29

Chest and Abdominal Trauma
OBJECTIVES

29.1 Define key terms introduced in this chapter. Slides 11, 15, 18, 27

29.2 Describe mechanisms of injury commonly associated with chest injuries. Slides 9–10

continued
29.3 Describe specific chest injuries, including flail chest, open chest wounds, pneumothorax, tension pneumothorax, hemothorax, hemopneumothorax, traumatic asphyxia, cardiac tamponade, aortic injury, *commotio cordis*, and the assessment and management for each of these specific injuries. Slides 11–16, 18–24
29.4 Discuss mechanisms and types of abdominal injury. Slide 27

29.5 Demonstrate the assessment and management of patients with blunt and penetrating abdominal injuries, including management of evisceration. Slides 28–33
MULTIMEDIA

- Slide 25  Open Pneumothorax and Hemothorax Video
- Slide 34  Liver Injuries Video
CORE CONCEPTS

- Understanding chest injuries and emergency care for chest injuries
- Understanding abdominal injuries and emergency care for abdominal injuries
Topics

- Chest Injuries
- Abdominal Injuries
Chest Injuries
Chest Injuries

• Blunt trauma
  – Can fracture ribs, sternum, and costal (rib) cartilages

• Compression
  – Occurs when severe blunt trauma causes the chest to rapidly compress

continued
Chest Injuries

- Penetrating objects
  - Bullets, knives, pieces of metal or glass, steel rods, pipes, other objects
  - Can damage internal organs and impair respiration
Closed Chest Injuries

Flail Chest

Paradoxical Motion
Assessment: Flail Chest

- Mechanism of injury
- Difficulty breathing/hypoxia
- Chest wall muscle contraction
Treatment: Flail Chest

- Primary assessment for life threats
- Administer oxygen
- Use bulky dressing to stabilize flail segment
- Monitor patient for respiratory rate and depth
  - Assist ventilations if too shallow
Open Chest Injuries

- Difficult to tell what is injured from entrance wound
- Assume all wounds are life-threatening
- Open wounds allow air into chest
  - Sets imbalance in pressure
  - Causes lung to collapse
Assessment:
Open Chest Wound

- “Sucking chest wound”
- Direct entrance wound to chest
- May or may not be a sucking sound
- May be gasping for air
Treatment: Open Chest Wounds

- Maintain open airway
- Seal wound
- Occlusive dressing
- Administer oxygen
- Treat for shock
- Immediate transport
- Consider ALS
Think About It

• Does the patient’s chest injury need to be treated during the primary assessment?
• Does the open chest injury require an occlusive dressing?
• Does the patient’s injury necessitate immediate transport to a trauma center?
Injuries Within the Chest Cavity

Flutter Valve
Traumatic Asphyxia

• Sudden compression of chest forcing blood out of organs and rupturing blood vessels
• Neck and face are a darker color than rest of the body
• May cause bulging eyes, distended neck veins, broken blood vessels in face
Cardiac Tamponade

• Direct injury to heart causing blood to flow into the pericardial sac around the heart
• Pericardium is a tough sac that rarely leaks
• Increased pressure on heart so chambers cannot fill
Cardiac Tamponade

- Blood backs up into veins
- Usually a result of penetrating trauma
- Distended neck veins
- Shock and narrowed pulse pressure
Aortic Injury

• Aorta is the largest blood vessel in the body
• Penetrating trauma can cause direct damage
• Blunt trauma can sever or tear the aorta
• Damage can cause high-pressure bleeding; often fatal

continued
Aortic Injury

- Patient complains of pain in chest, abdomen, or back
- Signs of shock
- Differences in blood pressure between right and left arms
Commotio Cordis

- Uncommon condition
- Trauma to chest when heart is vulnerable
- Ventricular fibrillation (VF)
- Treat like VF patient: CPR, defibrillation
Open Pneumothorax and Hemothorax Video

Click [here](#) to view a video on the subject of open pneumothorax and hemothorax.
Abdominal Injuries
Abdominal Injuries

- Can be open or closed
- Internal bleeding can be severe if organs or blood vessels are lacerated or ruptured
- Serious, painful reactions if hollow organs rupture
- Evisceration may occur
Assessment: Abdominal Injuries

• Pain, initially mild but rapidly becoming intolerable as bleeding worsens
• Nausea
• Weakness
• Thirst

continued
Assessment: Abdominal Injuries

• Indications of blunt trauma to chest, abdomen, or pelvis
• Coughing up or vomiting blood
• Rigid and/or distended abdomen
Treatment: Abdominal Injuries

- Carefully monitor airway in presence of vomiting
- Place patient on back with knees flexed to reduce tension on abdominal muscles
- Administer oxygen
- Treat for shock

continued
Treatment: Abdominal Injuries

- If allowed, utilize pneumatic anti-shock garments (PASG)
- Nothing to patient by mouth
- Continuously monitor vital signs
Treatment: Evisceration

- Do not touch or replace eviscerated organs
- Apply sterile dressing moistened with sterile saline over wound site
- For large evisceration, maintain warmth by placing layers of bulky dressing over occlusive dressing
Treatment: Impaled Object

- Do not remove
- Stabilize with bulky dressings bandaged in place
- Leave patient’s legs in position found to avoid muscular movement that may move impaled object
Liver Injuries Video

Click here to view a video on the subject of liver injuries.
Chapter Review

• An open chest or abdominal wound is considered to be one that penetrates not only the skin but the chest and abdominal wall to expose internal organs.

• Open chest and abdominal wounds are life threatening.

continued
Chapter Review

- A flail chest is characterized by paradoxical motion.
- Seal an open chest wound with an occlusive dressing taped on three sides to make a one-way valve.
- Closed chest wounds are difficult to distinguish.
Chapter Review

- A patient who collapses in cardiac arrest after a force to the center of the chest should receive CPR.
- If a patient develops signs of tension pneumothorax, arrange immediately for ALS intercept.
Chapter Review

- When solid abdominal organs are injured, life threatening amounts of blood loss can occur.
- When hollow abdominal organs are injured, their contents spill into the abdominal cavity causing irritation.
Remember

- Blunt trauma, penetrating trauma, and compression are mechanisms that can injure the chest and abdomen.
- *Open* or *closed* pertains to the integrity of the chest or abdominal wall after injury.
- Seal open chest wounds to prevent air from entering the chest cavity.
Remember

• Closed chest and abdominal wounds bear a high risk for underlying organ system damage and internal bleeding. Use mechanism of injury and patient assessment to recognize the signs and symptoms of shock.
Remember

- EMTs should learn signs and symptoms, and treatment procedures for specific chest and abdominal injuries.
Questions to Consider

- Is the patient’s breathing adequate, inadequate, or absent?
- Is the patient displaying signs of shock?
- Is there an open wound in the chest that needs to be sealed?
Questions to Consider

- Is the patient displaying signs of a tension pneumothorax?
- Is there an open wound in the abdomen that needs to be dressed and covered?
Critical Thinking

• You are caring for a patient who was shot in the chest with a nail gun. You applied an occlusive dressing around the wound. The patient is suddenly deteriorating. He is having extreme difficulty breathing and his color has worsened.
Critical Thinking

• Breath sounds have become almost totally absent on the side with the impaled nail. What complication might you suspect is causing his worsening condition? How could this be corrected?
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