17.1B: Pericardium

The pericardium is a thick, membranous, fluid-filled sac which encloses, protects, and nourishes the heart.

Learning Objectives

• Distinguish between the fibrous and serous layers of the pericardium

Key Points

• The pericardium is a mesothelium tissue of the thoracic cavity which surrounds the heart. The outer layer, the fibrous pericardium, is comprised of dense connective tissue that protects the heart, anchors it to the surrounding walls, and prevents it from overfilling.

• The inner layer of the pericardium, the serous pericardium, is further divided into two layers, an outer parietal layer and an inner visceral layer with the pericardial cavity in between the two layers.

• The serous pericardium functions to lubricate the heart with pericardial fluid, which is stored in the space between the parietal and visceral layers.

• Pericarditis is inflammation of the pericardium, often due to infection, which can constrict and put harmful pressure on the heart.

Key Terms

• **fibrous pericardium**: Composed of dense connective tissue which protects the heart, anchors it to the surrounding walls, and prevents the heart from overfilling with blood.

• **serous pericardium**: Located deeper than the fibrous pericardium, this structure contains two layers that lubricate
the heart to prevent friction from occurring during heart activity.

- **pericardium**: A serous membrane that surrounds and protects the heart.

The pericardium is the thick, membranous, fluid-filled sac that surrounds the heart and the roots of the vessels that enter and leave this vital organ, functioning as a protective membrane. The pericardium is one of the mesothelium tissues of the thoracic cavity, along with the pleura which cover the lungs. The pericardium is composed of two layers, an outer fibrous pericardium and an inner serous pericardium.

Membranes of the Thoracic Cavity: A transverse section of the thorax, showing the contents of the middle and the posterior mediastinum. The pleural and pericardial cavities are exaggerated since normally there is no space between parietal and visceral pleura and between pericardium and heart.

Fibrous Pericardium

The fibrous pericardium is the outer layer of the pericardium. It is composed of dense connective tissue which anchors the heart to the mediastinum of the chest wall. It prevents the heart from overfilling with blood and protects it from nearby infections by completely separating it from the rest of the thoracic cavity. It is continuous with the outer fibrous layer of the neighboring great blood vessels.

Serous Pericardium

The serous pericardium, the inner layer of the pericardium, is composed of two different layers. The outer layer, the **parietal layer**, is completely adhered to the fibrous pericardium. The inner layer is known as the **visceral layer**, which covers and protects the great vessels and heart. The space between the parietal and visceral layers is called the pericardial cavity.

The visceral layer is referred to as the **epicardium** in the areas where it is in direct contact with the heart. The space between these two serous layers, the parietal and the visceral, is the **pericardial cavity**, which contains pericardial fluid. The serous pericardium, with its two membranes and the fluid-filled pericardial cavity, provides protection to the heart.
and a lubricated sliding surface within which the heart can move in response to its own contractions and to the movement of adjacent structures such as the diaphragm and the lungs.

Function of the Pericardium

The pericardium is important because it protects the heart from trauma, shock, stress, and even infections from the nearby lungs. It supports the heart and anchors it to the mediastinum so it doesn’t move within the body. The pericardium lubricates the heart and prevents it from becoming too large if blood volume is overloaded (though it will not prevent chronic heart enlargement).

Despite these functions, the pericardium is still vulnerable to problems of its own. Pericarditis is the term for inflammation in the pericardium, typically due to infection. Pericarditis is often a severe disease because it can constrict and apply pressure on the heart and work against its normal function. Pericarditis comes in many types depending on which tissue layer is infected.