

Revascularization AKA Bypass:

A bypass is performed to bring blood flow around the blocked arteries in the leg. The bypass can be made with the patient's own vein or with an artificial (plastic) bypass graft.

A vascular bypass (or vascular graft) is a surgical procedure performed to redirect blood flow from one area to another by reconnecting blood vessels. Often, this is done to bypass around a diseased artery, from an area of normal blood flow to another relatively normal area. It is commonly performed due to inadequate blood flow (ischemia) caused by atherosclerosis, as a part of organ transplantation, or for vascular access in hemodialysis. In general, someone's own vein (autograft) is the preferred graft material (or conduit) for a vascular bypass, but other types of grafts such as polytetrafluoroethylene (Teflon), polyethylene terephthalate (Dacron), or a different person's vein (allograft) are also commonly used. Arteries can also serve as vascular grafts. A surgeon sews the graft to the source and target vessels by hand using surgical suture, creating a surgical anastomosis.

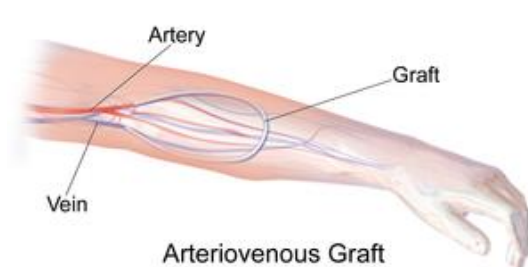
Common bypass sites include the heart (coronary artery bypass surgery) to treat coronary artery disease, and the legs, to treat peripheral vascular disease.

Leg (lower extremity) bypass

In the legs, bypass grafting is used to treat peripheral vascular disease, acute limb ischemia, aneurysms and trauma. While there are many anatomical arrangements for vascular bypass grafts in the lower extremities depending on the location of the disease, the principle is the same: to restore blood flow to an area without normal flow.

For example, a femoral-popliteal bypass ("fem-pop") might be used if the femoral artery is occluded. A fem-pop bypass may refer to the above- or below-knee popliteal artery. Other anatomic descriptions of lower extremity bypasses include:

Hemodialysis access



An arteriovenous graft serving as a fistula for hemodialysis access

A vascular bypass is often created to serve as an access point to the circulatory system for hemodialysis. Such a bypass is referred to as an arteriovenous fistula if it directly connects a vein to an artery without using synthetic material.

Cerebral artery bypass

In the skull, when blood flow is blocked or a damaged cerebral artery prevents adequate blood flow to the brain, a cerebral artery bypass may be performed to improve or restore flow to an oxygen-deprived (ischemic) area of the brain.^[4]

When several arteries are blocked and several bypasses are needed, the procedure is called multiple bypass. The number of bypasses needed does not always increase the risk of surgery, which depend more on the patient's overall health.

Evaluation

Prior to constructing a bypass, most surgeons will obtain or perform an imaging study to determine the severity and location of the diseased blood vessels. For cardiac and lower extremity disease, this is usually in the form of an angiogram. For hemodialysis access, this can be done with ultrasound. Occasionally, a CT angiogram will take the place of a formal angiogram.

Risks and complications

Several complications can arise after vascular bypass

Risks of the bypass:

- **Acute graft occlusion** is the occlusion (blockage) of a vascular bypass graft shortly after the bypass is performed. Its causes, which are distinct from those of chronic graft occlusion, include technical failure (e.g. anastomotic stricture, incomplete valve lysis in non-reversed vein) and thrombosis. It is rare, but almost always requires reoperation.

General risks of surgery:

- Hemorrhage (bleeding)
- Infection
- Embolism

Recovery

Immediately following coronary artery or neurosurgical vascular bypass surgery, patients recover in an intensive care unit or coronary care unit for one to two days. Provided that recovery is normal and without complications, they can move to a less intensively monitored unit such as a step-down unit or a ward bed, or even be discharged the next day.

Depending on the extent of the surgery, recovery from a leg bypass may start from a step-down, ward bed or home. Monitoring immediately after bypass surgery focuses on signs and symptoms of bleeding and graft occlusion. If bleeding is detected, treatment can range from transfusion to reoperation. Later on in the hospital course or home health, common complications include wound infections, pneumonia, urinary tract infection, and graft occlusion.

At discharge, patients are often prescribed oral painkillers, and should be prescribed a statin and an anti-platelet medication if not contraindicated and their bypass was performed for atherosclerosis, (e.g., peripheral vascular disease or coronary artery disease). Some patients start feeling normal after one month, while others may still experience problems several months after the procedure

During the first twelve weeks after most bypass operations, patients are advised to avoid heavy lifting, house work, and strenuous recreation like golf, tennis, or swimming while their surgical wounds heal, particularly the sternum after coronary bypass.

Part of the recovery after any bypass surgery includes regular visits to a physician to monitor the patient's recovery. Normally a follow-up visit with a surgeon is scheduled for two to four weeks after surgery. The frequency of these visits gradually lessens as the patient's health improves

For vascular bypass operations performed for atherosclerosis, the operation does not cure the metabolic problem that led to the vascular disease. Lifestyle changes that include quitting smoking, making diet changes, and getting regular exercise are required to cure the underlying condition