Thoracic trauma:-

Occurrence :- mlc in polytrauma patients

MC cause of death in:-

- Blunt thoracic trauma - tracheobronchial injury
- Penetrating thoracic trauma - hemothorax 2° to pulmonary laceration.

Life threatening injuries during 1°survey:

Airway: Airway Obstn
Tracheobronchial tree injury

Breathing: tension pneumothorax
Open "

Circulation:
Massive hemothorax
Cardiac tamponade
Traumatic circulatory arrest

Investigations:

1) Chest xray : AP view
2) eFAST (Extended focused assessment sonogram in trauma)
3) Pulse oximetry - adjunct

Mx:- Conservative with chest tubes. (majority).

* Rib fractures & Flail Chest:

↳ mlc type of thoracic trauma

Etiology :- mlc ribs fractured during CPR: 3-5th RIBS
high velocity impact : 1st / 10th - 12th RIB FRACTURE

Structures associated :-

a.) With 1st rib : Apex of lung, brachial plexus, subclavian vessels.

b.) 10th - 12th rib : (floating ribs)

Injury on → left → splenic
↳ right → liver

Ant. Vs. Post. aspect of rib:-

	Ant.	Post.
location	away from midline	closer to midline
Direction/ Orientation	Obliquely oriented	Hz. oriented

Incidence :-

→ mlc in adults

→ In children : ribs are pliable → damage the underlying organs

CF :-

Pain

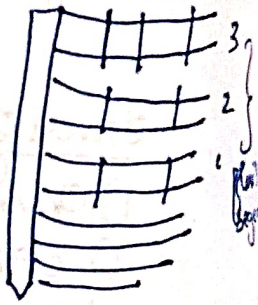
Bruising on chest

Mn:

Adequate analgesia

✡ FLAIL CHEST:

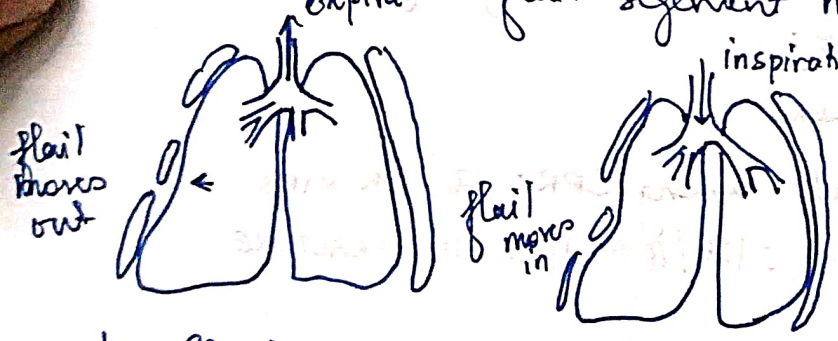
Def:- Fracture of ≥ 2 consecutive ribs at ≥ 2 places.



Complications :

Flail chest → underlying pulmonary contusion (leading cause of death)

→ paradoxical chest movement (flail segment moves in opp. direction of chest wall)



In: Chest xray

Mn: Give O_2, adequate analgesia (thoracic epidural)

↓ if RR > 20/min

PO_2 < 60 mm Hg

Intermittent positive pressure ventilation (IPPV)

(serves as int. splinting)

↓ if RR > 20/min

PO_2 < 60 mm Hg

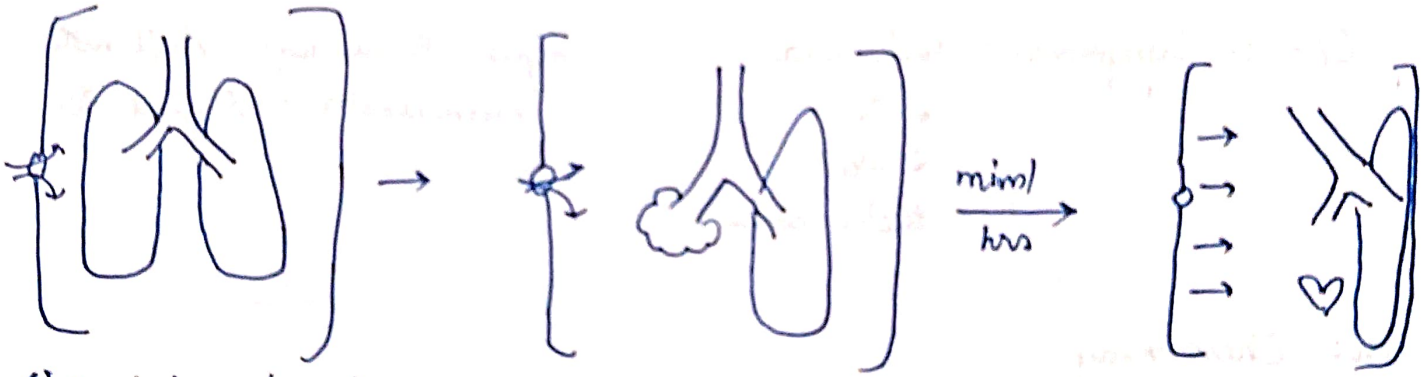
Sn. finatn

✱ Pneumothorax :- Accumulation of air in pleural space

- **Simple** — when hemodynamic profile is (N)
- **Tension** — Altered hemodynamic status

Tension pneumothorax: 1.) tracheobronchial injury
2.) Large pulmonary laceration with air leak.
3.) Penetrating wound in the chest wall : Open pneumothorax

Mechanism :-



Stab injury (open) to chest wall acts as a sucking wound (one way valve)

Collapse of affected lung, hyperinflation of opp lung

1.) trachea shifted to opp. side
2.) Heart get compressed

C/F - 1) tachypnea (↑RR) → Air hunger
2) ↓ CO_2
3) tachycardia (↑HR)
4.) ↓ SBP 5.) ↑ JVP

Absent lung ✱ marking

In :- 1) Chest xray
2) eFAST :
Barcode sign
Stratosphere sign
loss of seashore sign

↓
D/D → Hemothorax
Absent BS
PN - dull

TP
Absent BS
hyperresonant
CS - N

CT no tracheal shift
Normal BS
(N)
muffled HS

Mx → Emg. → Adults → 5th ICS mid axillary line
                → Children → 2nd ICS space midclavicular
] needle thoracocentesis

↓

Definitive – Tube thoracocentesis – Chest tube in Δ of safety

Three sided occlusive dressing for open pneumothorax

↓

Reverse flow of one way valve

Simple - if symptomatic → chest tube

* Hemothorax :- Accumulation of blood in pleural space. d/t intercostal vessel injury

C/F :- Symptoms :- tachypnea
↓ CO
↓ SBP
tachycardia

Signs : Percussion – dull note
Auscultation – Absent BS

Ix :- Chest xray
eFAST

Mx :- Chest tube insertion in triangle of safety

Indications for emergency thoracotomy (anterolateral)

1.) >1-1.5L of bleeding upon chest tube insertion
2.) >200cc/hr for ≥3 consecutive hours.
3.) Aortic injury
4.) Tracheobronchial / Esophageal injury
5.) Cardiac tamponade.

NOTE :- Emergency room thoracotomy :-
Obsolete now.
Disadvantage :-
Open cardiac massage [causes contaminated wound]
High mortality

* Chest Tube :-

Site of Insertion - △ of safety → placed over the upper border of lower rib.

Structures pierced :-

All areas to be anesthetised :-

1.) Skin 2.) Sup. fascia 3.) Deep fascia 4.) Serratus Ant.

5.) 3 layers of Intercostal muscles 6.) Endothoracic fascia 7) Parietal pleura

Functioning :

Assessed by :- Movement of water column using underwater seal.

Positioning :- Chest xray (Break in radiopaque line → pleural cavity

Chest tube removal :

When lung is expanded → when seen on CXR.
→ BS - normal

Output < 100 cc / 24 hrs

At peak of inspiration when pt. is holding breath - to prevent suction of air

* CT : Penetrating trauma >>> blunt injury

Beck's △

Mx :- left antero lateral thoracotomy or sternotomy + Evacuation of hematoma & repair of myocardium + insertion of pericardial drain.

NOTE :- No role for pericardiocentesis in traumatic CT.