



Trauma

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intruduction

The doctor recommended to read this topic from dr.
Hamad alqahtani book

- 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 Most common here in KSA
- ▶ Pedestrians vs car
- ▶ Fall

▶ **penetrating**

- ▶ Gunshot or stab

▶ **Thermal burn**

- ▶ Electrical



Case Scenario

MIST is EMS time out report

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

Aims to pick life threatening conditions

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

In secondary survey you find all injuries

In tertiary survey you will do head-toe examination with all investigations needed



➤ Airway (With cervical spine precautions):

- Asses patency of airway Talk to the pt (What's your name?) if he answers u, it means a good breathing and perfusion to the brain. If he can't talk then do the step below immediately
- Use jaw thrust or **chin lift with head tilt** initially to open airway
 - Usually we do it
 - Usually we don't do it (neck)
- Clear foreign bodies (suction) Then assess breathing again, if pt still not breathing do the step below
- Insert oral or nasal airway when necessary If you're not trained to do intubation
- Obtunded/unconscious patients = intubated RSI is what we do
- Surgical airway = Cricothyroidotomy used when unable to intubate.

- **Indication of intubation:** ABCDE
- Airway protection
- Breathing insufficiency
- Controle PaO₂ and PaCO₂
- Disaster reduction Like: agitated pt and u can't control him
- Event

Gun shut to the face, you know that pt with time will develop edema that obstruct his breath so you want to prevent that from happening



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 We do **NOT** use Propofol for trauma pts unless pt has increased ICP because propofol causes hypotension.
- Paralytic Succinylcholine. We use etomidate or ketamine (**know contraindications and side effects for each one it's very important for your exam**)
- Pass the tube
- Placement assessment Co₂ detector or breathing sound bilaterally

If still can't breathe, do cricothyroidotomy (surgery) either:

- open: in the membrane between thyroid and cricoid cartilage (size, 7-7.5)
- By using needle but we rarely do it

Before moving to the next step always reassess

Breathing and Ventilation

Examination:

- Inspect, Auscultate, & Palpate the chest
- **Ensure Adequate ventilation & identify & treat injuries that may immediately impair ventilation:**

Once you see decreased air entry in one side of lungs, insert chest tube (size 32 and above) if you couldn't find tube use needle decompression size 14.

- ✓ Tension pneumothorax
- ✓ Flail chest & Pulmonary Contusion
- ✓ Massive Hemothorax Means more than 1000 of Blood
- ✓ Open Pneumothorax

To differentiate between tension and simple pneumothorax is by checking hemodynamic status of the pt.



Once you put the chest tub you have to check the output (air? Blood?) but first, connect it to underwater seal.

Circulation = vitals

- 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.

Why do we draw blood? To cross match + ABG (look for increased lactate and base deficit to assess response to treatment) + basics + toxicology screen. We don't look for Hb because it's normal in cases of acute bleeding AKA doesn't change quickly in acute state

Give 1 L of fluids (RL, NS) then see if pt is bleeding. If pt is bleeding transfer blood ASAP.
If they told you pt is hypotensive and tachycardic start blood transfusion and then look for source of bleeding

Source of bleeding

FAST in Morison's pouch to look for fluids in the subxiphoid area (cardiac tamponad) - pelvic (fluids around the bladder)
فلويز معناتها بليدينق

- Chest
- Abdomen
- Pelvic
- Long bone
- external Scalp laceration



Assess pelvic stability by putting your hands in each side of the pelvis and pressing in and down, if it's moving it means unstable (do binder or sheeting)

So in the exam:- 1. Two I.V cannula 2. Draw blood 3. Give fluids 4. Hook the pt on monitors and check his/her vitals 5. If BP is low and HR is high it means pt is bleeding until proven otherwise 6. Blood transfusion 7. Look for bleeding source




Disability

- Rapid neurologic exam
 - Establish pupillary size & reactivity & level of consciousness using the Glasgow Coma Scale.
- ¹ For head bleeding
- ²




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. **Rewarm**
- Log rolling.



adjuncts

FAST - x-ray chest and pelvis- ECG - foley cath - orogastric catheter

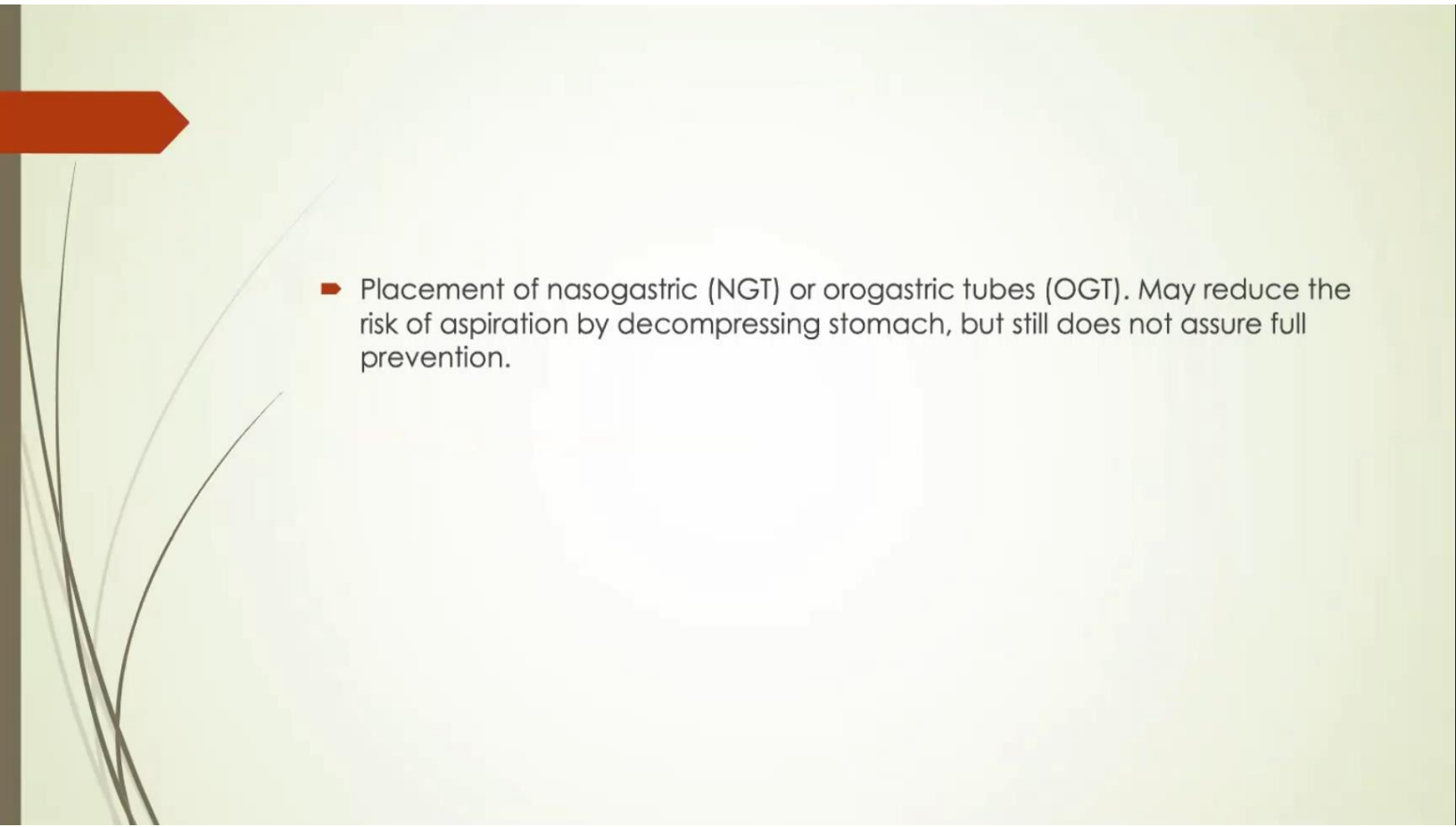
- ▶ Placement of a urinary catheter is considered part of the resuscitative phase that takes place during the primary survey
- ▶ Foley is contraindicated when urethral transection is suspected, such as in the case of a pelvic fracture. If transection is suspected, perform retrograde urethrogram before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

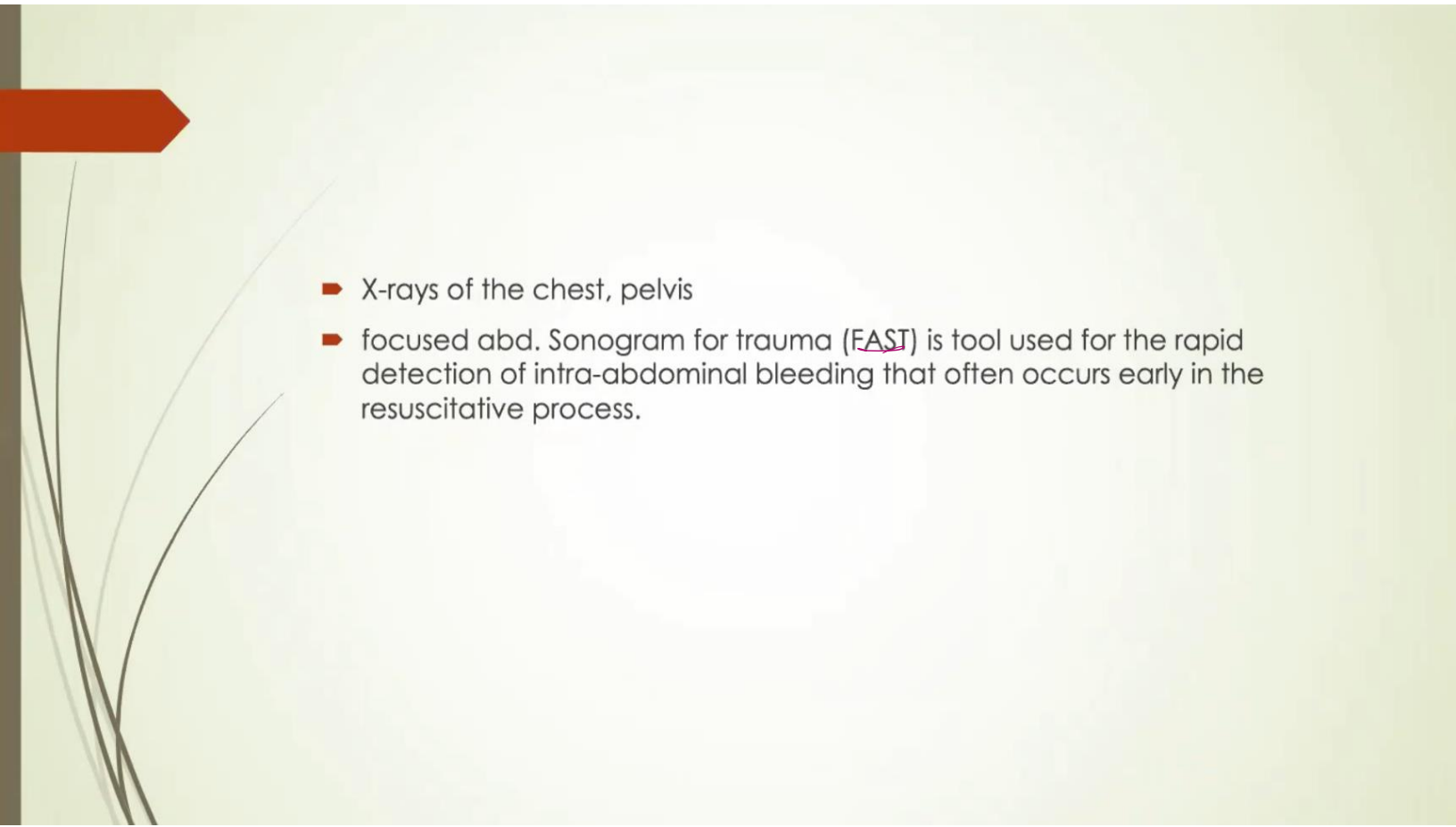


■ **Signs of Urethral Transection** Contraindications for folly:

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

If pt can't do folly, call urology to do retrograde urethrogram

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

- 
- 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 *Mostly trauma pt has wounds*
- *CT if pt is stable*

Blunt Abdominal trauma

- **Grey-Turner sign** : bluid discoloration of lower flanks, lower back; associated with retroperitoneal bleeding of pancrease,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) *Only if pt is awake*
- **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. *نادر نشوفها*



❑ **Imaging in Abdominal Trauma**

➤ FAST exam

➤ If stable CT scan.

➤ ^{CT is} 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

Blunt Abdominal Trauma

- ▶ NOM: nonoperative management
- ▶ LAP: laparotomy

If stable = Do FAST, if positive go for CT

If unstable (Diffused peritonitis) = Do FAST, if positive go to OR

nonoperative management

Your pt was stable and you decided to do CT which showed things (مدري وش هذي الثقفز)
now you need to decide if you go with non operative or operative management

- **criteria for non operative management** مرة مهم
- 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

How to know if your non operative management failed?
Decreased Hb or change in hemodynamic or peritonitis



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