Cases From the Files of a Level 1 Trauma Center

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- Level 1 Trauma Center
- 115,000 ED visits
- Average 90 activations/ month
- About 800 trauma admits annually

Financial Disclosures

- Sadly, none
- I am friends with McEvoy and Beebe but don’t hold that against me.

Objectives

- Understand mechanisms of trauma
- Discuss factors related to destination decision
- Understand current treatment modalities for common types of trauma.
- Discuss trauma center systems of care.

Case 1

- It’s 1:30am, called for man struck by train (subway). PD requesting a “rush on the bus”.
- What are your initial concerns as you respond to the scene?

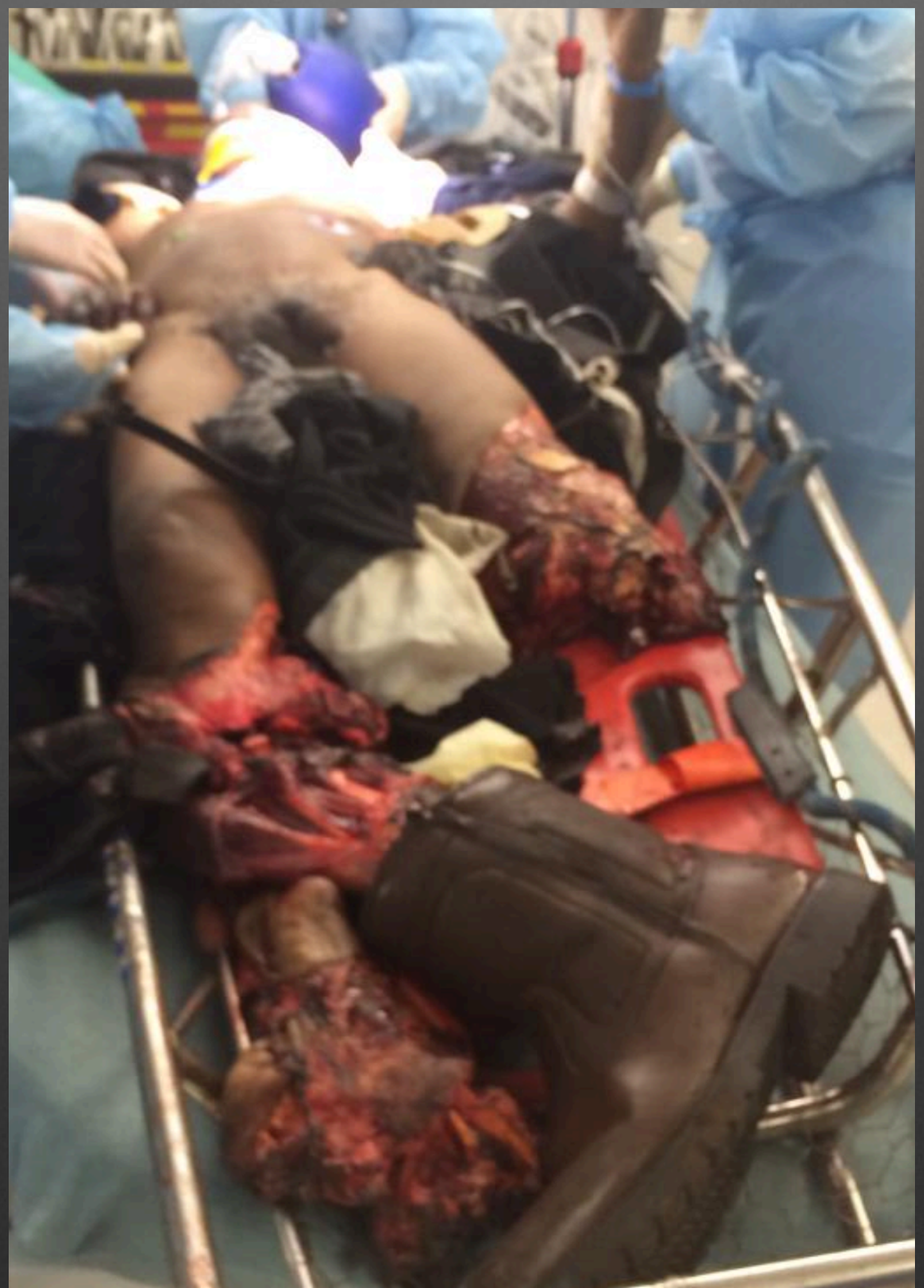
Scene Survey

- 69 y/o male found lying on tracks, appears unresponsive large amount of blood on ground.
- Obvious bilat lower extremity amputations.
- Not pinned by train, area secured by NYPD. MTA holding trains. No immediate threats.

What Now?

- Unresponsive, GCS 8
  - Intubate?
- BP 80P
- How will you get him out?
- Where should we take him?

On Arrival



Primary Assessment

- A: Intubated by EMS on field
- B: Breath Sounds equal b/l, clear
- C: radial pulses present, skin cool
- D: GCS:10T, Pupils 3mm, reactive
- E: Traumatic b/l Lower extremity Amputations

Secondary Survey

Vitals: BP 147/105, repeat: 88/56, HR 63, R 14, O2 99%
Gen: Awake, uncomfortable
HEENT: Pupils 3mm and reactive, TMs clear, no oral trauma
Neck: C-Collar in place
CV: RRR
Pulm: Breath sounds equal bilaterally, no crepitus
GI: Abdomen soft, nontender, nondistended
Ext: B/L traumatic BKAs, L leg with macerated tissue above knee
Back: No step-off, normal rectal tone, no blood in vault

Issues on arrival

- Leg stumps still oozing blood
- BP dropped to 59/47
- Patient awake, pulling at ETT

ED Course

- Tourniquets applied to both legs
- Fentanyl given for sedation
- Right subclavian Cordis placed
- Massive transfusion protocol started

Massive Transfusion

- 1:1:1 ratio
- pRBC, FFP, Platelets
- TXA (transaxemic acid)

Disposition

- Admit to OR for debridement and control of bleeding
- developed necrotising fasciitis
- multiple re-ops
- expired

Case 2

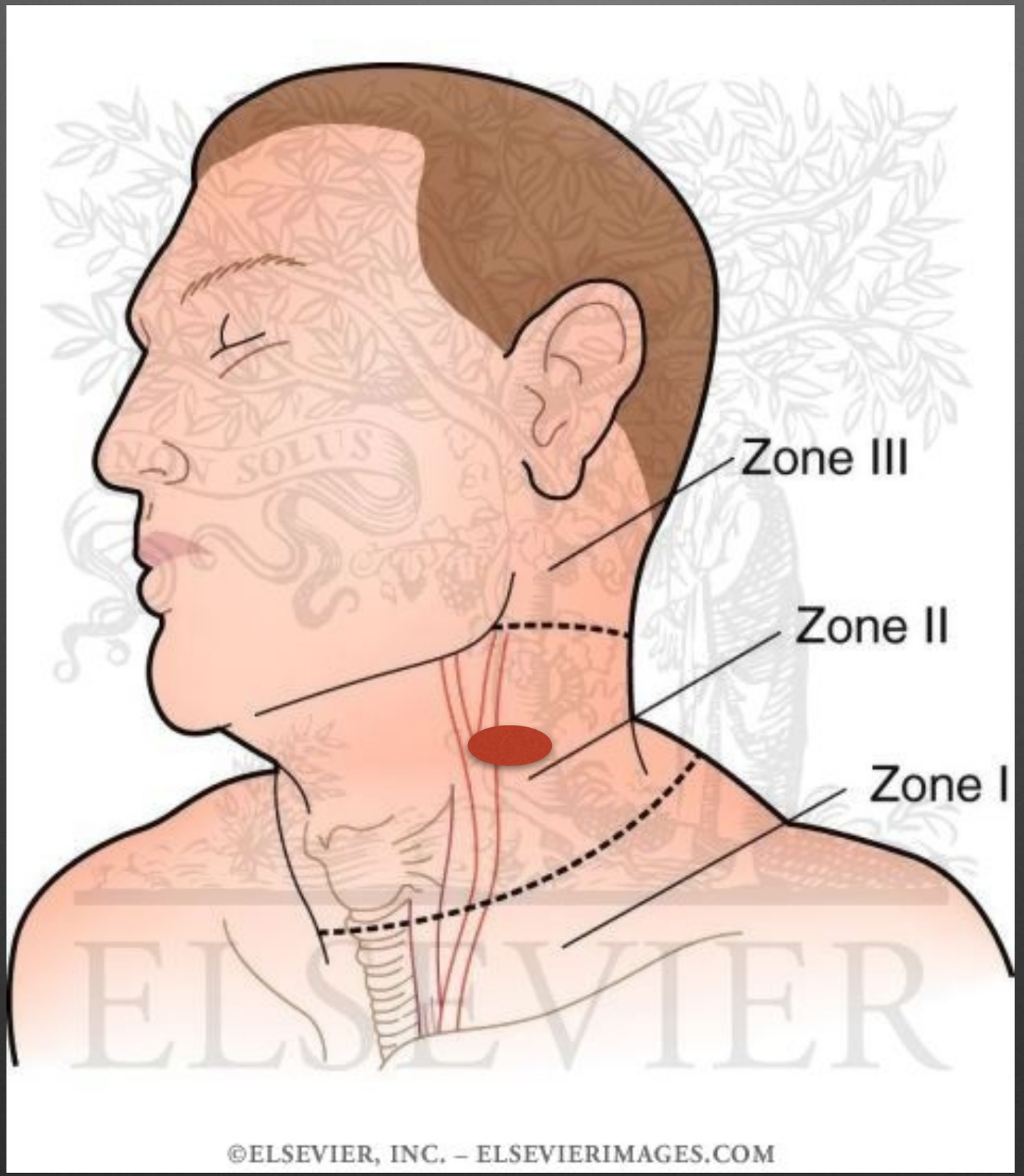
- 14 y/o Male
- “I Can’t Breathe Yo!”

Dispatch Info

- Male stabbed
- Location: housing project
- No further info

Scene Size-up

- 14 y/o Male
- Single stab wound to the left neck
- Chief Complaint: “I can’t breathe yo!”
- Spitting blood from mouth
- What are your priorities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Zone II
Zone I
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Vital Signs

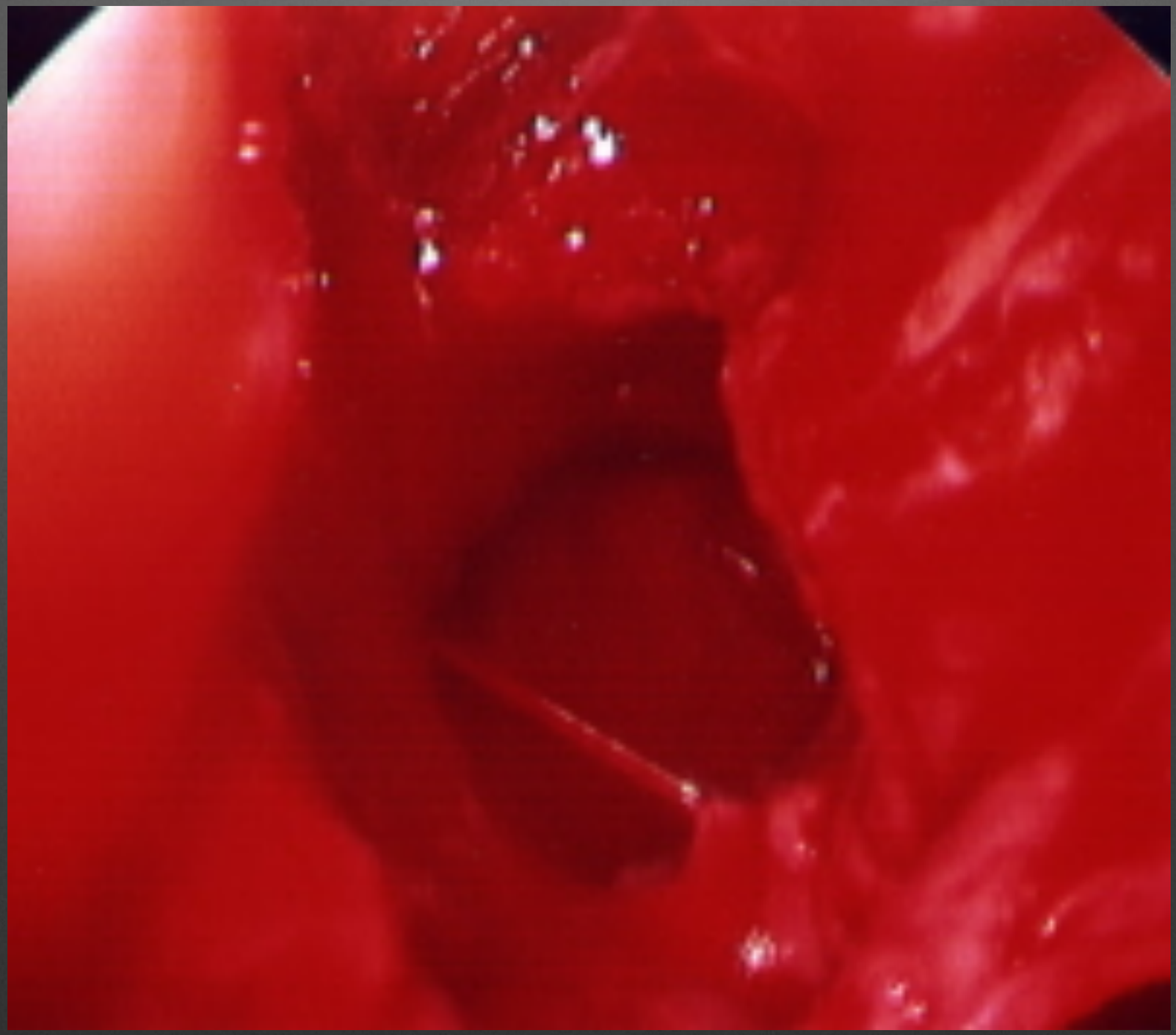
- 138/61
- HR 131
- RR 24
- SpO2 90%
- 2 large bore IV’s placed

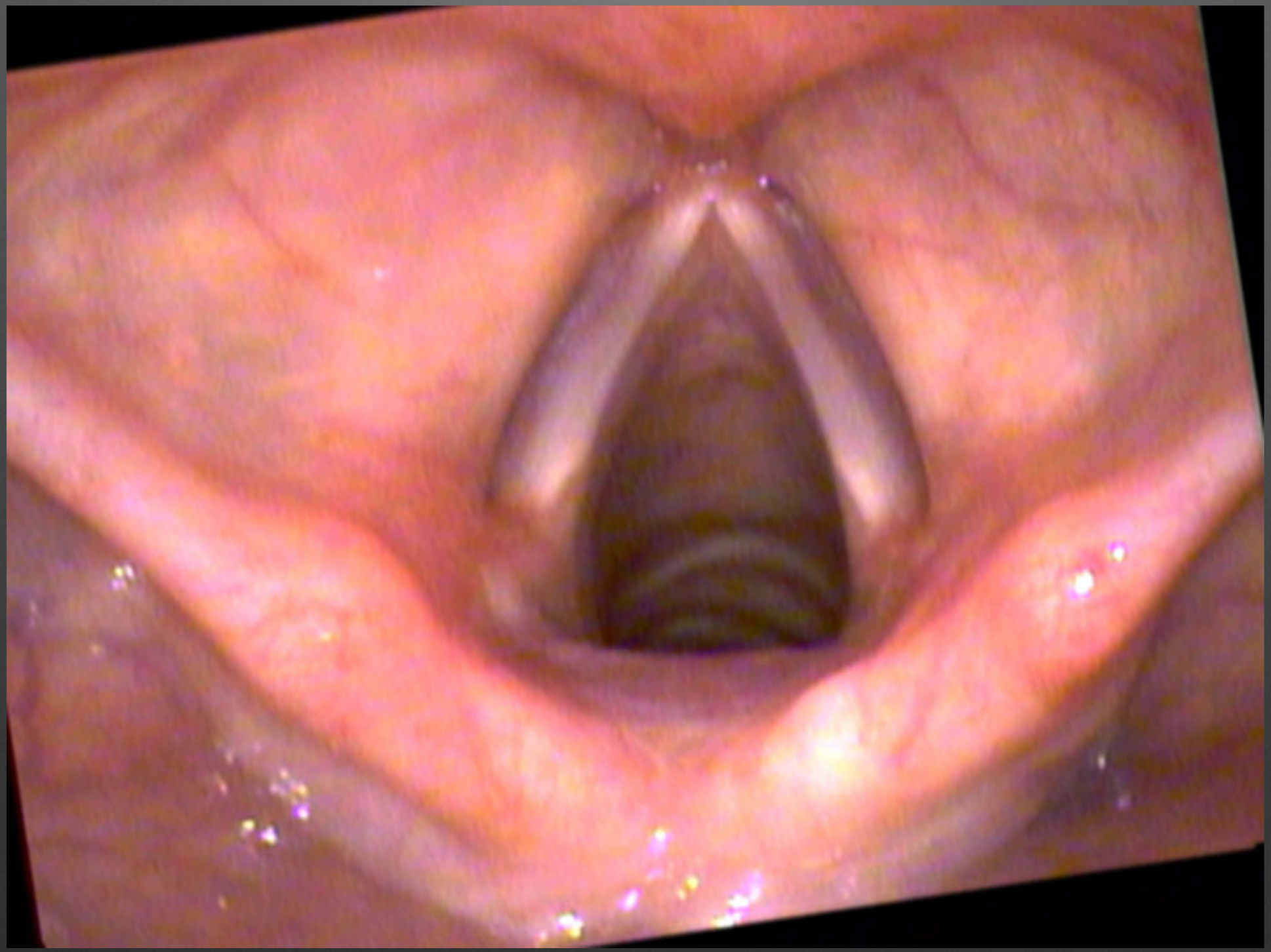
Primary Survey

- Airway- “a bloody mess”
- Breathing - gurgling, tachypneic
- Circulation - Strong radial pulses
- Disability - PERL, Moving all 4 ext, alert
- Exposure - No additional wounds

Airway Issues

- What would you do?
- BVM
- SGA
- Intubate
- Surgical



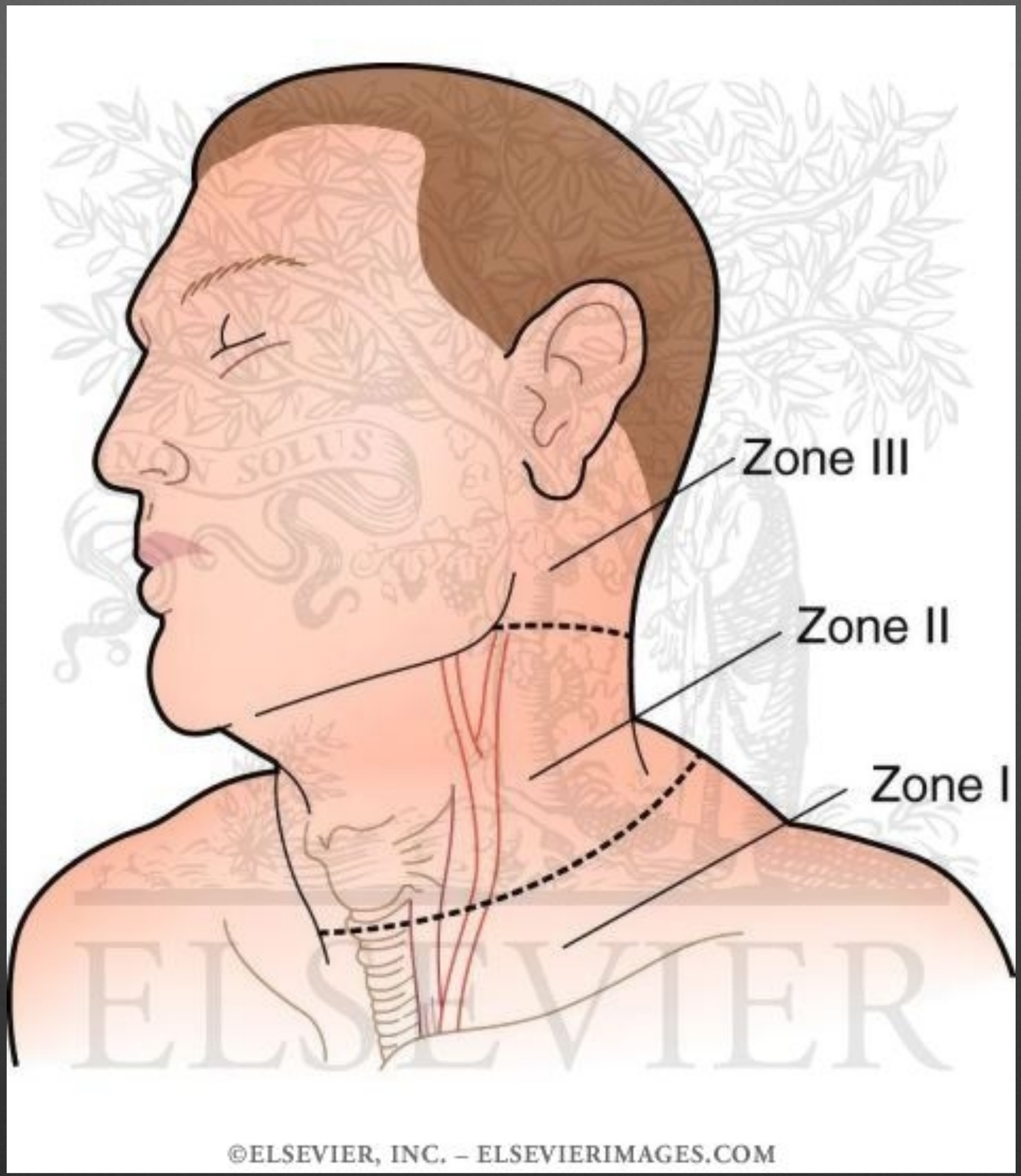


Secondary Survey

- No additional injury found
- No active bleeding from neck wound

ED Course

- Intubation attempted with RSI and double setup
- Intubation unsuccessful and surgical cric done
- MTP initiated
- Taken to OR for Exploration, but nothing found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Hospital Course

- Taken to ICU for monitoring
- Started to re-bleed and taken to Interventional Radiology for angio and embolization.
- Found a bleeding branch of external carotid that was embolized and hemorrhage controlled.
- Decannulated post-op day 2
- Discharged without incident

Case 3

- Motor Vehicle Collision with Ejection

Initial Information

- MVC with ejection on highway
- 46 Y/O Male patient who was unrestrained driver
- Found approximately 60 feet from the vehicle
- Alert, complaining of LUE pain and “road rash”.

Primary Survey

- VS: BP 140/87 HR 150's RR18 SpO2 95% ra
- A: Intact, no fluid or blood
- B: CTA bilat, normal effort
- C: Tachy, no external hemorrhage
- D: GCS 15, PERL, MAE
- E: Degloving injury scalp, left shoulder, multiple abrasions

On-Scene

- What are your priorities?
- Transport decision?
- What treatments prior to transport?

Secondary Survey

- Alert, Oriented
- HEENT: multiple scalp abrasions and lac
- Neck: no stepoff or deformity
- Chest: abrasions
- Abd: Distended, firm but non-tender
- Pelvis: tenderness and crepitus right iliac crest
- Ext: Lac left knee. PMS x 4
- Back: abrasions, small avulsion over left shoulder

What now?

- Remains persistently tachycardic
- SBP drops to the 80’s, then 60’s
- Unable to get peripheral IV
- Chest x-ray shows left shoulder dislocation

Trauma Team

- Placed a 8.5Fr introducer in left groin
- Shoulder reduced by ED Attending
- FAST negative
- MTP initiated

The Real Question

- Where is the blood?
  - Scalp?
  - Chest?
  - Lacerations?
  - Abdomen?
  - Pelvis?
  - Street?

Where to?

- CT
- ICU
- OR
- IR

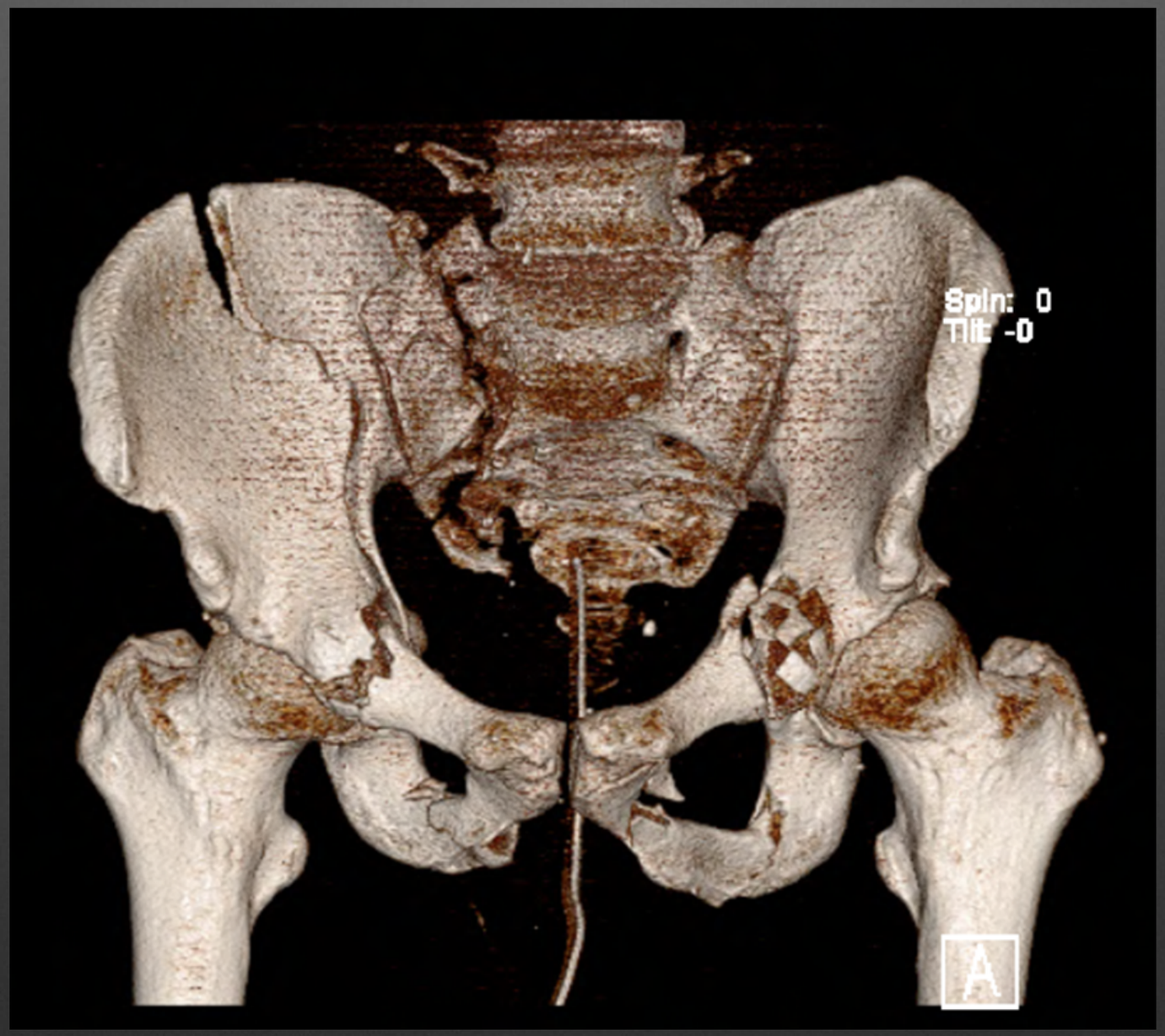
OR

- Ex-Lap
  - negative
- Lacs washout and repair
- What now?

CT

- Head: L frontal skull Fx, non-depressed
- Spine: R L3-5 transverse process and L5 L TP Fx
- Chest: negative
- Abd/pelvis: Acute comm fx of right ilium through acetabulum, inf/sup rami fx

3D Reconstructs



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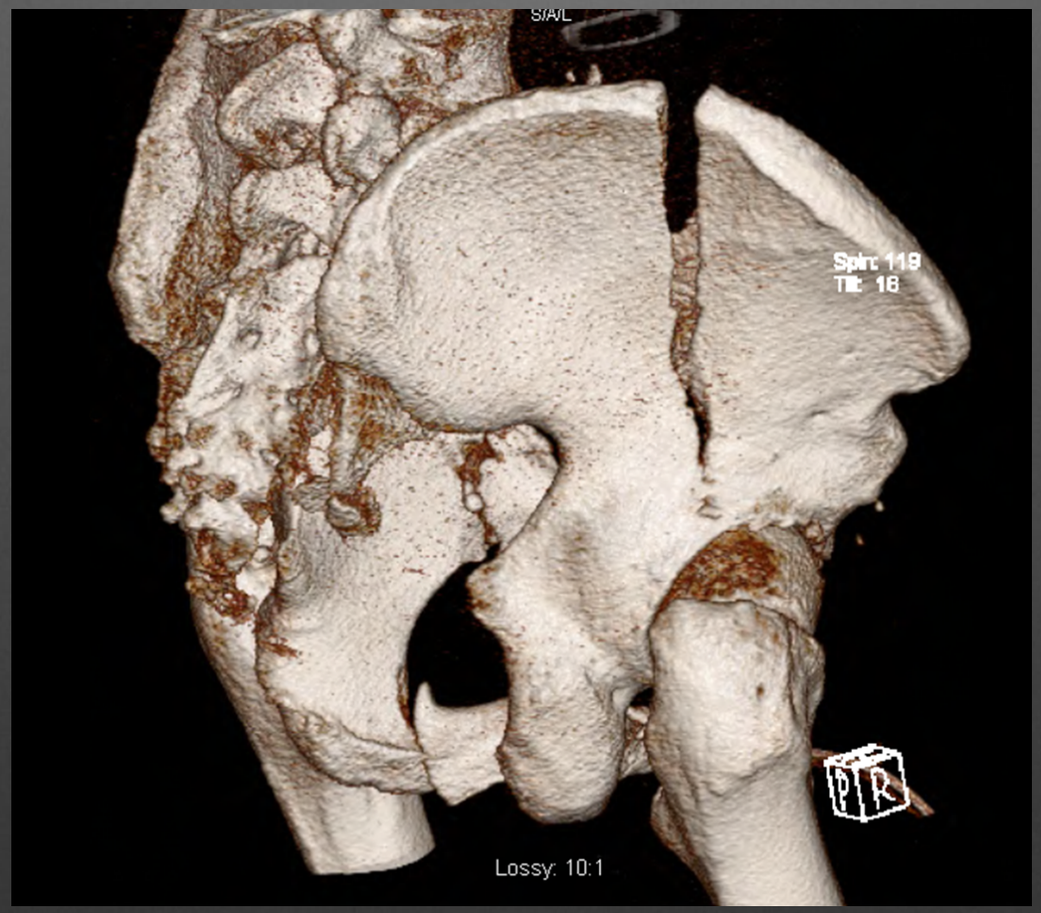

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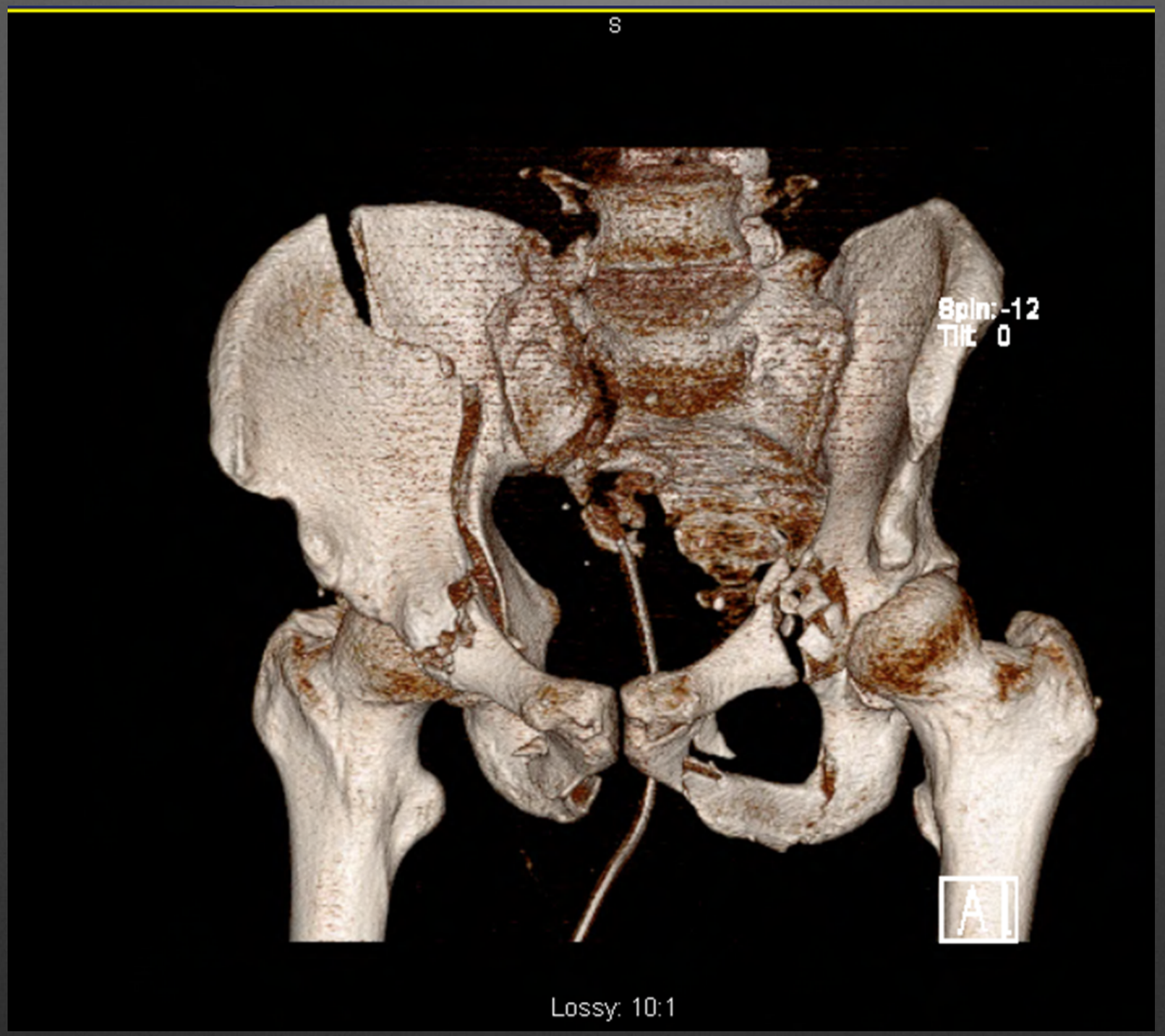
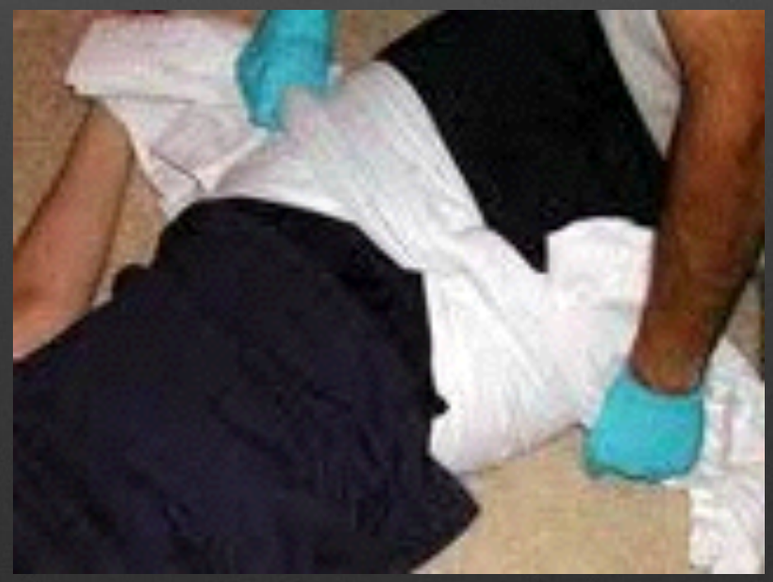
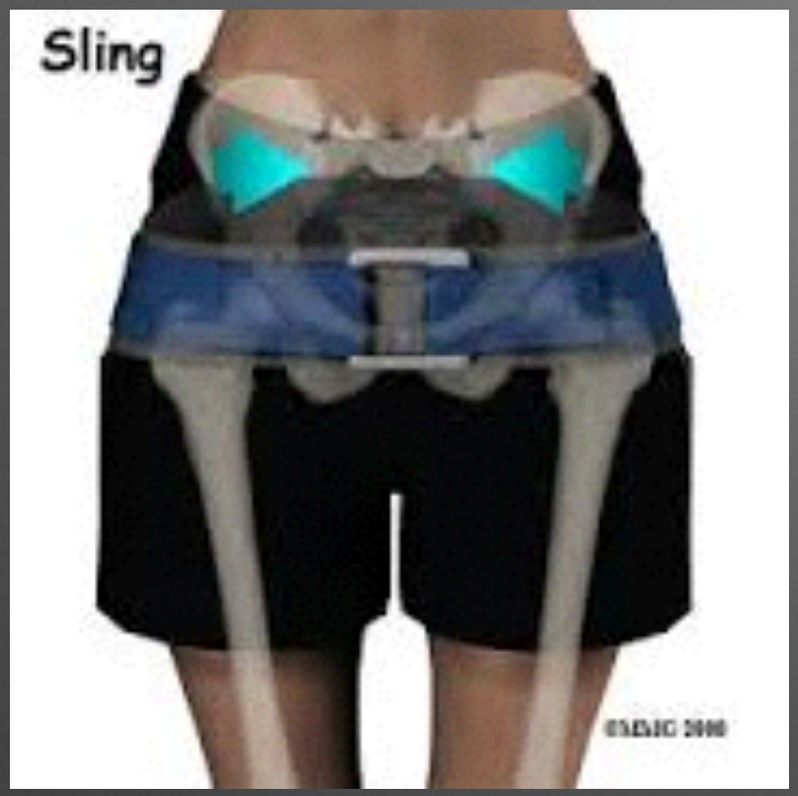
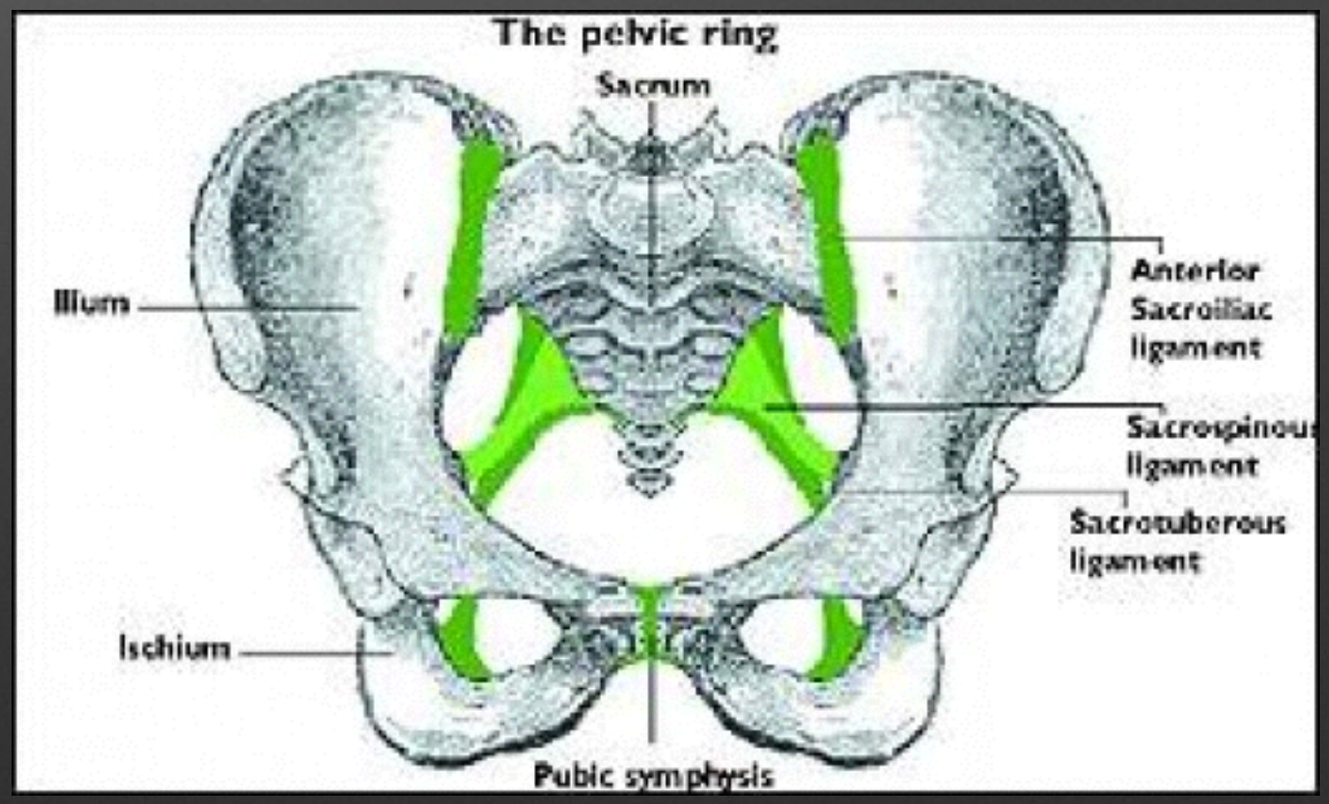


Pelvic Fractures




Sling


The pelvic ring
Sacrum
Ilium
Ischium
Pubic symphysis
Anterior Sacroiliac ligament
Sacrospinous ligament
Sacrotuberous ligament

Case 4

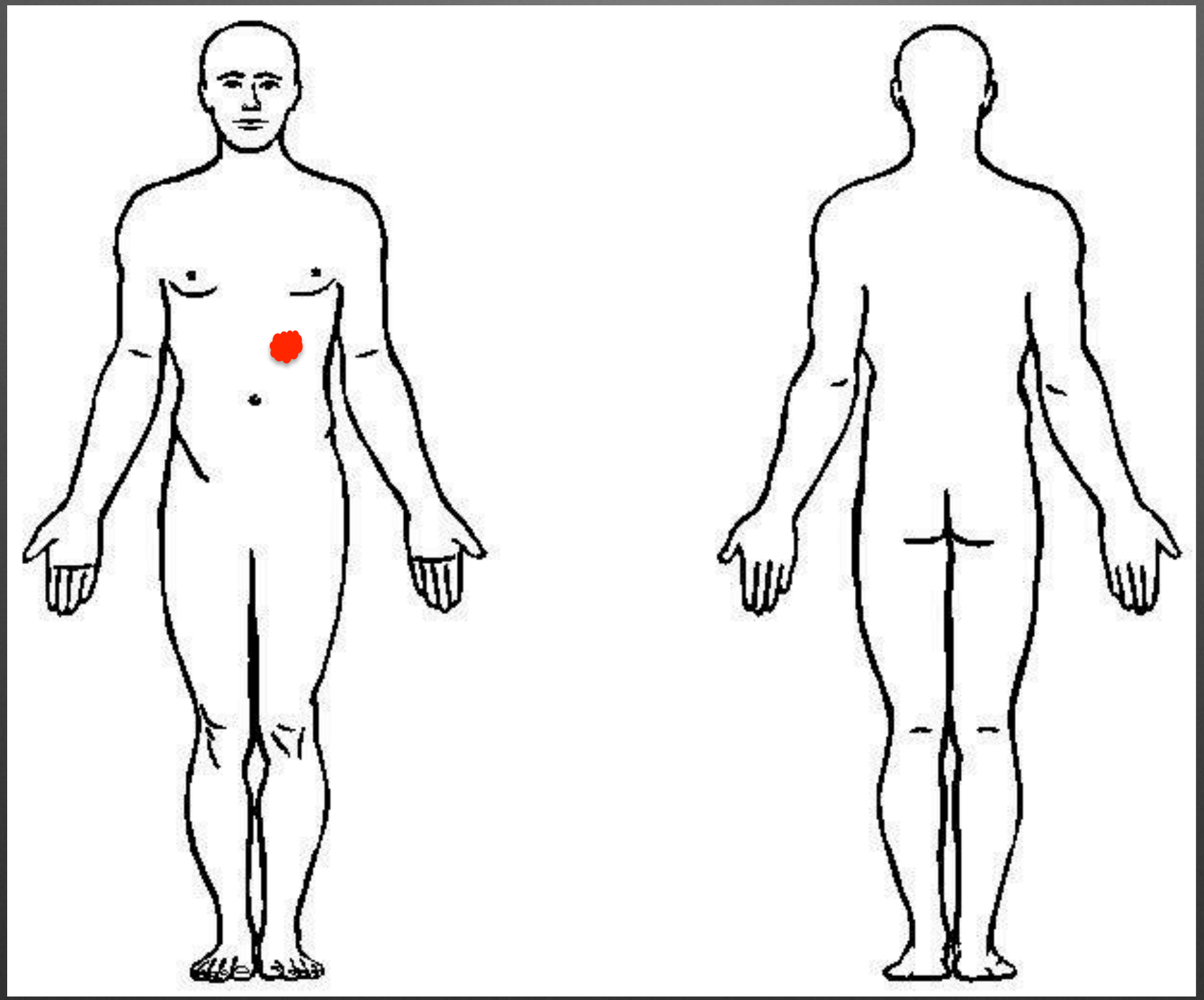
- GSW to the Abdomen

Initial Information

- 20 y/o Male with single GSW to left abdomen
- Found on street, claims he was just walking town the street and he was shot by “some dude”.
- NYPD on scene, no immediate threats

Primary Survey

- A: intact, phonating well, clear speech
- B: CTA bilat, LS clear and equal
- C: Strong radial pulses, no significant hemorrhage
- D: GCS 15, PERL
- E: single GSW LUQ of abdomen
- VS: BP 94/50 HR 90-126 RR16 SpO2 98%



Secondary Survey

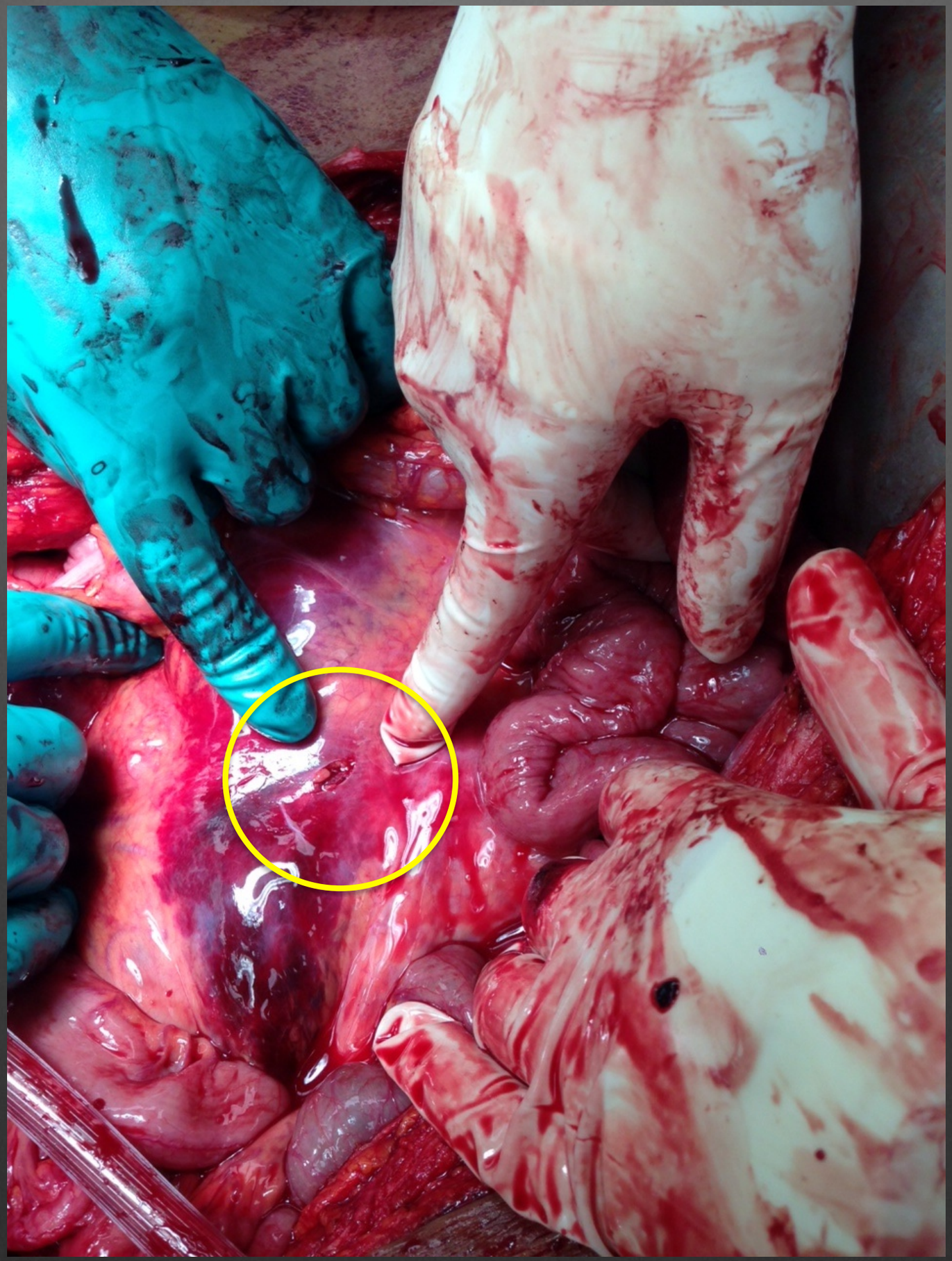
- Alert and awake
- PERL, moist MM
- Neck supple, no woulds
- Chest CTA bilat, non-tender
- Abd soft, non-distended, GSW to LUQ with diffuse tenderness
- Ext: no injuries, sensation intact, pulses +2

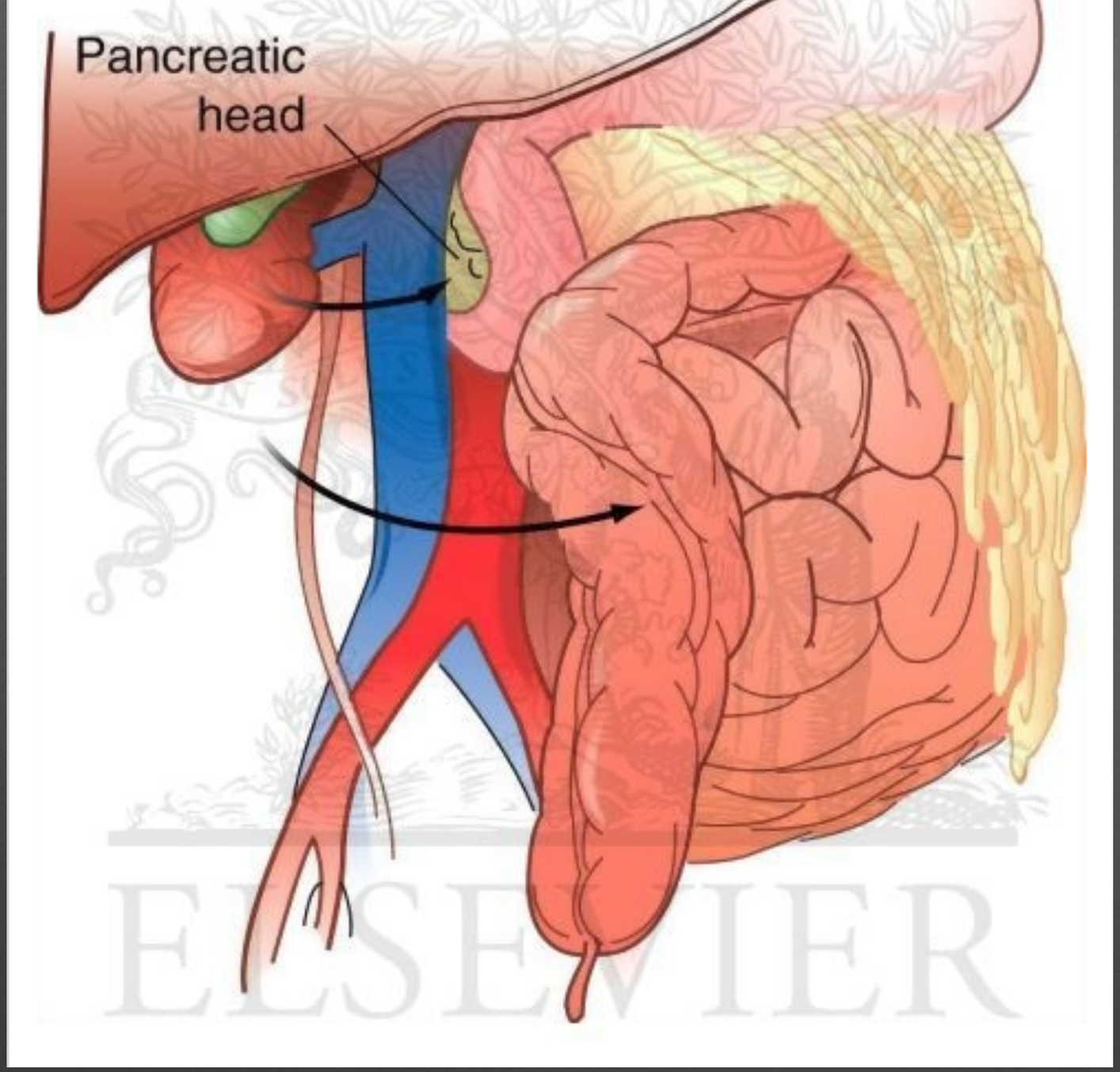
Now What?

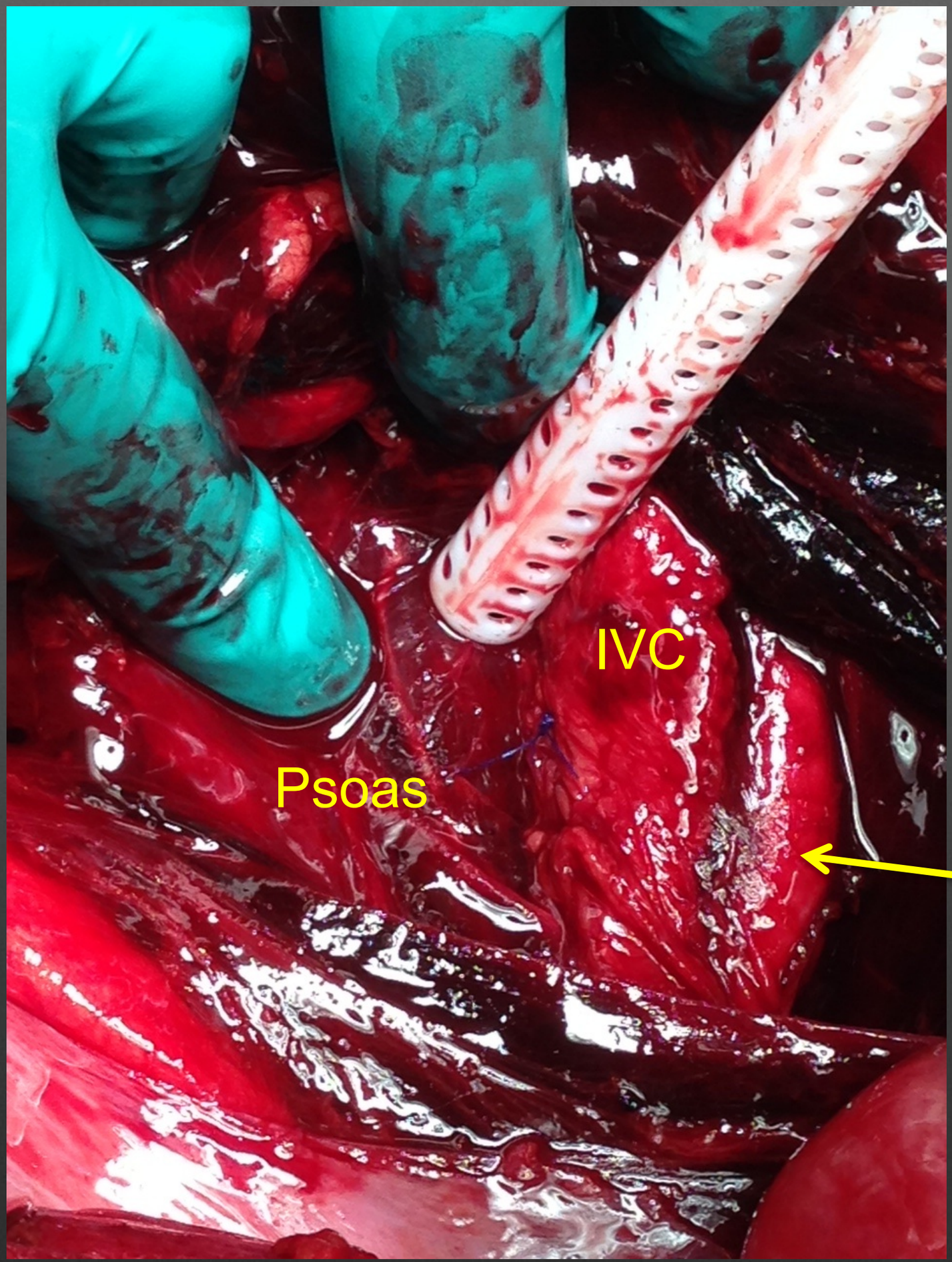
- XRAYS?
- CT?
- ICU?
- Go directly to the OR, do not pass Go, do not collect $200

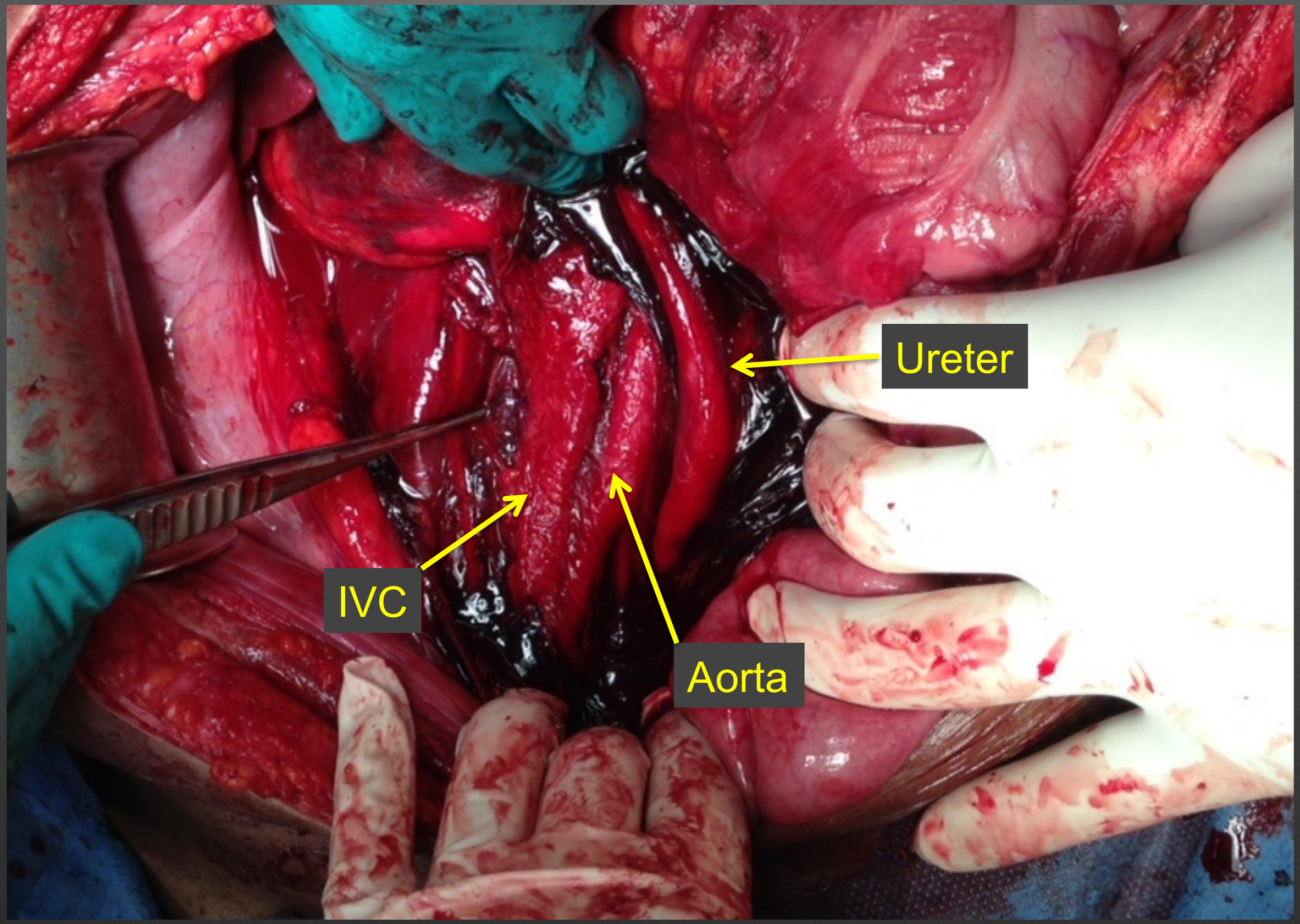
OR

- Injuries found:
- Through and through mesenteric injury x2
- Through and through Small Bowel Injury
- Through and Through IVC injury with large Retroperitoneal hematoma




Pancreatic
head


IVC
Psoas
Aorta


Ureter
IVC
Aorta

Case Follow Up

- Went to ICU
- Remained hemodynamically stable
- Discharged home on Day 5

Case 5

- Pedestrian struck by Bus

Initial Scene

- 62 y/o woman pinned under front of bus
- FDNY on scene preparing to lift bus with airbags
- Patients head and upper torso accessible

Primary Assessment

- Awake, alert
- BP 80/P HR 100 RR16 SpO2 96%
- Airway patent, speaking clearly
- Lungs CTA bilat
- Weak radial pulses, oozing from Right hip/pelvis wound
- CGS 15, PERL

E: Expose

- Large degloving injury of right upper thigh, buttock and pelvis
- oozing blood but no arterial bleeding

What now?

- Transfusion 2 units pRBC
- Consider TXA
- Where to?
  - OR
  - ICU
  - IR

ED Course

- Continues to ooze blood and get hypotensive
- 3rd and 4th unit of blood ordered
- Left subclavian cordis placed
- Pelvic xray showed sup/inf rami fx
- Plan to go to IR

Interventional Radiology

- Accessed left femoral
- gelfoam ebolization
- VS stabilized
- Transferred to trauma center

Hospital Course

- prolonged wound care
- hyperbarics
- multiple OR washouts
- Back to Spain a few days ago

Case 6

- Man down on subway platform

Scene Info

- 20 y/o male, intoxicated
- found down on platform after getting right leg caught between platform and train
- Scene safe

Primary

- A: patent and clear
- B: CTA bilat, no distress
- C: Radial pulses intact, bilat 18g
- D: GCS 14 (intox)
- E: Mangled RLE, deep lac to RUE
- VS: BP 114/60 → 77/40 HR 104

Secondary

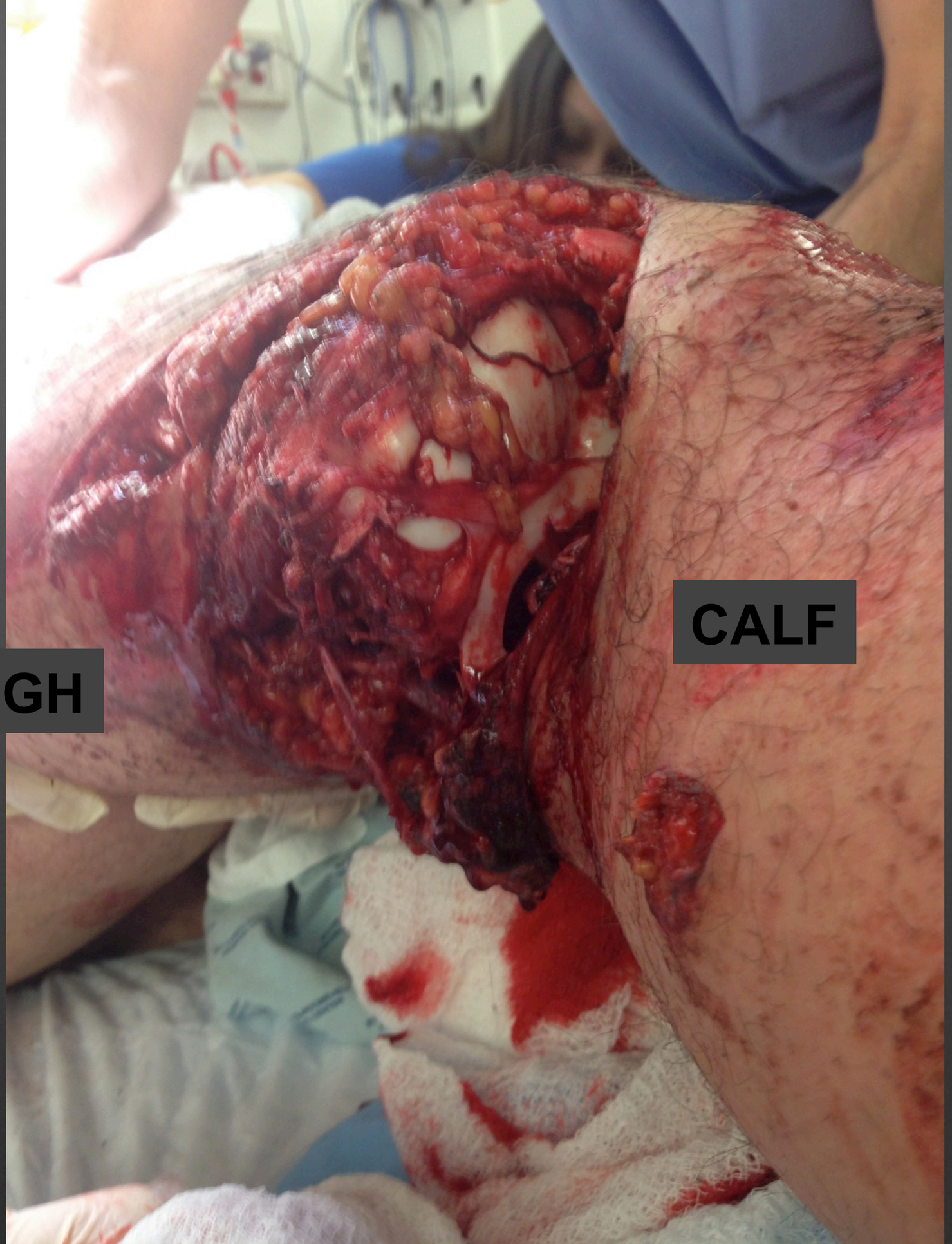
Extremities:

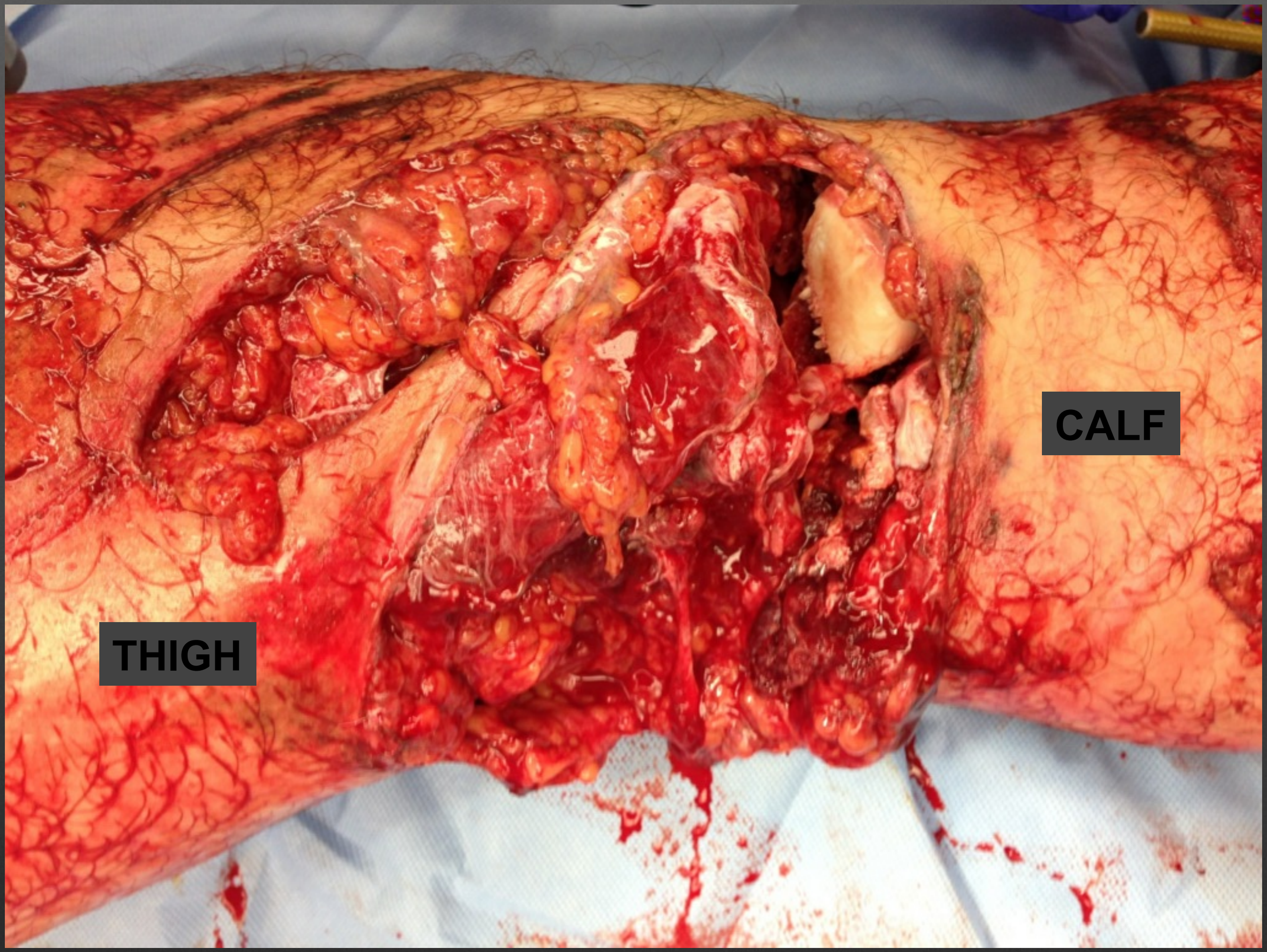
Right upper extremity with 4x4 cm deep laceration to medial aspect near axilla. No expanding hematoma. 2+ radial pulses

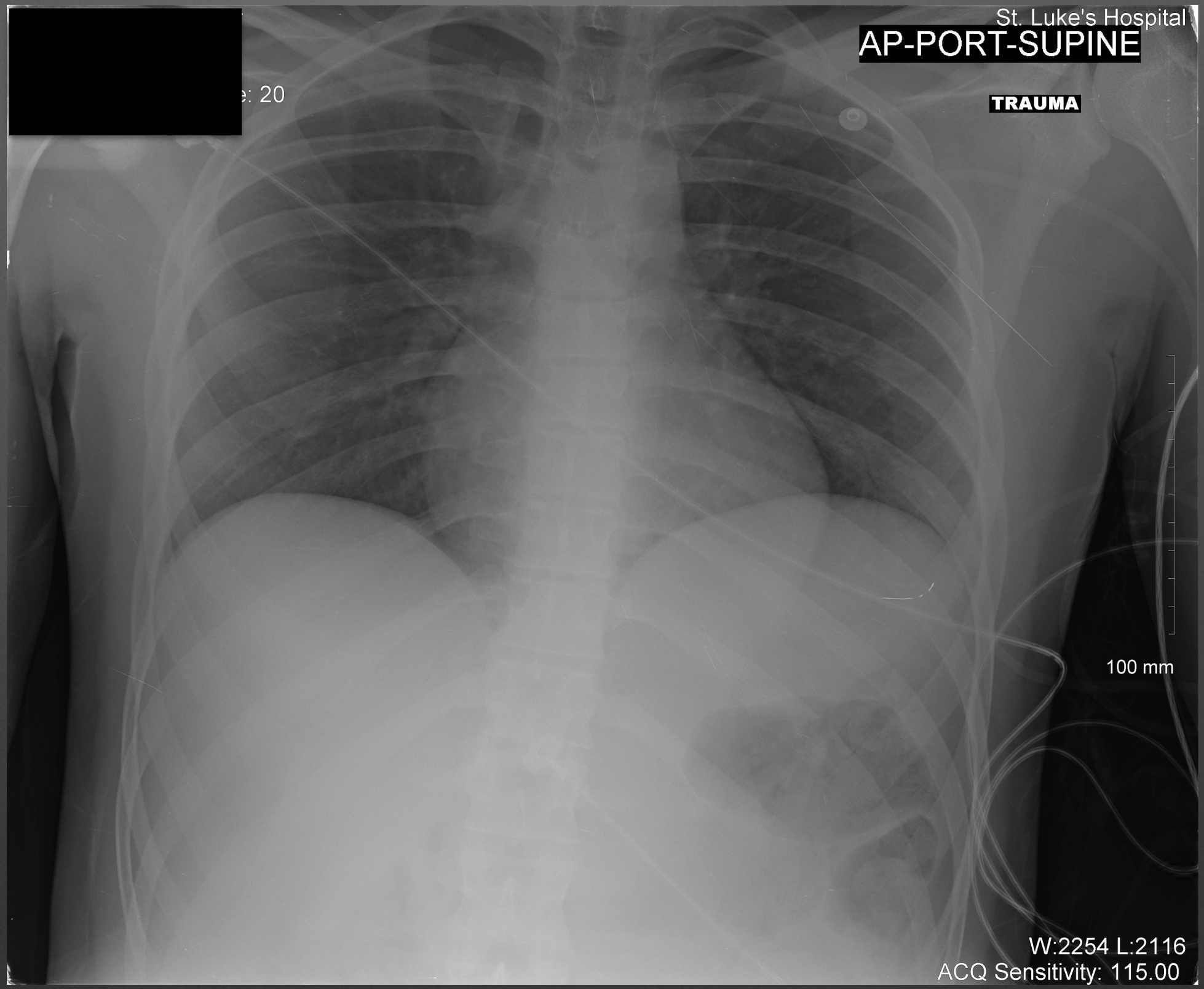
Mangled right lower extremity at popliteal fossa/ posterior thigh with dislocated knee and open tibia/ fibula fractures

Pulses: R DP faintly palpable, L DP 1+, R PT 1+, L PT 1+

Unable to move RLE, minimal sensation


CALF
THIGH


CALF
THIGH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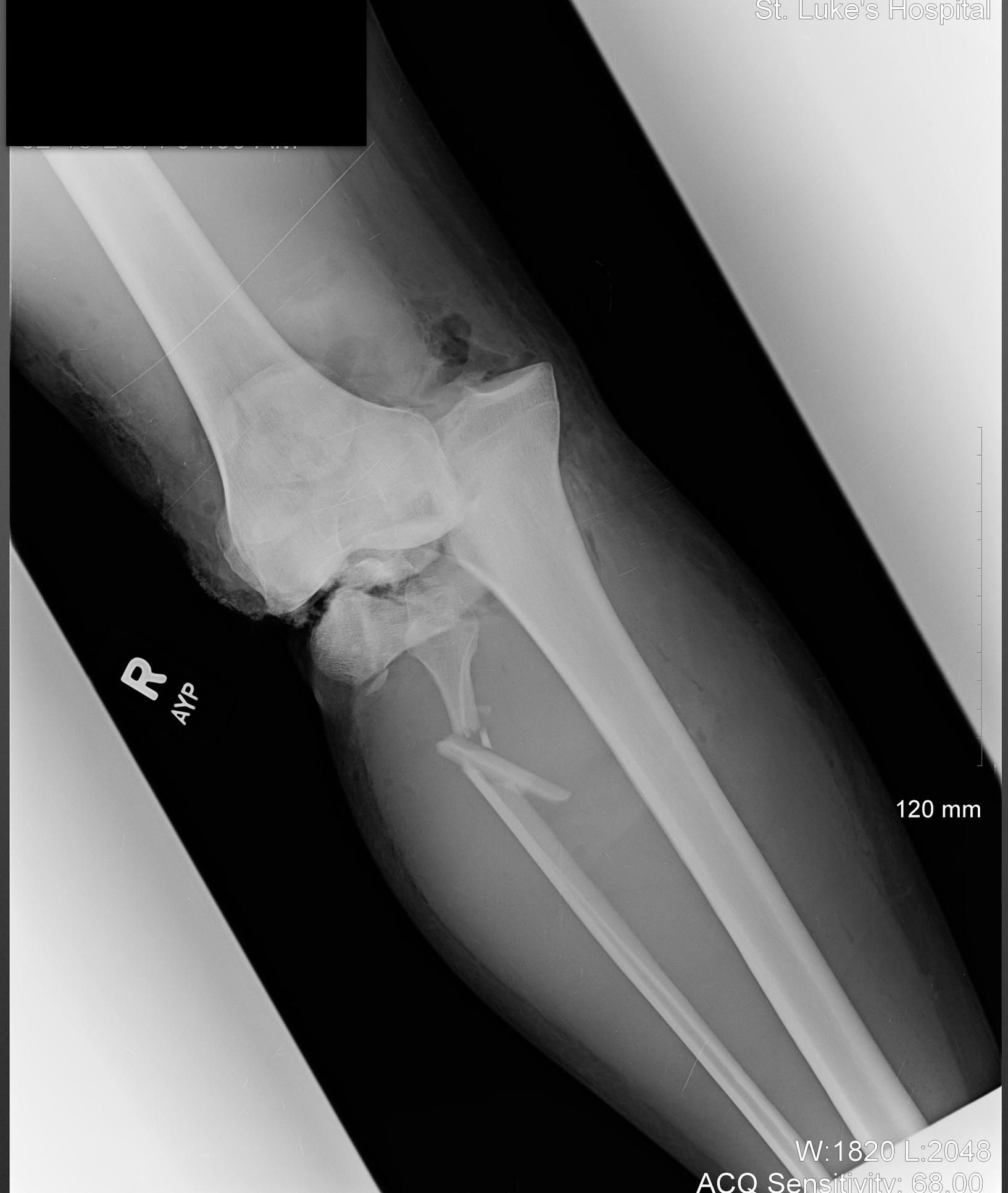
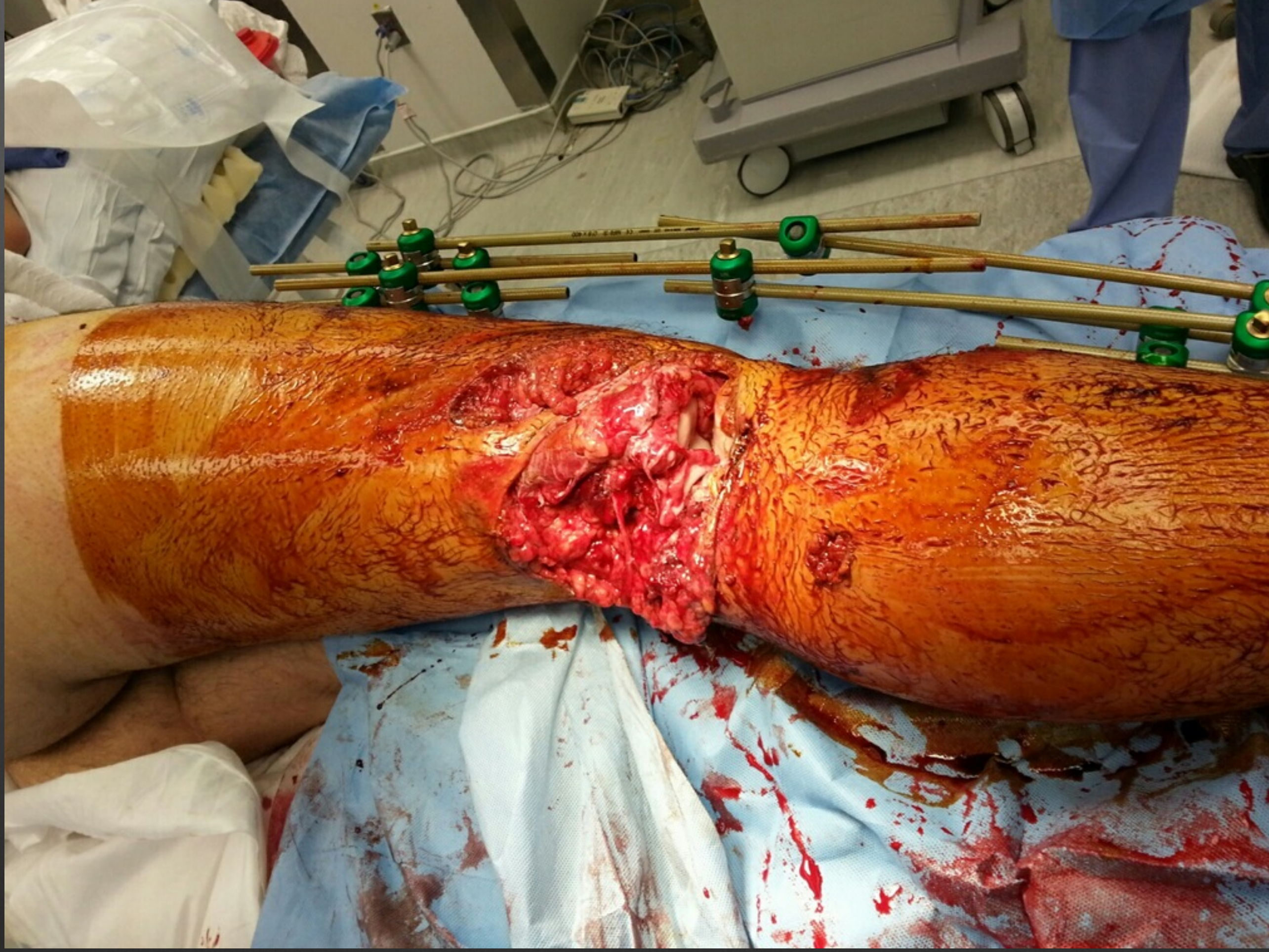
e: 20
St. Luke's Hospital
AP-PORT-SUPINE
TRAUMA
100 mm
W:2254 L:2116
ACQ Sensitivity: 115.00


St. Luke's Hospital
R
AYP
120 mm
W:1820 L:2048
ACQ Sensitivity: 68.00



Mangled Extremity Score

- **Skeletal/soft-tissue injury**:

low energy (stab, simple fracture, civilian gunshot)	1
medium energy (open or multiple fracture, dislocation)	2
high energy (shotgun, military gunshot injury, crush injury)	3
very high energy (as above, plus soft-tissue avulsion)	4

- **Shock**:

stable (systolic RR maintained > 90mmHg)	0
transient hypotension	1
persistent hypotension	2

- Limb ischaemia: **(* doubled for limb ischaemia > 6h)**

no ischaemie (puls present)	0
mild ischaemia (pulse reduced or absent, but normal perfusion)	1*
moderate ischaemia (reduced capillary refilling)	2*
severe ischaemia (no capillary refilling)	3*

- Age:

< 30 years	0
30 – 50 years	1
> 50 years	2

Score range: **1 - 14**