

War Surgery – Dr. Abdulwahid

INTRODUCTION: AIRWAY, BREATHING

The aims of war surgery:

- Save life
- Avoid infectious complications
- Save limbs
- Minimize residual disability

The outcome is influenced by:

- Type of injury
- General condition of the patient
- First aid
- Time needed for transport to hospital
- Quality of treatment (surgery, post-operative care, rehabilitation)
- Possibility of evacuation to a better equipped hospital with more experienced staff

Death

- The first aid is to prevent death and to avoid further injury.
- Most deaths are caused by loss of cardio-respiratory function and from haemorrhage

First aid

- Airway
- Breathing
- Circulation

Basic treatment

- **Penicillin** 5 mega-units 6-hourly
- **I.V. fluids** (Ringer Lactate or Hartmann's solution)
- **Antitetanus toxoid** vaccine
- **Analgesics** can be given i.v., i.m., as suppositories or orally.

Evacuation

- The patient's condition should be **stabilized** before evacuation.
- **Skilled first aid** at the site of injury allow stability
- **Delay** in evacuation will contribute to an increase in **mortality**.

In the hospital

- **More skillful resuscitation** can be done in the hospital.

Respiratory obstruction

- Aspiration of blood
- Vomitus
- foreign bodies:
 - loose teeth
 - dentures
 - food
 - blood clot
- Obstruction by the tongue
- Edema of the pharynx or larynx caused by inhalation burns

The airway must be cleared by

- removing debris and foreign bodies from the mouth and oropharynx:
 - manually
 - suction

Obstruction by the tongue:

- controlled by **extending the neck**
- placing the patient in the **semi-prone** position
- An oropharyngeal airway

Airway & breathing

- The simplest methods;
 - Mouth to mouth (specially designed oropharyngeal airway with a mouthpiece for use by the rescuer)
 - Mouth to nose method
 - An Ambu bag should be used if available artificial ventilation on an Ambu bag commenced.

Endotracheal tube

1. If control is still not obtained
 2. Deeply unconscious patients
 3. Oedema of the pharynx or larynx
- Intubation usually requires sedation.
 - Diazepam (5-10 mg) given iv

Cricothyroidotomy

- Quick
- Safe
- Relatively bloodless
- In an emergency, is the treatment of choice
- is preferred to tracheostomy,

Needle cricothyroidotomy

- Is preferred in
- An emergency situation
- In a child under twelve.

Use a large i.v. cannula (gauge 14) inserted into the trachea below the point of obstruction.

- Effective for about 45 minutes. A more definitive
- Airway is then required.

Tracheostomy

- Should be an elective procedure.
- The only specific indication for emergency tracheostomy in missile wounds is direct laryngeal injury.

Breathing

1. Pneumothorax
2. Tension pneumothorax
3. Haemothorax
4. Flail segment of the chest
5. Haemopericardium

Penetrating chest wounds

- May have a serious effect on: Respiration, Heart, Mediastinal structures

Penetrating chest injuries

- More than **90%** of all can be managed initially by **chest drain**.
- The incidence of concomitant **abdominal** injuries varies, ranges between **10% and 40%**.
- the most **common operation**
 1. wound excision
 2. chest tubes
 3. laparotomy.

Pneumothorax

- Less than 20% of patients with penetrating war injuries of the chest
- Some degree of haemothorax.
- Air leaks will not be large if only the pulmonary parenchyma is injured.
- When full lung expansion and pleural apposition is achieved, the leak will cease within two or three days.

Open pneumothorax

- Air passing in and out of the pleural cavity,
- And bubbling through the blood coming from the wound

Pneumothorax treated by

- An **airtight sealed dressing** (vaseline gauze or plastic sheeting) covered with a bulky dressing, firmly taped into place
- An intercostal drain
- Positioned with the uninjured side uppermost, thus allowing optimal ventilation of the undamaged lung

A tension pneumothorax

- Is an acute emergency
- from penetrating chest wounds
- It more commonly occurs when a sucking chest wound has been sealed by an occlusive dressing
- Large bore needle, inserted in the second intercostal space in the mid-clavicular line

Mid-clavicular (apical) chest tube

- Be inserted into the second space anteriorly for
 - pneumothorax
 - tension pneumothorax,
- attached to;
 - A Heimlich one-way valve.
 - An underwater seal.
- should be done **before X-rays** are taken
- An **X-ray one or two hours** after inserting.
- X-ray is checked **daily**.

A flutter valve

- mid-clavicular (apical) chest tube
 - widebore needle
 - or size F 20 or F 24 tube
- second intercostal space
- advanced upwards to the apex
- mid-axillary (basal) chest tubes

Seal the wound

- Sealed with an airtight dressing.
- A wet bulky dressing
- Securely fixed in place
- More effective seal can be made using vaseline gauze

A haemothorax

- Blood in the thoracic cavity **rarely clots**
- **Defibrinogenate** the blood by its **movements**.
- Drained using a widebore chest tube.

Removal of chest tubes

- The lung has **re-expanded**
- Drainage is very small (**less than 75 ml/24 hours**)
- **Radiographic** evidence that the lung has adequately **expanded** and collections have drained to a minimum
- **The underwater seal has stopped swinging**, but is not blocked.
- **Clamp** the drains for one more day, the patient perform a **Valsava manoeuvre** when the tube is removed

A flail segment

- may well result from **closed injuries**
- **number of ribs broken** results in an unstable segment of chest wall
- consequent **paradoxical respiration**
- **bruised** poorly functioning lung, Lung contusion for 2-3 days and will resolve slowly
- **Aspiration** at the time of injury is common, resulting in obstructive **atelectasis**
- firm **Elastoplast strapping** of the affected segment
- A few heavy sutures tied over a plaster of Paris **slab**
- Positioning; the damaged segment is **against the ground, uninjured side uppermost** to allow optimal ventilation of the good lung.
- **nerve blocks** reduces the effort of breathing
- can be stabilized by **skeletal traction**

Postoperative controls

- The patient should be **checked** several times a day.
- **Deep-breathing exercises** by a trained physiotherapist,
- Adequate **pain relief** is essential.

The indications for thoracotomy:

- **massive bleeding** (more than 1000-1500 ml at the time of insertion of chest drains,
- **200-300 ml/hour** for 5 hours
- persistent **pleural air leak** over 24 hours, or earlier if massive;
- **Mediastinal injury**
- Major **defect** of the chest wall.

Constrictive haemopericardium

- In the **rare**
- due to a **penetrating** missile wound of the heart,
- immediate **pericardiocentesis**, repeated if necessary
- emergency **thoracotomy**