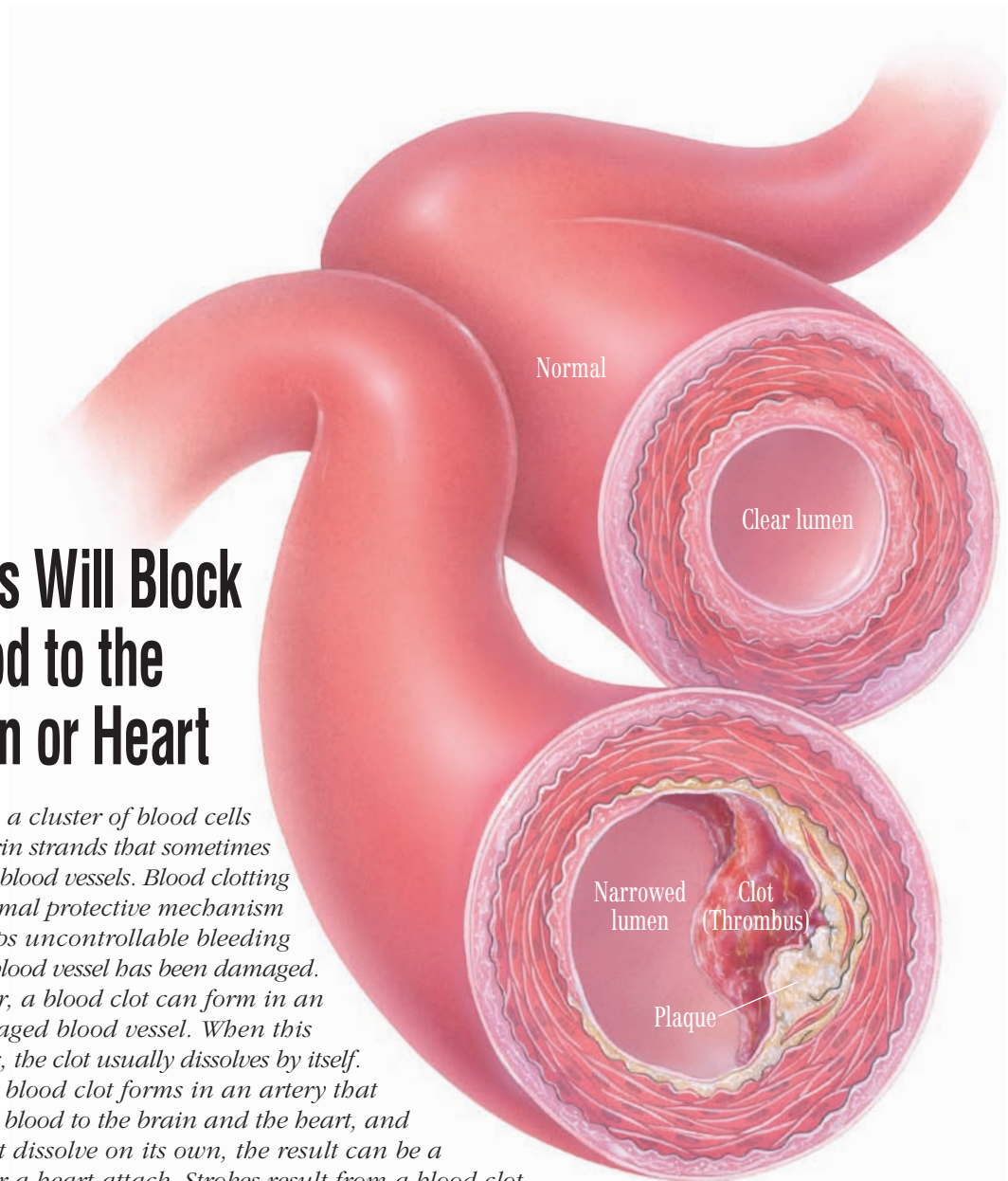


# Blood Clots

TEAR ALONG PERFORATION

## Clots Will Block Blood to the Brain or Heart

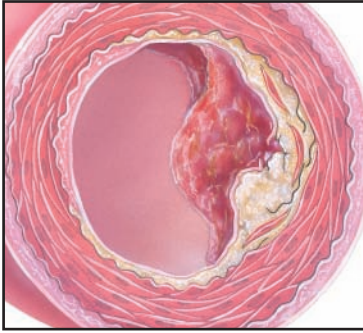
*A clot is a cluster of blood cells and fibrin strands that sometimes form in blood vessels. Blood clotting is a normal protective mechanism that stops uncontrollable bleeding after a blood vessel has been damaged. However, a blood clot can form in an undamaged blood vessel. When this happens, the clot usually dissolves by itself. But if a blood clot forms in an artery that supplies blood to the brain and the heart, and does not dissolve on its own, the result can be a stroke or a heart attack. Strokes result from a blood clot (thrombus) in the arteries that supply blood to the brain. A stroke can also occur if a clot breaks off and travels to an artery in the brain (known as an embolus), cutting off the blood supply. A heart attack can result from a blood clot that forms in one or more coronary arteries, the arteries on the surface of the heart that supply blood to heart tissue. If blood flow in these arteries is slowed or blocked, the heart tissue will receive an insufficient supply of blood and will eventually die. Blood flow must be restored as quickly as possible, which is why a person who has a heart attack (or thinks he or she is having one) must be rushed to a hospital for emergency care. "Clot buster" drugs are successful only when used within a few hours of a heart attack. Persons most at risk for heart attacks are those who smoke, get little exercise, are obese, take birth control pills, or have a family history of cardiac problems.*



MEDICAL ILLUSTRATION: KEVIN A. SOMERVILLE

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continued ▶



*If a blood clot can be dissolved quickly after blood flow is blocked, there will be minimal damage to brain tissue or heart muscle. The best prevention against formation of a blood clot is to maintain a healthy weight, stop smoking, and participate in regular exercise.*

## Clots Can Trigger a Stroke

A blood clot is a cluster of fibrin and blood cells that forms when blood coagulates, or thickens. A clot that forms in a blood vessel is called a thrombus. A detached clot that moves through the bloodstream to another location is known as an embolus. A thrombus or embolus that blocks a blood vessel will prevent blood from flowing to the area beyond the clot. Without a blood supply, tissue becomes damaged, and eventually, if the blood supply is not restored, the tissue will die. If the clot can be dissolved quickly after the blood flow is stopped, brain tissue or heart muscle will not be destroyed.

**Why Blood Clots Form:** Normally, when blood vessels are damaged blood will thicken and form a clot. This process helps heal the vessel by slowing down or stopping the flow of blood through the damaged vessel. This same clotting process can occur when blood flow slows down for other reasons. Slower-than-normal blood flow through the arteries can occur from atherosclerosis, atrial fibrillation, congestive heart failure, high blood pressure, and diseases of the heart valve. Whenever a blood clot forms within a blood vessel in these situations, the body tries to dissolve it on its own, but may be unable to do so. Blood clots that do not dissolve can become dangerous if they form in arteries that supply blood to the brain or heart because these clots can trigger a stroke or heart attack.

**Diagnosing a Blood Clot:** The diagnosis of a blood clot is made using the information from the patient's medical history and physical symptoms. An ultrasound image will show the areas where blood flow is blocked through the blood vessels. An electrocardiogram (ECG) and laboratory tests can help confirm the diagnosis of a heart attack. Both computed tomography (CT scan) and magnetic resonance imaging (MRI) use an injectable dye to show blood flow through the arteries. In the case of a stroke, a scan with dye helps to visualize whether the condition is due to a hemorrhage, tumor, or blood clot. In a heart attack, these scans help show the areas where blood flow to the coronary artery is slowed or stopped.

**When Clot Busters Are Used:** If a clot in an artery has led to a heart attack or stroke, injectable drugs known as "clot busters" can be used within a few hours of the attack to quickly dissolve the clot (thrombolysis). The most commonly used clot buster is tissue plasminogen activator, also known as tPA. Clot busters are very effective but also very powerful, and can only be used in patients who fit the narrow guidelines for their safe use. Sometimes the clot buster is injected into the bloodstream; other times, the drug is delivered through a special catheter tube to the clot itself.

**Taking Medication:** Once the clots are dissolved, anticoagulant medications are used to prevent more clots from forming. If the clot busters cannot be used in a patient or if they don't work, a filter may be surgically placed in the blood vessel to trap clots before they begin to travel through the bloodstream. If your doctor has prescribed daily aspirin, antiplatelet drugs, anticoagulants, or other drugs to prevent blood clots, heart attack, or stroke, be sure to take them regularly as directed. Your pharmacist can answer any questions you may have about these and all your medications.