Difference Between Myocardium and Pericardium

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Key Difference - Myocardium vs Pericardium

The heart which is a large muscular organ is the main body organ that is associated with the blood circulatory function. The heart pumps blood to the blood vessels in the circulatory system. Blood provides the nutrients and oxygen to the body tissues. In humans, the heart is located in between lungs which is in the middle compartment of the chest. Heart is divided into four chambers in humans, mammals and also in birds. Upper left, and right chambers are called "atria." Lower left and right chambers are called "ventricles." The heart is comprised of four layers. Each layer has its own function which aids in blood flow through the body. **The myocardium is the heart muscle. The pericardium is the folded fibrous connective tissue layer that encompasses the entire heart and the root of great vessels.** This is the **key difference** between myocardium and pericardium.

What is Myocardium?

The cardiac muscle is an involuntarily, striated muscle that is found in the heart wall. It is specifically known as the myocardium. The cardiac muscle is one of the three major types of muscle (other two major types include the skeletal muscle and smooth muscle) in the human body. These three types of muscle are formed by the process of myogenesis. The cardiac muscle consists of cardiac muscle cells commonly comprised of one nucleus. However certain cells are comprised of two to four nuclei. Cardiac muscle cells are named as cardiomyocytes or myocardiocytes. The muscle tissue of the heart (myocardium) forms a thick middle layer between the outer epicardium and inner endocardium layer. The heart muscle is also formed by cylindrical and cross-striated muscle fibers. It also contains specialized junctions regions called "intercalary discs."

The coordinated contraction of the heart muscle pumps blood out of the heart to the body tissues. This process is known as a circulatory process, and it starts from the right atrium. Deoxygenated blood goes from right atrium to right ventricle and afterward to pulmonary artery and finally to lungs. Then from lungs, oxygenated blood goes to pulmonary veins and then to the left atrium and then to the left ventricle and then to the aorta and finally to rest of the body. This is also known as **systole of the heart** (it is the part of the cardiac cycle when heart muscle contracts). The cardiac muscle relies on the electrical signal that is available in the blood, unlike in the other body tissues.

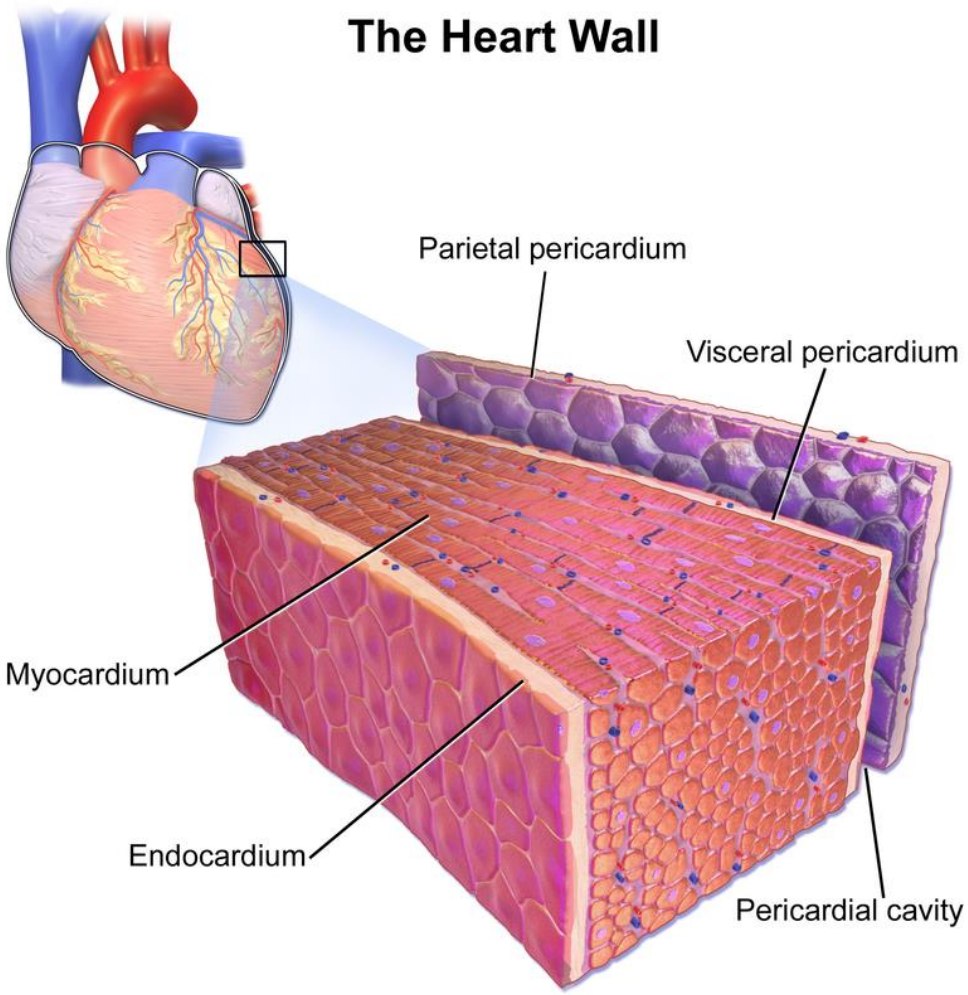

Figure 01: Myocardium

The function of the heart muscle or myocardium is extremely important for the process of distribution of nutrients and oxygenated blood throughout the body. In physiology, the cardiac muscle is very similar to the skeletal muscle. The function of both muscle types is contraction. It starts with the flow of ion across the membrane known as an action potential. In 2009, Olaf Bergmann and his colleagues found that heart muscles could be regenerated.

What is Pericardium?

The pericardium is also called as "pericardial sac." It is the connective tissue layer that encompasses the entire heart including the root of the great vessels. It consists of the outer fibrous layer (fibrous pericardium) and an inner double layer of serous membrane (serous pericardium).

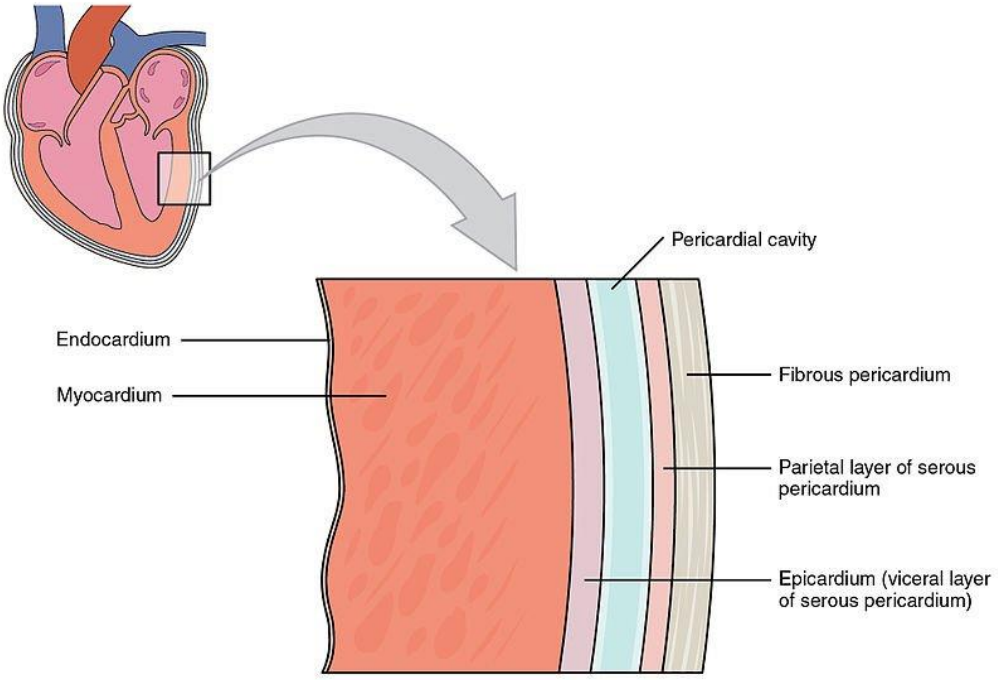

Figure 02: Pericardium

The fibrous pericardium is made up of tough connective tissue. hence it is non distensible in nature. It continues to the central tendon of the diaphragm. This rigidity prevents the rapid overfilling of blood from the heart. The serous pericardium is enclosing within the fibrous pericardium. The serous pericardium is double layered. The outer layer (parietal layer) lines internal surface of the fibrous pericardium. On the other hand inner visceral layer lines the out layer of the heart's epicardium.

Pericardium performs several important functions such as,

- Preventing overfilling of heart.
- Fixing the heart by connecting to diaphragm.
- Performing a lubrication function (serous pericardium).
- Protecting against infection (fibrous pericardium).

What are the Similarities Between Myocardium and Pericardium?

- Both are found in the heart.
- Both help in fixing heart structurally in the body.
- Both help in heart function.
- Both help in circulatory function and thus, support circulatory system.

What is the Difference Between Myocardium and Pericardium?

Myocardium vs Pericardium	
The myocardium is the heart muscle tissue.	The pericardium is the connective tissue that encompasses entire heart and root of the great vessels.
Function	
Myocardium contraction helps to pump blood out of the heart.	Pericardium mainly prevents the heart from overfilling. It also performs a lubricating function and prevents infections.
Tissue Type	
Myocardium is a muscle tissue.	Pericardium is a connective tissue.
Connectivity to the diaphragm	
The myocardium is not connected to the diaphragm.	The pericardium is connected to the diaphragm (continuous with the central tendon diaphragm).
Location	
The myocardium is found in the inner part of the heart..	The pericardium is found in the outer part of the heart.

Summary - Myocardium vs Pericardium

The heart pumps blood to the blood vessels in the circulatory system. Blood provides the nutrients and oxygen to the body tissues. In humans, the heart is located in between lungs and the middle compartment of the chest. The heart is divided into four chambers. Upper left, and right chambers are called as “atria.” Lower left and right chambers are called as “ventricles.” It is also comprised of four layers: Pericardium, Epicardium, Myocardium, and Endocardium. Each layer has its own function which aids in blood flow through the body. Hence helps in nutrients and oxygen supply to the other parts of the body. The myocardium is the heart muscle. The pericardium is the folded fibrous connective tissue layer that encompasses the entire heart and the root of great vessels. This is the difference between myocardium and pericardium.

Reference:

1.“Cardiac muscle.” Wikipedia, Wikimedia Foundation, 8 Nov. 2017. Available here
2.Pericardium.” Wikipedia, Wikimedia Foundation, 28 Oct. 2017. Available here

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