

CARDIOVASCULAR RADIOLOGY

Echocardiography Findings

00:00:12

- **Apical ballooning of the heart**, seen in patients with chest pain, is suggestive of **Takotsubo cardiomyopathy**, also known as **broken heart syndrome**. This may present as basal contraction with apical ballooning, sometimes referred to as an "**Octopus pot heart**" appearance.
- **Right ventricular hypokinesis with apical sparing** is indicative of **pulmonary thromboembolism** and is known as the **McConnell sign**. In this condition, most of the right ventricle's free wall does not contract properly, while the apex may exhibit some weak contractions.
- A **pericardial collection causing diastolic collapse** of the right atrium or right ventricle suggests **cardiac tamponade**.
- **Asymmetrical thickening of the ventricular septum** with systolic anterior motion of the mitral valve leaflet, causing a banana-shaped left ventricle, points towards **hypertrophic obstructive cardiomyopathy (HOCM)**. This can lead to severe left ventricular outflow tract obstruction and mitral regurgitation. **Cardiac MRI is the investigation of choice for HOCM**.

Chest X-Ray Findings

00:03:50

- A **boot-shaped heart** with a concave pulmonary area, upward cardiac apex, and a heel formed by right ventricular hypertrophy is associated with **Tetralogy of Fallot**.
- A "**goose neck**" or "**goose side**" appearance with a narrow superior mediastinum is seen in **transposition of the great arteries**, where the pulmonary artery comes from the left ventricle and the aorta comes anteriorly and to the right.
- A **box-shaped heart**, with a large right atrium and small right ventricle due to a low-lying tricuspid valve, is a feature of **Ebstein's anomaly**.



Boot Shaped Heart
Cor-en-sabot



Egg on string Appearance
Egg on Side Appearance



Box shaped Heart

- **Pericardial calcification**, often described as an **"egg cup" appearance**, is seen in constrictive pericarditis.



Egg in Cup Appearance

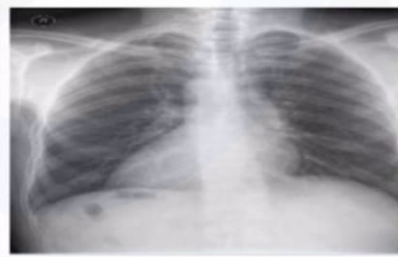


Fig of 8/Snowman Appearance
Cottage Loaf Heart

- A **"figure of eight" or "snowman" appearance**, also called a **"cottage loaf heart"**, suggests a **supra-cardiac type of total anomalous pulmonary venous communication (TAPVC)**, which involves a vertical vein draining into the left brachiocephalic vein.
- A **"money bag" or "leather bottle" appearance** of the cardiac shadow is seen in **pericardial effusion**. On a lateral X-ray, this can also present with the **"Oreo cookie sign"**, caused by pericardial fat surrounding fluid.



Money Bag Appearance
Leather Bottle Appearance



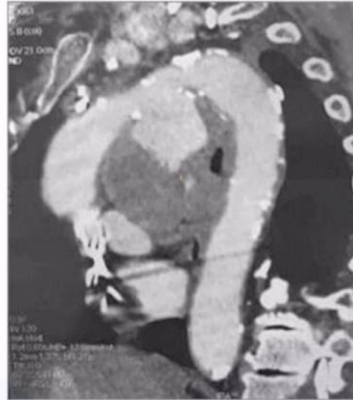
Dextrocardia with Situs Inversus

- **Dextrocardia** (heart on the right side) with **situs inversus** (organs on the opposite side) and bronchiectasis (bunch of grape appearance) is associated with **Kartagener syndrome**.
- A **saccular aneurysm of the aortic arch** can compress the left laryngeal nerve causing **hoarseness**, known as **Ortner's syndrome**.



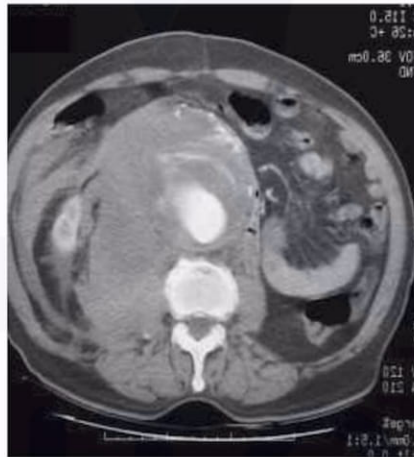
Saccular Aneurysm Of Arch

- **Coarctation of the aorta**, a narrowing at the beginning of the descending aorta, can present with a three sign on chest x-ray, reverse three sign or E sign on barium study, inferior rib notching(3-10) (Roesler sign), differential blood pressure between upper and lower limbs, and radiofemoral delay.



Saccular Aneurysm Of Arch

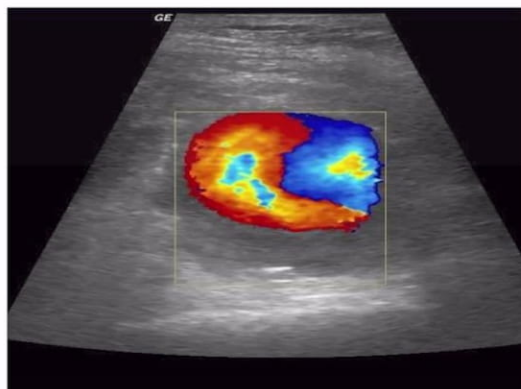
- **draped aorta sign**, where a hematoma drapes around the aorta, suggests a ruptured aortic aneurysm.



Draped Aorta sign

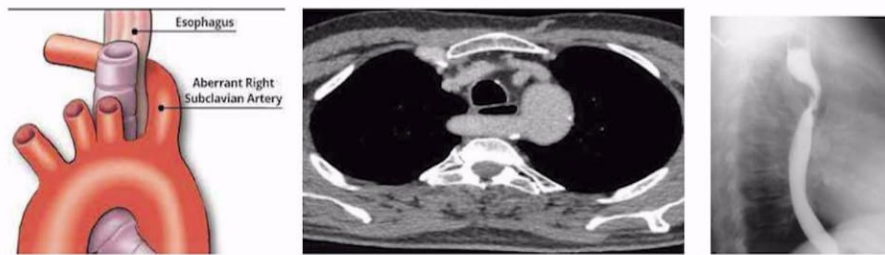
Contained Rupture Of Aortic Aneurysm

- A **yin-yang sign** on color Doppler is associated with a pseudoaneurysm or a large true aneurysm. This shows bidirectional flow due to blood moving towards and away from the probe.



YIN YANG Sign on Color Doppler

- An **aberrant right subclavian artery** passing posterior to the oesophagus causes an indentation seen on barium swallow, a condition called **dysphagia lusoria**.



Aberrant Right Subclavian Artery-Posterior indentation of Esophagus on Barium Swallow

Cardiac MRI Indications

00:19:34

- **Cardiac MRI** is the most accurate method for assessing **ventricular function** and **ejection fraction**.
- It is the **investigation of choice for various cardiomyopathies**, including restrictive and hypertrophic obstructive cardiomyopathy. It can also be used to evaluate Takotsubo cardiomyopathy, arrhythmogenic right ventricular cardiomyopathy, and dilated cardiomyopathy.
- Cardiac MRI is the preferred investigation for **myocarditis**, showing myocardial oedema. The gold standard for myocarditis remains endomyocardial biopsy, but MRI is often preferred as it is less invasive.
- Cardiac MRI can be used to assess **myocardial scars after** a myocardial infarction by identifying late gadolinium enhancement.

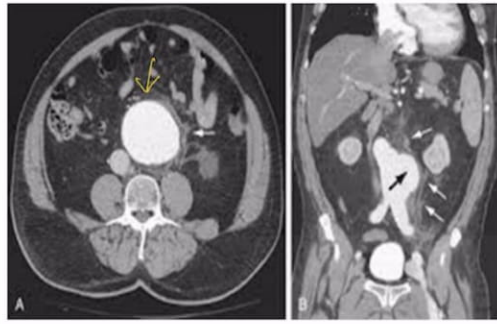
Aortic Dissection and Aneurysm

- In a stable patient with suspected **aortic dissection**, **CT angiography** is preferred, whereas **transoesophageal echocardiography** is used in unstable patients.
- **Aortic dissections** are classified as **Stanford A** if they involve the ascending aorta and require surgical intervention, and **Stanford B** if they involve the descending aorta and are typically treated medically.
- **True lumen** in aortic dissection is smaller and has more contrast, while the **false lumen** is larger, has less contrast, and may show cobweb signs and beaking.



Aortic Dissection

- **Aortic aneurysms** are typically considered when the abdominal aorta diameter exceeds 5 cm.
- The most common site for aortic aneurysms is at the **infrarenal descending aorta**.



Aortic Aneurysm



TUTORIALS

LOGIN FOR SUCCESS

Mind Map

Cardiovascular Radiology

Chest X-Ray Findings

- Boot-shaped heart
 - Concave pulmonary area
 Tetralogy of Fallot
- "Goose neck" appearance
 - Narrow superior mediastinum
 Transposition of Great Arteries
- Box-shaped heart
 - Low-lying tricuspid valve
 Ebstein's Anomaly
- Pericardial calcification
 - "Egg in cup" appearance
 Constrictive Pericarditis
- Total Anomalous Pulmonary Venous Communication (TAPVC)
- "Money bag" or "leather bottle" appearance
 - "Oreo cookie sign" on lateral X-ray
 Pericardial Effusion
- Dextrocardia
 - Situs inversus
 - Bronchiectasis
 Kartagener Syndrome
- Ortner's syndrome (hoarseness) — Aortic Arch Aneurysm
- Three sign on chest X-ray
 - Rib notching (Roesler sign)
 - Differential blood pressure
 Coarctation of the Aorta
- Draped aorta sign
 Ruptured Aortic Aneurysm
- Yin-yang sign on color Doppler
 Pseudoaneurysm
- Aberrant right subclavian artery
 Dysphagia Lusoria

Echocardiography Findings

- Takotsubo Cardiomyopathy
 - Apical ballooning
 - Chest pain
 - "Octopus pot heart" appearance
 - Pulmonary Thromboembolism
 - Right ventricular hypokinesis
 - McConnell sign
 - Cardiac Tamponade
 - Pericardial collection
 - Diastolic collapse of right atrium/ventricle
 - Hypertrophic Obstructive Cardiomyopathy (HOCM)
 - Asymmetrical ventricular septum thickening
 - Systolic anterior motion of mitral valve
 - "Banana-shaped" left ventricle
 - Cardiac MRI preferred

Cardiac MRI Indications

- Ventricular Function Assessment
 - Most accurate method
 - Ejection fraction evaluation
 - Cardiomyopathies
 - Restrictive and HOCM
 - Takotsubo, arrhythmogenic right ventricular,
 - Myocarditis
 - Myocardial edema
 - Endomyocardial biopsy gold standard
 - Myocardial Scars

Aortic Dissection and Aneurysm

- CT angiography for stable patients
 - Transoesophageal echocardiography for unstable patients
 - Stanford A (ascending aorta) vs. Stanford B (descending aorta)
 Aortic Dissection
- Diameter > 5 cm
 - Most common at infrarenal descending aorta
 Aortic Aneurysms