Chest and Abdominal Trauma

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Chest and ABD Trauma

- Anatomy
- Cases
- Identify Injuries
- Treatment
Anatomy

- Chest
  - Lower rib margin up, Scapular tip up
  - Heart, Lungs, Vessels, Esophagus

- Abdomen
  - Below nipples/Scapular tip to pelvis
  - Hollow/Solid Organs

- Pelvis

- Spine and rib cage
Case 1

- Respond to the Headwall for an adult male with impaled object, unknown further.
Case 1 – On scene

- 21 y.o. male with impaled ski pole to right lower chest.

- Alert but agitated, BP no radial pulse, HR 130, Resp 30 shallow and labored, diaphoretic cool skin, strong odor of EtOH
Case 1 – Primary Survey

- What to do?
  - Scene Safety – more ski poles (arrows)?
- A – B – C – D – E
  - A – Patent, Protected
  - B – Marginal, midline trachea
  - C – “Shock”-inadequate tissue perfusion
  - D – Intact
  - E – Where exactly is the pole?
Case 1 – Exam

- HEENT/Back – normal
- Chest – equal, shallow labored respirations, Ski Pole to right lower chest wall, no SQ air
- ABD – rigid, distended, diffusely tender
- Pelvis - stable
- Ext – atraumatic
Case 1 – Treatment

- Rapid trauma assessment/transport
  - Sick vs. Not-Sick
- ABC’s, Oxygen
- Arrow stabilization – Control Bleeding
  - ? Backboard / Bandages / Cut
- Early notification to Clinic/ED - EMS.
- Reassess
Case 1 - Summary

- Intra-ABD injury only

- Broadhead (ski pole) in Liver, significant hemoperitoneum

- Pt taken to OR for removal
Identifying SHOCK on the hill

- Volume Shock
  - Low Blood Volume – RBC’s/Plasma

- Vascular Shock
  - Poor Vascular Tone – Pipes/Squeeze

- Cardiogenic Shock
  - Poor Cardiac Output - Pump

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Identifying SHOCK on the hill

- Vital Sign Pattern
  - Mental Status (AVPU)
    - Alert with qualifier (i.e. Alert and Confused)
  - Heart Rate
  - Pulse Location (Radial/Femoral/Carotid)
  - Respiratory Rate and Effectiveness
  - Skin Temperature, Color, Dry/Wet
  - Pulse Ox / BP

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Case 2

- Respond to top of AV lift for a lift operator that has been shot, unknown further.
Case 2

- 35 y.o. male lift operator sustained shotgun wound to right chest at close range by angry skier who has left the scene. Law enforcement enroute.

- Unresponsive, weak Carotid pulse, HR 160, Resp 4, diaphoretic cool skin.
Case 2 – Primary Survey

- What to do?
  - Scene Safety – more shots?
- A – B – C – D – E
  - A – No gag, OPA – Suction available
  - B – Assist Ventilations w/ BVM, Occlusive Bandage
  - C – Stop bleeding, rapid transport
  - D – Unable to assess - Unresponsive
  - E – Where exactly is the injury?
    - Chest or Abdomen or Both?
Case 2 – Exam

- HEENT/Back – normal *** (no exit)
- Chest – large sucking chest wound to R chest
- ABD – soft, non-distended
- Pelvis - stable
- Ext – atraumatic
Case 2 – Treatment

- Rapid trauma assessment/transport
  - Sick vs. Not-Sick
- ABC’s, Oxygen, BVM
- Control Bleeding/Occlusive Bandage
- No spinal immobilization – Backboard o.k.
- Early notification to Clinic/ED - EMS.
- Reassess
Case 2 - Summary

- Significant Chest and Potentially ABD wound.

- Rapid treatment and transport
  - Needs an Surgeon and OR
Case 3

- Respond to Airforce Chutes in Granite Canyon for an injured skier caught in an avalanche.

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Case 3

- 30 y.o. Male caught in an avalanche carried 2,000 ft with obvious abdomen and left femur injuries.

- Alert and orientated, weak radial pulse, HR 130, RR 26 and labored, Skin cool, pale, dry.

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Case 3 – Primary Survey

- What to do?
  - Scene Safety – avalanche hang fire?
- A – B – C – D – E
  - A – Patent, Protected
  - B – Adequate, mild respiratory distress
  - C – “Shock”- stop bleeding
  - D – Intact
  - E – All injuries identified?
Case 3 – Exam

- HEENT/Back – normal
- Chest – normal, mild respiratory distress
- ABD – soft, non-distended, bleeding wound left lower abdomen
- Pelvis – stable, except for left pelvic wing
- Ext – left femur deformity, right knee pn
Case 3 – Treatment

- Rapid trauma assessment/transport
  - Sick vs. Not-Sick
- ABC’s, Oxygen
- Control Bleeding
- Spinal immobilization – Backboard splints all
- Early notification to Clinic/ED - EMS.
- Reassess
Additional Injuries

- Grade 1 Liver Laceration
- Right Kidney Contusion
- Multiple Bowel Injuries
  - Requiring Partial Colectomy
- Right Knee ACL/MCL tears

Segmental Left femur fracture, left pelvic wing fracture, aspiration/pulmonary contusion.
Case 3 - Summary

- Multiple System Trauma – Rapid Evacuation (helicopter)
- Hospital Course
  - Intubated in ICU 6 days
  - Discharged after 12 additional hospital days
  - Prolonged rehab and multiple surgeries
Case 4 – Callout

- Respond to Expert Chutes for injured snowboarder.
Case 4

- 40 y.o. male complaining of severe groin pain after taking big air and collided with tree-rock-ground. He complains of blood coming from penis and pelvic pain.

- Alert and Orientated, Strong Radial Pulse, HR 102, Resp 22, Skin is pink, warm, and dry.
Case 4 – Primary Survey

What to do?
- Scene Safety – More Boarders droppin’ in?

A – B – C – D – E
- A – Patent, Protected
- B – Adequate
- C – “Shock”- stop bleeding
- D – Intact
- E – All injuries identified?
Case 4 – Exam

- HEENT/Back – normal
- Chest – equal, clear, shallow respirations
- ABD – soft, TENDER, non-distended
- Pelvis – UNSTABLE
- GU – Significant penile/scrotal swelling and ecchymosis, with bloody penile drainage
- Ext – atraumatic
Case 4 – Treatment

- Rapid trauma assessment/transport
  - Sick vs. Not-Sick
- ABC’s, Oxygen
- Control Bleeding
- Spinal immobilization – Vacuum Mattress/Backboard splints all
- Early notification to Clinic/ED - EMS.
- Reassess
Case 4 - Summary

- Pelvic fractures
  - Urethra/Bladder injuries
  - Can have significant bleeding with “open-book” injury
  - Pelvic binder may decrease bleeding
TPOD

"If you want to reduce the volume in the pelvis, I have never seen nor used anything that works as well as the T-POD. The best thing is that it is the most well designed and efficient device that is exceptionally simple to use."

— Captiolin Mintz MD, FACR, FCCM, DMSc, Director, Newborn Intensive Care Unit, Hospital of the University of Pennsylvania, Children's Hospital of Philadelphia, Children's Hospital of Philadelphia Medical Center

T-POD provides powerful, fast and safe simultaneous circumferential compression of the pelvic region.

These photos demonstrate (at right) the T-POD’s effectiveness in closing and stabilizing the pelvic ring.

Pre-application of TPOD

Post-application of TPOD

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Sam Sling
Chest Trauma

- Rib Fractures - Flail
- Pneumothorax
- Hemothorax
- Aortic
  - Rupture
  - Dissection
- Cardiac
  - Rupture
  - Tamponade
- Spine
- Diaphragm Rupture (L)
- Lungs
  - Laceration
  - Contusion
- Mediastinum
  - Esophagus
  - Airways - Bronchus
Abdominal Trauma

- Solid Organs
  - Liver
  - Spleen
  - Kidney

- Hollow Organs
  - Intestines
  - Bladder
  - Blood Vessels

- Pelvis

- Spine

- Pregnancy
Summary

- Chest and Abdominal Injuries require rapid recognition, treatment, and transport.
- Remember A-B-C-D-E and transport
- Early Clinic/EMS notification
Questions?

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