

Accelerated Graft Atherosclerosis

In cardiac transplant patients

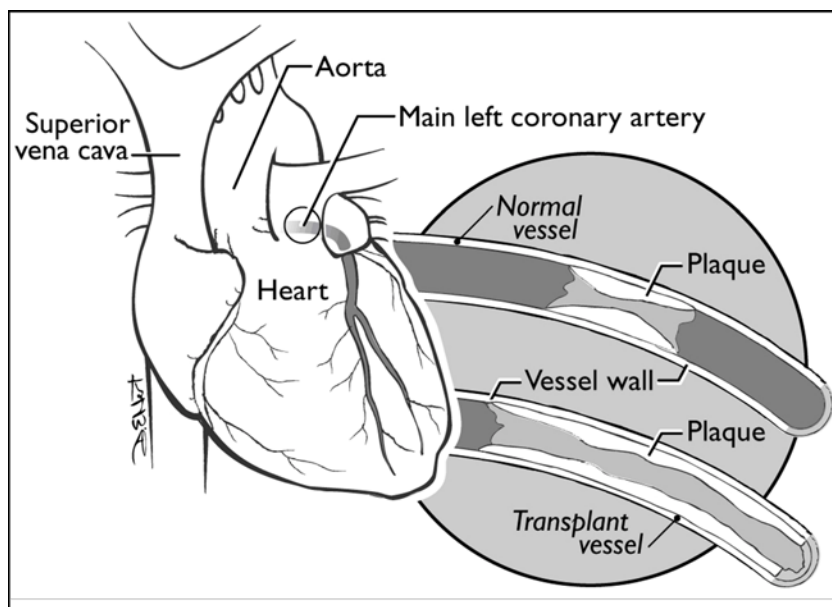
There are 2 types of atherosclerosis that may affect cardiac patients. The first type is coronary atherosclerosis, which can affect anyone. The second type occurs only in heart transplant patients. It is called accelerated graft atherosclerosis.

Coronary Atherosclerosis

Coronary atherosclerosis (**kore**-oh-nair-ee **ath**-ur-oh-sklur-oh-sis) is the narrowing of the coronary arteries. These are the vessels that supply blood to the heart.

Atherosclerosis occurs when fats (*plaque*) build up on the inside wall of an artery and make the artery narrower. This narrowing makes it hard for oxygen-rich blood to reach the heart. Without this oxygen-rich blood, the muscle cells in the heart cannot work properly. If this goes on for a long time, these muscle cells start to die.

Coronary atherosclerosis affects only a small section of an artery, but many places in the same artery can get blocked. This type of atherosclerosis can happen to anyone.



Plaque from coronary atherosclerosis on the coronary arteries. The top blood vessel shows plaque buildup from coronary atherosclerosis. The bottom blood vessel shows a larger area of plaque buildup from accelerated graft atherosclerosis.

To help prevent typical coronary atherosclerosis, eat a low-fat diet, get regular exercise, do not smoke, keep a healthy weight, and keep blood pressure under control.

Balloon angioplasty and coronary artery bypass graft surgery are 2 main ways to treat coronary atherosclerosis.

Symptoms of Coronary Atherosclerosis

Angina is a common symptom of coronary atherosclerosis. Angina is a pain in your chest. This is a sign that your heart's muscle cells are not getting enough oxygen-rich blood.

Like all pain, angina travels along the nerves that connect your heart to your brain's pain centers. But, because the nerves in the heart that sense pain were cut when you had your transplant operation, you may not feel angina even if you develop coronary atherosclerosis.

Treatment for Coronary Atherosclerosis

Lifestyle Changes

There are several ways to prevent or treat coronary atherosclerosis. These are lifestyle changes that may help:

- Eat a low-fat diet.
- Keep your weight at a healthy level.
- If you smoke, stop. Ask your health care team for help quitting.
- Exercise on a regular basis.
- Control your blood pressure.
- Take the medicine that your heart doctor prescribed.

Balloon Angioplasty

If lifestyle changes still do not let enough blood through the artery, other things can be done. One is called *coronary balloon angioplasty* (**ann-jee-oh-plass-tee**). In this procedure, a tube with a small balloon at the end is placed in the artery where it is blocked. Then the balloon is blown up. This widens the artery by flattening the plaque against the artery wall. Often, an expandable metal *stent* (tube) is placed in the artery to keep the blocked area open.

Coronary Artery Bypass

Sometimes, a *coronary artery bypass* is needed. In this surgery, a blood vessel that has good blood flow is sewn to another area with good blood flow. This "bypasses" the blocked area and allows the blood to flow properly.

We do not know what causes accelerated graft atherosclerosis, so it is unclear how to prevent the illness. At this time, the only way to treat severe cases of the disease is with a second transplant.

Accelerated Graft Atherosclerosis

Accelerated graft atherosclerosis is another disease where the arteries narrow. It occurs only in heart transplant patients. It is thought to be a kind of *rejection* caused by B-cells or by the antibodies they make.

As the antibodies travel around the body, they can cause scars to form on the lining of the blood vessels. As the lining of the artery gets scarred, it gets thicker. This leaves less room for blood to flow through. Also, plaque sticks to the artery lining more easily when it is scarred. This makes the artery even more narrow.

Accelerated graft atherosclerosis is different from coronary atherosclerosis because it:

- Affects a large section of an artery, not just one small spot.
- Is harder to treat than coronary atherosclerosis.
- Often does not have symptoms.

Remember, after your transplant, you probably won't feel angina or chest pain because the nerves that connect your heart to your brain's pain centers are cut during the transplant surgery. Surgeons cannot reconnect those nerves.

Diagnosis

Since you will not feel the normal pain of angina, the best way to tell if your arteries are getting narrow is with a test called a *coronary angiogram* (**ann-jee-oh-gram**). The test is described on page 4 of Chapter 9, "Clinic Procedures."

Other less invasive tests, such as *stress echocardiograms* or *stress nuclear studies*, can also be done to screen for transplant atherosclerosis. One of these tests should be done each year after your heart transplant. Both of these tests are also described in Chapter 9.

Accelerated graft atherosclerosis can happen in heart transplant patients as soon as 3 months after transplant. About half of all heart transplant patients will have at least some accelerated graft atherosclerosis by 5 years after their transplant.

We do not know exactly what causes accelerated graft atherosclerosis. This means it is also hard to know exactly how to prevent it. The best we can do right now is to find the problem as early as possible and to try to lower your risk for the disease.

Prevention

To help prevent accelerated graft atherosclerosis we suggest that you:

- Keep your weight under control.
- Exercise on a regular basis.
- Eat a diet low in saturated fats, cholesterol, and sugars.
- Control your blood pressure. Please keep a record of your blood pressure and tell your transplant team about any major changes. Also, if you take blood pressure medicines, take them the way your transplant doctor prescribed them.

Our hope is that these steps will slow down and perhaps prevent accelerated graft atherosclerosis.

At this time, the only treatment for severe accelerated graft atherosclerosis is another transplant. Finding the exact cause of this disease and how to prevent it are main areas of heart transplant research.

Questions?

Your questions are important. Call your doctor or health care provider if you have questions or concerns.

Cardiology Clinic:
Weekdays 8 a.m. to 5 p.m.,
call 206-598-4300.

After hours and on weekends and holidays, call 206-744-2500. Say you are a heart transplant patient. A nurse will assess your problem and help you.