Traumatic Cardiac Arrest Guideline

- This guideline is for traumatic cardiac arrest only. If the primary cause of arrest is non-traumatic continue with ALS protocols. It does not cover the techniques of resuscitative thoracotomy.

- Thoracotomy has four uses: 1/ tamponade relief 2/ aortic compression 3/ internal cardiac massage 4/ thoracic bleed haemostasis.
  - Occlude cardiac wounds with a finger or a foley catheter initially (insert through wound, inflate balloon, gentle traction.
  - Consider lung twist for lung haemorrhage in preference to clamping the hilum.
  - Pack smaller vessel bleeding.

- External chest compressions in traumatic cardiac arrest have limited effect due to reduced venous return by increased intrathoracic pressure in hypovolaemia. If CPR must be done, do so cautiously and do not delay thoracotomy.[2,7]

- Adrenaline (epinephrine)/vasopressors have *limited* use in traumatic arrest when the cause of the arrest is due to hypoxia, hypovolaemia or massive brain injury. There is also evidence that adrenaline in out of hospital cardiac arrest has a limited role.[3,4]

- Recognise that, despite our best efforts, resuscitative thoracotomy is often futile. If the patient arrests in transit to hospital a decision will need to be made on whether or not to proceed with resuscitation. For blunt trauma attempts at resuscitation more than 5-10 minutes after arrest will almost certainly be futile. For penetrating trauma the window of opportunity is a little longer.

References:

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ETT - endotracheal tube LMA - laryngeal mask airway G&S - group and save ASAP - as soon as possible CT - computed tomography
US - ultrasound USS - ultrasound scan VF - ventricular fibrillation TXA - tranexamic acid CPR - cardiopulmonary resuscitation ALS - advanced life support

TRAUMATIC CARDIAC ARREST GUIDELINE

West Yorkshire Major Trauma Network

TRAUMATIC CARDIAC ARREST IN THE EMERGENCY DEPARTMENT OR DURING AMBULANCE TRANSFER TO THE FACILITY [1,7]

- ETT OR LMA (No drugs required)
- STOP CHEST COMPRESSIONS OR CONTINUE WITH CAUTION[2]
- BILATERAL THORACOSTOMIES
- CONTROL BLEEDING (DIRECT PRESSURE +/- TOURNIQUET) AND BIND PELVIS (in blunt trauma)
- LARGE BORE ACCESS WITH BLOOD/FLUID (4 UNITS IDEALLY)
- CONSIDER PERI-MORTEM DELIVERY OF BABY IF >20 WKS (ideally after 3-4 minutes of maternal arrest and before 20 minutes post arrest)[5,6]

RETURN OF SPONTANEOUS CIRCULATION (ROSC)

YES

NO

ELECTRICAL ACTIVITY

NO

ULTRASOUND

ASYSTOLE AND NO PERICARDIAL EFFUSION

STOP

ASYSTOLE AND PERICARDIAL EFFUSION

YES

USS FOR PERICARDIAL EFFUSION

INVASIVE MONITORING

CT/THEATRE

BLOOD PRODUCTS

TXA

SEDATION AND PARALYSIS

DISPOSITION

THORACOTOMY

- RELIEF OF TAMPONADE
- COMPRESS OR CLAMP AORTA
- CONTROL BLEEDING
- INTERNAL CARDIAC MASSAGE

ONGOING BLOOD AND PRODUCTS REQUIREMENTS WITH NO OUTPUT OR RECURRENT VF/AGONAL CARDIAC EFFORT

CONSULTANT DECISION TO STOP RESUSCITATION

SUCCESSFUL THORACOTOMY

PREPARATION AND CONCURRENT ACTIVITY CHECKLIST

- PRE- ALERT TRAUMA TEAM AND VASCULAR CONSULTANT
- ALLOCATE ROLES- YOU CANNOT PERFORM THORACOTOMY AND BE TEAM LEADER
- SEND A RUNNER FOR 4 UNITS O-ve BLOOD & WARN LAB OF MAJOR HAEMORRHAGE (SEND G&S ASAP)
- TURN ON US MACHINE
- PREPARE FLUID WARMER
- ALERT THEATRE AND CT
- PREPARE THORACOTOMY PACK
- TIME-KEEPER/SCRIBE TO BE KEPT SEPARATE FROM CLINICAL TEAM

If ROSC achieved and further advice needed contact cardiac surgical OR thoracic surgical consultant on-call at LTHT