

Difference Between Thrombus and Embolus

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Key Difference - Thrombus vs Embolus

Blood vessels are important structures that are present in the circulatory system of organisms. They involve in the transportation of blood into various parts of the body which provides essential components to the cells and tissues. Blocking of blood vessels could lead to detrimental effects. This occurs due to the development of thrombi and emboli that result in thrombosis and embolisms. A **thrombus is commonly known as a blood clot that forms due to blood clotting process, while an embolus is a piece of a blood clot which is unattached.** It is capable of travelling along the bloodstream into a considerable distance from its point of origin. This is the **key difference** between thrombus and embolus.

What is a Thrombus?

In common terms, a thrombus is known to as a blood clot. A blood clot usually occurs as the final stage of the blood clotting process. Thrombus consists of two components; platelets and red blood cells. Platelets are aggregated together in the thrombus. Red blood cells form a plug-like structure with the presence of a cross-linked mesh developed by the protein fibrin. The components which make up the thrombus are known as cruor. Thrombus is a double-edged sword. Thrombus formation is an important aspect of blood clotting process since it prevents excessive or unnecessary bleeding. But it could also lead to thrombosis which obstructs the healthy blood vessels and causes harmful effects.

A thrombus could be classified into three major groups which mainly depend on the number of red blood cells and platelets. Two groups are white thrombi and red thrombi which are characterized by the predominance of platelets and RBCs respectively. The third type of thrombus is mixed thrombi which possess the characteristics of both red and white thrombi. A thrombus could also be a mural thrombus that adheres to the walls of larger blood vessels which include heart and aorta. A mural thrombus does not completely block the blood vessel but restricts the blood flow to a greater extent.

Blood Clot Diagram

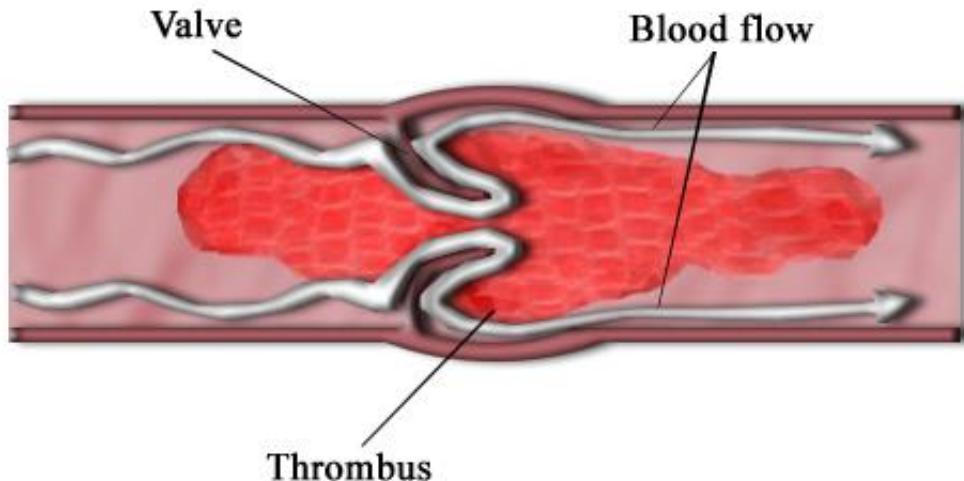


Figure 01: Thrombus

Thrombus formation could be due to many reasons. It could occur due to an endothelial injury or trauma which is due to the disruption of epithelial cells of the inner region of the blood vessels. Abnormal blood flow that affects the normal laminar flow can also be a reason for the occurrence of a thrombus which finally leads to thrombosis. Hypercoagulability also leads to thrombus formation. It occurs due to development of leukemia and mutations in the clotting factor V. It is important to take measure in the prevention of occurrence of clots and treating the clots to minimize the risk of getting heart attacks, strokes, and pulmonary embolism.

What is an Embolus?

An embolus could be defined as a mass or a piece of a blood clot which is unattached and capable of travelling along the bloodstream into a considerable distance from its point of origin until it meets a smaller vessel that could not pass. An embolus can be defined as a floating blood clot too. This unattached mass could cause arterial, capillary beds which gives detrimental effects such as arterial occlusion. Emboli could be of different origins from different sources. Different types of embolisms include blood clots, plaque forming due to cholesterol, crystals of cholesterol, and globules of fat and gas bubbles. Also, a foreign body that is capable of travelling within the bloodstream along the capillary beds is also considered as a potential source to create an embolus.

The formation of an embolism could be of different types of phenomena that occur within the blood vessels. Within the blood vessels, there are immobile blockages that occur due to various potentials such as vascular inflammation, vascular trauma, etc. This immobile thrombus has the potential to break off from the site of origin and forms a mobile thrombo embolus. If this thrombo embolus does not get broken down into smaller components, it could lead to an embolism.

An embolism is mainly classified into different divisions according to the type of substance. Cholesterol embolism occurs by the presence of an atherosclerotic plaque

developed due to the accumulation of cholesterol within a blood vessel. From a blood clot, an embolus can be formed. Such embolism is referred to as thromboembolism. A fat embolism occurs by fat droplets or due to a bone fracture occurs in the tubular bones such as the femur. The fat tissue that is present in the bone marrow will enter the blood vessels through the rupture and causes the embolism.

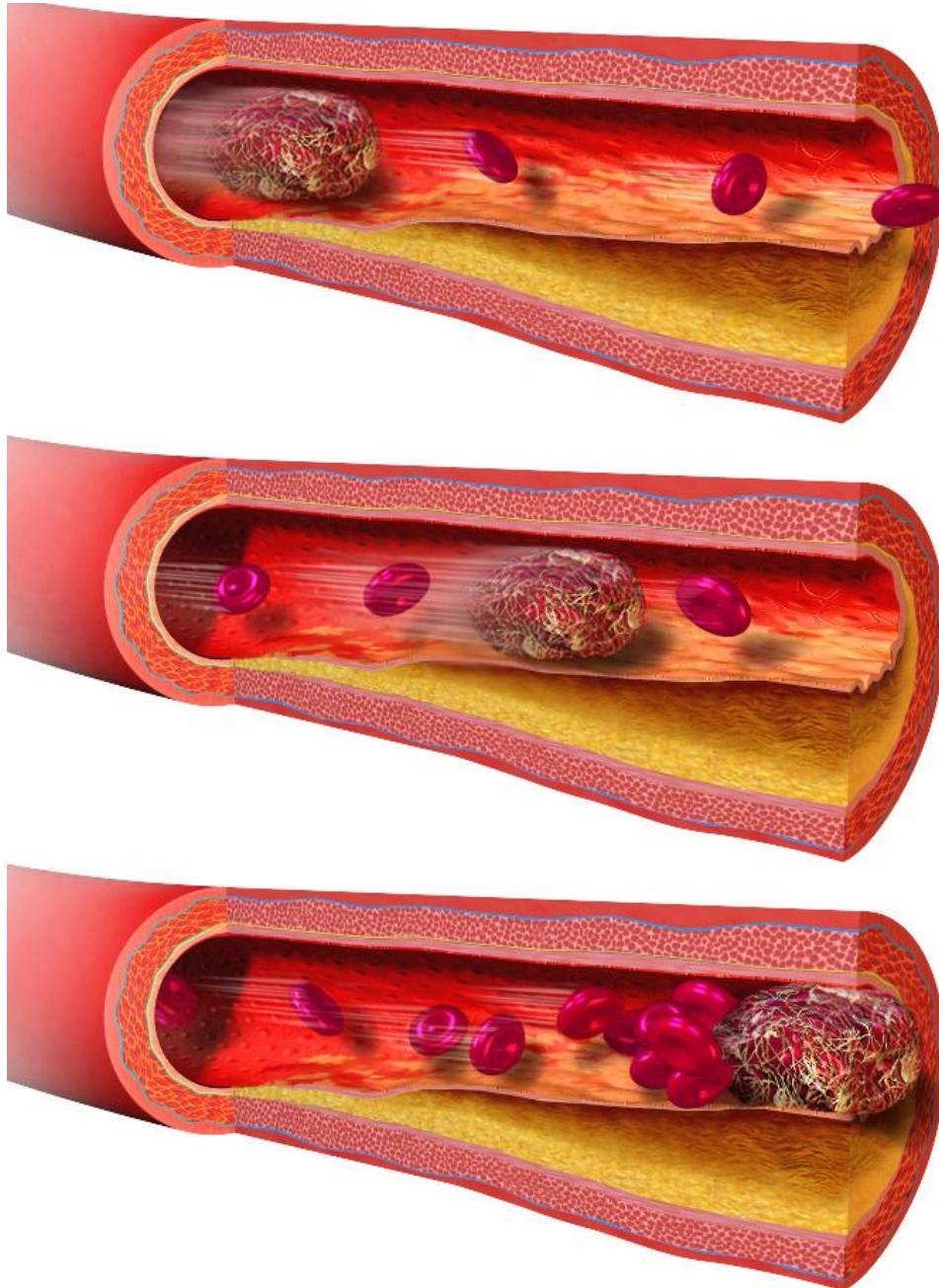


Figure 02: Embolus

Along with these major types of embolisms, other types such as air embolisms (due to the presence of an air bubble), tissue embolisms (due to tissue components) and septic embolisms (presence of pus containing bacteria) are also visible.

What are the Similarities Between Thrombus and Embolus?

- Both are types of blood clots.
- Both block the blood flow in blood vessels.
- Both can cause cardiac diseases (heart attacks) and strokes.

What is the Difference Between Thrombus and Embolus?

Thrombus vs Embolus	
Thrombus is a blood clot that formed due to blood coagulation process.	An embolus is a piece of a blood clot which is unattached and capable of travelling through the bloodstream.
Movement	
Thrombus does not travel along the vessels.	An embolus is capable of traveling along the vessels.

Summary - Thrombus vs Embolus

A thrombus is known as a blood clot. Hypercoagulability leads to thrombus formation. An embolus is defined as a piece of a blood clot which is unattached and capable of travelling along the bloodstream into a considerable distance from its point of origin. Emboli could be of different origins from different sources which include blood clots, plaque forming due to cholesterol, crystals of cholesterol, and globules of fat and gas bubbles. This is the difference between thrombus and embolus.

Reference:

- 1.Lieberman, Bethany. "What Is an Embolus? - Definition, Symptoms & Treatment." Study.com. [Available here](#)
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- 1.'Blood clot diagram'By Persian Poet Gal ([CC BY-SA 3.0](#)) via [Commons Wikimedia](#)
- 2.'Blausen 0089 BloodClot Motion'By Blausen.com staff (2014). "Medical gallery of Blausen Medical 2014". WikiJournal of Medicine 1 (2). DOI:10.15347/wjm/2014.010. ISSN 2002-4436. - Own work, ([CC BY 3.0](#)) via [Commons Wikimedia](#)

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