

# ANGIOPLASTY AND VASCULAR STENT FOR PERIPHERAL VASCULAR DISEASE

*Information for patients*

## **Introduction**

- Peripheral angioplasty and stenting are performed in patients with peripheral vascular disease in whom the vessels are narrowed or occluded, most commonly from atherosclerotic disease. The most commonly involved vessels are those in the pelvis and legs. These patients have leg pain, either at rest or after exercise, because not enough blood can reach the calf and foot through the narrowing. Some patients have foot or ankle ulcers.
- The goals of the procedure are to re-expand the lumen and to maintain the patency of the vessel.
- The procedure is performed by radiologists with special training in interventional radiology.
- The procedure can be performed in the Department of Radiology or operational theatre under image guidance.

## **Procedure**

- After the groin is anesthetized, the femoral artery at the groin is punctured and an arterial sheath inserted to provide an access to the arterial system. The direction of puncture depends on the sites of diseased arteries. You should not feel any major discomfort. Alternative accesses include the radial or brachial artery in the arm, the popliteal artery behind the knee or even a small tibial artery at the ankle.
- An angiographic study with contrast medium injected through a small catheter is performed to provide a road map for subsequent intervention.
- Heparin (a blood thinning agent) and/or drugs to dilate the arteries will be given to prevent acute occlusion of the artery.
- A balloon catheter of the right size and length is chosen and is directed across the narrowing in the artery through a guidewire. The balloon is inflated in order to stretch the narrowed artery back to its normal diameter. You may feel a little pain as the artery is being stretched.
- After successful dilatation, the balloon catheter is withdrawn. Another angiographic study is performed to document the patency of the artery and successful dilatation.
- In some situations, a metallic stent may be implanted to augment the effect of angioplasty or to remedy the situation in case complications arise. A metallic stent is mounted on a catheter and is introduced to the correct position inside the artery under X-ray guidance. Once in the correct position, it is released. It can be a self-expandable stent or it may be expanded with a balloon catheter. It will be subsequently covered by overgrowing cells from the arterial wall. It will permanently remain inside the artery.
- Cutting balloon (balloons embedded with sharp blades) or drug-eluting balloon (balloon coated with drugs) may be employed.
- Different types of stent, such as cover stent (stent covered with a synthetic material) or drug-eluting stent (stent coated with drugs) may be employed in special

situations.

- Other special recanalization devices may be used for passing through an occluded artery. This may be a mechanical device or a device releasing some form of energy like laser or ultrasound. In some patients, clot dissolving drug will be infused into the artery to dissolve the clots above an occluded artery. Angioplasty and stenting will be performed after this. Your doctor will discuss this with you beforehand about its use and potential complications.
- The procedure takes approximately one to three hours, depending on the complexity of the procedure.
- At the end of the procedure, the catheter is removed. Bleeding from the puncture site is controlled by pressure or other means. It is utmost important that you should co-operate and keep still so that the wound can be compressed effectively. Once the wound is sealed by natural clotting, you should rest the limb with the puncture site as recommended. A special closure device may be implanted at the puncture site to accelerate this process.
- After the procedure, your vital signs (like blood pressure and pulse rate) will be monitored.
- You will be given some anti-platelet agent, such as Aspirin and Clopidogrel, in order to prevent clot formation and re-occlusion of the artery or stent.
- You will be followed up by your clinician and occasionally with imaging study such as ultrasound.

## **Potential Complications**

Overall incidence of complications is less than 10%.

- Local complications such as blood clot accumulation (hematoma) at the puncture site: <10%.
- A pseudoaneurysm may arise from the puncture site: (<2%). This may require treatment later if this does not disappear spontaneously, such as manual compression, injection of thrombin or surgery.
- Abnormal communicate between the femoral artery and vein may appear at the puncture site (<2%), this may require open surgical treatment.
- Patient may develop infection at the site of puncture or elsewhere in the body (rare).
- Injury to the vessel such as guidewire perforation without bleeding, unintentional dissection, and rupture of the balloon during stretching.
- In less than 6% of cases, more severe complications may be encountered which may impede the circulation to the involved limb because of vessel spasm, dissection, perforation, clot dislodgment and thrombosis. Urgent treatment will be required, which may include repeat angioplasty, stent insertion, percutaneous clot dissolution or removal with drugs or mechanical means. In extreme cases, surgical intervention may be necessary.
- Complications specific to stenting include stent dislodgment (0.7%), stent fracture, and pseudoaneurysm (an outpouch) adjacent to the stented site (0.3%). Long-term complications such as stent stenosis or occlusion occur in less than 20% of iliac stents. There is a higher incidence of stent stenosis and occlusion in stents implanted in the femoral, popliteal arteries and arteries below the knee.
- Artery perforation may result from use of recanalisation devices or cutting balloons.

- Minor to major bleeding complications can occur if clot dissolving drug is used. Please refer to the patient information leaflet about thrombolysis.
- Complications can arise from anti-platelet agents such as Aspirin and Clopidogrel. They are most commonly related to gastrointestinal upset and rarely bleeding. Bleeding can be severe if Clopidogrel is used.
- Specific complications may occur if a closure device is used, depending on the type of closure device being used. Please ask your doctor for more information.
- Procedure-related death is rare.
- The overall adverse reactions related to iodine-based non-ionic contrast medium is below 0.7%. The mortality due to reaction to non-ionic contrast medium is below 1 in 250000.

### **Disclaimer**

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