What are Angioplasty and Vascular Stenting?

Angioplasty with or without vascular stenting is a minimally invasive procedure performed to improve blood flow in the body's arteries and veins.

In an angioplasty procedure, with the guidance of x-ray images a catheter (a long thin tube)with a balloon is placed into an artery or vein and advanced to where the vessel is narrow or blocked. The balloon is then inflated to open the vessel, deflated and removed.

During stenting, a small wire mesh tube called a stent may be permanently placed in the newly opened artery or vein to help it remain open. There are two types of stents: bare stents (wire mesh) and covered stents (also commonly called stent grafts).

What are the limitations of Angioplasty and Vascular Stenting?

- Angioplasty with vascular stenting is just one way to treat narrowed or blocked arteries. Medications and exercise are often the first step in treating atherosclerosis.
- Regardless of which artery is blocked, angioplasty does not reverse or cure the underlying disease of atherosclerosis. It is extremely important for patients to make lifestyle changes, including eating a healthy diet that is low in saturated fat, exercising and not smoking. Individuals with diabetes, high blood pressure and/or high cholesterol need to follow the treatment plan prescribed by their healthcare providers.
- Angioplasty may have to be repeated if the same artery becomes blocked again, a condition called restenosis. If a stent is placed at the time of the angioplasty, the chance of restenosis is reduced but it can still occur.
- Angioplasty and vascular stenting for peripheral artery disease (PAD) affecting arteries in the pelvis and legs are less successful when there are multiple leg vessels that are narrowed or when small vessels have to be opened.
- Your referring Doctor will discuss alternative treatment options.

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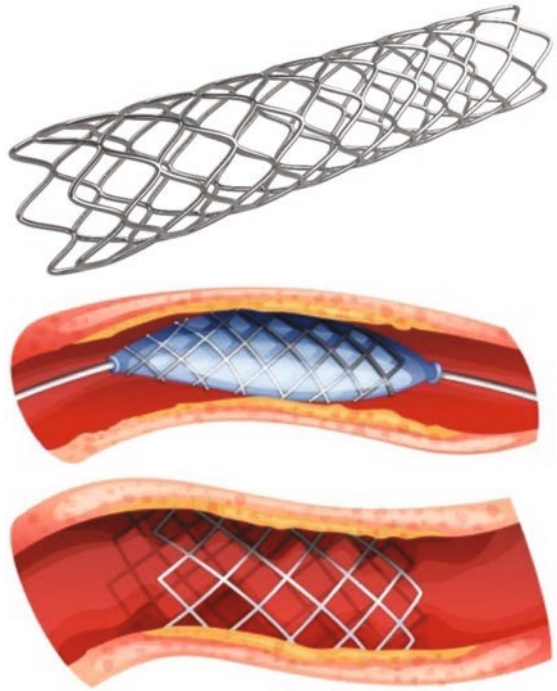
Angioplasty and Vascular Stenting



What are some common uses of the procedures?

Angioplasty with or without vascular stenting is commonly used to treat conditions that involve a narrowing or blockage of arteries or veins throughout the body, including:

- narrowing of large arteries (aorta and its branches) due to atherosclerosis, or hardening of the arteries, a gradual process in which cholesterol and other fatty deposits, called plaques, build up on the artery walls.
- peripheral artery disease (PAD), a narrowing of the arteries in the legs or arms. In patients with PAD, angioplasty alone or angioplasty with stenting may be used to open up a blocked artery in the pelvis, leg or arm.
- renal vascular hypertension, high blood pressure caused by a narrowing of the kidney arteries. Angioplasty with stenting is a commonly used method to open one or both of the arteries that supply blood to the kidneys. Treating renal arterial narrowing is also performed in some patients to protect or improve the kidney function.
- carotid artery stenosis, a narrowing of the neck arteries supplying blood to the brain.
- coronary artery disease, a narrowing of the coronary arteries that carry blood and oxygen to the heart muscle.
- venous narrowings involving the central veins (in the chest, abdomen or pelvis). In some cases, stenting of the narrowed vein is also needed.
- narrowing in dialysis fistula or grafts. When there is decreased flow in the graft or fistula so that is not adequate for dialysis, angioplasty is generally the first line of treatment. Stenting or stent grafting may also be needed in some cases.

How should I prepare?

- You should report all medications that you are taking. Medications are to be continued unless otherwise advised.
- Report any allergies, especially to contrast materials containing iodine
- Your physician may advise you to stop taking aspirin, nonsteroidal anti-inflammatory drugs (NSAIDs) or blood thinners for a specified period of time before your procedure.
- Women should always inform their physician and radiographer if there is any possibility that they are pregnant.
- Do not eat or drink anything for 4-6 hours before your procedure.
- You may need to stay overnight at the hospital following your procedure.

How is the procedure performed?

You will be positioned on the angiography table.

You may be connected to monitors that track your heart rate, blood pressure and pulse during the procedure.

An intravenous (IV) line may be inserted into a vein in your hand or arm so that sedative medication may be given intravenously. Moderate sedation may be used. As an alternative, you may receive general anaesthesia.In most instances, local anaesthesia is all that is required.

The area of your body where the catheter is to be inserted will be shaved, cleansed and covered with a sterile surgical drape. A local anesthetic will be applied and a very small skin incision or needle puncture is made at the site.

A sheath is first inserted into the artery, or vein, if the narrowed blood vessel is a vein.

Guided by fluoroscopy(real-time x-rays), the catheter is then inserted through the skin and maneuvered through the artery until it reaches the site of the blockage. Once the catheter is in place, contrast material will be injected into the artery and an angiogram will be taken of the blocked artery to help identify the site of the blockage.

With x-ray guidance, a guide wire will then be moved to the site, followed by the balloon-tipped catheter. Once it reaches the blockage, the balloon will be inflated for a short period of time. The same site may be repeatedly treated or the balloon may be moved to other sites.

Angiograms will be taken to determine how much the blood flow has improved. Once it is confirmed that it has improved, and the artery has been opened enough, the balloon catheter, the guide wire and catheter will be removed. A stent, a small, flexible tube made of plastic or wire mesh may also be inserted to support the damaged artery walls.

At the end of the procedure, the catheter will be removed and pressure will be applied to stop any bleeding. The opening in the skin is then covered with a dressing. Strict bed rest for at least 6 hours.

When the procedure is completed, you will be moved to a hospital room.

The length of the procedure varies depending on the time spent evaluating the vascular system prior to any therapy, as well as the complexity of the treatment.

After the procedure

- You are required to stay in the hospital for at least one day for observation
- After you return home, you should rest and drink plenty of fluids.
- You should avoid lifting heavy objects and strenuous exercise for at least 24 hours.
- If bleeding begins where the catheter was inserted, you should lie down, apply pressure to the site and call your physician. Any change in color in your leg, pain or a warm feeling in the area where the catheter was inserted should be promptly reported to your physician.

What are the benefits vs. risks?

Benefits

- Compared to surgical interventions such as bypass surgery, balloon angioplasty and stent placement are much less invasive and relatively low-risk procedures.
- These procedures are performed using local anaesthesia; no general anaesthetic is required in the majority of patients.
- No surgical incision is needed—only a small nick in the skin that does not have to be stitched closed.
- You should be able to return to your normal activities shortly after the procedure.

Risks

- Major complications following angioplasty are uncommon.
- When angioplasty is performed alone, blockages can recur, although most of these arteries can be opened again successfully. This can also occur when a stent is placed in the artery at the time of the angioplasty.
- Also when the balloon is inflated, the plaque may be disrupted and small pieces may break off and block smaller vessels downstream. The procedure also poses a small risk of blood clots or tearing of the artery.
- Heavy bleeding from the catheter insertion site may require special medication or a blood transfusion.
- There is a risk of stroke when angioplasty and/or stenting are performed on the carotid artery.
- A relatively rare complication associated with balloon angioplasty is abrupt vessel closure, or occlusion. This blockage in the area treated by the balloon angioplasty typically occurs within 24 hours of the procedure. If it happens, treatment with medication into the artery to dissolve clots followed by angioplasty or stenting may be appropriate. In some cases, emergency bypass surgery may be needed.
- Other rare complications include heart attack and sudden cardiac death.
- Any procedure where the skin is penetrated carries a risk of infection.
- There is a very slight risk of an allergic reaction if contrast material is injected.
- Any procedure that involves placement of a catheter inside a blood vessel carries certain risks. These risks include damage to the blood vessel, bruising or bleeding at the puncture site, and infection.