

Anatomy of the Heart

Anatomy of the Heart – Study Notes

1. Overview

- **Location:** Mediastinum, between the lungs; sits behind the sternum, slightly left of midline.
 - **Orientation:** Apex points inferolaterally (5cm below the left fifth intercostal space); base faces posteriorly toward the vertebrae.
 - **Size & Weight:** Roughly the size of a closed fist; ~250–350g in adults (larger in males).
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2. External Features

Structure	Description	Clinical Relevance
Pericardium	Fibrous sac (outer) + serous pericardium (parietal & visceral layers). Contains ~15mL serous fluid.	Protects heart, limits overdistension, reduces friction.
Apex (Tip)	Pointed inferior/lateral portion; contacts the diaphragm.	Palpated at the apical impulse (PMI).
Base	Broad superior surface; contains the atrial openings and the origins of the great vessels.	Site of the aortic and pulmonic areas for auscultation.
Sutures (Grooves)	Coronary sulcus (separates atria from ventricles) and interventricular sulci (anterior & posterior).	Landmarks for coronary artery placement.
Surface Landmarks	Aortic notch, pulmonary notch, left and right atrial appendages.	Guide imaging and surgical approaches.

3. Chambers & Their Walls

Chamber	Wall Thickness (approx.)	Main Function
Right Atrium (RA)	Thin	Receives deoxygenated blood from systemic circulation (vena cavae).
Right Ventricle (RV)	Moderately thick	Pumps blood to pulmonary circulation via the pulmonary artery.

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Chamber	Wall Thickness (approx.)	Main Function
Left Atrium (LA)	Thin	Receives oxygen-rich blood from pulmonary veins.
Left Ventricle (LV)	Thickest (~1cm)	Generates high pressure to deliver blood to systemic circulation via the aorta.

- **Septum:** Muscular interventricular septum separates ventricles; membranous portion lies near the aortic valve.

4. Valves & Their Components

Valve	Location	Leaflet Types	Supporting Structures
Tricuspid	RA → RV (right AV valve)	Anterior, posterior, septal leaflets	Chordae tendineae → papillary muscles (RV).
Pulmonary	RV → pulmonary artery	Three semilunar cusps (anterior, left, right)	Pulmonary trunk, annulus.
Mitral (Bicuspid)	LA → LV (left AV valve)	Anterior & posterior leaflets	Chordae → papillary muscles (anterolateral & posteromedial).
Aortic	LV → aorta	Three semilunar cusps (right, left, posterior)	Aortic root, sinuses of Valsalva.

- **Function:** Ensure unidirectional flow; prevent backflow during systole/diastole.

5. Coronary Circulation

Vessel	Origin	Main Territory Supplied
Right Coronary Artery (RCA)	Right aortic sinus	Right atrium