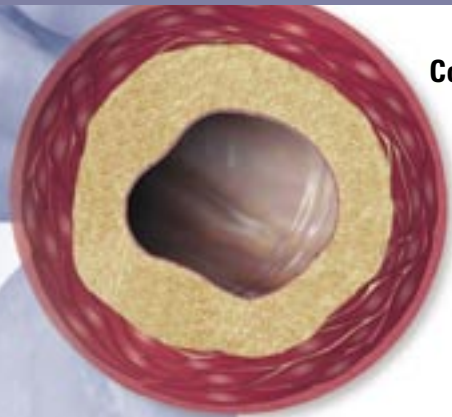


Working together. A patients' guide.

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What is Coronary Artery Disease?



The build-up of fatty deposits and plaque inside coronary arteries causes narrowing i.e. stenosis.

Coronary Artery Disease (CAD) is usually caused by atherosclerosis, which is the build up of fatty deposits and plaque inside the coronary arteries. The build-up of these substances causes narrowing of the arteries i.e. stenosis, which, in turn, reduces the flow of blood and oxygen to the heart.

Starved of proper nourishment the heart can suffer, particularly under physical exertion. Coronary heart disease may cause mild to moderate chest pains. These pains can also spread to the arms and jaw, a condition known as angina pectoris. But if a coronary artery becomes completely obstructed, a heart attack (myocardial infarction) may occur.

Who is at risk?

People with a history of high cholesterol, diabetes, smoking, high blood pressure, and relatives with CAD have heightened risks of developing atherosclerosis. Anyone who experiences angina-like symptoms should promptly consult a physician.

Often, chest discomfort can be relieved with a medication called nitroglycerin. But this medication has no effect on the arterial blockages – called stenoses – that lead to angina and increase the risk of heart attack.

Your cardiologist may have you take various tests, including a coronary angiogram, to make his diagnosis. Usually three treatment options will then be considered and may be offered to you:

MEDICATION

This can be used to increase coronary artery blood flow.

CORONARY BYPASS SURGERY

A surgical procedure performed under general anaesthetic to create a detour to bypass the blockage or narrowing.

PERCUTANEOUS TRANSLUMINAL CORONARY ANGIOPLASTY (PTCA)

The coronary artery is dilated or widened at the point of obstruction to re-establish normal blood flow. Approximately 600,000* of these procedures are carried out each year in Europe.

*Source: European Heart Journal (2004), 25, 1208-1213

The Catheterization Laboratory

Percutaneous Transluminal Coronary Angioplasty

(PTCA) is performed in a special room known as the catheterization laboratory, usually called the Cath Lab. This room contains an examination table, above which is suspended extremely high-definition radiology equipment to provide live, on-screen X-rays and several video monitoring screens.

Some of the video monitors are directly connected to the radiology equipment.

This enables the cardiologist to view continuously the narrowed artery and the entire angioplasty procedure, as well as the outcome.

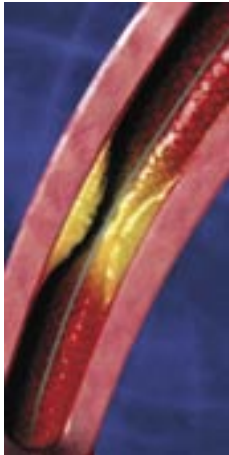
Other devices monitor the electric activity and functioning of the heart.



What does the PTCA procedure involve?

You will be administered a local anaesthetic in the groin or arm, which will feel just like a normal injection. You will remain awake throughout the entire procedure, allowing you to follow your cardiologist's instructions (e.g. "breathe deeply", "hold your breath", "cough"...).

An introducer or sheath is placed either in the groin, into the femoral artery which descends from the heart or, in the wrist into the radial artery.



The cardiologist will begin the procedure by placing an introducer or sheath either in your groin or in your wrist to gain access to the heart.

The introducer enables the cardiologist to slide a small hollow tube, known as a catheter, up to the entrance of the coronary artery. A finer guide wire is then advanced through the stenosis. This provides the "railway track" which carries all the equipment necessary for the procedure.

When a balloon is used, it is positioned precisely in the clogged area.

The balloon is then inflated, sometimes repeatedly for between 30 and 90 seconds to widen the narrowed portion of the artery. During inflation, you may experience some chest pain, similar to what you ordinarily feel.

This is normal but you must inform your cardiologist.

How a stent is implanted

If you have a more complex blockage, your cardiologist may decide that it is necessary to implant a stent to keep the affected part of the artery open.

Placed in the narrowed or obstructed portion, the stent expands when the balloon is inflated, locking in place along the inner arterial wall.

The balloon is inflated to expand the stent and implant it within the vessel wall.



Your cardiologist may choose to expand the stent further using another balloon. The balloon is inserted inside the stent and then inflated to allow the stent to make better contact with the artery wall. This part of the procedure is called post-dilatation. Post-dilatation is done to assure full contact of the stent to the artery wall.

During the procedure, a blood thinner or anticoagulant (heparin) may be used.

The introducer or sheath is removed either at the end of the procedure or a few hours later, depending on the effects of the heparin. Once in place, the stent will remain in your artery. Over time, the lining of the artery will grow around the stent as the stent continues to support the vessel.

Sometimes your cardiologist will choose to implant a drug-eluting stent.

A drug-eluting stent is a stent coated with a drug. The drug-eluting stent has been coated with a drug such as paclitaxel or the drug everolimus, shown in clinical trials to be effective in preventing restenosis within the stent.

The drug-eluting stent has been designed to allow for a predictable and consistent release of medication from the stent surface directly to vessel walls.

Both the amount of drug and release rate have been judiciously evaluated so that healing can occur while the processes leading to restenosis may be prevented, thus eliminating the need for additional treatment in the stented area.

After the procedure

You should be able to get out of bed the day of the angioplasty procedure. If a stent was used, you will spend a night in the hospital so you can be monitored. After leaving the hospital you should be able to return to normal activities according to your physician's indications.



What is Restenosis?

Restenosis is the recurrent blockage of a vessel. In approximately 15 to 30 percent* of patients who have been treated by these methods, the arteries become re-blocked due to re-growth of vascular tissue within the artery or stent wall, a situation known as restenosis.

Restenosis can be painful for the patient and often requires additional treatment such as bypass surgery or another PTCA procedure.



Medications

Your cardiologist may prescribe a number of medications to thin the blood and prevent blood clots from forming and adhering to the surface of the stent. Your doctor will let you know when you can stop taking these medications. Until then, it is extremely important to follow your medication regimen.

Precautions

1. Do not stop taking your medications unless you are asked to stop by the doctor who implanted your stent.
2. Report side effects from medications immediately, including headaches, nausea, vomiting or rash.
3. Carry your Patient Anti-Clotting Medication Reminder Card (provided in the back of your anti-clotting brochure) at all times.
4. If you receive dental or medical care or report to an emergency room/center, show your Patient Anti-Clotting Medication Reminder Card.

*Source: European Heart Journal, Vol. 21, Nov. 2000

Frequently asked questions

Can the stent move or rust?

Once positioned, the stent should not move. It will not rust because it is made of non-corroding metal.

Can I walk through metal detectors with a stent?

Yes, as the amount of metal in the stent is too low to set off the detector.

How soon can I go back to work?

The majority of people return to work within a few days following the procedure.

What if I still get pains?

If you experience pain, inform your cardiologist or the center where the procedure was performed immediately.

Can I play sports?

Yes, but be cautious! Your doctor will tell you what sports you can play and when you can start them.

Can I undergo MRI or scanner testing with a stent?

Yes, it is possible but special precautions are required for undergoing Magnetic Resonance Imaging (MRI) as it may create interference. Prior to undergoing these examinations, inform your doctor that you have a stent.

What should I change in my diet?

You must reduce your intake of animal fats (cheese, meat, butter, eggs...) and increase your intake of foods with lower cholesterol, such as fish.



By following your cardiologist's advice on how to reduce the risk factors, you will be making a big contribution to your recovery.

Glossary



- Angiogram** X-ray of the heart using dye injection.
- Angioplasty** A procedure that may precede or follow stent placement. A balloon catheter expands the lumen of the vessel, leaving a larger opening for the blood to pass through. Also known as percutaneous transluminal coronary angioplasty (PTCA).
- Atherosclerosis** A disease in which the flow of blood to the heart is restricted with plaque deposits and, therefore, less oxygen and other nutrients reach the heart muscle. This may lead to chest pain (angina pectoris) or to a heart attack (myocardial infarction).
- Catheter** A small, thin plastic tube used to provide access to parts of the body, such as the coronary arteries of the heart.
- Coronary** Related to arteries that supply blood to the heart.
- Coronary Angiogram** A test to determine if CAD is present. Contrast dye is injected into the coronary arteries and a fluoroscope allows the doctor to see the vessels on an x-ray machine.
- Coronary Arteries** The arteries that surround the heart and supply blood containing oxygen and nutrients to the heart muscle.

Coronary Artery Disease (CAD) Disease affecting the coronary arteries that surround the heart and supply blood to the heart muscle. CAD occurs when the lumen of the coronary arteries becomes narrowed with plaque deposits (a build-up of cholesterol and other fats, calcium and elements carried in the blood).

Myocardial Infarction Permanent damage to the heart tissue and muscle due to the interruption of the blood supply to the area. Commonly referred to as a heart attack.

Percutaneous Performed through the skin.

**Percutaneous Transluminal
Coronary Angioplasty (PTCA)** see Angioplasty.

Plaque Accumulation or build-up of calcium, cell debris, fatty deposits and collagen in a coronary vessel that leads to narrowing of the lumen.

Post-Dilatation After the stent has been expanded, another balloon catheter may be inserted inside the stent and inflated to size the stent more precisely to the wall.

**Percutaneous Transluminal
Coronary Intervention (PTCI)** A minimally invasive treatment of the coronary arteries that is performed through a small access via the skin and lumens of the vessels.

Restenosis Recurrent blockage or narrowing of a previously treated vessel.

Stent An expandable metal tube that supports the vessel wall and maintains blood flow through the opened vessel.

Transluminal Literally, through the lumen i.e. the inner channel of the vessel.

Medication Reminder Card

_____ mg of _____ must be taken
_____ times per day through _____.

_____ mg of _____ must be taken
_____ times per day through _____.

Date of stent implant/procedure _____

**DO NOT discontinue your medications
for any reason before these dates without
contacting your cardiologist's office.**

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