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# Coronary angioplasty and stenting for the heart

## Department of Cardiology

Information for Patients

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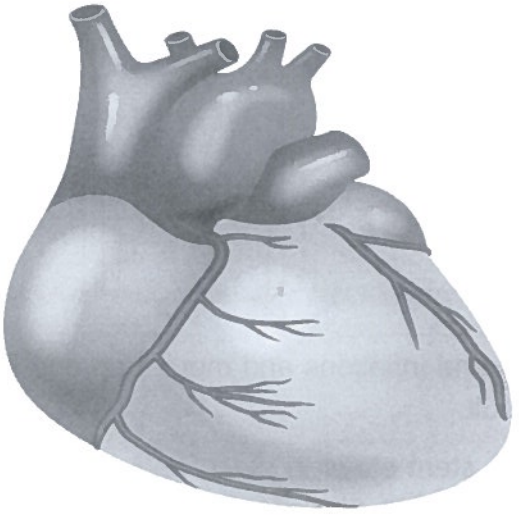
## Introduction

This booklet has been developed to help you understand what to expect before, during and after your coronary angioplasty and stent implant. If you have any questions that the booklet does not answer, please do not hesitate to ask the nursing or medical staff who are looking after you.

## Coronary artery disease

Coronary artery disease is the term used to describe furring and narrowing of the arteries (blood vessels) in the heart that provide blood flow to the heart muscle. The gradual build up of fatty materials in the inner lining of the arteries is the most common cause of narrowing of the coronary arteries. **Angina** is the name given to the feelings, or symptoms, that happen when the build up is enough to restrict the blood flow down the artery, and the heart muscle does not receive enough blood and oxygen. These symptoms may include chest pain or discomfort as well as breathlessness.



The heart and its coronary arteries

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## What is a coronary angioplasty and stenting?

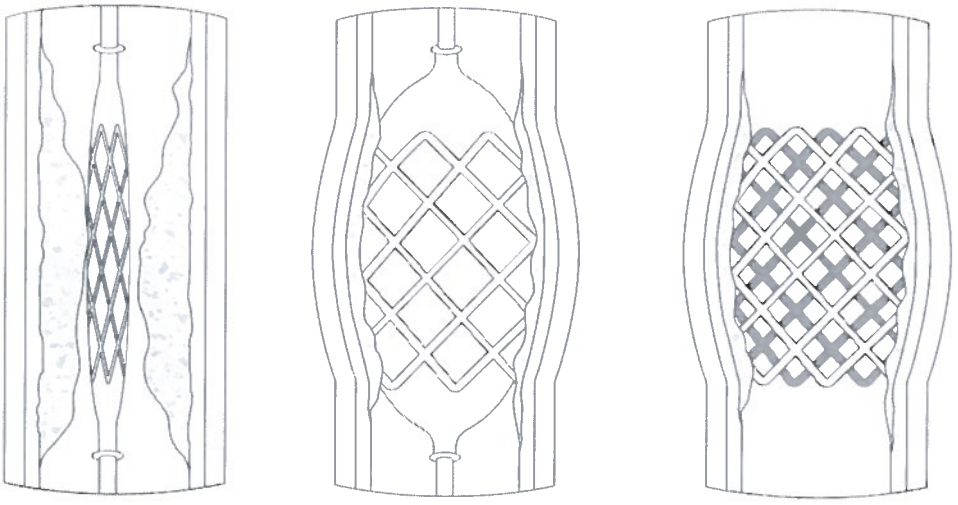
Coronary angioplasty and stenting is a specialised treatment used to stretch the coronary artery to widen the narrow part. It is also known as PCI (Percutaneous Coronary Intervention).

This procedure happens in the cardiac catheterisation laboratory using x-ray screening; therefore **if you think you may be pregnant, please let us know before the procedure**.

The procedure involves inserting a thin plastic tube (also called a sheath) into an artery through a small puncture hole usually in the wrist, sometimes in the groin. This is done under local anaesthetic, so you will be awake.

A thin tube called a guide catheter is threaded up through the sheath to the coronary artery. A 'balloon catheter' is then threaded through the guide catheter, down the artery into the narrowing. The stent is a thin metal 'scaffold' tube and is mounted on the balloon catheter.

Once the balloon catheter is positioned it is filled with air (inflated) which causes the stent to expand and be pressed up against the wall of the artery. The balloon is then let down (deflated) and taken out leaving the stent in place, keeping the artery open.



Several inflations and more than one stent may be needed to widen the narrowing to achieve a good result.

The stent stays in place and can not be taken out. Over time the stent becomes part of the artery wall. A thin film of cells grow over the surface of the stent. This happens over a period of time between one month and six months depending on the type of stent used. During this time there is a risk of blood clotting on the surface of the stent and therefore blocking the coronary artery. This would cause you to experience chest pain and risk of a heart attack. This risk can be significantly reduced by medicines such as Aspirin and Clopidogrel. These will be explained a little later in this booklet.

## Pre admission

Many patients are seen in a pre admission clinic before being admitted to hospital for their procedure. If you are on Warfarin or have diabetes, the doctor and nursing staff will talk to you about what tablets and insulin you may need to stop or reduce before coming in to hospital. You will have an ECG (heart tracing), blood tests and MRSA (Methicillin Resistant Staphylococcus Aureus) swabs taken to check for bacteria. You will be given an anti bacterial nasal and bodywash treatment to start using two days before you come in for your procedure.

Preadmission may occur on the day you have been informed that you have been listed for the procedure, or it may be a separate appointment.

**If you do not receive a pre admission appointment, it is very important that you ring the pre admission admin team on 0116 250 2598 or 258 3903.**

Remember to bring all your usual medication with you to your pre admission clinic and on the day of your procedure.

## How do I need to prepare myself?

We ask that you have a shower or bath on the morning of the procedure.

We encourage you to eat and drink as normal right up until the procedure (no fasting is needed).

Please take all your morning medication as usual, unless you have been told not to.

**Diabetic Patients** - Please stop taking any Metformin (or Sukkarto) two days **before** the procedure.

A gown and pants will be provided for you to wear during your procedure. We don't usually give sedative medicine beforehand, but if you very are anxious this can be arranged in the Catheter Labs. Please feel free to ask about this at any time whilst in the lab.

**Please bring an overnight bag with a dressing gown and slippers.**

## On the ward

You will be admitted onto a Cardiology Ward and told what time to expect your procedure. This could possibly be the next day if further blood tests or x-rays are needed.

If you are well after the procedure we will talk to you about when you can go home (be discharged). This could be the same day or we might ask you to stay in hospital overnight.

A small plastic tube (called a venflon or cannula) will be placed in the back of your hand or arm. This is so that medication and fluids can be given to you during the procedure if needed.

We will clip any body hair from the angiogram puncture site, the wrist and groin. **Please do not shave this area before you come to hospital.**

The procedure happens away from the ward in one of the catheter rooms (labs). The lab contains the specialised x-ray and monitoring equipment needed for the procedure. The staff in the department wear gowns and gloves, as this is a clean procedure. You may be asked to walk to the lab.

## During the angioplasty and stent implant

If you have had a cardiac catheter before, you will find there is really very little difference in what to expect during the procedure.

When you arrive at the catheter room, you will be lie on the x-ray table, which is narrow, firm and moves up and down as needed. Heart monitoring (ECG) leads will be attached to your arms and legs. Your wrist and groin will be cleaned with an antiseptic lotion and covered with sterile towels.

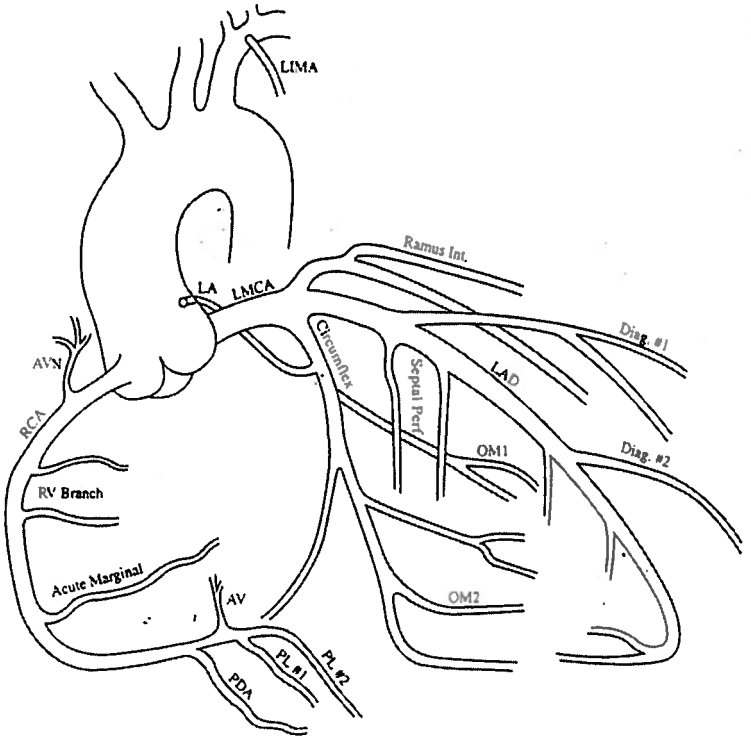
A local anaesthetic will be injected to numb the skin around the area where the tube will be inserted. You should feel no pain apart from a small sting from the local anaesthetic. Once the guide wire has been passed through the artery in the wrist or groin, you will not feel it as it is passed up to your heart. The narrowing in the artery is seen with the help of a dye, x-rays and a television screen. The x-ray equipment will be brought close to your chest to allow the balloon catheter to be put in place.

As the balloon is being inflated in the coronary artery, you may feel your usual angina symptoms. If this happens, tell the doctor about this straightaway. This is due to the balloon causing a temporary blockage of blood flow through the artery and is to be expected.

The procedure may take 30 minutes or longer. If more than one coronary artery needs treatment, we may do them all during this procedure, or you may need to come back and them treated separately at different times.

The plastic tube that was inserted into the groin or wrist will be taken out at the end of the procedure. Sometimes the plastic tube in the groin may need to stay in for a few hours after or sometimes until the following morning. Sometimes a 'Closure Device' often called a TR band is used to seal the entrance hole in the artery.

**Diagram of Coronary Arteries**



## Risks

With all procedures, and particularly one involving the heart, there are risks involved. The risks for this procedure are small, but are still important.

- There is a chance that the balloon and stent may damage the inside of the heart artery, causing it to tear or block. This may cause a heart attack. The chance of this happening is less than 1% (1 in 100 cases). Very rarely, an emergency bypass operation is needed to restore blood flow to a blocked artery. This happens in less than 1 in 1000 cases. Emergency coronary artery bypass surgery in this situation carries a slightly higher risk compared to planned/elective bypass surgery. The risk of a major complication such as death or stroke as a result of emergency surgery is still less than 2% (2 in 200 cases).
- There is a small chance of a complication at the entry site in the wrist or groin. This usually involves bruising that gets better after a few days. In a small number of cases, 1% (1 in 100 cases), a small operation is needed if the bruise is large with a collection of blood (haematoma).
- Within the first few months after the procedure, there is a small risk of the stent blocking off with a blood clot known as thrombus. To reduce the chance of this, we prescribe daily medication including Aspirin and a second drug (Clopidogrel, Ticagrelor, or Prasugrel). **It is really important that you continue to take these tablets daily**. These drugs do make you bleed and bruise more easily. You will be told how long to take these medications before you go home and this will be written on your discharge letter.
- There is an approximate risk of 1 in 4,000 of developing a fatal cancer due to the use of x-rays. This will vary depending on the complexity of the procedure. The amount of radiation that you will be exposed to is the equivalent of the background radiation you are exposed to through living in Leicester in 2 years (assuming background radiation of 2.6mSv per year).
- Depending on how complex the procedure is, there is a small chance of some skin redness (radiation induced erythema). We will talk to you after the procedure if this is a risk for you

## Benefits of the procedure

Coronary angioplasty and stenting allows a narrowed artery to the heart to be treated within the vessel rather than by cardiac surgery, which involves opening the chest wall. The procedure is simpler and recovery after it is shorter than for coronary artery bypass surgery.

Patients who have recently had a heart attack (Myocardial Infarction) or where other methods such as thrombolytic therapy (clot buster treatment) have been unsuccessful, angioplasty and stents can re-open the vessel.

Long term survival may be improved after coronary angioplasty.

Most patients have less angina symptoms after this procedure.

## When you return to the ward

An ECG (heart tracing) will be taken and your nurse will check your pulse and blood pressure. They will check the colour and warmth of your hand if your wrist was used, or your foot if your groin was used. They will check the puncture site for any bleeding. You can usually eat and drink again at this point.

If the plastic tube was not removed straight after the procedure, it will stay in until your blood clotting time (thickness of your blood) has returned to normal. Whilst this is in place you will need to stay in bed keeping your legs straight and only sitting up at a slight angle. You will usually have your plastic tube removed about four to six hours after your procedure or sometimes the next day.

When the plastic tube is taken out, the nurse will press over the puncture site for about 15 to 30 minutes until the bleeding has stopped. You will then need to stay in bed for two hours, which may mean you need to stay in hospital overnight.

## Your wound

Leave your plaster on for two days after your procedure, then take it off and leave the puncture site exposed to heal. You may have some bruising but this is not usually serious. You can take Paracetamol if you have some discomfort. If you are concerned about your wound site, please contact either your GP or the ward you stayed on for advice.

## What medication do I need for the stent implant?

You will need to permanently take Aspirin for life. You will also be prescribed one of three other drugs (Clopidogrel, Ticagrelor, or Prasugrel). These help to stop blood cells (platelets) sticking together.

It is essential that you continue taking these drugs every day as prescribed for as long as your Cardiologist recommends. This is usually for one year, but can be shorter in some cases. The instructions will be written in your discharge letter so that your GP is aware. The hospital pharmacy will give you a supply for one month, so you will need to get a repeat prescription from your GP if you need more.

You should tell any doctor and dentist treating you that you have a stent and are on Ticagrelor / Prasugrel / Clopidogrel.

You will need to continue your other medication as before the procedure unless your doctor changes them.

## Going home from hospital (discharge)

You will not be able to drive after the procedure. You will need to arrange for someone to collect you from hospital. The Driving and Vehicle Licencing Agency (DVLA) state that you should not drive a car for **one week** from the date of the procedure (no notification to DVLA is required). A bus or lorry driver must tell the DVLA about the procedure, and must not drive the bus or lorry until they have had permission from the DVLA.

You must have someone with you overnight on the day of your discharge, and you must have access to a telephone.

You should take it easy for at least two days and slowly increase your activity. Ask your doctor or nurse about returning to work as this often depends on your job, but we often suggest that you have one week off work. Avoid lifting heavy objects and activities such as vacuuming, mowing and lifting heavy shopping for two days and then return to normal activity.

You can have a warm shower 24 hours after your procedure. Don't have a hot bath as this may cause the artery to swell and cause bleeding.

Information is available on the ward on lifestyle adjustment or through your local Cardiac Rehabilitation team.

## Follow-up

A follow-up appointment is not always needed. If we do need to see you again in outpatients, we will write this in your discharge letter. Your local Cardiac Rehabilitation team are also available to help and support you in your recovery and to reduce your chances of further problems in the future.

## Chest pain after discharge

For some time after the procedure there is a small risk of a blood clot within the stent. This can cause chest pain and a possible heart attack. After one to six months a film of cells covers the stent, and the risk of clotting is less likely. It is possible to re-open a blocked stent but this is complex and needs to be done quickly. If you have chest pain during the first four weeks after leaving hospital, you should phone the ward you stayed on to seek further advice.

## Problems at home

There is a very small risk for the wound in your wrist or groin to start bleeding. If your groin bleeds, don't panic but lie down on the floor (not the bed), where you are less likely to faint. You, or better still, a relative or friend, should press with the flat of the fingers of both hands, or a clenched fist over the groin wound for thirty minutes and then slowly release.

If your wrist is bleeding, apply firm pressure just above the wrist pulse.

Do not use a tourniquet for either wrist or groin, as it will not work and is dangerous. You should contact your GP so that they can check your wound and to see that you are all right. If the bleeding has not stopped after 30 minutes dial 999 for assistance.

You may have a painful bruise over the puncture wound in your groin. This is due to bleeding under the skin. If a painful lump does develop, especially if the groin becomes painful when walking, please seek medical advice. Bruising and colour changes to the skin above and below the groin or wrist may develop over the week. Paracetamol can be taken for minor discomfort.

If there is any doubt or problem with your groin or wrist, within the first week of returning home, you should contact your GP.

## Contact details

| | |
|---|---|
| Ward 28 | 0116 258 3646 |
| Ward 32 | 0116 258 3313 |
| Ward 33 | 0116 258 3733 |

Pre Admission Nursing Team (Clinic D) 0116 250 2473 (Open Monday to Friday, 9.00 am to 5.00pm)

**Cardiac Rehabilitation Helplines:**

| | |
|---|---|
| Glenfield Hospital | 0116 258 3986 |
| Leicester General Hospital | 0116 258 8069 |
| Derby Royal | 0133 225 8137 |
| Kings Mill | 0162 367 2296 |
| Lincoln County | 0152 257 3945 |
| Pilgrim | 0120 544 6282 |
| Queen's Burton | 0128 359 3150 |
| Kettering | 0153 649 1102 |
| Bourne Health Care | 0177 8425124 |
| George Elliot | 0247 635 1351 |

## Further information

www.activateyourheart.org.uk is an interactive web site for heart patients and their relatives, offering heart and health related information.

The British Heart Foundation has up to date information on heart disease: www.bhf.org.uk They also have booklets and DVD's, with videos of procedures on line. It has a helpline number 0300 330 3311

اگر آپ کو یہ معلومات کسی اور زبان میں درکار ہیں، تو براہِ کرم مندرجہ ذیل نمبر پر ٹیلی فون کریں۔

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