**TRAUMA TO THE TORSO**

**Lec 2**

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The torso is generally regarded as the area between the neck andthe groin, made up of the thorax and abdomen.

Death from trauma has had a ‘trimodal’ distribution: 50% of deaths occurring in the pre-hospital environment.30% during the first few hours .The remaining 20% occurring later.

**The Advanced Trauma Life Support (ATLS) is the cornerstone of advanced resuscitation. The principles include:**

• early assessment and primary survey;

• simultaneous aggressive resuscitation;

• a careful secondary survey with full examination:– front to back;– top to toe;

• transfer to a definitive site of care.

**Trauma team** was developed to enable a careful assessment to be made in patients with multiple injuries and a treatment plan to be developed that recognises the need to treat the greatest threats to life first and ensure the early control of major bleeding and contamination.

The philosophy also includes the concept of **triage**: ***The sorting of patients***, with the most severely injured patients being treated first; the sorting of injuries, so that the most compelling threats to life receive priority For specific anatomy.

In a disaster or mass casualty situation, different systems for triage have been developed. One system is known as **START** (Simple Triage and Rapid Treatment). In START, victims are grouped into four categories, depending on the urgency of their need for evacuation.

The Simple Triage And Rapid Treatment ( START) system was developed to allow first responders to triage multiple victims in 30 seconds or less, based on three primary observations: Respiration, Perfusion, and Mental Status (**RPM**).

**Respiration or Breathing:**If the patient is not breathing, quickly clear the mouth of foreign matter. Use a head-tilt maneuver to open the airway. If the patient is breathing, you then need to determine  the breathing rate. Patients with breathing rates greater than 30 per minute are tagged Immediate .  These patients are showing one of the primary signs of shock and need immediate care.If the patient is breathing and the breathing rate is less than 30 per minute, move on to the circulation and mental status observations in order to complete your 30-second survey.

The second step of the RPM series of triage tests is **circulation** of the patient. The best field method for checking circulation (to see if the heart is able to circulate blood adequately) is to check the radial pulse.If the radial pulse is absent or irregular the patient is tagged Immediate.

**Mental Status**: Open Your EyesThis observation is done on patients who have adequate breathing and adequate circulation.Test the patient's mental status by having the patient follow a simple command:"Open your eyes.""Close your eyes.""Squeeze my hand."Patients who can follow these simple commands and have adequate breathing and adequate circulation are tagged Delayed .

A patient who is unresponsive or cannot follow this type of simple command is tagged Immediate . (These patients are "unresponsive" to verbal stimuli.).

**Injury often traverses different anatomical zones of the body, affecting anatomical structures on both sides of traditional anatomical zones.**

These zones are known as junctional zones.The key junctional zones are:• between the neck and the thorax;• between the thorax and the abdomen;• between the abdomen, the pelvic structures and the groin.These zones represent surgical challenges in terms of both the diagnosis of the area of injury and the surgical approach, which have to be balanced against the physiological stability of the patient.

**THORACIC INJURY**

Thoracic injury accounts for 25% of all injuries. In most of these patients, the cause of death is haemorrhage.Chest injuries are often life-threatening, either in their own right or in conjunction with other system injuries. About 80% of patients with chest injury can be managed non-operatively, and the key is early physiological resuscitation followed by diagnosis.

**Investigation**

Routine investigation in the emergency department of injury to the chest is based on clinical examination, supplemented by chest radiography.

In the unstable patient, **chest radiography** is the investigation of first choice, provided that it does not interfere with resuscitation. **Ultrasound** can be used to differentiate between contusion and the actual presence of blood.

**A chest tube** can be a diagnostic procedure as well as a therapeutic one, and the benefits of insertion often outweigh the risks.

**Computerised tomography scan**In blunt chest trauma the CT scan will allow the definition of rib and vertebral fractures, as well as showing haematomas, pneumothoraces and pulmonary contusion. In penetrating trauma the scan may show the track of the missile and allow the planning of definitive surgery.CT scanning has replaced angiography as the diagnostic modality of choice for the assessment of the thoracic aorta.

**Life-threatening injuries can be remembered as the deadly dozen.** Six are immediately life-threatening and should be sought during the primary survey and six are potentially life-threatening and should be detected during the secondary survey.

**Immediately life threatening:** Airway obstructionTension pneumothorax

Pericardial tamponadeOpen pneumothoraxMassive haemothorax

Flail chest

**Potentially life threatening:** Aortic injuriesTracheobronchial injuriesMyocardial contusion

Rupture of diaphragmOesophageal injuries

Pulmonary contusion

**EMERGENCY THORACOTOMY**

Indications for thoracotomy include:• internal cardiac massage;• control of haemorrhage from injury to the heart;

• control of haemorrhage from injury to the lung;• control of intrathoracic haemorrhage from other causes;• control of massive air leak.

**Thoracotomy can be broadly divided into the following:**• emergency (resuscitative) thoracotomy for control of life threatening bleeding;• planned thoracotomy for repair of specific injury.

It is far better to perform a thoracotomy in the operating room, either through an anterolateral approach or a median sternotomy, with good light and assistance and the potential for auto transfusion and potential bypass, than it is to attempt heroic emergency surgery in the resuscitation suite.

However, if the patient is in extremis with a falling systolic blood pressure, despite volume resuscitation, there is no choice but to proceed immediately with a left anterolateral thoracotomy in an attempt to relieve the situation.A resuscitation room thoracotomy following blunt trauma has limited indications and is rarely successful.

**Continuing blood lossThe first principle of all care is to assess and treat the patient according to the physiology.**

* **Initial blood loss of more than1500 ml indicates the potential for class III shock, and any ongoing bleeding must be dealt with surgically, as soon as possible.**
* **Similarly, an on-going blood loss of more than 200 ml h–1 for 3 consecutive hours requires resuscitative surgery to stop the bleeding.**