

Aortic Dissection: Causes, Symptoms and Treatment

Aortic dissection is a life-threatening condition where a tear in the **intimal layer** of the aorta allows blood to enter the **medial layer**, creating a **false lumen** that splits the aortic wall.

Epidemiology

- More common in **men** (M:F ratio ~2:1)
- Typically occurs between ages **40–70**
- High mortality: **1–2% increase in mortality per hour** after onset if untreated
- **Most common predisposing factor: chronic hypertension**

Etiology & Risk Factors

Major Causes

- **Chronic Hypertension** – most common
- **Atherosclerosis**
- **Connective Tissue Disorders:**
 - **Marfan syndrome**
 - **Ehlers-Danlos syndrome (vascular type)**
- **Congenital Cardiac Anomalies:**
 - **Bicuspid aortic valve**
 - **Coarctation of the aorta**
- **Aortitis:**
 - **Takayasu arteritis**
 - **Giant cell arteritis**
 - **Tertiary syphilis**
- **Trauma** – especially **deceleration injuries**
- **Iatrogenic** – e.g., cardiac catheterization, surgery
- **Substance Use:**
 - **Cocaine**
 - **Amphetamines**

Classification (Stanford) – High-Yield

| Type | Description | Treatment Approach |
|----------|--|---------------------------|
| A | Involves ascending aorta (± descending) | Surgical emergency |
| B | Involves only descending aorta | Medical ± surgical |

Clinical Features

History

- **Sudden, severe chest pain:**
 - Often described as **“tearing”** or **“ripping”**
 - Radiates to **back, abdomen,** or **neck**
- Often mimics **acute myocardial infarction (AMI)**

Associated Symptoms by Branch Obstruction:

Artery Obstructed

Carotid

Coronary (esp. RCA)

Subclavian

Renal

Spinal artery

Mesenteric (Celiac, SMA)

Clinical Findings

Stroke-like symptoms (hemiparesis)

Chest pain, MI

Upper limb ischemia, hypotension

Acute kidney injury, anuria

Paraplegia

Severe abdominal pain (ischemia)

Examination Findings

- **Pulse/BP discrepancy** (>20 mmHg between arms)
- **Hypertension** or **hypotension** (if tamponade or rupture)
- **New murmur of aortic regurgitation** (early diastolic)
- **Collapsing/bounding pulse**
- **Unequal peripheral pulses**
- **Signs of shock** or **syncope**
- **Murmur:** Left scapular or back region
- **Widened pulse pressure**

Investigations

Laboratory

- FBC, U&E, LFTs, Troponin (to rule out MI)
- Cross-match (urgent transfusion may be needed)
- Coagulation profile

Imaging

Modality

Chest X-ray

CT Angiography (CTA)

Transesophageal Echo

MRI Angiography

ECG

Findings

Widened mediastinum, pleural effusion (late finding)

Gold standard – shows intimal flap & false lumen

Useful if unstable; bedside test

High sensitivity; for stable patients

Often normal, may show LVH or MI

Management

Initial Emergency Care

- **Oxygen, IV access, monitor vitals**
- **Pain control:** IV opioids (e.g., morphine)
- **Blood pressure control:**
 - First-line: **IV beta-blocker** (e.g., **labetalol**)
 - Add **nitroprusside** if further BP reduction needed
 - Goal: Lower **SBP <120 mmHg** and **HR <60 bpm**

Definitive Treatment

Type

Type A

Type B

Management

Emergency surgery – replace affected aorta ± valve

Medical management first (BP control); surgery/stenting if complications

Indications for Surgery in Type B:

- Persistent pain
- End-organ ischemia
- Dissection progression
- Aneurysm >5.5 cm or expanding

Complications – High-Yield

- **Aortic rupture**
- **Cardiac tamponade**
- **Acute aortic regurgitation**
- **MI** (coronary artery involvement)
- **Stroke**
- **Renal failure**
- **Paraplegia**
- **Bowel ischemia**
- **Sudden death**

High-Yield Pearls

Mnemonic – “DISSECT”:

- **D** – Difference in BP (arms)
- **I** – Intimal tear
- **S** – Sudden tearing pain
- **S** – Syncope or stroke signs

- **E** – ECG may mimic MI
- **C** – CT angiogram is diagnostic
- **T** – Type A = **Thoracic surgical emergency**

Vital to Differentiate from MI – misdiagnosis and giving thrombolytics can be fatal.

Always check **bilateral pulses** and **BP** in chest pain patients.