

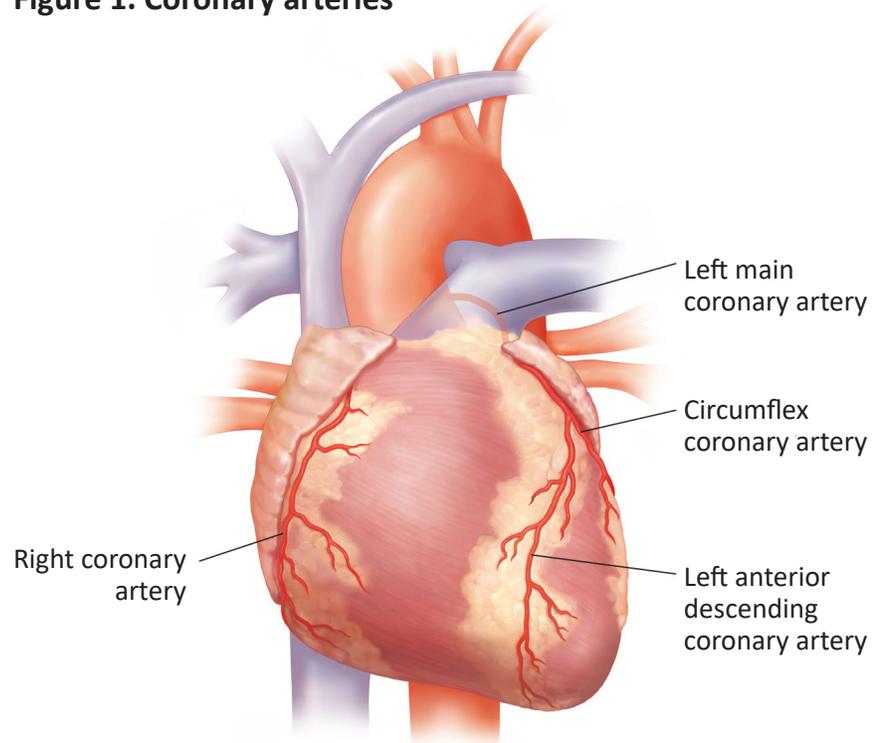
Chronic Total Occlusion of the Coronary Arteries

Coronary artery disease

*If you have any
questions or
concerns, call
312.NM.HEART
(312.664.3278).*

Coronary artery disease (CAD) affects the arteries of the heart. (Figure 1). CAD occurs when the arteries become clogged with plaque. Plaque consists of fat, cholesterol and calcium that collect in the arteries. As plaque builds up, the wall of the artery becomes rough, hard and narrowed over time. This is known as atherosclerosis and when it occurs in the coronary arteries, it decreases blood flow to the heart muscle. If the blood flow is decreased, the heart muscle does not get the oxygen and nutrients it needs to function at its best. This can cause damage to the heart muscle. CAD is the leading cause of death in the United States.

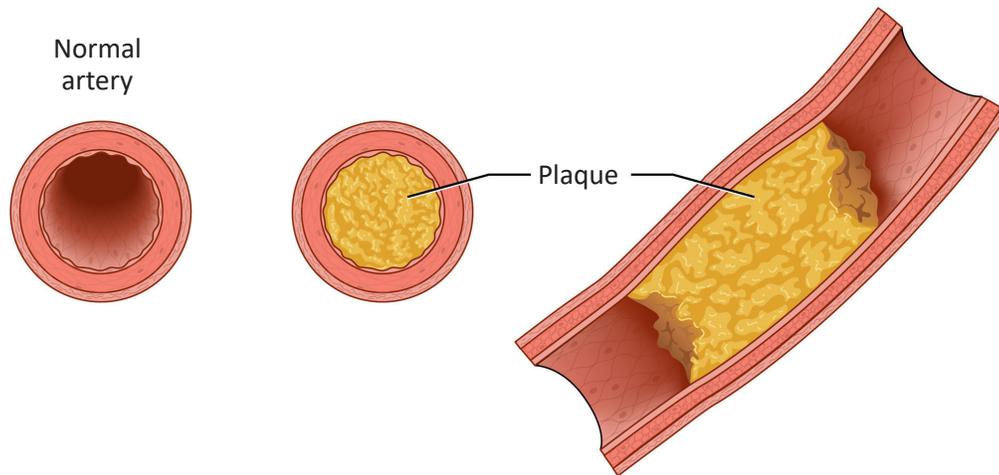
Figure 1. Coronary arteries



Chronic total occlusion

When the artery has been completely, 100% blocked for more than 3 months, it is called chronic total occlusion (CTO) of the artery (Figure 2).

Figure 2. Chronic total occlusion of the artery



Sometimes, when a coronary artery is completely blocked, smaller arteries in the heart detour blood around the blockage. These new arteries are called collateral arteries. They bring some, but not enough, blood flow to the affected area of the heart. So, a patient with CTO can still have symptoms of poor blood supply to the heart, such as:

- Shortness of breath
- Fatigue
- Angina (chest pain) with physical activity

The CTO plaque is often a very thick and hard blockage. These blockages may be difficult to treat with medications and other procedures. However, the Northwestern Medicine Bluhm Cardiovascular Institute Center for Coronary Disease offers advanced techniques to treat and ease symptoms of CTO.

Treatment options for chronic total occlusion

First, CTO is diagnosed by an angiogram. This shows the condition of the coronary arteries. Then, the CTO team will work with you to develop a plan to manage your CTO. The team includes physicians, nurses and technicians.

Typically, the first step in this plan is to assess and adjust your medications to improve symptoms. If this fails, a percutaneous coronary intervention (PCI) especially for CTO is often recommended.

PCI for CTO can successfully treat and ease symptoms. It can open blockages and increase blood flow to the heart. Unlike other PCIs in which a wire is passed through a narrow opening in the artery, a PCI for CTO passes the wires directly through or around the blockage, often using the collateral arteries that have been formed.

During the procedure, the physician inserts a catheter into a blood vessel near the groin and/or wrist. The special wires or devices are then passed through the catheter to the blockage.

Once the wires are in place, a balloon is inflated to compress the plaque to open the artery. A stent (small mesh tube) is placed to help keep the artery open. This allows blood to flow normally to the heart.

Benefits of treatment

PCI for CTO can be performed safely by our specially trained staff and the risk of complications is low. The procedure is minimally invasive and patients often return home the following day. Afterwards, the improved blood supply and heart function often result in a great decrease in symptoms.

To qualify for CTO

You may be a candidate for this treatment if you have all of the following:

- CTO with symptoms from the blocked artery **and**
- Abnormal stress test **and**
- Continuing symptoms despite medication therapy

Contact us

For more information about treatment of CTO, please call the Northwestern Medicine Bluhm Cardiovascular Institute at **312.NM.HEART (312.664.3278)**.

Clinical trials

For more information about clinical trials related to coronary disease, please call **312.926.4000**.