

Cardiac & Endovascular Center

Frequently Asked Questions (FAQ's)



Angioplasty and Stenting

What are angioplasty and stenting?

Atherosclerotic plaque can build up inside arteries and block the normal flow of blood, limiting the amount of blood that reaches the body tissues (like the heart, brain, legs, and kidneys). Angioplasty and stenting are performed when plaque buildup narrows or blocks an artery or, occasionally, when veins become narrowed or blocked. During angioplasty, a tiny balloon is placed inside the artery and inflated to crack and compress plaque buildup, expand the diameter inside of the blood vessel, and increase blood flow. Stents are slender metal-mesh tubes that are mounted on the outside of the balloon. When the balloon is inflated, the stents expand inside a blood vessel to provide support and keep blood vessels wide open.

As people age, the normal flow of blood through the arteries can be affected by the buildup of plaque inside the arteries. Over time, plaque continues to grow on arterial walls as cholesterol circulates in the blood; as the plaques enlarge, the arteries become narrow and stiffened. This process is called atherosclerosis, commonly known as hardening of the arteries, because the plaque buildup thickens the walls of the arteries and narrows the space through which the blood flows. When this happens, it reduces the circulation of blood through the area of the body that gets its blood from the artery.

Angioplasty is a procedure during which a physician inflates a small balloon inside a blood vessel to eliminate or reduce areas of narrowing. The goal of angioplasty is the restoration of adequate blood flow (revascularization) through the affected part of the body. This is accomplished by enlarging the blood vessel from within.

Stenting is a procedure in which a physician inserts a tiny, slender, expandable metal-mesh tube (stent) that fits inside a blood vessel once the vessel has been widened by angioplasty. The goal of stenting is to prevent the vessel from collapsing or being closed by plaque again.

When are angioplasty and stenting required?

Atherosclerosis can cause a variety of diseases or conditions depending on the location of the plaque within the body. Some of these include:

- Coronary heart disease
- Visceral artery conditions
- Carotid artery disease
- Renovascular conditions
- Aortoiliac occlusive disease
- Peripheral vascular disease (arms/legs)

In less advanced cases of atherosclerosis, medication is the first line of treatment. When atherosclerosis is advanced or does not respond to medication, angioplasty and stenting are recommended. In many cases, angioplasty is an alternative to bypass surgery. Conditions that also can affect the flow of blood through the venous system, such as deep venous thrombosis and portal hypertension, are sometimes treated with forms of angioplasty. Angioplasty may be used to treat blocked surgical bypasses when they occur.

What is required before angioplasty or stenting?

To determine the level of atherosclerosis in a person's veins, arteries, or vessels, a physician may use one of the following tests:

- Arteriogram
- Duplex ultrasound
- Venogram
- MRA/CTA



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What should I expect during artery angioplasty or stenting?

Prior to angioplasty, the patient's skin is cleaned and any hair around the insertion point is shaved. The insertion point is numbed with a local anesthetic, and a physician makes a tiny incision to access the artery below. Through the incision, a guidewire is inserted in the artery. A short hollow tube (catheter sheath) is then guided over the wire, and then a hollow guide catheter is inserted through the sheath.

Using fluoroscopy (a type of X-Ray that projects images onto a monitor), the physician guides the catheter or guidewire through the arterial system to the site where angioplasty is needed. Balloon catheters may then be inserted and withdrawn through the guide catheter or over the guidewire during the procedure. The physician uses a catheter that carries a balloon on its tip, choosing a balloon that, when inflated will be just barely larger than the normal inside diameter of the blocked artery and long enough to cover any plaque deposits. The balloon catheter is passed through to the point of blockage in the artery and inflated. The balloon is fully inflated until the blockage is flattened and the artery has been adequately opened.

Once complete, the catheters are removed through the sheath at the insertion site. In some cases, the sheath may stay in the artery as a precaution in case any problems occur. Angioplasty takes between 45 minutes and three hours to complete.

After angioplasty, there is a risk that an artery will become blocked or narrow again at the same site, called restenosis. To keep blood vessels open, physicians may also use devices called stents. A stent is a tiny, slender expandable metal-mesh tube. A stent fits inside an artery and can be placed under a compressed plaque deposit once the artery has been widened. The stent acts as scaffolding to prevent the artery from collapsing or being closed by plaque again. To place a stent, the physician inserts a catheter on which there is a closed stent. The stent-carrying catheter is advanced through the artery to the site of blockage or narrowing. The stent expands either with the aid of a balloon or by itself (self-expanding stent). Stents are left in place permanently.

What should I do after treatment?

Immediately following angioplasty and stenting, the patient must remain in bed for two to 24 hours to allow the access site to heal. During this post-operative period, the patient is closely monitored for any complications. A follow-up exam will be scheduled to determine if blood flow has improved. Aspirin or anti-platelet medications (blood thinning medications) may be prescribed. Other guidelines to follow include:

- Avoid lifting anything over five or 10 pounds for the first few days
- Drink plenty of water and other clear liquids
- Avoid showering for 24 hours
- Avoid baths for a few days

A rehabilitation exercise program that includes light exercise, such as walking, may be prescribed.

What are the possible complications?

Complications occur in fewer than four percent of angioplasties. Some possible complications may include:

- External bleeding or hemorrhage at the site of catheter insertion
- Allergic reaction to the contrast dye used to see the blood vessels
- Plaque material or blood clots dislodging and floating downstream, leading to blockage beyond the treated area

Rarely, artery thrombosis, or stoppage of blood flow caused by the formation of a blood clot in the treated area may occur. People who experience the following symptoms in the period immediately following an angioplasty should consult their physician as soon as possible:

- Persistent or worsening leg pain
- Shortness of breath
- Fever
- An arm or leg that turns blue or cold
- Bleeding, substantial swelling, pain, numbness, redness or drainage where the catheter was inserted.

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