

# **Bronchial artery embolisation – image guided**

## **Information for patients**

This leaflet explains bronchial artery embolisation (BAE). It covers what to expect on the day of the procedure, as well as the benefits, the potential risks and the alternatives.

Before bronchial artery embolisation, a clinical staff member will explain the procedure to you in detail. This leaflet is not meant to replace that discussion. If you have any questions or concerns, please do not hesitate to speak to the doctor who has referred you or the Interventional Radiology Department. It is important that you feel well informed before agreeing to having the bronchial artery embolisation and signing the consent form.

### **Confirming your identity**

Before you have a treatment or procedure, our staff will ask you your name and date of birth and check your ID band. If you do not have an ID band we will also ask you to confirm your address. If we do not ask these questions, then please ask us to check. Ensuring your safety is our primary concern.

### **What is bronchial artery embolisation?**

It is a procedure to block abnormal bronchial arteries that supply blood to your lungs. It involves having a dye (contrast) injected into these arteries through a thin plastic tube (catheter) so they show up on x-rays. This imaging of the blood vessels is called an angiogram. The doctor can then identify the problem arteries and inject tiny particles into them to block them.

Image guided means that we will use images from ultrasound scans and real time x-ray (fluoroscopy) to identify the arteries and ensure the correct ones are blocked.

### **Why do I need this procedure?**

You have been coughing up blood from your lungs (haemoptysis). This is caused by bleeding from abnormal blood vessels supplying part of your lungs. Bronchial artery

embolisation will reduce or stop the blood flow to the affected arteries in your lungs to prevent further bleeding.

Certain conditions can cause bleeding in the lungs. The most common include tuberculosis (TB), bronchiectasis, aspergillosis and cystic fibrosis. If you have long-term inflammation, such as with cystic fibrosis, the abnormal lung tissue causes changes in the bronchial arteries and alters the normal flow and distribution of blood, with new blood vessels being formed in the lungs. These newly formed blood vessels are thin and fragile and tend to bleed easily, so causing your symptoms. Chest infections can also break these delicate blood vessels.

## How is the bleeding diagnosed?

You usually have tests including chest x-rays and computed tomography (CT) scans to find the area that is bleeding. Depending on your condition, you may also have a test that shows the breathing tubes in your lungs (bronchoscopy).

## What are the risks?

Bronchial artery embolisation is generally safe. However, there are risks and possible complications with all procedures, even though every effort is made to prevent them.

- **Bleeding at the puncture (needle-entry) site:** You may have a small bruise after the procedure but this usually fades within a week or two.
- **Damage to the access artery in your groin or wrist.** This is rare and could cause a tender lump called a false aneurysm (pseudoaneurysm) to form a few days after the procedure. This is caused by blood leaking from the needle-entry site. We can find it using an ultrasound scan and we often treat it with an injection to clot the blood. Occasionally, you need surgery to repair the artery.
- **Post-embolisation syndrome.** This is rare and can cause chest pain behind your breastbone, pain in between your ribs, temporary difficulty in swallowing and fever. It usually eases over a few days to weeks and you can take painkilling medication to treat the symptoms.
- **Non-target embolisation** (embolisation of vessels not supplying the bleeding area). You will have an angiogram before any blood vessels are embolised to ensure it is safe to go ahead. If the wrong vessels are embolised, this does not often cause a significant problem.
- **Paralysis.** This is rare. Blood vessels to your spinal cord may come from your bronchial artery. If the tiny embolisation particles find their way into your spinal artery, they could cause paralysis. The Interventional Radiologist (specialist doctor carrying out your procedure) will minimise this risk. The risk of paralysis is very low compared with the greater risk of continuous bleeding in your lungs if you do not have the procedure.
- **Allergic reaction to the dye (contrast):** This is rare. Fewer than one in every 1,000 patients has a severe reaction to the dye.
- **Radiation risk:** In order to be performed safely, your procedure requires to be performed under x-ray guidance. X-rays are a type of ionising radiation. Studies have shown that people who have been exposed to high doses of ionising

- radiation have an increased chance of developing cancer many years or decades after they have been exposed. However, while more complex or difficult cases might require a slightly higher radiation dose, the radiation exposure associated with this procedure is moderate. It is the assessment of your doctor and the radiology doctor who will be performing the procedure that the benefit of the procedure outweighs the risk from the exposure to radiation. The specialist radiologist and radiographer will ensure that your radiation exposure is kept as low as possible during the procedure. If you have any concerns about the risk of exposure to radiation during this procedure, you can discuss this further during the consent process with the radiologist who will performing your procedure. Please notify the clinical team if you think you may be pregnant.

## **Consent**

We must by law obtain your written consent to any operation and some other procedures, including a bronchial artery embolisation, beforehand. Staff will explain all the risks, benefits and alternatives before they ask you to sign a consent form. If you are unsure about any aspect of this procedure, please do not hesitate to ask to speak with a senior member of staff again. We will inform your GP that you have had this procedure, unless you specifically instruct us not to.

## **What are the benefits?**

- Bronchial artery embolisation is a minimally invasive procedure with fewer complications than alternative treatments.
- Very unwell patients can have it as first line of treatment to stop the bleeding.
- It can also be used to control bleeding and ease your symptoms while your doctors decide on a more lasting medical or non-urgent surgical operation to treat the cause of the bleeding.

## **Are there any alternatives?**

You can have medical or surgical treatment that aims to manage the cause of the bleeding and to stop it from becoming worse. But bronchial artery embolisation is an immediate and highly effective treatment for bleeding in your lungs with a very low risk of complications.

## **Where will I have the procedure?**

You will have it in the Interventional Radiology Department, 1st Floor Denmark Wing, King's College Hospital (KCH), Denmark Hill.

## **How can I prepare for my procedure?**

**Drugs and alcohol:** Do not use any recreational drugs or drink alcohol for 24 hours before the procedure.

**Medications:** Please make sure the doctor or nurse knows if you are diabetic and whether you are taking tablets such as metformin or having Insulin injections.

Also inform them if you are taking any of the following blood-thinning medications (anticoagulants): aspirin, clopidogrel, warfarin, apixaban, rivaroxaban, edoxaban, ticagrelor, prasugrel, phenprocoumon, acenocoumarol, dagibatran, argatroban, heparins, fondaparinux, enoxaparin.

They will tell you when to stop taking these medications and when it is safe to start taking them again.

If in doubt, please bring all the medications that you are taking, whether they have been prescribed for you or if you have bought them over the counter at your local chemist store.

### **Will I be admitted to hospital for the procedure?**

Yes, you will be admitted to the hospital for your BAE. You will often be admitted to the hospital the day before your procedure and stay overnight before your procedure. Occasionally, you may be admitted on the morning of your procedure. The bed manager will call you to let you know when to arrive and which ward to go to.

### **What happens on the day of the procedure?**

**Eating and drinking:** You must not eat anything for at least **six hours** before your BAE. You can have clear fluids up to **two hours** before your procedure. It is very important that you follow these instructions because you will be lying flat on your back during the procedure.

**Medications:** Keep taking your regular medications, except for any blood-thinning ones. Remember to take your blood pressure medication on the morning of the procedure (if applicable).

**What to bring with you:** Please bring a small overnight bag, all your medications and something to read.

**What not to bring with you:** Do not bring valuables, jewellery or large sums of money. If this is unavoidable, please ask a relative or friend to take them home for you. The hospital cannot accept liability for the loss of items that are not handed in for safekeeping.

### **What happens before the procedure?**

A small, thin tube called a cannula into a vein in your hand or arm so we can give you medications such as antibiotics and/or pain relief if you need them during or after the BAE.

If you are diabetic and on insulin injections, you may also need a fluid drip in your vein to control your blood sugar once you start fasting.

### **What happens during the procedure?**

An Interventional Radiologist – a specialist doctor trained in image-guided procedures who will carry out your BAE – will explain the procedure and ask for your

consent. They will be assisted by interventional radiology nurse(s) and a radiographer who operates the special x-ray machine inside the procedure room.

You will be taken to the angiography suite or procedure room and asked to lie flat on your back on a special x-ray table.

We will attach you to a monitoring device to check your heart rate, breathing, oxygen level and blood pressure. If you have sedation (provided you pass the required assessments), we will give you oxygen through a face mask.

We will ask you to confirm your details before the start of the procedure and the doctor doing the BAE will confirm the procedure plan with the rest of the team.

The skin in your groin will be cleaned with disinfectant and the doctor will use an ultrasound machine to guide the needle and give you a local anaesthetic. You might feel a brief sting before the area gets numb.

They will then use ultrasound to decide the best place to make a small cut so they can put a needle into the artery in your groin. Next they will put a thin wire through the needle and into the artery.

They check that they are putting the wire in the correct place using real-time x-ray images. The needle will be taken out and a plastic tube (sheath) will be placed over the wire to secure the access site.

The doctor will use x-ray images to guide a thin plastic tube (catheter) towards the arteries that are bleeding in your chest. They will inject dye (contrast) to ensure the catheter is in the correct place. You may feel a temporary need to pass urine or a metallic taste in your mouth after each injection of the dye. This is normal.

The doctor will block the abnormal arteries by carefully injecting tiny particles through the catheter, again guided by x-ray images.

Once they are satisfied with the results, they will carefully remove the sheath and catheter. The doctor will close the hole in your groin, either with a special device or by applying firm pressure on the entry point for 10 to 15 minutes, to prevent any bleeding.

### **Will the procedure hurt?**

You have the procedure under local anaesthesia. To make you comfortable, we usually give you sedation when the procedure has started, as long as you have passed the STOP-BANG and Conscious Sedation Assessment which you will have when you arrive at the IR department. You might feel some pushing and mild discomfort in your groin when the sheath is placed to secure the access site. We will give you pain relief through the cannula in your arm if you need it.

### **How long does the procedure take?**

As a guide, expect to be in the radiology department for at least one to two hours.

## **What happens after the procedure?**

You will be taken to the recovery area, where the nursing staff will monitor you and the small hole in your groin. They will also check the pulse in your foot. If there are no signs of complications, you will be taken back to your ward

To make sure there is no bleeding in your groin, you will need to lie flat for one to four hours, depending on how the puncture site was treated. The Interventional Radiology nurse will let you know what your treatment plan is.

Once you are allowed to sit up, you need to rest for a few more hours. You will be allowed to get up after total bed rest of four to six hours.

The ward nurses will regularly check you for signs of bleeding, tenderness, swelling and infection. The puncture site must be kept clean and dry for at least 24 hours. You can eat and drink normally.

## **When can I go home?**

You need to stay in hospital overnight and we may discharge you home in the next day or so if you do not have any complications and your condition is stable.

## **How do I care for the cut?**

You will have a small dressing over the puncture site which you can change if necessary. If the dressing is heavily soiled, you can use a plaster to cover the cut instead. Keep the site dry for at least 48 hours, then remove the dressing and wash the area with soap and water. Avoid using lotion or powder. Make sure the cut has healed before bathing or soaking it in water.

## **What should I do when I get home?**

Rest and take it easy for the first 24 to 48 hours. Avoid heavy lifting, contact sports and strenuous exercise for seven days after the procedure.

## **What should I do if I cannot come for my procedure?**

Please let us know as soon as possible by contacting the Interventional Radiology Department, so we can arrange another date and time. This also enables us to offer your appointment time to someone else.

King's College Hospital, Denmark Hill, tel: **020 3299 3490**, **020 3299 6730** or **020 3299 3280**

## **Who can I contact with queries or concerns?**

If you have any questions about your procedure, please contact the Interventional Radiology Nurses:

King's College Hospital, Denmark Hill, tel: **020 3299 3490** or **020 3299 2060**, Monday to Friday, 9am – 5pm

## More information and support

- King's College Hospital: [www.kch.nhs.uk](http://www.kch.nhs.uk)
- NHS: [www.nhs.uk](http://www.nhs.uk), tel 111
- British Society of Interventional Radiology: [www.bsir.org](http://www.bsir.org) (click on Patients, click on patient information leaflets, select leaflet)

## Care provided by students

We provide clinical training where our students get practical experience by treating patients. Please tell your doctor or nurse if you do not want students to be involved in your care. Your treatment will not be affected by your decision.

## MyChart

Our MyChart app and website lets you securely access parts of your health record with us, giving you more control over your care. Visit [www.kch.nhs.uk/mychart](http://www.kch.nhs.uk/mychart) to find out more.

## Sharing your information

King's College Hospital NHS Foundation Trust has partnered with Guy's and St Thomas' NHS Foundation Trust through the King's Health Partners Academic Health Sciences Centre. We are working together to give our patients the best possible care, so you might find we invite you for appointments at Guy's or St Thomas' hospitals. King's College Hospital and Guy's and St Thomas' NHS Foundation Trusts share an electronic patient record system, which means information about your health record can be accessed safely and securely by health and care staff at both Trusts. For more information visit [www.kch.nhs.uk](http://www.kch.nhs.uk).

## Care provided by students

We provide clinical training where our students get practical experience by treating patients. Please tell your doctor or nurse if you do not want students to be involved in your care. Your treatment will not be affected by your decision.

## PALS

The Patient Advice and Liaison Service (PALS) is a service that offers support, information and assistance to patients, relatives and visitors. They can also provide help and advice if you have a concern or complaint that staff have not been able to resolve for you. They can also pass on praise or thanks to our teams.

Tel: **020 3299 4618** Email: [kings.pals@nhs.net](mailto:kings.pals@nhs.net)

**If you would like the information in this leaflet in a different language or format, please contact our Interpreting and Accessible Communication Support on 020 3299 4618 or email [kings.access@nhs.net](mailto:kings.access@nhs.net)**

**[www.kch.nhs.uk](http://www.kch.nhs.uk)**