ANATOMY OF A TRAUMA

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Objectives
• Highlight anatomical sites within the thorax and abdomen most susceptible to injury.
• Tounderstand the interaction of external forces with fixed anatomical sites and the resulting pattern of injury.
• To appreciate how borders and recesses of anatomical compartments determine CT findings.

Blunt trauma mechanisms

Pulmonary parenchyma

Injuries to the lung may result from the impact of forces through the thoracic cavity and may also occur due to the initial trauma and the secondary forces during the deceleration phase of the crash. These injuries are further classified into the following:

- **Compression forces**
  - Pressure applied to the lung by the upper body, resulting in contusion or bruising of the alveoli.
  - This is typically caused by the force applied to the chest by the steering wheel, dashboard, or even the seat belt.

- **Rapid deceleration injuries**
  - Caused by forces transmitted through the thoracic cavity and abdomen, resulting in contusions or bruising of the alveoli.
  - These forces may propagate from the thoracic cavity to the lung parenchyma, resulting in contusions or bruising of the alveoli.

Mediastinum

Injuries to the mediastinum may result from the impact of forces through the thoracic cavity and may also occur due to the initial trauma and the secondary forces during the deceleration phase of the crash. These injuries are further classified into the following:

- **Compression forces**
  - Pressure applied to the mediastinum by the upper body, resulting in contusion or bruising of the alveoli.
  - This is typically caused by the force applied to the chest by the steering wheel, dashboard, or even the seat belt.

- **Rapid deceleration injuries**
  - Caused by forces transmitted through the thoracic cavity and abdomen, resulting in contusions or bruising of the alveoli.
  - These forces may propagate from the thoracic cavity to the mediastinum, resulting in contusions or bruising of the alveoli.

Diaphragm

Injuries to the diaphragm may result from the impact of forces through the thoracic cavity and may also occur due to the initial trauma and the secondary forces during the deceleration phase of the crash. These injuries are further classified into the following:

- **Compression forces**
  - Pressure applied to the diaphragm by the upper body, resulting in contusion or bruising of the alveoli.
  - This is typically caused by the force applied to the chest by the steering wheel, dashboard, or even the seat belt.

- **Rapid deceleration injuries**
  - Caused by forces transmitted through the thoracic cavity and abdomen, resulting in contusions or bruising of the alveoli.
  - These forces may propagate from the thoracic cavity to the diaphragm, resulting in contusions or bruising of the alveoli.

Ventricular spaces within the abdomen and pelvis

Serious traumatic injuries to the abdomen and pelvis occur due to road traffic accidents, falls from height, or assault. These mechanisms generate force vectors that in turn produce serious injury.

- **Compression forces**
  - Pressure applied to the abdominal cavity by the upper body, resulting in contusion or bruising of the alveoli.
  - This is typically caused by the force applied to the chest by the steering wheel, dashboard, or even the seat belt.

- **Rapid deceleration injuries**
  - Caused by forces transmitted through the thoracic cavity and abdomen, resulting in contusions or bruising of the alveoli.
  - These forces may propagate from the thoracic cavity to the abdominal cavity, resulting in contusions or bruising of the alveoli.

References: