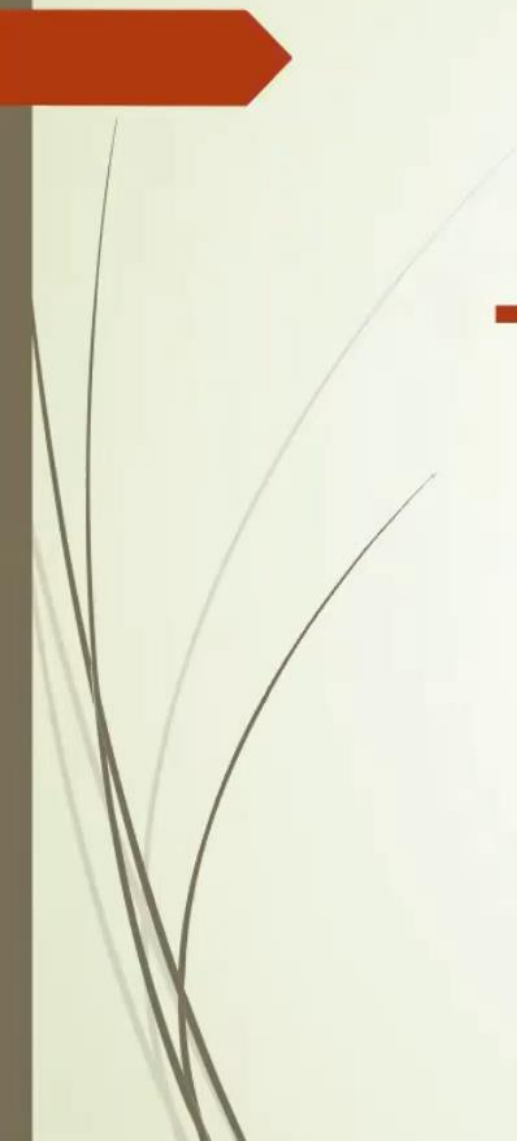
adjuncts


- ▶ Placement of a urinary catheter is considered part of the resuscitative phase that takes place during the primary survey
- ▶ Foley is contraindicated when urethral transection is suspected, such as in the case of a pelvic fracture. If transection is suspected, perform retrograde urethrogram before foley.



► **Signs of Urethral Transection**

- Blood at the meatus
- A “high-riding” prostate
- Perineal or scrotal hematoma
- Be suspicious with any pelvic fracture

- 
- Placement of nasogastric (NGT) or orogastric tubes (OGT). May reduce the risk of aspiration by decompressing stomach, but still does not assure full prevention.

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- X-rays of the chest, pelvis
 - focused abd. Sonogram for trauma (FAST) is tool used for the rapid detection of intra-abdominal bleeding that often occurs early in the resuscitative process.



Secondary survey

- ▶ Head-to-toe evaluation of the trauma patient; frequent reassessment is key.
- ▶ Neurologic examination including glasgow coma scale, procedures, radiologic examination & laboratory testing occur at this time if not already accomplished.
- ▶ Tetanus prophylaxis – immunize as needed



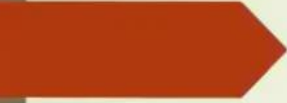
Blunt Abdominal trauma

- ▶ **Grey-Turner sign** : bluish discoloration of lower flanks, lower back; associated with retroperitoneal bleeding of pancreas, kidney or pelvic fracture.
- ▶ **Cullen sign** : bluish discoloration around umbilicus, indicates peritoneal bleeding, often pancreatic hemorrhage.
- ▶ **Kehr sign**: shoulder pain while supine ;caused by diaphragmatic irritation(splenic injury, free air, intra-abdominal bleeding)
- ▶ **Balance sign** : dull percussion in LUQ. Sign of splenic injury; blood accumulation in subcapsular or extracapsular spleen In the trauma patient, a 'normal' physical exam of the abdomen doesn't equate to much. You NEED to do further testing.



❑ **Imaging in Abdominal Trauma**

- FAST exam
- If stable CT scan.
- Accurate for solid visceral lesions and intraperitoneal hemorrhage
- guide nonoperative management of solid organ damage
- IV not oral contrast
- Disadvantages : insensitive for injury of the pancreas, diaphragm, small bowel, and mesentery



Management of BAT

- ▶ NOM: nonoperative management
- ▶ LAP: laparotomy



nonoperative management

- ▶ **criteria for non operative management**
- ▶ Patient hemodynamically stable after initial resuscitation
- ▶ Continuous patient monitoring for 48 hrs
- ▶ Surgical team immediately available
- ▶ Adequate ICU support and transfusion services available
- ▶ Absence of peritonitis
- ▶ Normal sensorium



nonoperative management

- ▶ Angioembolization may be alternative to surgical intervention
- ▶ All patients with solid organ injury managed nonoperatively require admission for observation, serial hematocrit measurement, and repeat imaging



Thank you