



CT Guided Lung Biopsy

Introduction

This leaflet tells you about the procedure known as a CT guided lung biopsy. It explains what is involved and some of the common possible complications associated with this procedure. Information contained in this leaflet is not meant to replace discussion between you and your doctor, but instead is a guide to be used to aid discussion with your doctor and help prepare you for the procedure.

Why do I need to have a biopsy taken?

Other tests you have had, such as a chest X-ray or CT scan of your chest, have shown an abnormal area or shadow. From these tests it is not possible to say what the abnormality is. The best way to find out is to take a small piece of tissue from the abnormal area, using a special needle, and examine this under the microscope. This procedure is called a biopsy.

What are the benefits of having this procedure?

A biopsy is the best way for us to get a tissue sample from the abnormal area that is in your lung. Looking at this sample under a microscope will give us a lot more information about what is causing your symptoms, and the best way to deal with it.

Are there any alternatives to having this procedure?

Your doctor has recommended this procedure as being the best for you. If you have any concerns, then please speak to your nurse or doctor.

Who will do the biopsy and where will it be done?

Your appointment instructions will inform you where to attend to prior to the biopsy procedure. You will be assessed by a nurse, who may ask you for a medication history and check your heart rate, pulse and breathing rate. You will then be brought to the correct area (usually in the Imaging department), where the biopsy procedure is performed.

The biopsy procedure will be performed by a Radiologist, who is a doctor who is an expert in performing and interpreting medical imaging tests. The Radiologist will use a CT scanner, or sometimes (but less frequently) an Ultrasound scanner, to locate the precise area to take the sample from. The Radiologist will be assisted by a Radiographer, who is an expert in performing CT scans, and occasionally a nurse.

After the procedure, you will be brought back to an observation ward/area for a period of observation (usually a few hours, though this can be longer).

How do I prepare for the biopsy?

You will likely have blood tests before the biopsy to check that your blood clots normally (your doctor/team requesting the biopsy procedure will normally request these). If you currently take blood thinning medication such as Warfarin, Apixaban or Clopidogrel, you will usually be asked to stop this for a few days before the biopsy. Please contact your doctor/their team if you have not had instructions to do this.

What happens during a CT guided biopsy?

In the Imaging department, the radiologist will explain the procedure and answer any questions you have about it. You will be asked to sign a consent form, giving your permission for the biopsy to be taken. You should tell the radiologist if you have any allergies and confirm that you are not taking any blood thinning medication.

You will be asked to take off your clothes above the waist and put on a hospital gown. You may need to lay on your back, front or side on the CT scan table, depending on where the area being investigated is, and where the sample is going to be taken from.

You will be awake for the biopsy procedure; however, an injection of local anaesthetic is used to numb the local area. It is very important that you hold still for the duration of the procedure. The Radiologist will try their best to make sure you are as comfortable as possible.

The Radiologist will use the CT scanner (or sometimes an ultrasound scanner) to decide on a suitable location to take the sample from. The Radiologist will then mark the location on your skin with a pen.

Your skin will be cleaned, and everything will be kept as clean/sterile as possible. You will then be given the injection to the skin of local anaesthetic, to make everything numb. This can sting slightly as it is being injected.

More scans will then be taken as the biopsy needle is slowly inserted into to the correct position. The biopsy samples will then be taken. The needle can make a noticeable 'clicking' noise at this point, however this is completely normal.

The Radiologist may need to take several biopsy samples (usually through the same needle) to be sure they have enough tissue. A final scan of the area will be taken to check for any complications.

Will it hurt?

Some people may feel some mild discomfort during some parts of the procedure, but the doctor will always do their best to minimise this as much as possible. When the local anaesthetic is injected, it stings a little to start with but then the area should become numb. The biopsy needle is then passed through this numbed area, between the ribs and into the lung. You may feel a pushing sensation as the needle passes into the lung. Some people find this uncomfortable, while others feel nothing.

When the local anaesthetic wears off, the area may feel sore or painful, sometimes for up to a few days.

How long will it take?

The length of the procedure can vary from case to case. Usually it lasts approximately 30 minutes, though can take longer. You will need to be able to lie still for this time on the CT scanner table.

Are there any risks involved in this procedure?

CT guided lung biopsy is a very safe procedure, but there are a few risks and complications that can arise, as with any medical procedure. The main risk is of causing an air leak (pneumothorax) into the space between the lung and the inner chest wall.

A small air leak after a lung biopsy is fairly common and, in most cases, should not cause any problems. Usually, a small leak will get better on its own and you shouldn't need to stay in hospital. However, if you live alone, it may be recommended that you stay in hospital overnight. If a large air leak occurs then the air will need to be drained, usually by putting a small tube through the skin (called a chest drain) and this may require a stay in hospital for approximately 1–2 days. If you develop a large air leak, you may experience symptoms such as shortness of breath or chest pain. The doctor may decide to treat this by inserting a chest drain during the biopsy procedure, or afterwards when you have returned to the ward. Some patients may be sent home with a particular type of chest drain in and will be asked to return to clinic after a few days for it to be removed.

Overall, a large air leak requiring a chest drain is rare, occurring in around six in every hundred lung biopsies (6%). However, this is variable and can be higher depending on the degree of emphysema and scarring in your lungs. The Radiologist will discuss the risk with you prior to the biopsy procedure.

There is also a risk of the needle causing some bleeding in your lung. If this happens you may cough up some blood. This is usually small amounts, but can last for a few hours and sometimes days after the biopsy (usually getting less and less over this time).

If you are coughing up a lot of blood (which is not common), you may need to stay in hospital for observation until it improves.

Life-threatening complications, such as severe bleeding or an air embolus (when air gets into an artery or vein in the lungs) are extremely rare but potentially recognised complications of a lung biopsy procedure.

There is also a small chance that the results of the biopsy procedure will not be able to tell us what is causing the abnormality in your lungs. This is called an 'inconclusive' or 'indeterminate' sample (estimated to occur in less than 15% of biopsies). If this were to occur, your doctors would discuss other possible options for you.

What happens afterwards?

After the procedure, you will go back to the ward/observation area and the nurses will perform routine checks of your pulse, blood pressure and breathing rate to make sure there are no problems. Usually, you will need to stay for at least 1-2 hours after the biopsy. Before you go home you will have a chest X-ray to check for any air leak.

After you go home, you should avoid strenuous activity for a few days. If you experience worsening shortness of breath, chest pain, or coughing up blood after you go home, this can be a

sign of a delayed complication. If this happens, please attend your nearest emergency department.

When will I get the results?

The doctor who saw you in clinic will arrange an appointment for you to come back to discuss the results of your biopsy. Unfortunately, not all biopsies are successful. This may be because, despite taking every possible care, the piece of tissue obtained may be too small to make a diagnosis. Sometimes, even with a good sample of the tissue it is not possible to make a definite diagnosis. If this is the case, your doctor will be able to discuss the next course of action.

Can I drive after the biopsy?

No. Someone else must drive you home after the test or accompany you on public transport. You should be able to drive again the next day if you feel well.

Are there any problems flying in an aircraft after a biopsy?

You are advised not to fly for six weeks. If this is a problem, please discuss it with your doctor.

What about returning to work?

If you work then you should be able to go back the day after your lung biopsy, unless advised otherwise.

Glossary of medical terms used in this information

Biopsy - A procedure in which a small piece of tissue is removed and examined under a microscope.

CT Scan - Computed Tomography (CT) uses special X-ray equipment to obtain many images from different angles. Then a specially designed computer programme joins them together to show detailed pictures of the inside of the body.

Pneumothorax - A leak of air from the lung into the space around the lung, which can cause your lung to collapse.

Radiologist - A doctor who specialises in using X-ray and scanning equipment and in interpreting X-rays.

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