Pathways through the Diaphragm

The diaphragm is a dome-shaped structure of skeletal muscle and fibrous tissue that separates the thoracic cavity from the abdominal cavity, and is vital for respiratory function. There are a number of openings in the diaphragm through which structures pass between the thorax and the abdomen. At the level of T8, the caval opening transmits the inferior vena cava. At the level of T10, the esophageal opening transmits the esophagus, vagus nerve and esophageal branches of the left gastric vessels. At the level of T12, the aortic opening transmits the aorta, thoracic duct and azygos vein.



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Characteristics

T8 Level (Caval opening)
Tea (8) Ball
The caval opening passes through the central tendon of the diaphragm. It is located at the level of T8. It contains the inferior vena cava.

Inferior Vena Cava
Inferior Vine Cave
The inferior vena cava (IVC) passes through the caval opening. The IVC is a large vein which carries deoxygenated blood from the abdomen and lower limbs to the right atrium of the heart. Occlusion or trauma of the IVC is a life threatening situation, as it may lead to thromboembolism or exsanguination.

T10 Level (Esophageal Opening)
Tea (10) Tin
The esophageal opening, also known as the esophageal hiatus, is situated in the posterior part of the diaphragm. It is located at the level of T10. It contains the esophagus, vagus nerve, and esophageal branches of the left gastric vessels.

Esophagus
Sarcophagus
The esophagus passes through the esophageal opening. The esophagus connects the mouth to the stomach and pushes food boluses downwards via peristalsis. The top of the esophagus has striated muscle under voluntary control for swallowing. However, the lower two thirds of the esophagus is involuntary smooth muscle controlled by the autonomic nervous system.

Vagus Nerve
Vegas-sign
The vagus nerve passes through the esophageal opening. The vagus nerve, also known as CN X, is a motor, sensory and visceral nerve with several functions, such as heart rate regulation, respiratory drive regulation, palate elevation, swallowing, and talking.

Esophageal Branches Left Gastric Vessels
Sarcophagus Branches Left Gastric Vessels
Esophageal branches of the left gastric vessels pass through the esophageal opening. These are vessels that supply the esophagus with blood.

T12 Level (Aortic opening)
Tea (12) Dozen
The aortic opening, also known as the aortic hiatus, is situated slightly posterior to the diaphragm. It is located at the level of T12. It permits the passage of the aorta, thoracic duct and azygos vein.

Aorta
A-orca
The descending aorta passes through the aortic opening. The aorta is a large artery that originates from the left ventricle of the heart and extends down the abdomen, where it splits into the common iliac arteries. It distributes oxygenated blood to the body through the systemic circulation.

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Thoracic Duct

Thor-axe Duck

The thoracic duct passes through the aortic opening. The thoracic duct is the main lymphatic channel for the return of chyle to the venous system.

Azygos Vein

Ascending-ghost

The azygos vein passes through the aortic opening. The azygos vein is a unilateral vessel that ascends the thorax on the right side of the vertebral column. It is part of the azygos venous system.

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