

# PERICARDIAL TAMPONADE

Pericardial tamponade is life threatening obstructive shock caused by rapid accumulation of pericardial fluid, leading to impaired ventricular filling, reduced cardiac output, and circulatory collapse.

Tamponade is a **clinical diagnosis**. Delay to drainage is the commonest cause of death.

## ED priorities:

- Recognise tamponade physiology early
- Maintain preload and spontaneous ventilation
- Avoid iatrogenic haemodynamic collapse
- **Urgent pericardial drainage**
- Rapid specialist escalation

## RECOGNITION

### CLASSIC FEATURES (BECK'S TRIAD)

- **Hypotension**
- **Raised JVP**
- **Muffled heart sounds**

Triad is often incomplete; absence does **not** exclude tamponade.

### SUPPORTING SIGNS

- Tachycardia
- Narrow pulse pressure
- Pulsus paradoxus
- Dyspnoea
- Reduced level of consciousness
- Electrical alternans (late)

Tamponade can masquerade as septic or cardiogenic shock

## COMMON CAUSES

- Malignancy
- Uraemia
- Infection (TB, bacterial)
- Post MI or post cardiac procedure
- Trauma (including iatrogenic)
- Aortic dissection

Cause identification should **never delay treatment**.

## PATHOPHYSIOLOGY

- Rising pericardial pressure → impaired diastolic filling
- Stroke volume falls → hypotension
- Tachycardia is compensatory
- **Positive pressure ventilation reduces venous return** → abrupt collapse

Tamponade is **preload dependent obstructive shock**.

## DIAGNOSIS

### CLINICAL

- Shock with raised JVP and clear lungs
- Disproportionate hypotension
- Poor response to vasopressors alone

### ULTRASOUND (IF AVAILABLE)

- Pericardial effusion
- Diastolic RV collapse
- IVC plethoric with minimal respiratory variation

## IMMEDIATE ED ACTIONS

- ABCs
- Oxygen
- Large bore IV access
- Cardiac monitoring
- Prepare for urgent drainage – pericardiocentesis or resuscitative thoracotomy

Parallel planning is essential, tamponade deteriorates suddenly.

## TEMPORISING MEASURES

### INTRAVENOUS FLUIDS

- Small bolus may improve preload temporarily
- Useful **while preparing for drainage**
- Benefit is transient

### VASOPRESSORS

- May support BP briefly
- **Do not correct obstruction**
- Not a substitute for pericardiocentesis

## DEFINITIVE MANAGEMENT

### URGENT PERICARDIAL DRAINAGE

- Pericardiocentesis (often ultrasound guided)
- Surgical drainage if traumatic or loculated (resuscitative thoracotomy)

This is a **time critical, life saving intervention**.

## AIRWAY & VENTILATION

- **Avoid positive pressure ventilation if possible**
- Intubation may precipitate cardiovascular collapse
- If unavoidable:
  - Volume load first
  - Vasopressors ready
  - Lowest possible PEEP

## WHAT TO AVOID

- Delays to drainage
- Intubation without preparation
- Treating with fluids or vasopressors alone
- Waiting for imaging confirmation in shock

## DISPOSITION

- Immediate cardiology or cardiothoracic involvement
- ICU or theatre after drainage
- Early transfer if expertise unavailable



# CHECKLIST

## PERICARDIAL TAMPONADE

### INITIAL STABILISATION (ABCDE)

#### Airway

- Maintain spontaneous ventilation if possible
- Prepare for difficult airway if deterioration

#### Breathing

- Oxygen (target SpO<sub>2</sub> ≥94%)
- Avoid positive pressure ventilation if possible

#### Circulation

- 2 large bore IV lines
- Cardiac and BP monitoring
- Treat hypotension cautiously

#### Disability

- GCS
- Signs of poor perfusion

#### Exposure

- Look for malignancy, trauma, infection clues

### DIAGNOSIS

- Clinical suspicion established
- Bedside echo if available:
  - Effusion
  - RV diastolic collapse
  - Plethoric IVC
- Do not delay treatment for imaging

### TEMPORISING MEASURES

- Small IV fluid bolus (bridge only)
- Vasopressor if severely hypotensive (bridge only)

### DEFINITIVE MANAGEMENT

- Urgent pericardiocentesis planned
- Ultrasound guided if possible
- Surgical drainage if indicated (resuscitative thoracotomy)

### AIRWAY PRECAUTIONS

- Avoid intubation if possible
- If unavoidable:
  - Preload patient
  - Vasopressors ready
  - Minimal PEEP

### WHAT TO AVOID

- Delayed drainage
- Positive pressure ventilation without preparation
- Treating tamponade as purely cardiogenic shock
- Waiting for "full confirmation"

### DISPOSITION

- Immediate cardiology / cardiothoracic referral
- ICU post procedure
- Transfer urgently if drainage not available locally