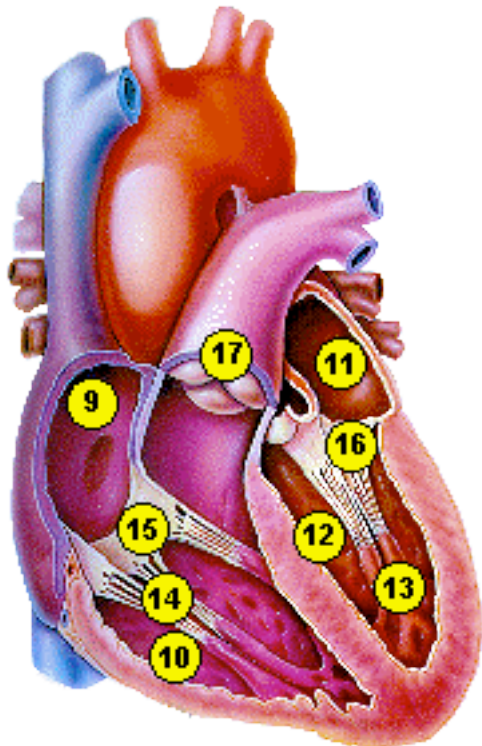


1. RIGHT CORONARY
2. LEFT ANTERIOR DESCENDING
3. LEFT CIRCUMFLEX
4. SUPERIOR VENA CAVA
5. INFERIOR VENA CAVA
6. AORTA
7. PULMONARY ARTERY
8. PULMONARY VEIN
9. RIGHT ATRIUM



10. RIGHT VENTRICLE
11. LEFT ATRIUM
12. LEFT VENTRICLE
13. PAPILLARY MUSCLES
14. CHORDAE TENDINEAE
15. TRICUSPID VALVE
16. MITRAL VALVE
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Coronary Arteries

Because the heart is composed primarily of cardiac muscle tissue that continuously contracts and relaxes, it must have a constant supply of oxygen and nutrients. The coronary arteries are the network of blood vessels that carry oxygen- and nutrient-rich blood to the cardiac muscle tissue.

The blood leaving the left ventricle exits through the aorta, the body's main artery. Two coronary arteries, referred to as the "left" and "right" coronary arteries, emerge from the beginning of the aorta, near the top of the heart.

The initial segment of the left coronary artery is called the left main coronary. This blood vessel is approximately the width of a soda straw and is less than an inch long. It branches into two slightly smaller arteries: the left anterior descending coronary artery and the left circumflex coronary artery. The left anterior descending coronary artery is embedded in the surface of the front side of the heart. The left circumflex coronary artery circles around the left side of the heart and is embedded in the surface of the back of the heart.

Just like branches on a tree, the coronary arteries branch into progressively smaller vessels. The larger vessels travel along the surface of the heart; however, the smaller branches penetrate the heart muscle. The smallest branches, called capillaries, are so narrow that the red blood cells must travel in single file. In the capillaries, the red blood cells provide oxygen and nutrients to the cardiac muscle tissue and bond with carbon dioxide and other metabolic waste products, taking them away from the heart for disposal through the lungs, kidneys and liver.

When cholesterol plaque accumulates to the point of blocking the flow of blood through a coronary artery, the cardiac muscle tissue fed by the coronary artery beyond the point of the blockage is deprived of oxygen and nutrients. This area of cardiac muscle tissue ceases to function properly. The condition when a coronary artery becomes blocked causing damage to the cardiac muscle tissue it serves is called a myocardial infarction or heart attack.

Superior Vena Cava

The superior vena cava is one of the two main veins bringing de-oxygenated blood from the body to the heart. Veins from the head and upper body feed into the superior vena cava, which empties into the right atrium of the heart.

Inferior Vena Cava

The inferior vena cava is one of the two main veins bringing de-oxygenated blood from the body to the heart. Veins from the legs and lower torso feed into the inferior vena cava, which empties into the right atrium of the heart.

Aorta

The aorta is the largest single blood vessel in the body. It is approximately the diameter of your thumb. This vessel carries oxygen-rich blood from the left ventricle to the various parts of the body.

Pulmonary Artery

The pulmonary artery is the vessel transporting de-oxygenated blood from the right ventricle to the lungs. A common misconception is that all arteries carry oxygen-rich blood. It is more appropriate to classify arteries as vessels carrying blood away from the heart.

Pulmonary Vein

The pulmonary vein is the vessel transporting oxygen-rich blood from the lungs to the left atrium. A common misconception is that all veins carry de-oxygenated blood. It is more appropriate to classify veins as vessels carrying blood to the heart.

Right Atrium

The right atrium receives de-oxygenated blood from the body

through the superior vena cava (head and upper body) and inferior vena cava (legs and lower torso). The sinoatrial node sends an impulse that causes the cardiac muscle tissue of the atrium to contract in a coordinated, wave-like manner. The tricuspid valve, which separates the right atrium from the right ventricle, opens to allow the de-oxygenated blood collected in the right atrium to flow into the right ventricle.

Right Ventricle

The right ventricle receives de-oxygenated blood as the right atrium contracts. The pulmonary valve leading into the pulmonary artery is closed, allowing the ventricle to fill with blood. Once the ventricles are full, they contract. As the right ventricle contracts, the tricuspid valve closes and the pulmonary valve opens. The closure of the tricuspid valve prevents blood from backing into the right atrium and the opening of the pulmonary valve allows the blood to flow into the pulmonary artery toward the lungs.

Left Atrium

The left atrium receives oxygenated blood from the lungs through the pulmonary vein. As the contraction triggered by the sinoatrial node progresses through the atria, the blood passes through the mitral valve into the left ventricle.

Left Ventricle

The left ventricle receives oxygenated blood as the left atrium contracts. The blood passes through the mitral valve into the right ventricle. The aortic valve leading into the aorta is closed, allowing the ventricle to fill with blood. Once the ventricles are full, they contract. As the left ventricle contracts, the mitral valve closes and the aortic valve opens. The closure of the mitral valve prevents blood from backing into the left atrium and the opening of the aortic valve allows the blood to flow into the aorta and flow throughout the body.

Papillary Muscles

The papillary muscles attach to the lower portion of the interior wall of the ventricles. They connect to the chordae tendineae, which attach to the tricuspid valve in the right ventricle and the mitral valve in the left ventricle. The contraction of the papillary muscles opens these valves. When the papillary muscles relax, the valves close.

Chordae Tendineae

The chordae tendineae are tendons linking the papillary muscles to the tricuspid valve in the right ventricle and the mitral valve in the left ventricle. As the papillary muscles contract and relax, the chordae tendineae transmit the resulting increase and decrease in tension to the respective valves, causing them to open and close. The chordae tendineae are string-like in appearance and are sometimes referred to as "heart strings."

Tricuspid Valve

The tricuspid valve separates the right atrium from the right ventricle. It opens to allow the de-oxygenated blood collected in the right atrium to flow into the right ventricle. It closes as the right ventricle contracts, preventing blood from returning to the right atrium; thereby, forcing it to exit through the pulmonary valve into the pulmonary artery.

Mitral Value

The mitral valve separates the left atrium from the left ventricle. It opens to allow the oxygenated blood collected in the left atrium to flow into the left ventricle. It closes as the left ventricle contracts, preventing blood from returning to the left atrium; thereby, forcing it to exit through the aortic valve into the aorta.

Pulmonary Valve

The pulmonary valve separates the right ventricle from the pulmonary artery. As the ventricles contract, it opens to allow the de-oxygenated blood collected in the right ventricle to flow to the lungs. It closes as the ventricles relax, preventing blood from returning to

the heart.

Aortic Valve

The aortic valve separates the left ventricle from the aorta. As the ventricles contract, it opens to allow the oxygenated blood collected in the left ventricle to flow throughout the body. It closes as the ventricles relax, preventing blood from returning to the heart.