

Chest Trauma

Tarun Lall

Trauma Centre, S.M.S Hospital, India

Introduction:

- Majority of chest wounds result from blunt trauma, secondary to motor vehicle/ road traffic accident.
- Most of the deaths in these cases are due to asphyxia and haemorrhage and are avoidable.
- Blast lung injury (BLI) is a major cause of morbidity after terrorist bomb attacks (TBAs) and is seen with increasing frequency worldwide.
- Death can occur
 - ✓ Immediately (within seconds to minutes), disruption of the heart or great vessel injury.
 - ✓ Early (minutes to hours), airway obstruction, tension pneumothorax, pulmonary contusion or cardiac tamponade.
 - ✓ Late (days to weeks) after injury. Pulmonary complications, sepsis and missed injuries.

Mechanism of Chest Injury:

1. Body acceleration and deceleration (organ inertia lags behind skeletal acceleration or deceleration) e.g. RTA
2. Body compression (force > the strength of skeleton) e.g. Crush injury and falls Penetrating wounds (open pneumothorax and organ injury) e.g. assaults.

Types of Chest Injury:

1. Blunt Chest injury (closed chest injury) E.g. RTA, fall, Crush injury – Associated with multiple injuries such as head, limb and abdomen
2. Penetrating Chest injury (open chest injury) mostly by assault–associated with chest wall damage, open pneumothorax and organ injury
3. Blast Injury- One of the emerging problems in developing country is terrorism.
Blast injury may involve many organs and commonly involves lung.

Damage to Lungs Due to Air Blast:

- Alveolar haemorrhage due to tearing of alveolar septa
- Lungs are bruised due to direct blow on the chest by bomb fragments and debris.
- Chest X-ray showing typical bilateral patchy infiltrates commonly known as “Blast Lungs”

Assessment and Management

- Primary survey with resuscitation of vital functions
- Detailed secondary survey definitive care goal of early intervention is to prevent or correct hypoxia.

General Anaesthetic Management Considerations

1. Pre-operative assessment:

In conscious patients the following brief history should be taken. –

- History of present illness
- Past medical and surgical history
- Previous anesthesia difficulties
- Malignant hyperthermia
- Current medication
- Allergies
- NPO status
- Review of systems
- Monitoring

2. Induction:

- Unconscious moribund patient – intubated; surgery is performed without anesthesia.
- When vital signs and consciousness improve, anesthetics can be added, start with lower doses.
- Drug of choice - Ketamine
- Avoid thiopentone and like drugs including inhalational agents in patients in shock.
- They should be used only after correction of BP with adequate fluid replacement.
- Excessive crystalloids may lead to hypo proteinemia and further pharmacokinetic disturbances hence after adequate hydration colloids should be added as plasma expanders.
- Consider full stomach and delayed gastric emptying.
- RSI

Criteria for Operating Room or Postanesthesia Care Unit Extubation of the Trachea in a Trauma Patient

Mental Status

- Resolution of intoxication
- Able to follow commands
- Noncombative
- Pain adequately controlled

Airway Anatomy and Reflexes

- Appropriate cough and gag
- Ability to protect airway from aspiration
- No excessive airway edema or instability

Respiratory Mechanics

- Adequate tidal volume and respiratory rate
- Normal motor strength
- Required FiO₂ less than 0.50

Systemic Stability

- Adequately resuscitated (see earlier)
- Small likelihood of urgent return to the operating room
- Normothermic, without signs of sepsis