Patient Guide to Transradial Access for Cardiac Catheterization and Angioplasty

What Is Cardiac Catheterization?

Cardiac catheterization is a diagnostic test that is used to find blockages in the arteries of the heart. A long, thin tube called a catheter is inserted into an artery in your groin, wrist, or elbow and a thinner tube known as a guidewire is used to guide the catheter into the various arteries of the heart. A special dye, known as a contrast dye, is injected through the catheter into the arteries so that x-ray pictures can be taken. The x-ray pictures show the location of any blockages that may be restricting blood flow to your heart.

What Is Balloon Angioplasty?

Coronary heart disease is caused by the build-up of fatty plaque in the arteries of the heart. If there are blockages in your arteries that need to be fixed, your doctor can perform angioplasty. Angioplasty, with or without stents, is also called percutaneous coronary intervention or PCI. For this procedure, a catheter with a balloon at the tip is pushed over the guide wire and into the blockage. The balloon is inflated which pushes back the fatty plaque, opening the blocked vessel and restoring proper blood flow to the heart.

What Are Stents?

Most times balloon angioplasty is combined with stent placement. After the fatty plaque is dislodged and the blocked vessel is opened, a wire-mesh tube (stent) may then be placed in this area. The stent expands when the balloon is inflated. The stent is left there to help keep the artery open.

What Is Transradial and Transfemoral Access?

When cardiac catheterization or balloon angioplasty are performed through the radial artery in the wrist, this is called transradial access. When these procedures are done through the femoral artery in the groin, this is called transfemoral access.

Is Transradial Access New?

No. Doctors have been doing transradial procedures for more than 20 years. However, most US physicians are trained to use the groin artery.
What Are the Benefits of Transradial vs Transfemoral Access?

The most common complications of cardiac catheterization are discomfort and bleeding at the puncture site where the catheter is inserted.

In general, patients treated using transradial access have a faster recovery time, feel less pain, and have fewer bleeding complications than patients treated with transfemoral access. The patient can stand up earlier and can go home sooner (sometimes within 4 hours).

When transfemoral access is used, the patient must lie flat for 4 to 6 hours after the procedure while a nurse or technician puts pressure on the groin area where the catheter was inserted to help prevent bleeding problems.

If the wrist is used, the patient can sit up and walk immediately after the procedure.

What Are the Disadvantages of Transradial vs Transfemoral Access?

Doing procedures such as angioplasty through the artery in the wrist is technically more challenging than using an artery in the groin. Most US physicians are trained to do transfemoral procedures and are more comfortable with this approach.

The benefits of using the wrist artery are generally seen only if the doctor performing the procedure is skilled with transradial access. An inexperienced doctor trying to use the wrist artery may not succeed and the patient could feel more pain and may end up having to be treated transfemorally anyway.

With the transradial approach, there is a slight risk of a severe spasm in the artery in the wrist that can cause arm pain. More rarely, the radial artery may close after the procedure. This shouldn’t affect blood flow to the hand in the long-term because there are other arteries that can take over.

Can Transradial Be Used All the Time?

No. There are certain cases that cannot be done easily through the wrist artery and the doctor will have to use the groin or an artery in the elbow (brachial artery) instead.

Additionally, if the operator is not skilled in using the radial artery s/he may have to switch to a transfemoral approach.

Who Benefits Most From Transradial Access?

Because transradial access reduces the risk of bleeding complications, patients at higher risk for bleeding problems, including women and the elderly, have the most to benefit. Patients taking blood thinners such as warfarin also benefit.
Transradial access is generally the better approach for people who are obese and those with blockages in the blood vessels in their legs, known as peripheral artery disease, or PAD. This is because threading a catheter through an artery in the groin can be difficult in people who are obese or have PAD.

**How Do I Know If I Am a Candidate for Transradial Access?**

Most people can be treated transradially. Your doctor will perform a test called the Allen’s Test to check that there are no problems with the blood supply to your hand.

For this test, you raise your hand and make a fist while the doctor applies pressure to arteries in the hand and wrist. When you open your hand, it will appear blanched. If color does not return to the palm within 5 to 15 seconds, you may not be a suitable candidate for transradial access.

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Additional Resources:

National Heart Lung & Blood Institute

http://www.nhlbi.nih.gov/health/health-topics/topics/cath/
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