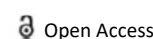




COMMENTARY



Brief Note on Heart Valve Structure

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Description

A heart valve is a one-way valve that permits blood to pass through the chambers of the heart in just one direction. A mammalian heart typically has four valves, which together define the blood flow pattern through the heart. Differential blood pressure on each side causes a heart valve to open or close. The mitral valve in the left heart and the tricuspid valve in the right heart are the two atrioventricular valves that separate the upper atria from the lower ventricles in the mammalian heart. The semilunar valves—the aortic valve at the aorta and the pulmonary valve at the pulmonary artery—are located at the entry of the arteries leaving the heart.

Structure

Endocardium lines the valves and chambers of the heart. The atria and ventricles, or the ventricles and a blood vessel, are separated by heart valves. The fibrous rings of the cardiac skeleton surround the heart valves. The valves have flaps called leaflets or cusps that are pulled open to enable blood flow and then closed together to seal and prevent backflow, similar to a duckbill valve or flutter valve. There are two cusps on the mitral valve, whereas the others have three. The seal is made tighter by nodules at the extremities of the cusps.

The pulmonary valve has three cusps: left, right, and anterior. The aortic valve has left, right, and posterior cusps. The anterior, posterior, and septal cusps of the tricuspid valve are present, while the anterior and posterior cusps of the mitral valve are absent.

The valves of the human heart are divided into two categories: Two atrioventricular valves to prevent blood from the ventricles from flowing back into the atria, Between the right atrium and the right ventricle is the tricuspid valve, also known as the right atrioventricular valve, Between the left atrium and the left ventricle is the mitral valve, also known as the bicuspid valve.

Two semilunar valves to keep blood from flowing back into the ventricle: Pulmonary valve, which is found at the junction of the right ventricle and the pulmonary trunk, the aortic valve is a valve that connects the left ventricle to the aorta.

Atrioventricular valves

The mitral and tricuspid valves, which are located between the atria and the ventricles and prevent backflow from the ventricles into the atria during systole, are responsible for this. The chordae tendineae anchor them to the ventricle walls, preventing the valves from inverting. The chordae tendineae are papillary muscles that create tension in order to keep the valve in place. The subvalvular apparatus is made up of the papillary muscles and chordae tendineae. When the valves close, the subvalvular apparatus prevents the valves from prolapsing into the atria. The subvalvular apparatus, on the other hand, has no effect on the valves' opening and closing, which is totally determined by the pressure gradient across the valve. The unusual placement of chords on the leaflet free margin, on the other hand, allows for systolic stress sharing between chords according on their thickness. The initial heart sound is lub, which is the closure of the AV valves (S1). The second heart sound is dub, which is the closure of the SL valves (S2). Because it has two leaflets or cusps, the mitral valve is also known as the bicuspid valve. The word "mitral valve" comes from its similarity to a bishop's mitre (a type of hat). It is located on the heart's left side and allows blood to flow from the left atrium to the left ventricle. The tricuspid valve is located on the right side of the heart and has three leaflets or cusps. It is located between the right atrium and the right ventricle and prevents blood from flowing backwards between them.

Semilunar valves

The aortic and pulmonary valves are positioned at the base of the aorta and the pulmonary trunk respectively.

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The “semilunar valves” are another name for them. These two arteries take blood from the ventricles, and their semilunar valves allow blood to be forced into the arteries while preventing backflow into the ventricles. These valves lack chordae tendineae and resemble vein valves more than atrioventricular valves. The second heart sound is caused by the closure of the semilunar valves. The pulmonary valve (also known as the pulmonic valve) is a three-cusp valve that connects the right ventricle to the pulmonary artery. When the pressure in the right ventricle rises above the pressure in the pulmonary artery, the

pulmonary valve opens, just like the aortic valve. When the pressure in the right ventricle falls fast at the conclusion of ventricular systole, the pressure in the pulmonary artery closes the pulmonary valve. The P2 component of the second heart sound is produced by the pulmonary valve closing. Because the right heart is a low-pressure organ, the P2 component of the second heart sound is often weaker than the A2 component. However, in some young people, hearing both components separated during inhalation is physically normal.