Safe | Personal | Effective

East Lancashire Hospitals NHS Trust

CA02 Percutaneous Coronary Intervention

Expires end of September 2019

You can get information locally from the main switchboard on 01254 263 555.

You can also contact:

_____

_____

_____

You can get more information from www.aboutmyhealth.org
Tell us how useful you found this document at www.patientfeedback.org

The Preoperative Association

Royal College of Surgeons ADVANCING SURGICAL CARE

THE ROYAL COLLEGE OF SURGEONS OF EDINBURGH

Crystal Mark 13196 Clarity approved by Plain English Campaign

The Information Standard Certified Member

EIDO HEALTHCARE UNITED KINGDOM

What is a percutaneous coronary intervention?

A percutaneous coronary intervention (PCI) is used to treat the symptoms of coronary artery disease, which is narrowing of the coronary arteries (blood vessels that supply your heart muscle with oxygen) (see figure 1).

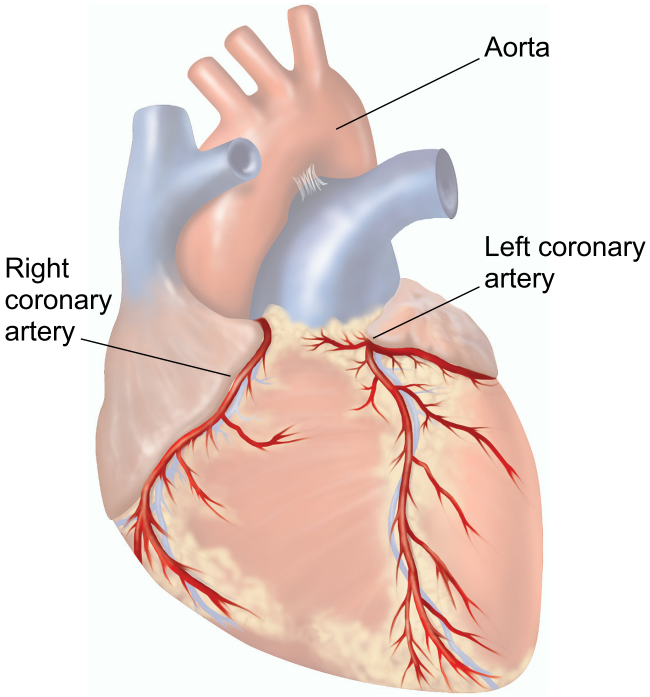

Figure 1
The coronary arteries

A PCI is a procedure to widen or unblock an artery using a small inflatable balloon. A stent (metal mesh tube) is usually used to hold the artery open.

This treatment is usually performed after a cardiac catheterisation, which is a test to find out if you have any problems with your coronary arteries.

A PCI is performed by a cardiologist (heart specialist).

Your doctor has recommended a PCI. However, it is your decision to go ahead with the procedure or not.

This document will give you information about the benefits and risks to help you to make an informed decision. If you have any questions that this document does not answer, ask your cardiologist or the healthcare team.

How does coronary artery disease happen?

Coronary artery disease is more common in older people. It can be more severe or happen earlier in life caused by one or more of the following risk factors – smoking, a strong family history of angina or heart attacks, high blood pressure, diabetes and high cholesterol levels. The narrowing of the coronary arteries is caused by atherosclerosis, where abnormal fatty material coats the inside of the artery.

The diseased arteries may not deliver enough oxygen to your heart (ischaemic heart disease). The pain associated with this is called angina. At first, angina may happen only during exercise. As the condition gets worse, you may also get pain or be short of breath while you are resting.

A coronary artery can become blocked, causing part of the heart muscle to die. This is a heart attack and unfortunately may be the first sign of heart disease for some people.

What are the benefits of a PCI?

Having a PCI to widen or unblock an artery should improve the flow of blood without you having to have open heart surgery (heart bypass operation). The procedure is successful in more than 9 in 10 people.

You should get less pain. A PCI may also improve your breathing if blocked or narrowed arteries are causing you to be short of breath.

Sometimes a PCI can be used to treat an artery during or soon after a heart attack. In this case, you may live longer after a PCI and it may reduce the risk of you having another heart attack.

The procedure is effective only if you also have medication but you may be able to reduce the medication you need to take.

Are there any alternatives to a PCI?

A PCI is suitable only for certain types of coronary artery disease.

For some people it may be possible to have a coronary bypass operation. However, there is also a risk of serious complications at the time of surgery and it takes longer to recover. If you have a bypass you are less likely to need another bypass or a PCI in the future.

For some people a bypass may be a better alternative and may help you to live longer if you have many narrowings in your arteries, blocked arteries or damage to your heart muscle. This is particularly the case if you have diabetes.

Coronary artery disease can be treated using medication to relieve the symptoms and to help prevent the disease from getting worse.

What will happen if I decide not to have a PCI?

Your angina may stay stable and controlled for many years. You will need to continue with medication.

Without a PCI, your angina may get worse. If you have recently had a heart attack or unstable angina (acute coronary syndrome) there may be a higher risk of you having another heart attack if you do not have a PCI.

What does the procedure involve?

Before the procedure

You may be asked to have other tests before you come to the hospital such as blood tests, an ECG (electrocardiogram) or a chest x-ray.

If you are female, the healthcare team may ask you to have a pregnancy test. They need to know if you are pregnant because x-rays are harmful to unborn babies. Sometimes the test does not show an early-stage pregnancy so let the healthcare team know if you could be pregnant.

If you take warfarin, clopidogrel, ticagrelor or other blood-thinning medication, let your cardiologist know at least 7 days before the procedure. Do not stop taking your medication unless a cardiologist tells you to.

If you have diabetes and take medication containing metformin, let the healthcare team know as soon as possible. You may need to stop taking it on the day of the procedure and for the next 2 days. You may need to have a blood test after the procedure before continuing with your medication.

You will be admitted to hospital. The healthcare team will carry out a number of checks to make sure you have the procedure you came in for. You can help by confirming to your cardiologist and the healthcare team your name and the procedure you are having.

The healthcare team will ask you to sign the consent form once you have read this document and they have answered your questions.

The healthcare team may ask you to not eat in the 6 hours before the procedure. If you have diabetes, you will need special advice depending on the treatment you receive for your diabetes.

You may drink some water up to 3 hours before the procedure.

The healthcare team will insert a small needle in your arm or the back of your hand.

In the x-ray room

A PCI usually takes 30 minutes to 2 hours, depending on how many of your coronary arteries need to be treated.

Your cardiologist will ask you to lie on your back. If appropriate, they may offer you a sedative or painkiller which they can give you through the needle. To help prevent blood clots, they will use the needle to give you blood-thinning medication during the procedure.

The healthcare team may monitor your oxygen levels using a finger or toe clip. If you need oxygen, they will give it to you through a mask or small tube under your nostrils.

The healthcare team will place sticky pads on your chest or arms so they can monitor your heart during the procedure.

Your cardiologist will keep everything as clean as possible and will wear a theatre gown and operating gloves. They will use antiseptic to clean the area where the sheath will be inserted and most of your body will be covered with a sterile sheet.

The sheath is usually inserted in your radial artery near your wrist or your femoral artery near your groin.

Your cardiologist will inject local anaesthetic into the area over the artery. This stings for a moment but will make the area numb, allowing your cardiologist to insert the sheath into your artery with much less discomfort for you.

When your cardiologist is satisfied that the sheath is in the right position, they will insert a catheter (long, narrow plastic tube) through the sheath and into your artery.Your cardiologist may inject medication through the sheath to widen your artery. You may feel warm for a few seconds where the sheath was inserted.

Your cardiologist will pass the catheter along the artery to your heart. They will use x-rays to help them guide the catheter to the right position. The x-ray equipment will move around the table and come close to your chest but it will not actually touch you.

Your cardiologist will inject dye (colourless contrast fluid) into the catheter so they can take x-rays to find out exactly where your coronary arteries have narrowed.

Your cardiologist will pass a fine wire down the catheter and through the narrowed part of the artery. They will pass a small tube, with a small inflatable balloon at the end, over the wire and across the narrowed part of the artery. They will inflate the balloon to widen the artery (see figure 2).

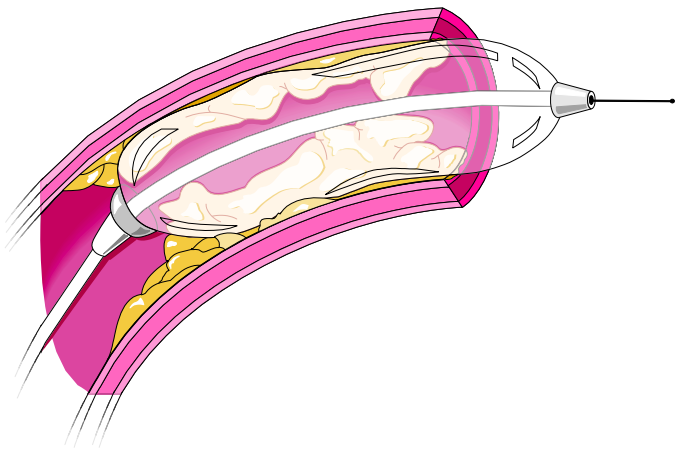

Figure 2

An inflated balloon inside the narrowed artery

In most cases they will also expand a stent inside the artery to hold it open (see figure 3). Your cardiologist may use a drug-eluting (drug-coated) stent to reduce the risk of the artery narrowing again.

Your cardiologist may repeat this procedure a number of times, depending on how many arteries need to be treated.

You may feel faint or have some discomfort during the procedure. If you have angina, you may get your usual pain when your cardiologist inflates the balloon or expands the stent. However, this usually passes after a few minutes. It is normal for your heart to beat a few extra times (palpitations). If you feel unwell, let your cardiologist know.

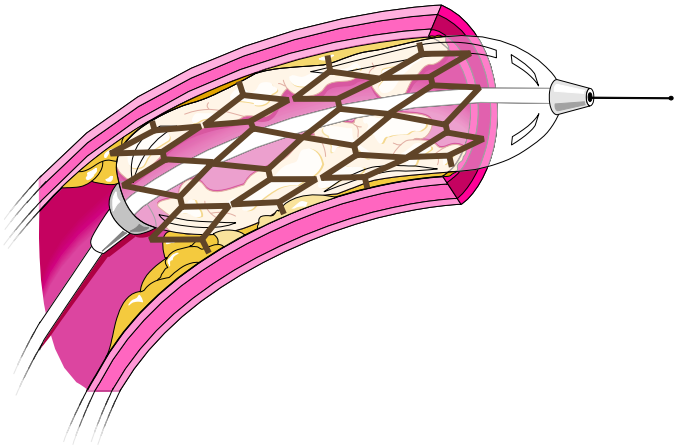

Figure 3

A stent inside the artery holding it open

Your cardiologist will remove the wire, balloon and catheter. They will remove the sheath when your blood has thickened.

Your cardiologist or a nurse will press firmly for a few minutes where the sheath was inserted to help the hole to heal. They may use a mechanical clamp to apply pressure. Sometimes your cardiologist will insert a device to close the hole.

Your cardiologist may ask you to rest on a bed in the recovery area for up to 4 hours to reduce the risk of bruising.

What complications can happen?

The healthcare team will try to reduce the risk of complications.

Any numbers which relate to risk are from studies of people who have had this procedure. Your doctor may be able to tell you if the risk of a complication is higher or lower for you.

A serious complication happens in about 1 in every 200 percutaneous coronary interventions (overall risk of death for non-emergency procedures: 1 in 500).

You should discuss with your doctor these possible complications, and the benefits and risks for you of having drug-eluting stents, if there is anything you do not understand.

Complications during or soon after the procedure

- Bruising where the sheath was inserted. This is common and usually fades in about 3 weeks.
- Infection, where the needle was inserted in your arm or the back of your hand, or in your groin (risk: 1 in 100).
- Infection of the stent (risk: 1 in 5,000).
- Bleeding after the procedure. It is common to have a little bleeding. This is easily treated by your cardiologist or a nurse simply pressing firmly for a few minutes where the sheath was inserted. More serious bleeding can happen (risk: 1 in 100), including internal bleeding (risk: less than 1 in 200). The risk is higher if you need extra blood-thinning medication during the procedure. If the bleeding is heavy, you may need a blood transfusion (risk: 1 in 200) and, rarely, further surgery.
- Developing a collection of blood (haematoma) (risk: 1 in 10). Small haematomas causing bruising are common but are not serious. If you get a large haematoma, it will take longer to settle (risk: 1 in 50). Rarely, it may press on a nerve, causing weakness or numbness. This usually gets better within a few weeks.
- False aneurysm (lump that connects to the artery) or arteriovenous fistula (abnormal connection between an artery and vein) where the sheath was inserted (risk: 4 in 100 if the femoral artery is used, 1 in 500 if the radial artery is used). If the problem is small, it should heal. If the problem is large, you may need further treatment. An aneurysm or fistula can take a few days to appear. If you notice a tender lump, let your doctor know.
- Change in heart rhythm. A faster heartbeat (risk: 2 in 100) is usually caused by the procedure itself and is easily treated but you may need a cardioversion (shock to your heart). A slow heartbeat will usually improve but you may need medication or a temporary pacemaker (a device that treats a slow heart rhythm). If you feel faint or unwell during the procedure, let your cardiologist know.
- Kidney damage, as your kidneys need to filter the colourless dye from your bloodstream (risk of serious damage: less than 1 in 100, risk of needing dialysis: less than 1 in 500). The risk is higher if you already have problems with your kidneys or have diabetes.
- Allergic reaction to the equipment, materials, medication or dye. This usually causes a skin rash which settles with time. Sometimes the reaction can be serious (risk: less than 1 in 2,500). The healthcare team is trained to detect and treat any reactions that might happen. Let your cardiologist know if you have any allergies or if you have reacted to any medication or tests in the past.
- Radiation exposure (the extra risk of developing cancer over a lifetime: on average less than 1 in 1,000 – this is a small increase). The risk increases the younger you are. Your cardiologist will keep the number of x-rays as low as possible.
- Blood clot (thrombosis) in the artery where the sheath was inserted, which can reduce the flow of blood to the rest of your leg or arm. This can cause discomfort. The risk is higher if your cardiologist uses the radial artery (risk: up to 5 in 100). Often this does not cause any symptoms but you may need treatment with blood-thinning medication. A thrombosis can result in you losing your limb (risk: less than 1 in 1,000).
- Lost stent, where the stent falls off in the wrong part of the coronary artery or in another blood vessel (risk: less than 1 in 300). Your cardiologist will usually be able to get the stent out again or insert it safely.
- Blood leaking into the sac that surrounds your heart (cardiac tamponade) (risk: less than 1 in 800). This is serious and can usually be treated by draining the fluid using a small tube.
- Drop in blood pressure (risk: 3 in 100). This can cause you to feel faint.
- Heart attack, if your heart artery is damaged during the procedure, or if the catheter dislodges a clot that travels down the artery to your heart (risk: 2 to 3 in 500). You may need medication, another procedure to treat the problem, or an emergency bypass operation (risk: less than 1 in 550). Minor damage to your heart muscle can happen but does not often cause symptoms (risk: up to 1 in 10).

- Radial artery spasm (risk: up to 1 in 10). If the radial artery is used, the artery can go into a spasm, causing pain during the procedure or when the sheath is being removed. Special coated sheaths or medication can be used to help prevent this from happening. The spasm may cause damage to the artery or reduce the blood flow in the artery, which usually improves with medication.
- Stroke (loss of brain function resulting from an interruption of the blood supply to your brain) (risk: 3 in 1,000).

Late complications

- Stent restenosis, where the artery narrows again (risk: 4 in 100 where the narrowing causes symptoms). You may need another PCI or a bypass operation (risk: less than 6 in 100 after 5 years).
- Stent thrombosis, where a blood clot forms in the stent (risk: 1 in 100 after 3 years). This can cause a heart attack. It is important that you take your blood-thinning medication to reduce the risk of a blood clot forming in the stent.

How soon will I recover?

In hospital

After the procedure you will be transferred to the recovery area where you can rest.

The healthcare team will monitor your heart rate and blood pressure to check for any problems. They will check the area where the sheath was inserted for any bleeding. If you notice any bleeding or swelling, let the healthcare team know straightaway.

You should be able to go home the same day or the day after. However, your doctor may recommend that you stay a little longer.

If you do go home the same day, a responsible adult should take you home in a car or taxi and stay with you for at least 24 hours. Be near a telephone in case of an emergency.

Returning to normal activities

If you were given a sedative, you should also not sign legal documents or drink alcohol for at least 24 hours.

Do not operate machinery (this includes cooking) for at least a week. Your doctor will tell you when you can operate machinery again.

Your doctor will tell you when you can drive again. The rules for licence holders are complicated. You should also check your insurance policy.

Do not have a hot bath for 2 to 3 days. It is important not to do strenuous exercise for about a week.

If you had a stent inserted, you will be on extra blood-thinning medication such as clopidogrel or ticagrelor, so you will be at a higher risk of bleeding. However, do not stop taking your medication unless a cardiologist tells you to.

It is important that you take your medication as you are told by your doctor. If you do not, you have a higher risk of having a heart attack or developing other life-threatening complications.

You can remove the plaster over the hole after the first day. There is a small risk of bleeding. If this happens, lie flat on your back and ask someone to press firmly on your wound for 15 to 20 minutes and then gradually release the pressure. If the bleeding continues, do not use a tourniquet (a tight strap). Keep on pressing firmly on your wound and call an ambulance or go immediately to your nearest Emergency department.

Lifestyle changes

If you smoke, stop smoking now to reduce the risk of your arteries narrowing even more. Stopping smoking will improve your long-term health.

Try to maintain a healthy weight. You have a higher risk of developing complications if you are overweight.

Regular exercise should improve your long-term health. Before you start exercising, ask the healthcare team or your GP for advice.

The future

If you have high blood pressure or high cholesterol, you will usually need to continue with most of the medication you were on before the procedure.

Summary

Coronary artery disease can cause pain, shortness of breath and heart attacks. A PCI is usually a safe and effective way to relieve your pain, and may help you to live longer. However, complications can happen. You need to know about them to help you to make an informed decision about the procedure. Knowing about them will also help to detect and treat any problems early.

Keep this information document. Use it to help you if you need to talk to the healthcare team.

Acknowledgements
Author: Dr Julia Baron BMBS (Hons) MD FRCP FESC
Illustrators: Medical Illustration Copyright © Medical-Artist.com, LifeART image Copyright © Wolters Kluwer Health, Inc. Lippincott Williams & Wilkins. All rights reserved

This document is intended for information purposes only and should not replace advice that your relevant healthcare team would give you.