

Physiotherapy ICU 6<sup>th</sup> semester 3<sup>rd</sup> year  
Fracture Ribs

By  
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- Fractures of the ribs are common chest injuries.
- In children, the ribs are highly elastic, and fractures in this age group are therefore rare. Unfortunately, the pliable chest wall in the young can be easily compressed so that the underlying lungs and heart may be injured.

- With increasing age, the rib cage becomes more rigid, owing to the deposit of calcium in the costal cartilages, and the ribs become brittle.
- The ribs then tend to break at their weakest part, their angles.

- The ribs prone to fracture are those that are exposed or relatively fixed.
- Ribs 5 through 10 are the most commonly fractured ribs.
- The first four ribs are protected by the clavicle and pectoral muscles anteriorly and by the scapula and its associated muscles posteriorly.

- The 11th and 12th ribs float and move with the force of impact.
- Because the rib is sandwiched between the skin externally and the delicate pleura internally, it is not surprising that the jagged ends of a fractured rib may penetrate the lungs and present as a pneumothorax.

- Severe localized pain is usually the most important symptom of a fractured rib.
- The periosteum of each rib is innervated by the intercostal nerves above and below the rib.
- To encourage the patient to breathe adequately, it may be necessary to relieve the pain by performing an intercostal nerve block.

# Flail Chest

- In severe crush injuries, a number of ribs may break.
- If limited to one side, the fractures may occur near the rib angles and anteriorly near the costochondral junctions.
- This causes flail chest, in which a section of the chest wall is disconnected to the rest of the thoracic wall.
- If the fractures occur on either side of the sternum, the sternum may be flail.
- In either case, the stability of the chest wall is lost, and the flail segment is sucked in during inspiration and driven out during expiration, producing paradoxical and ineffective respiratory movements.