Approach to Trauma

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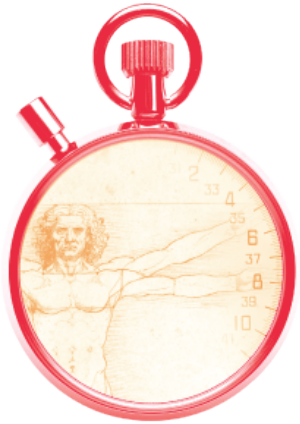
Objectives

- Approach to trauma
- Critical diagnoses
  - Blunt abdominal trauma
  - Penetrating abdominal trauma
  - Head trauma
  - Penetrating extremity trauma

- Fourth leading cause of death overall in US
- #1 in ages 1-44
  - Fatal- MVA
  - Nonfatal- Falls

ATLS Algorithm

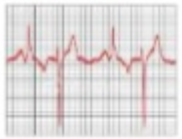
- Primary Survey
- Resuscitation
- Secondary Survey
- Disposition



ATLS™
ADVANCED TRAUMA LIFE SUPPORT

 **Airway**	Maintain airway with cervical spine control.
 **Breathing**	Assess breathing and ventilation. Apply high flow O_2.
 **Circulation**	Assess circulation with haemorrhage control.
 **Disability**	Check neurological status.
 **Exposure/ Environment**	Complete assessment of the patient but prevent hypothermia.

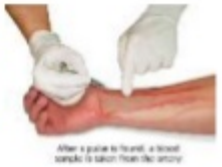
Adjuncts to Primary Survey



ECG

Vital signs

ABGs

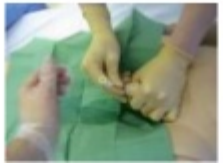


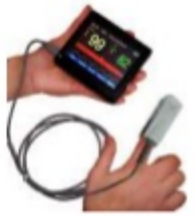
PRIMARY SURVEY

Urinary output

Pulse oximeter and CO_2

Urinary / gastric catheters unless contraindicated





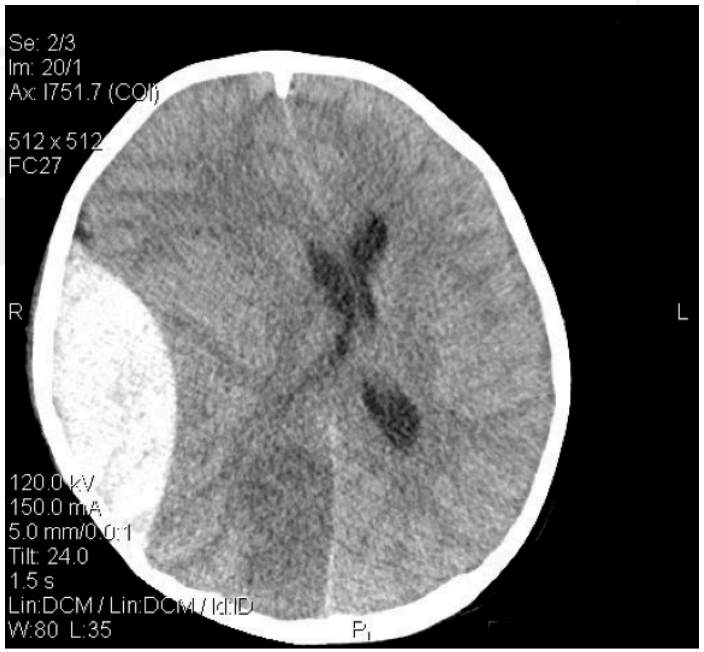
Airway

Breathing

Circulation

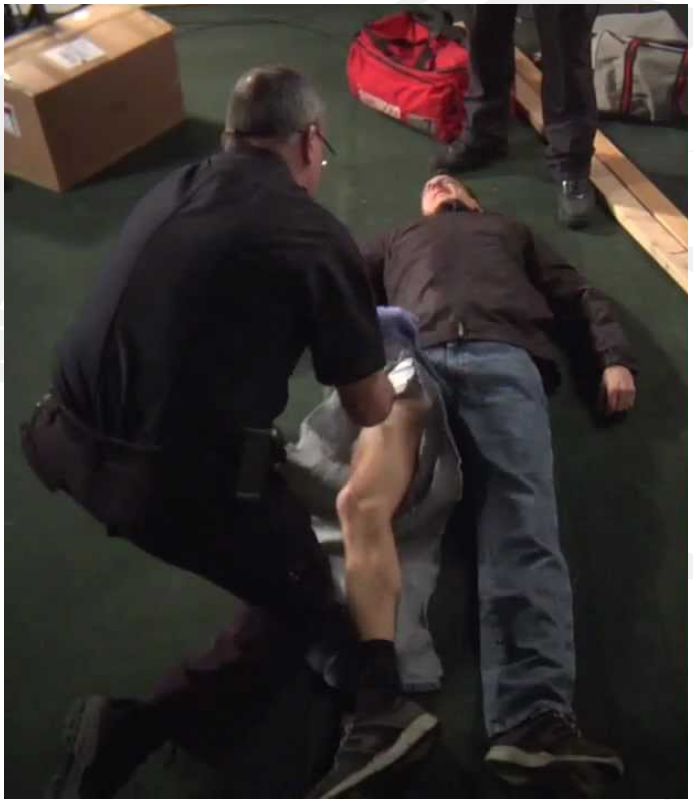
Disability

Glasgow Coma Scale		
Eye Opening (E)	**Verbal Response (V)**	**Motor Response (M)**
4=Spontaneous 3=To voice 2=To pain 1=None	5=Normal conversation 4=Disoriented conversation 3=Words, but not coherent 2=No words...only sounds 1=None	6=Normal 5=Localizes to pain 4=Withdraws to pain 3=Decorticate posture 2=Decerebrate 1=None
		Total = E+V+M



< 8,
intubate!

Exposure and Environment



Secondary Survey

- Complete Exam
- Imaging: X-rays: Chest, Pelvis, common CTs include head and C-spine w/o contrast and abdomen and pelvis with contrast, FAST exam
- Consults: Trauma, Surgical Specialties

FAST EXAM (Focused assessment with sonography for trauma)

- Noninvasive
- Quick
- Can be done without removing patient from clinical area
- Can be repeated for serial exam
- Safe in pregnant women and children

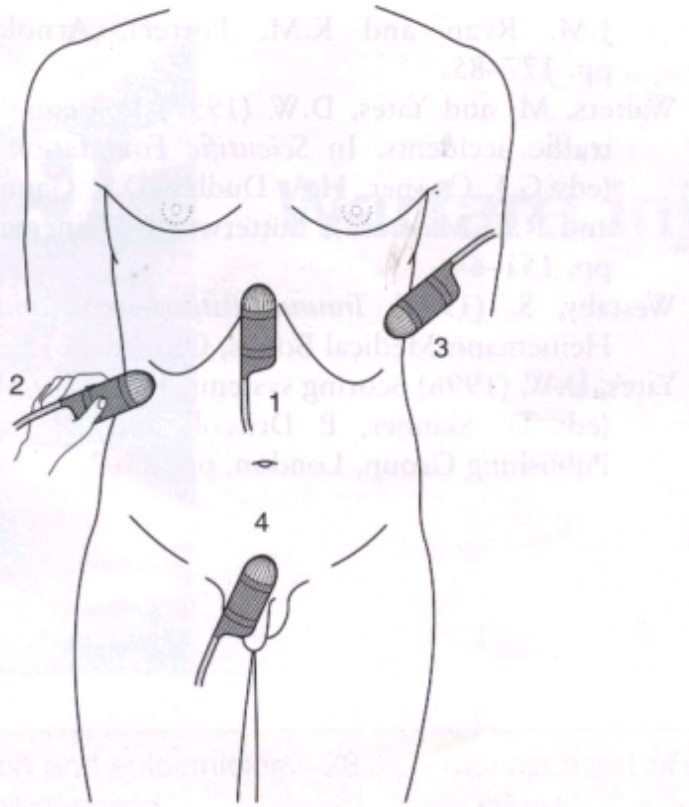
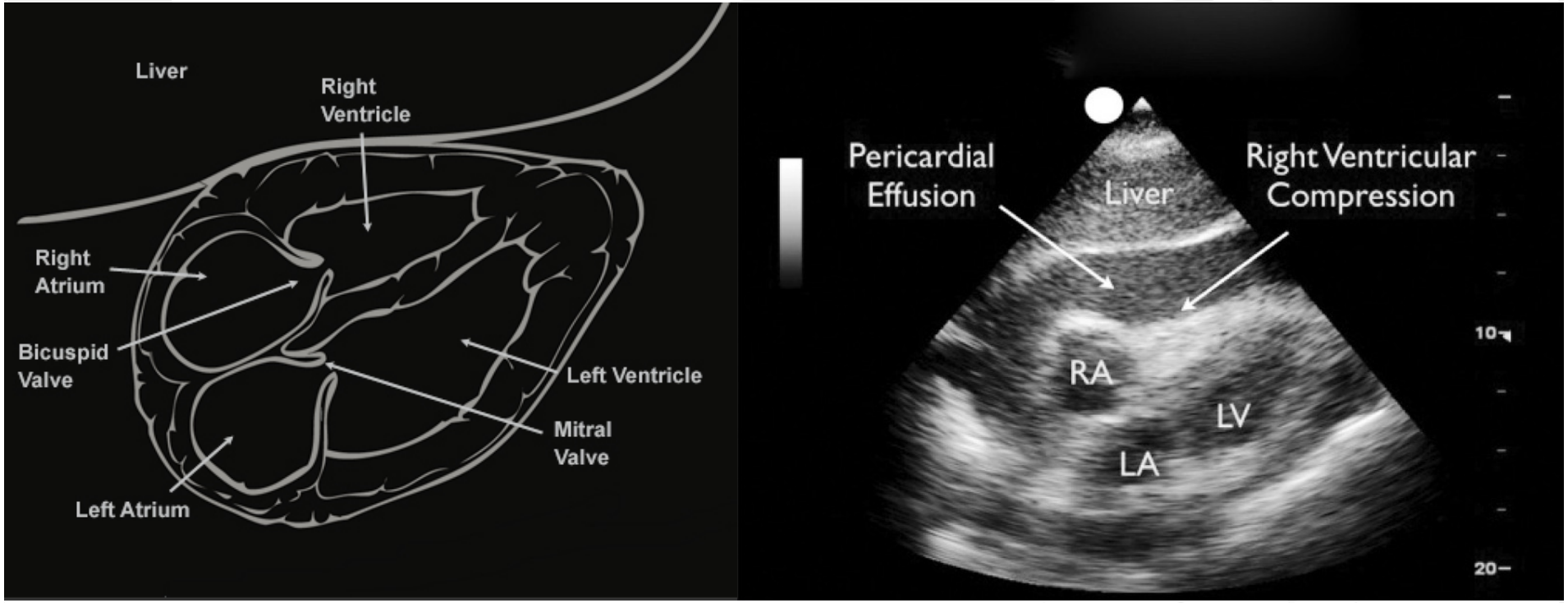
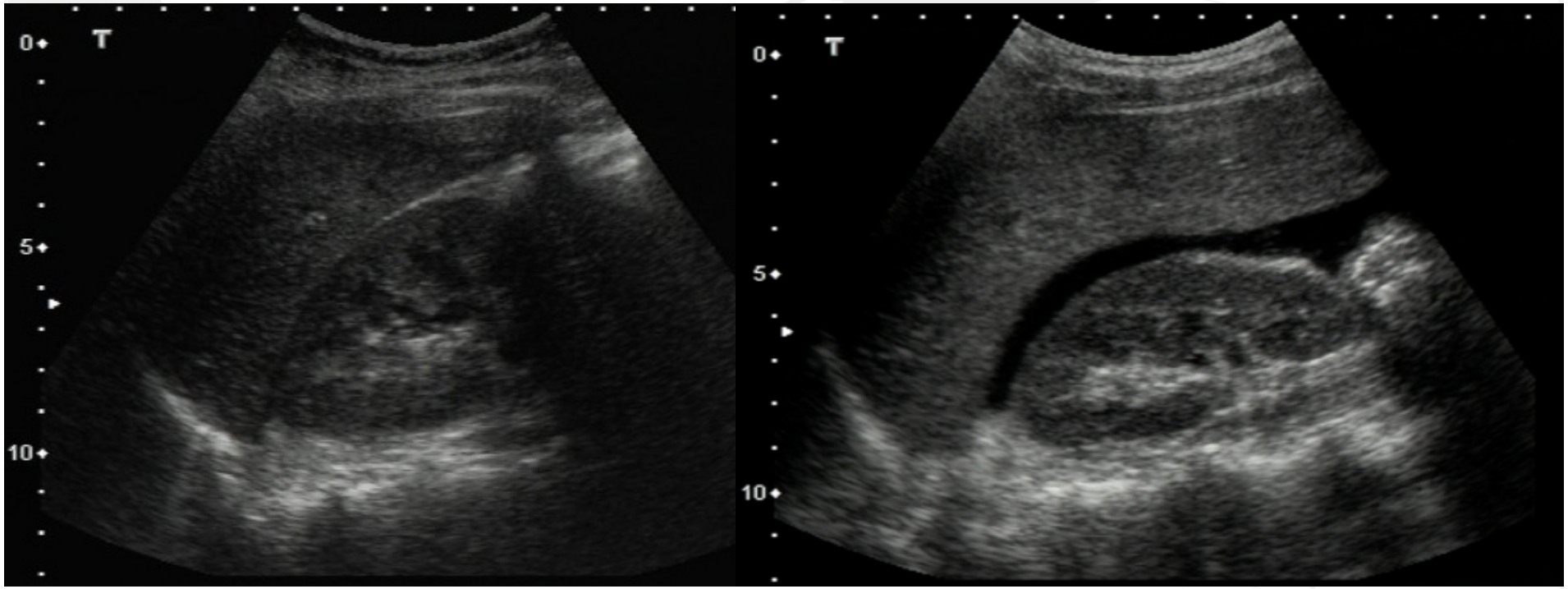


Fig. 18.5 The four areas to be scanned during focused abdominal sonogram for trauma (FAST). The aim is to rule out cardiac tamponade, the presence of free blood and solid organ disruption.

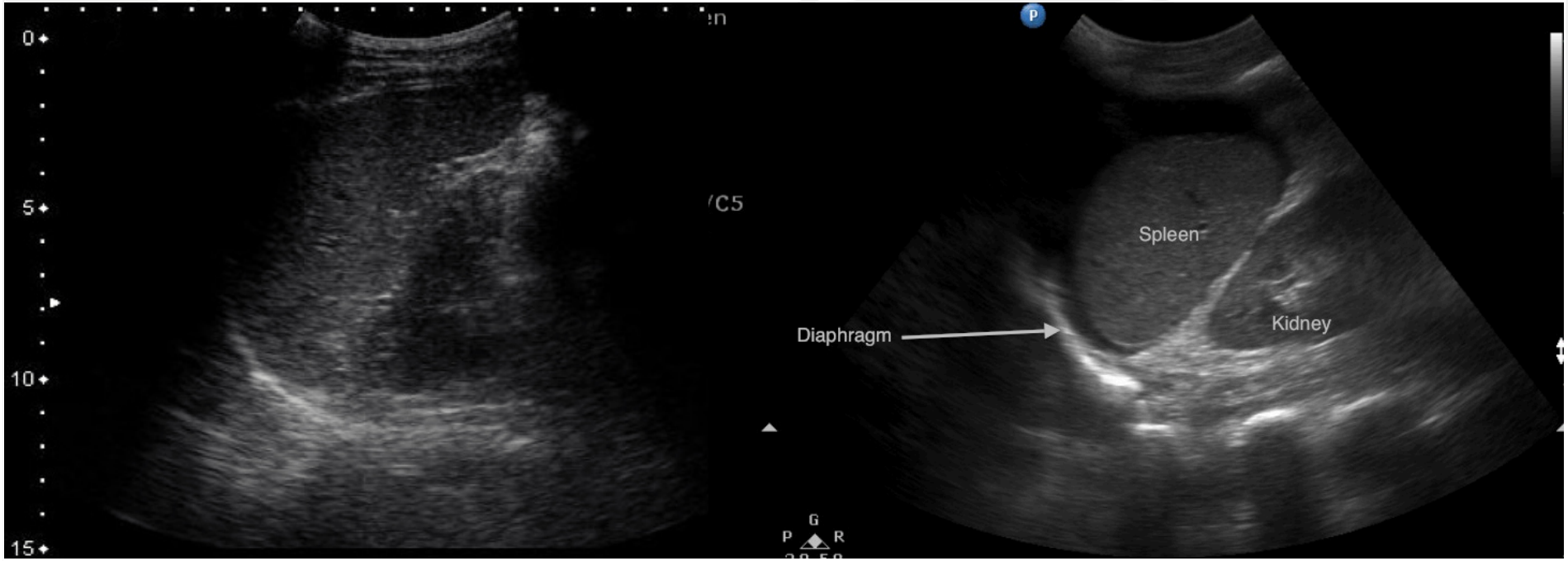
Cardiac view: subxiphoid



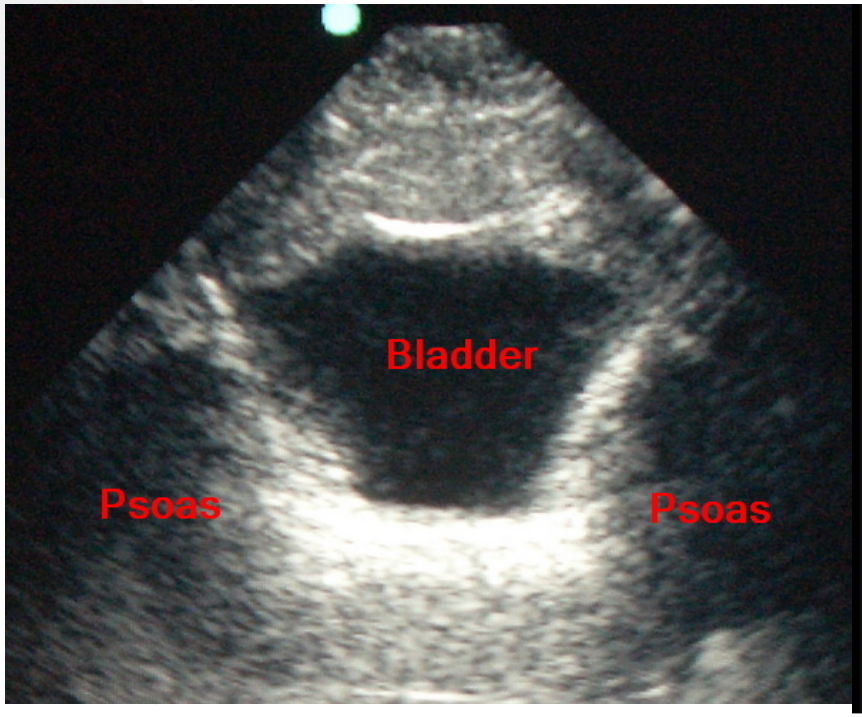
RUQ: Morrison's Pouch

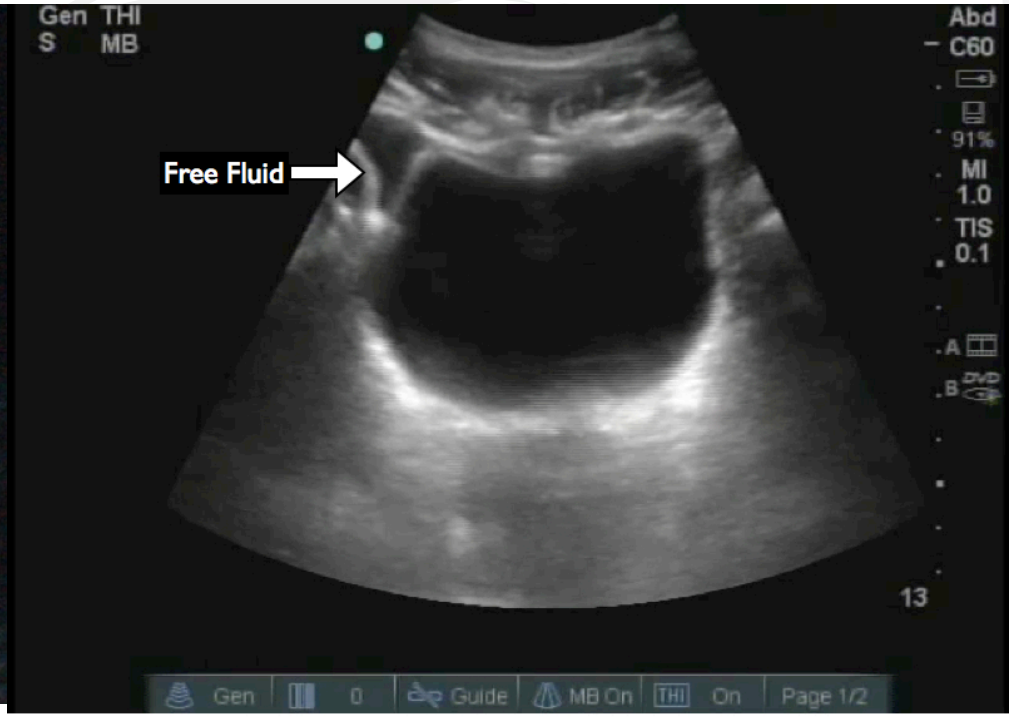


LUQ: parasplenic



Pelvis


Bladder
Psoas
Psoas


Gen THI
S MB
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1.0
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Free Fluid
13
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Guide
MB On
On
Page 1/2

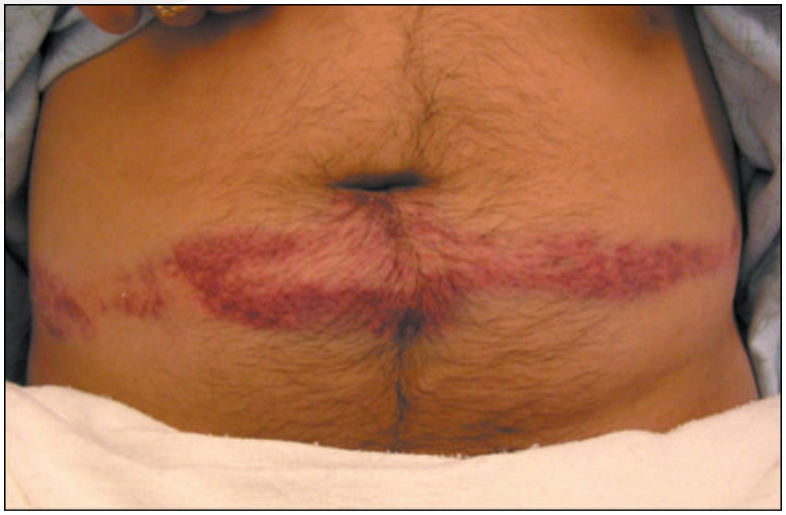
Disposition

-Admit (surgery, SICU)
-wheel to OR (and admit)
-Observe in ED with close monitoring
-Discharge home with strict return precautions and good follow-up

EMS brings in patient

Case #1

32 YOM s/p MVA. He is alert and crying in pain. VS WNL

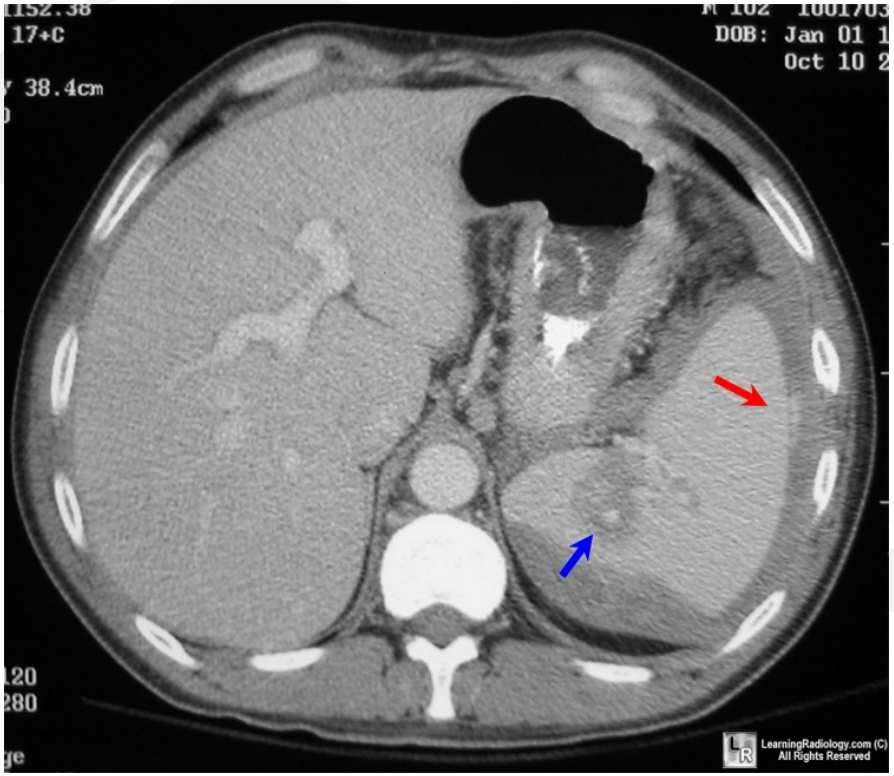


ED Care for Blunt Abdominal Trauma

- Spleen 40-55%, liver 35-45%, small bowel 5-10%
- Testing:
- Xray helpful if pelvic fx
- If stable, CT scan. Sensitive and specific
- If unstable, FAST. 86-97% sensitive
- Treatment may involve laparotomy, pelvic stabilization, angiographic embolization, serial examinations.

ED Care for Blunt Abdominal Trauma in THIS PATIENT

- IV,02, monitors
- Pain control
- CT because stable
- On way back from CT scan, pt becomes hypotensive → OR for ligation

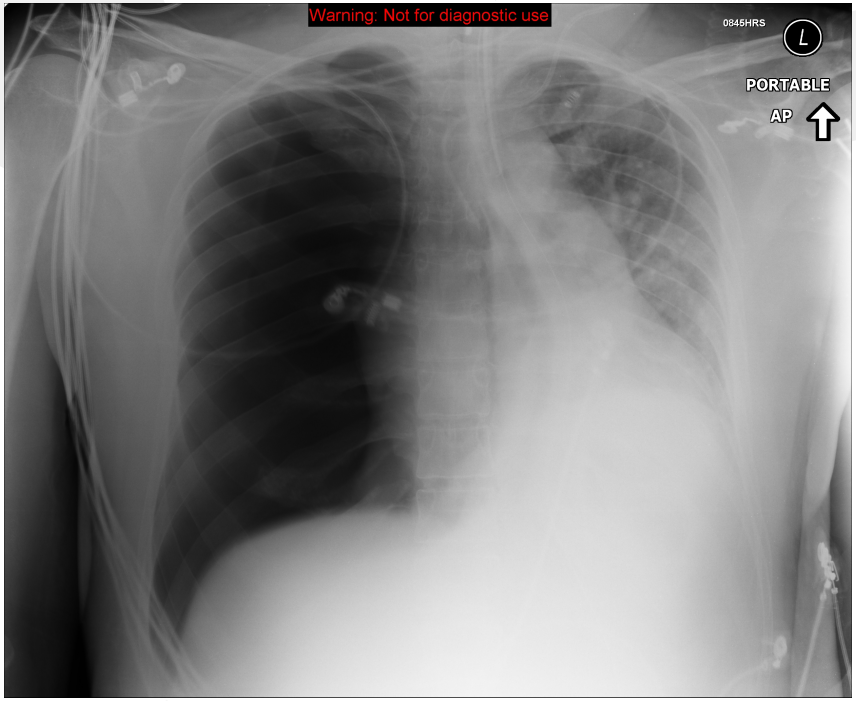


Case #2

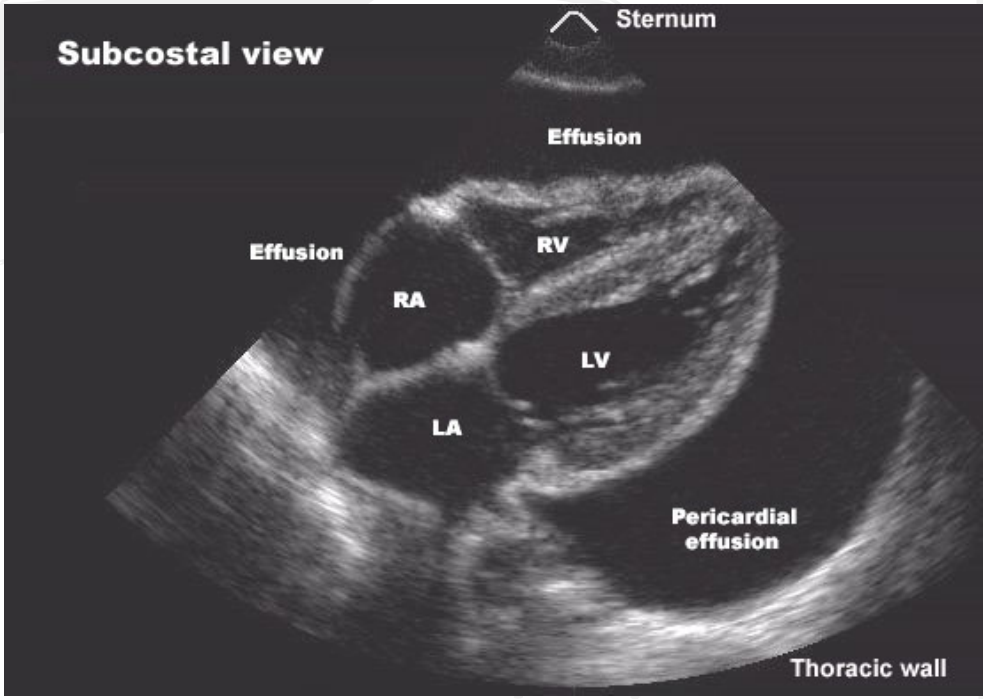
19 YOM stabbed to right axilla. Pt moaning incoherently, eyes open spontaneously, moving all 4 extremities. BP 70/38 HR 156 02 sat 88% room air

Is this A or B?:

A



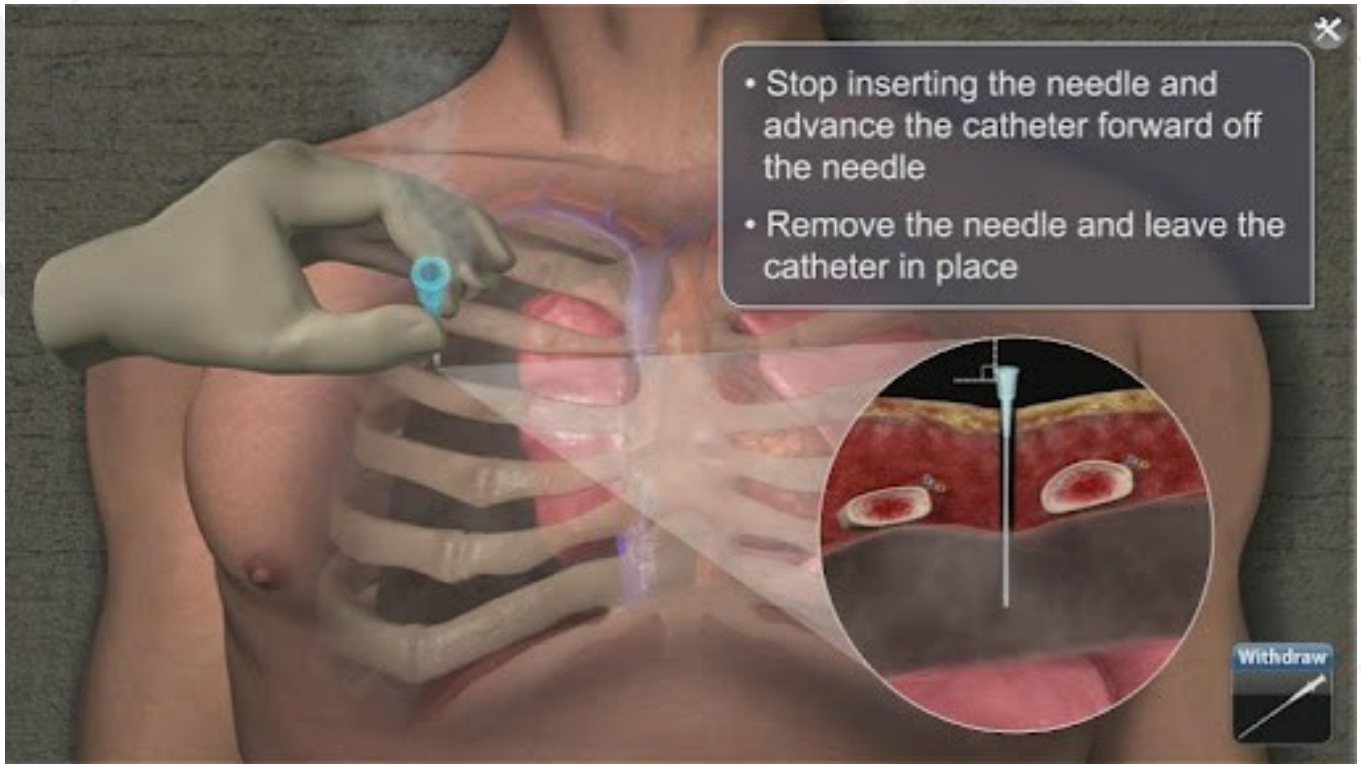
B



Next step?

A) Intubate the patient and apply high PEEP
B) Call trauma to place STAT chest tube
C) Order a STAT chest xray and moving on through the rest of your primary and secondary survey while waiting
D) Insert a large caliber needle into the 2nd intercostal space, midclavicular line while you prepare the chest tube tray

Tension pneumothorax



Disposition after chest tube?

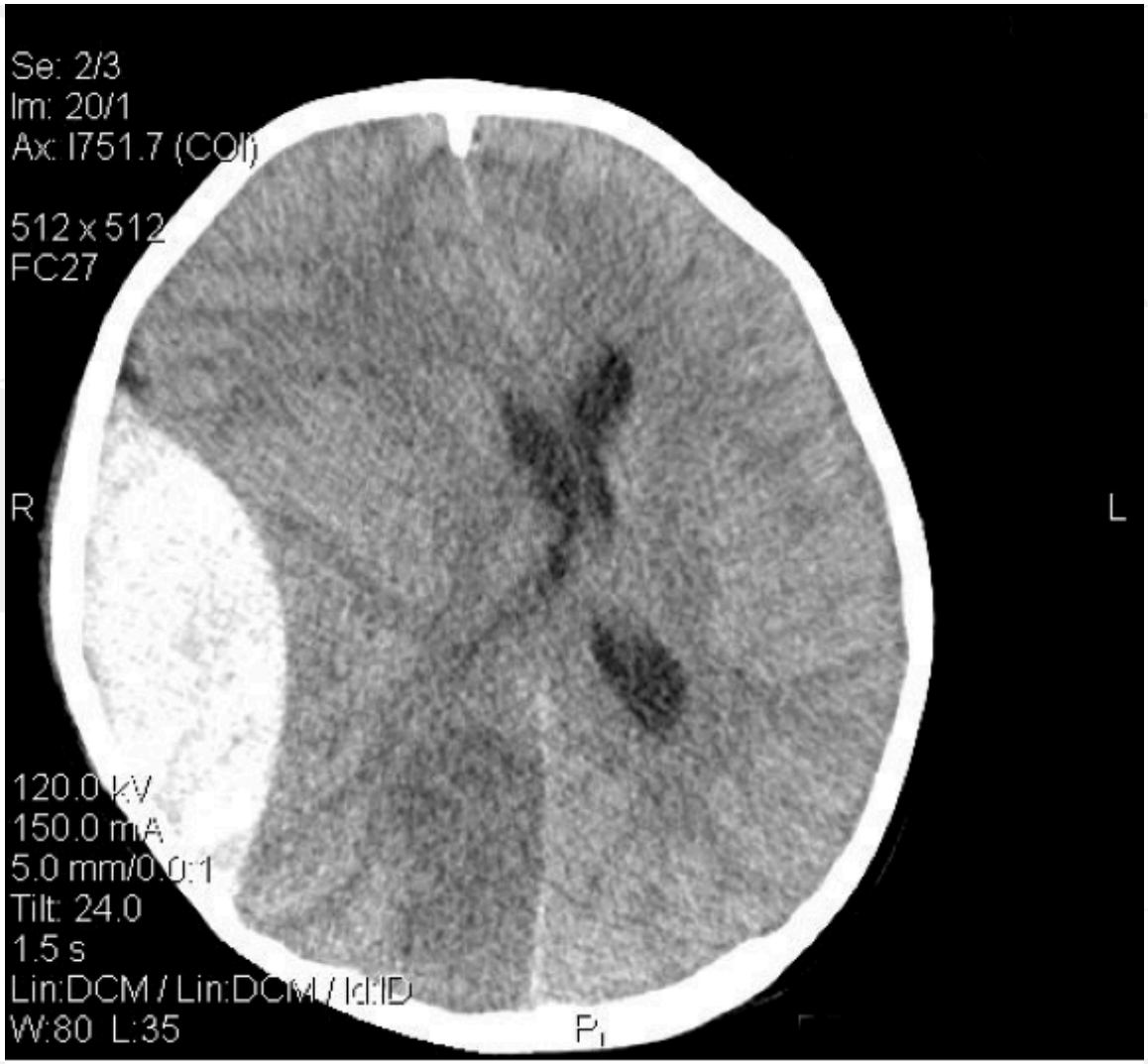
A) Discharge home
B) Admit to SICU
C) Place on med observation
D) Discharge to subacute rehab

Case #3

40 YOM + ETOH fell from 2nd story of fire escape. + obvious left skull deformity. Eyes open to pain only, babbling incohesive sounds, withdraws from pain. VS unremarkable. FAST negative.

Next step?

A) Clear the C-collar and then take to CT scan
B) Intubate and then take to CT scan
C) Place on BIPAP and then take to CT scan
D) Have the medical student suture the facial lac while you go get coffee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512 x 512
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120.0 kV
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5.0 mm/0.0:1
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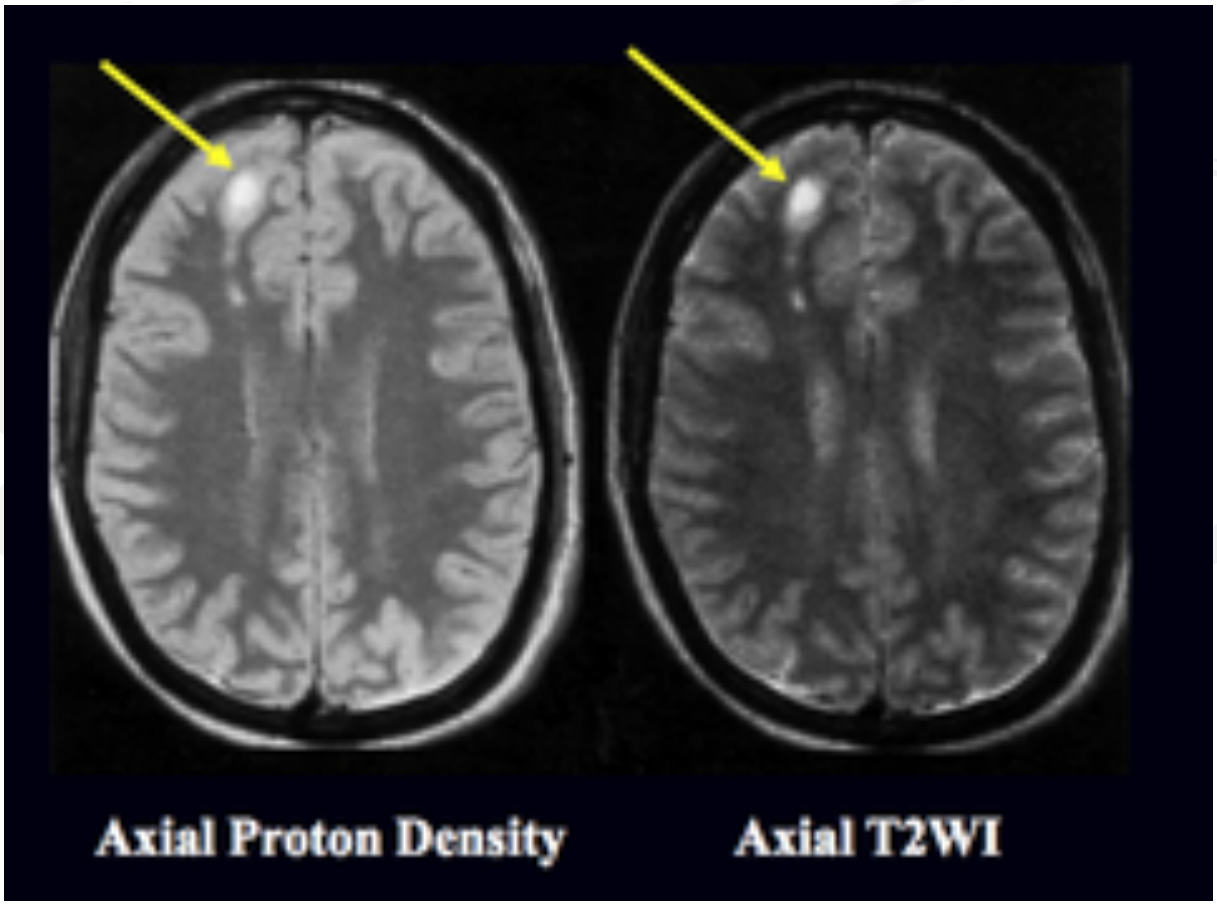
W:80 L:35
P

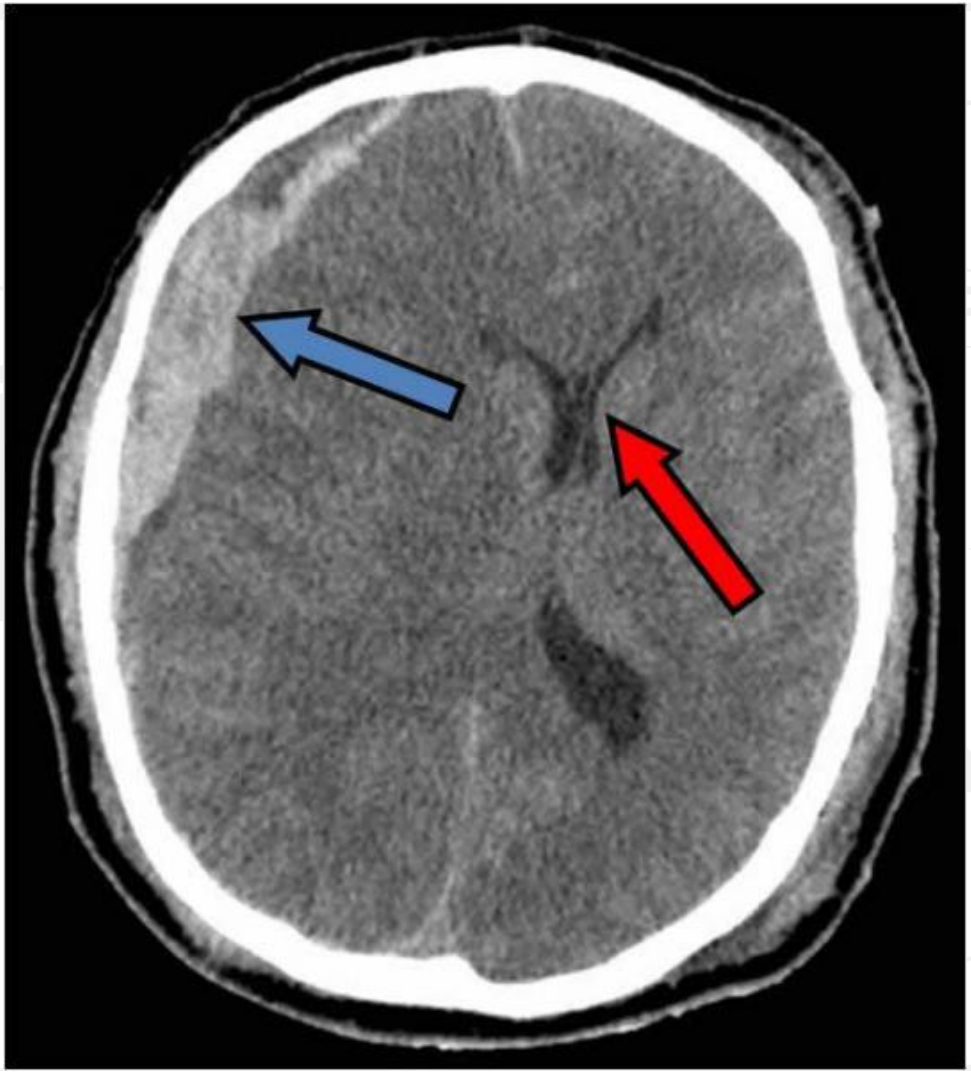
Next step?

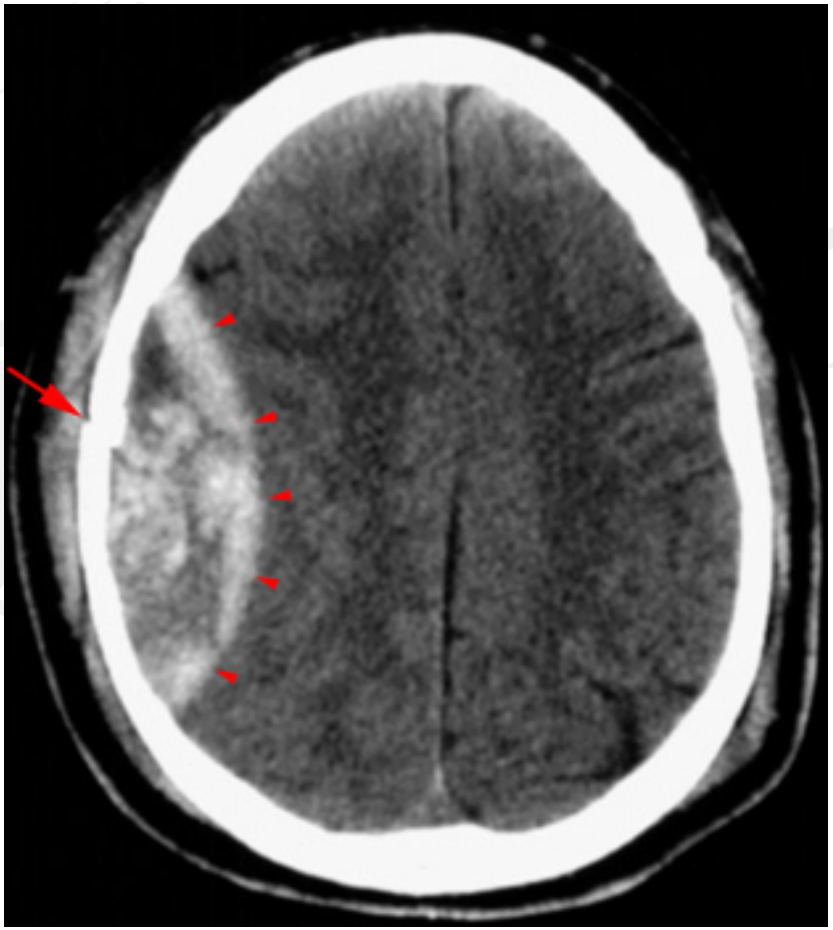
A) Admit to medicine
B) Elevate head of the bed, call neurosurgery stat and push bolus of hypertonic saline or mannitol
C) Perform burr hole of skull to release the blood, call neurosurgery afterwards
D) Hyperventilate to a PCO_2 of 5, place arterial line and check ABG q 15 minutes

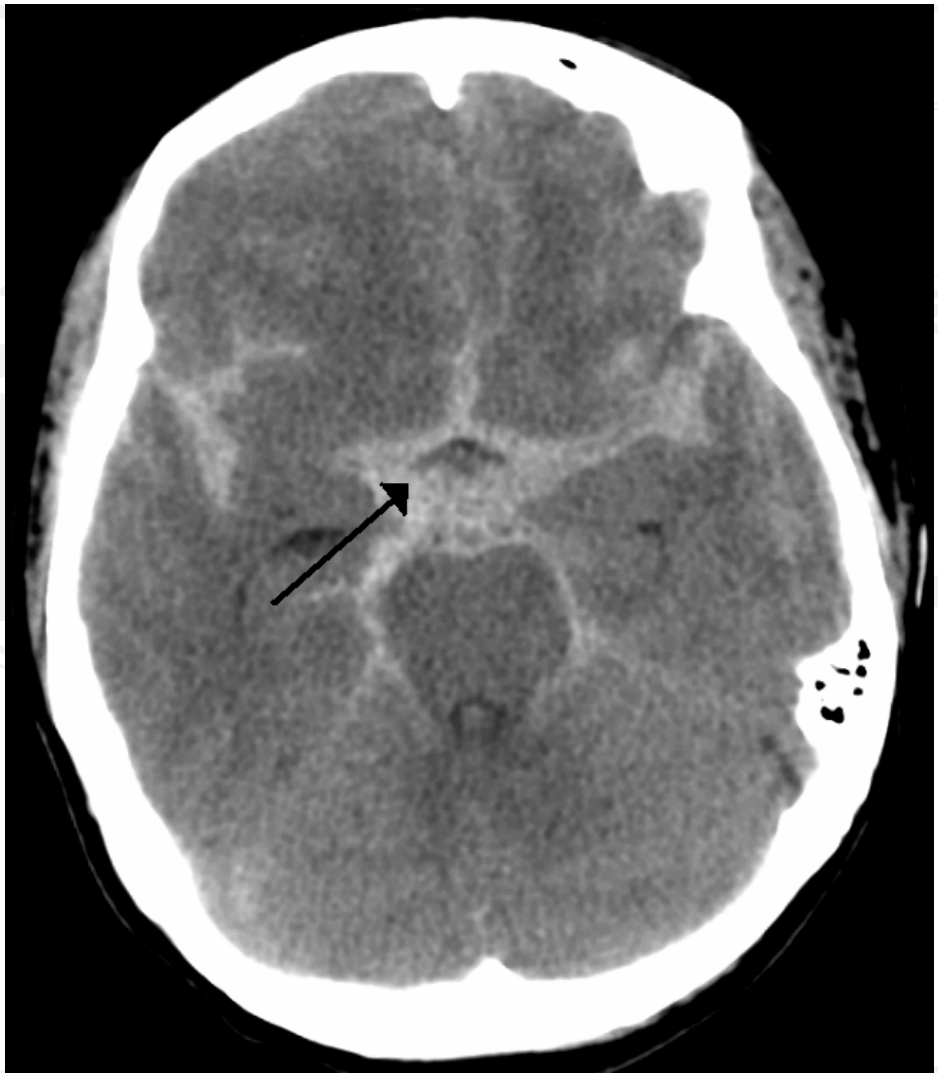
Traumatic Head Injuries

- TBI- mild (concussion) → severe (diffuse axonal injury)
- Subarachnoid hemorrhage
- Epidural Hematoma
- Subdural Hematoma


Axial Proton Density
Axial T2WI







ED Care for Head Trauma

- ABCs, IV, O2, Monitor, C-spine stabilization, secure the airway
- Obtain stat CT head, then stat neurosurgical consult once type of injury is known
- Treat seizures if present with benzos and fosphenytoin

ED Care for Head Trauma

- If suspect increased ICP:

- -elevate head of bed to 30°
- -adequate sedation and analgesia
- -Hypertonic Saline or Mannitol bolus
- -If impending brain herniation, as last resort, may need skull trephination
- Hyperventilation no longer recommended

Penetrating Limb trauma case

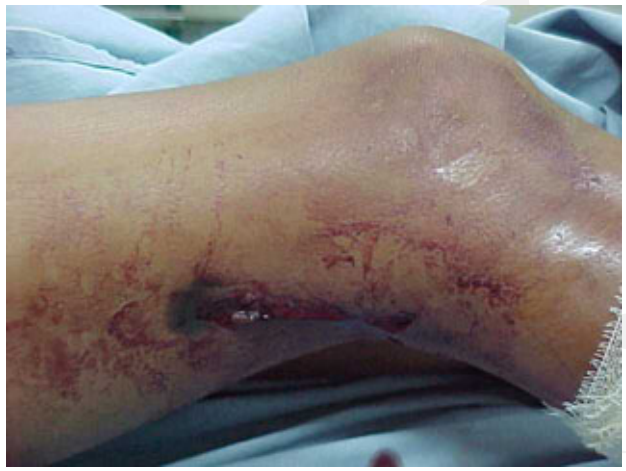
A 19 YOM BIBEMS s/p multiple stab wounds to the right thigh. AOx3 with normal Vitals. You are unable to palpate distal pulses and notice a large hematoma in the right inguinal region.

Next step?

A) Throw a purse-string stitch over the hematoma and admit to ortho
B) Admit for 24 hour observation with serial exams
C) Stat vascular surgery intervention
D) Perform ABIs, then get xrays, venous dopplers, and CT scans. Call vascular when studies are complete.

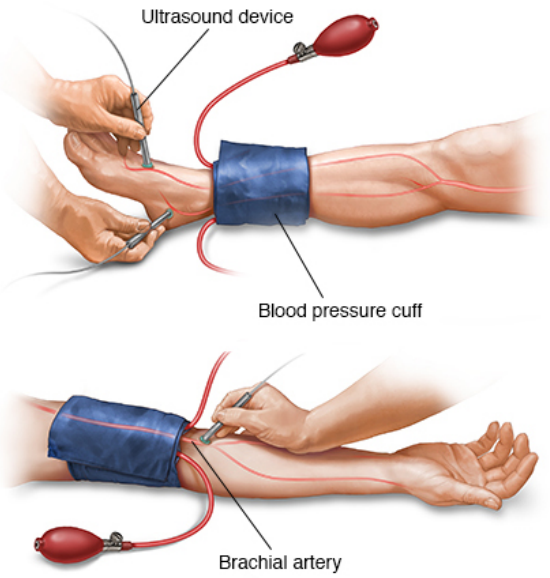
Hard Signs of Vascular Trauma

- Absent or diminished distal pulses
- Obvious arterial bleeding
- Large expanding or pulsatile hematoma
- Audible bruit
- Palpable thrill
- Distal ischemia



ED Care for Penetrating trauma to the extremities

- "Hard" signs of vascular trauma require immediate intervention, note "soft" signs
- Diagnostic tests such as arterial dopplers and ABIs if needed
- ABI= ankle BP/arm BP
- ABI 1.0 normal, 0.5-0.9 injury,
- < 0.5 severe arterial injury



ED Care for Penetrating trauma to the extremities

- “soft” signs of injury 24 hour observations with serial exams
- Control bleeding with direct pressure
- Open fractures require orthopedic intervention and antibiotics
- Tetanus booster

Summary

- Trauma should have systematic approach
- If patient is crashing, only focus on the life-threatening injuries, if their vital signs are stable, do a careful thorough exam
- Ultrasound useful diagnostic tool

References

Advanced Trauma Life Support: Student Course Manual. Chicago, IL: American College of Surgeons, 2012. Print.

Ilgen, Jonathan. "Trauma in Adults." Tintinalli's Emergency Medicine Just the Facts. N.p.: McGraw-Hill, 2013. Print.

http://www.sonoguide.com/FAST.html