Understanding Cancer

A SERIES OF SIMPLE EDUCATIONAL VIDEOS FOR THE GENERAL PUBLIC

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Part 14: Diagnosis - Biopsy

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What is a biopsy?

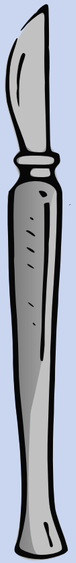
A biopsy is a procedure that involves taking a small sample of tissue to be examined under the microscope.

What is a biopsy?

The tissue can be taken from any organ or area in the body.

What is a biopsy?

It is minimally invasive where it involves using a sharp medical tool called a scalpel.



Imaging methods: X-ray, MRI, CT, and ultrasound are used to provide guidance when taking a biopsy.

What is it used for?

To detect any abnormal tissue in the body.

Abnormal tissue is sometimes called a TUMOUR or MASS.

What is the response to treatment?

What is it used for?

Is the organ swollen?

E.g. Lymph nodes

What is it used for?

Is there growth on the skin?

Skin conditions

What is it used for?

Is there any inflammation in the kidney or liver?

What is it used for?

Is there any infection?

Tuberculosis

What is it used for?

Sometimes samples are taken of normal tissue to compare with cancer cells.

It is also to see whether the organ transplant has rejected?

Sedation and Anaesthetics

This is normally given to prevent any pain or discomfort during the procedure.

Local anaesthetics are usually given but sometimes general anaesthetics are used.

What are the types of biopsy?

NEEDLE BIOPSIES.

- This involves a needle to access the tissue investigated.

There are several types!

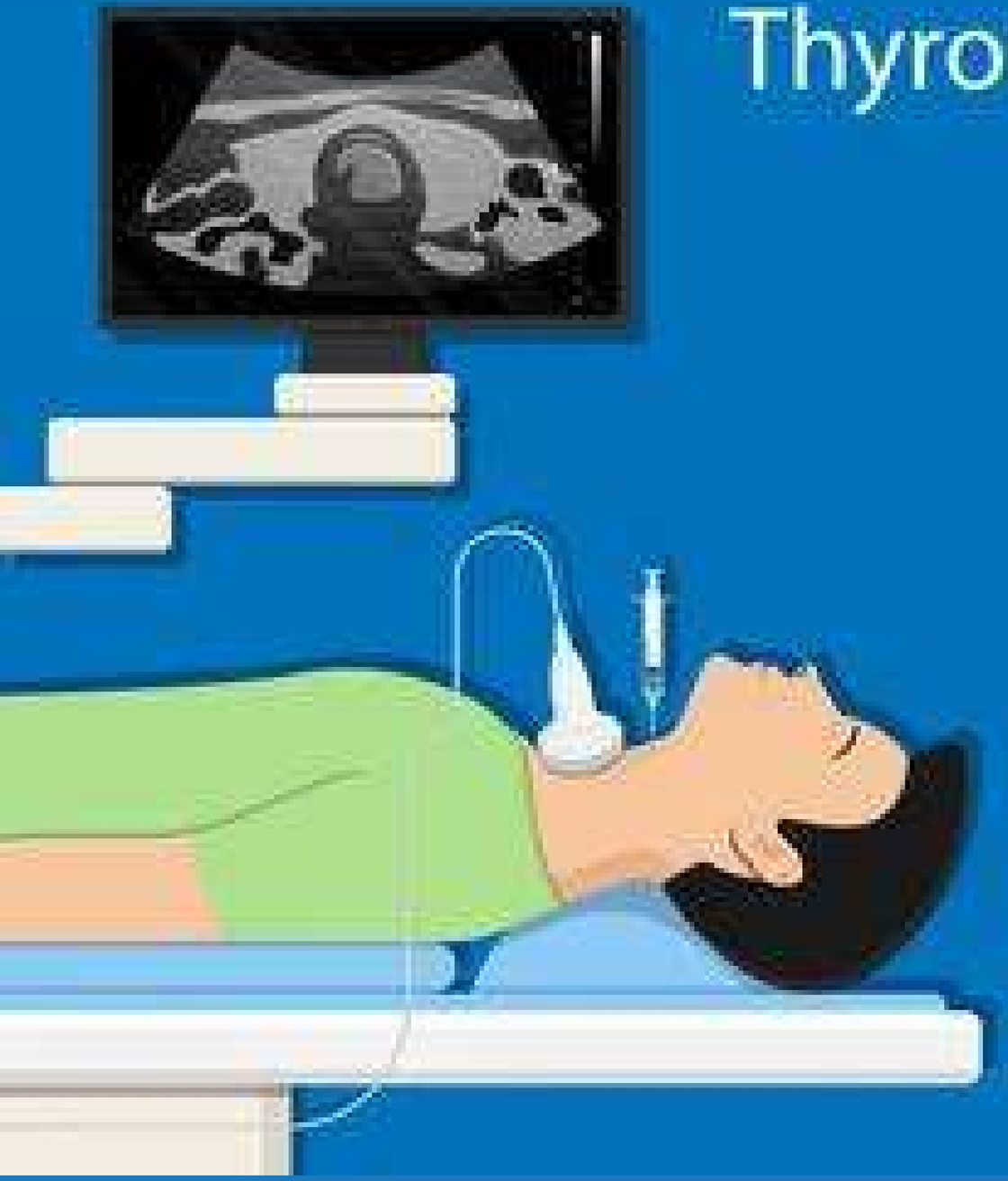
Needle biopsies

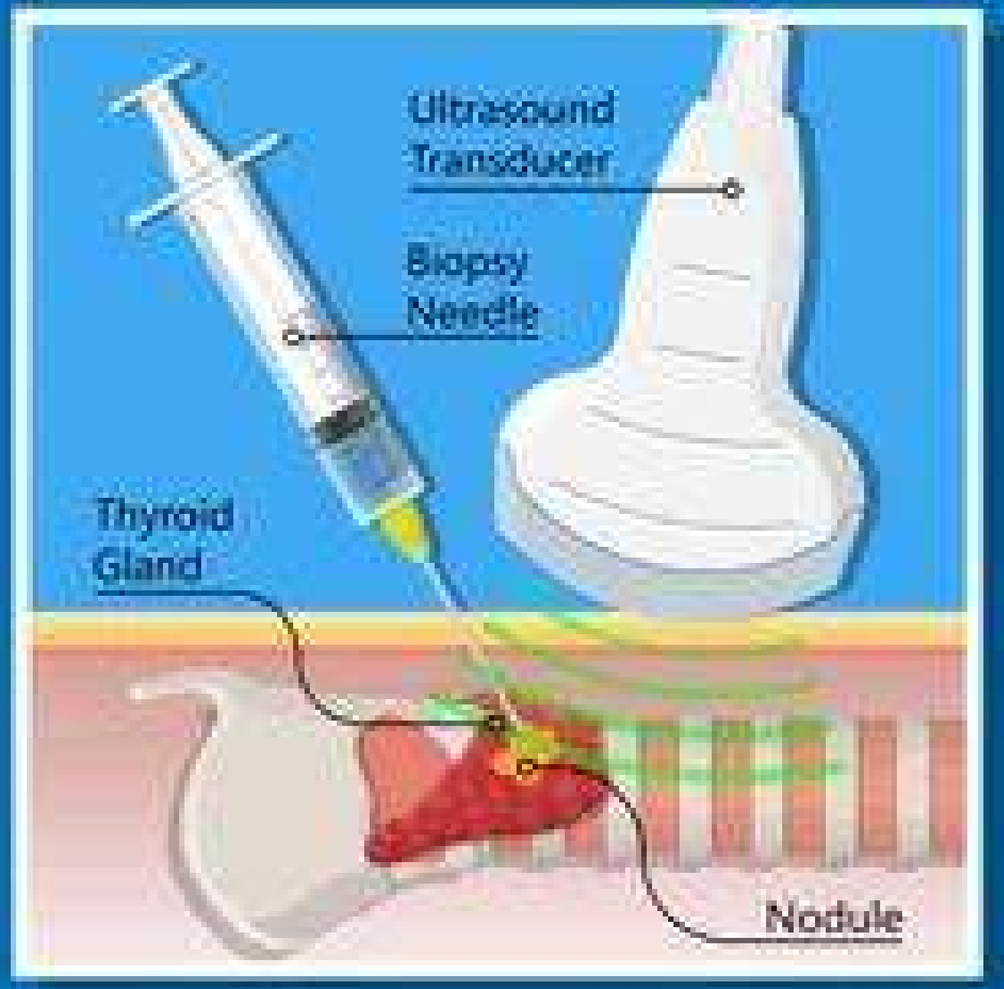
FINE NEEDLE BIOPSIES.

This can be used for organs such as the lung, breast and thyroid.

The aim is to use a thin, hollow needle to take the tissue under the surface of the skin.

Thyroid Fine Needle Aspiration

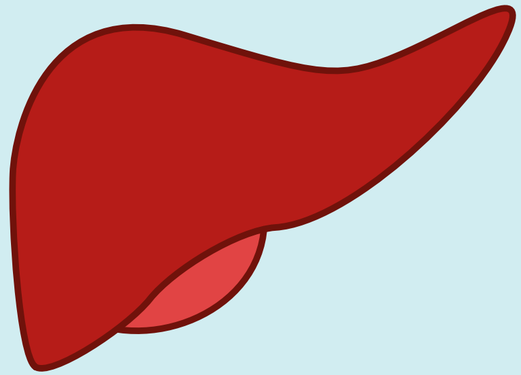




Needle biopsies

FINE NEEDLE BIOPSIES.

Needle is injected into the belly through the skin to reach the liver.

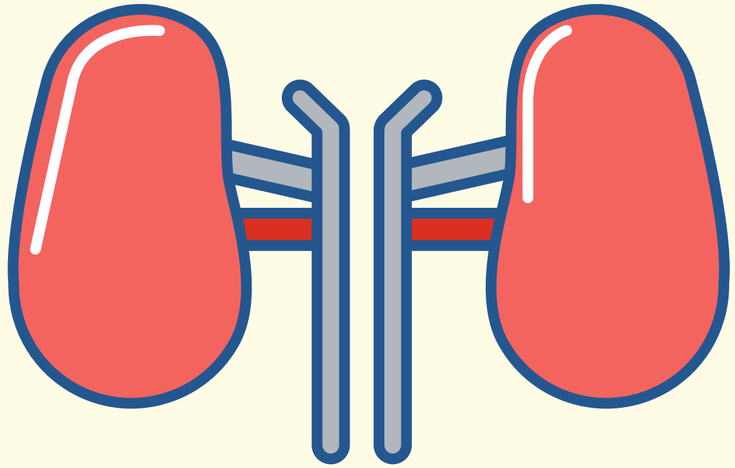


LIVER BIOPSY

Needle biopsies

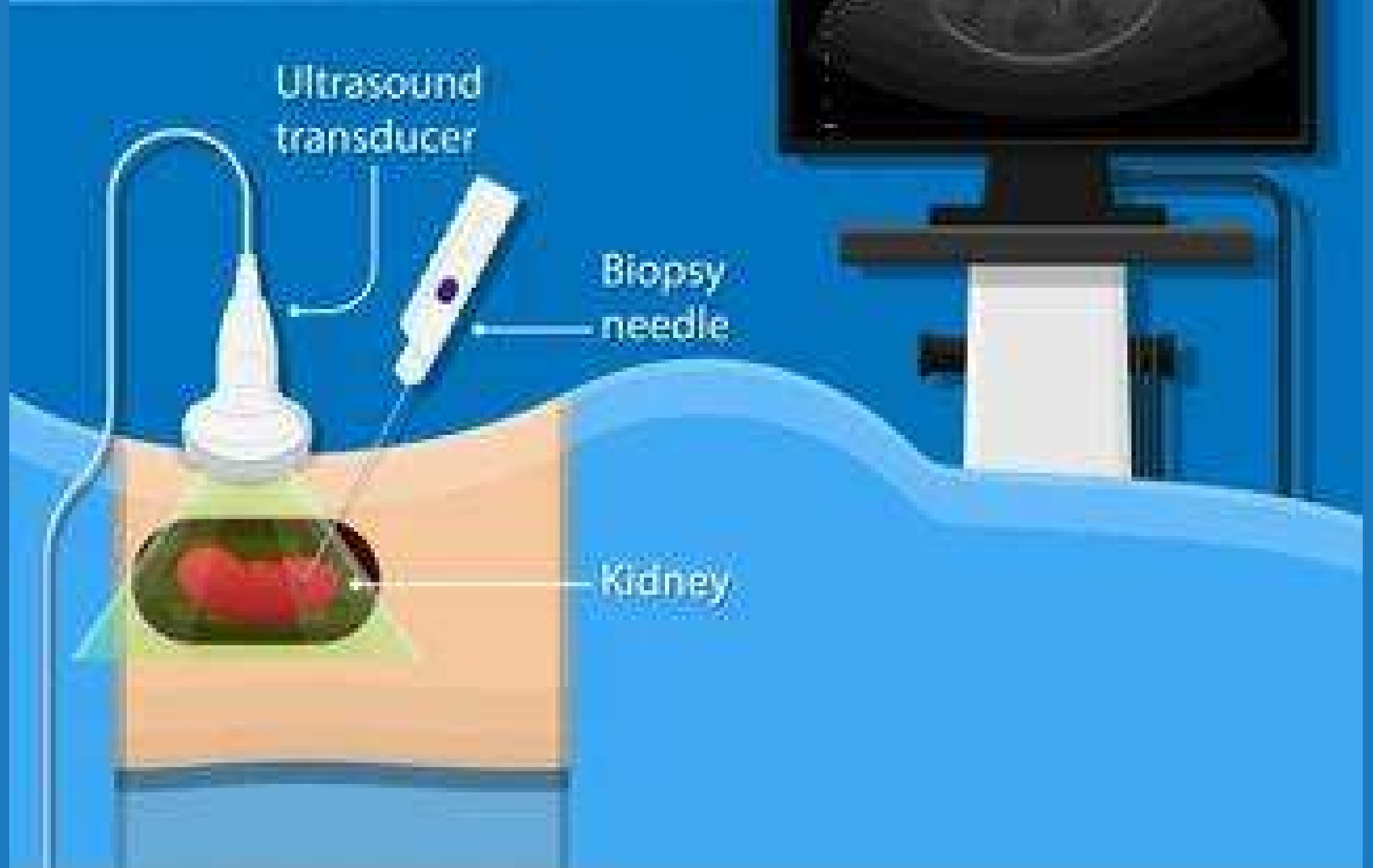
FINE NEEDLE BIOPSIES.

Needle is injected through the skin at the back to reach the kidneys.



KIDNEY BIOPSY

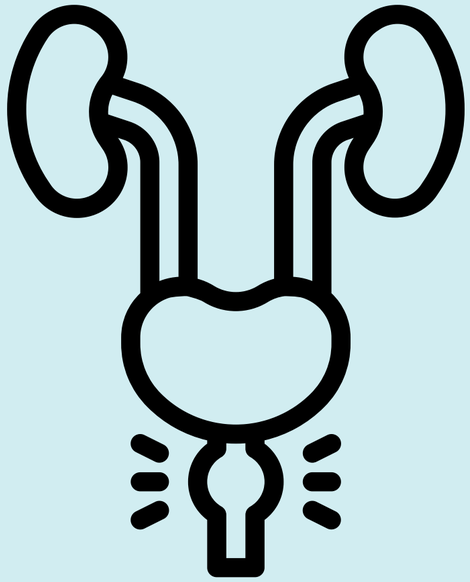
Kidney Biopsy



Needle biopsies

FINE NEEDLE BIOPSIES.

A probe is inserted to the back wall called the rectum where needles are injected to take multiple biopsies of prostate.



Prostate biopsy

Needle biopsies

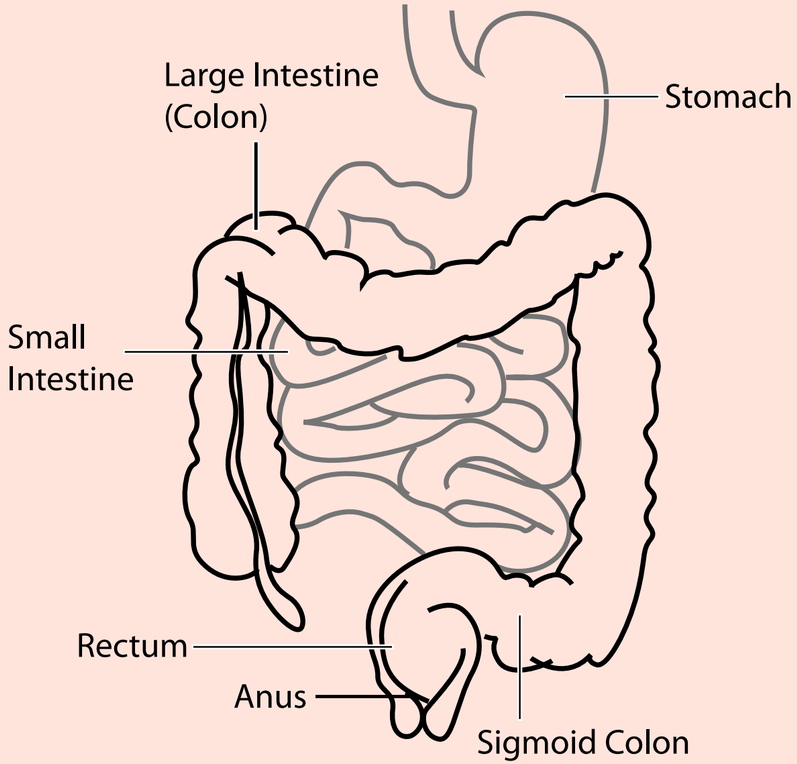
CORE NEEDLE BIOPSIES.

This involves using a thin, hollow needle to take a larger sample. For example in breast cancer tissue.

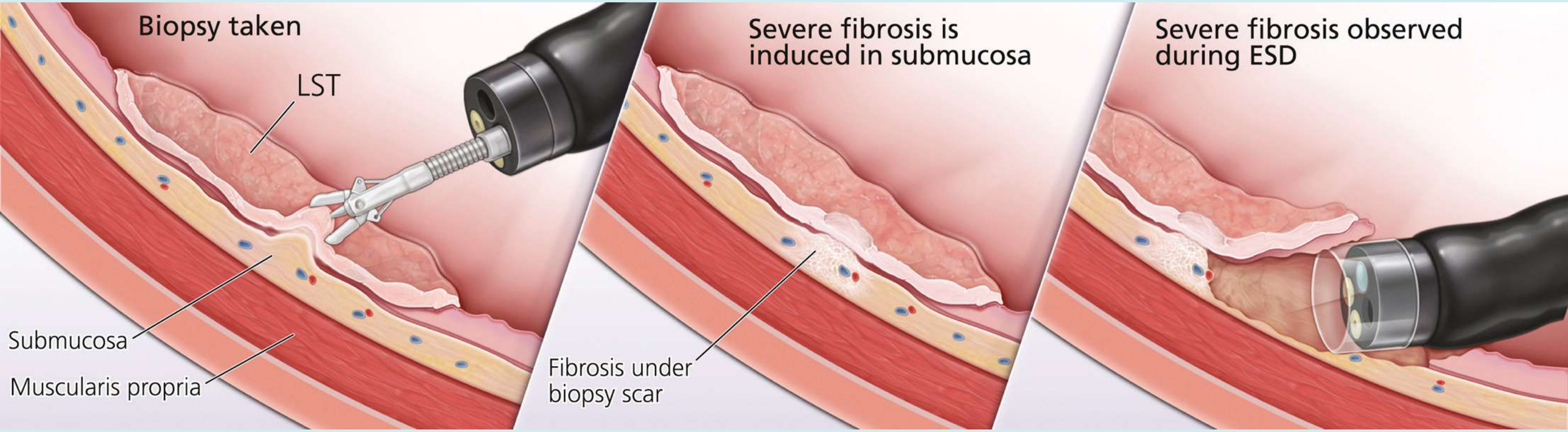
Endoscopic biopsies

This involves using a thin, flexible tube with a light and camera at the end called an endoscope.

Depending on what is being investigated it can be inserted into the mouth or at the back passage (anus).



This is done by an endoscopist.
A doctor or nursing specialist.



Punch biopsies

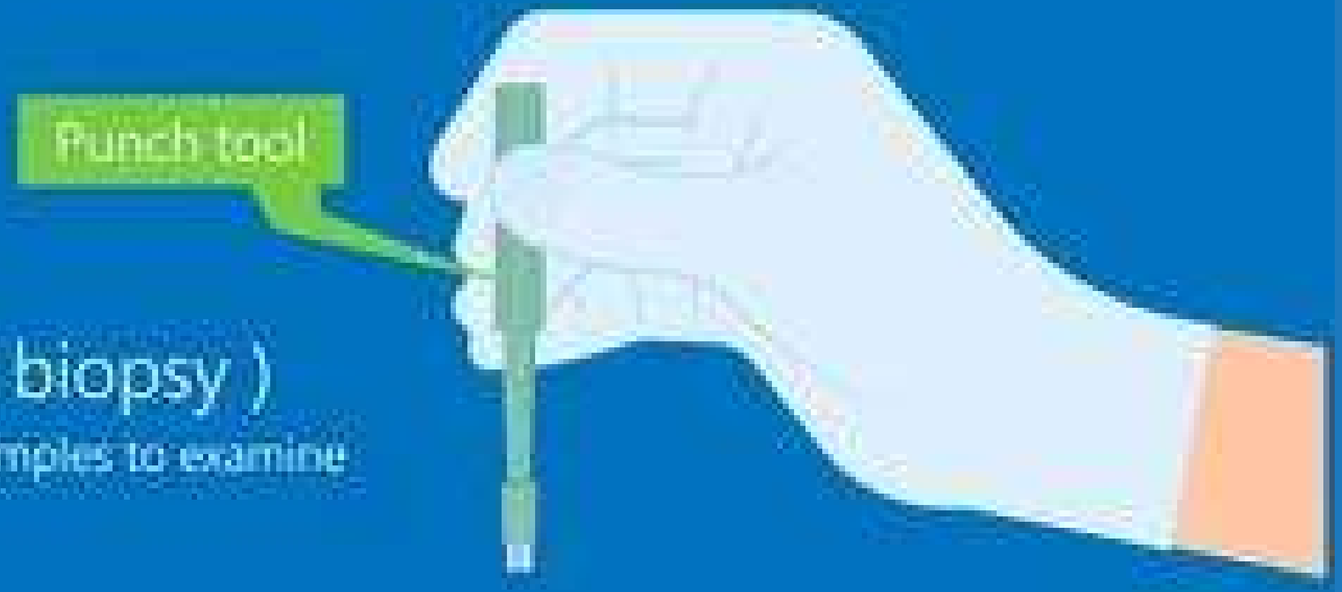
A punch biopsy involves taking a sample using a circular blade to take tissues of the skin.

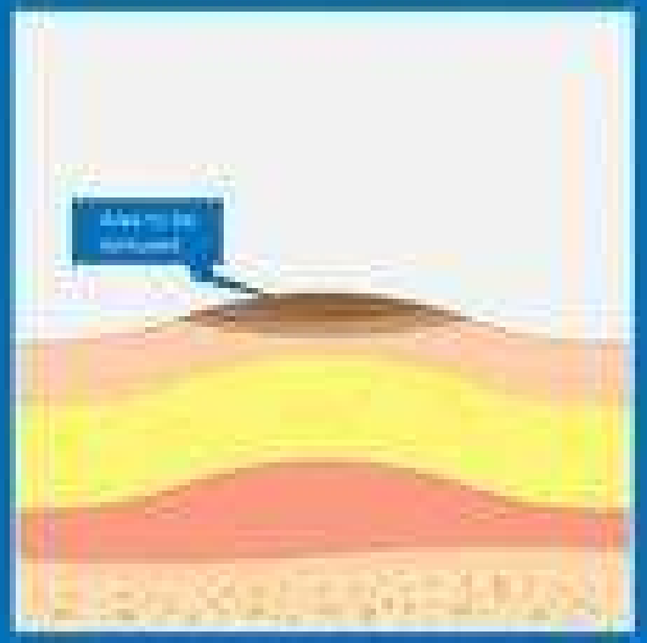
This helps detect skin conditions.

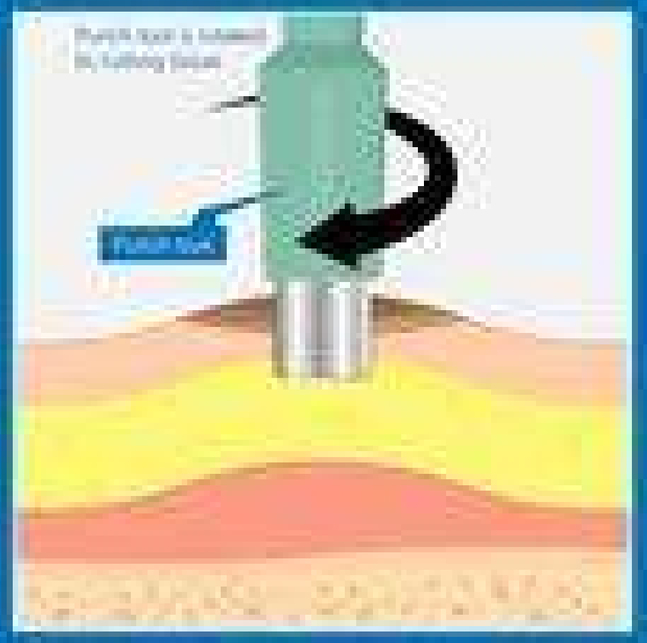
Stitches are done following the procedure.

Punch biopsy (Skin biopsy)

Procedure to remove cells or skin samples to examine



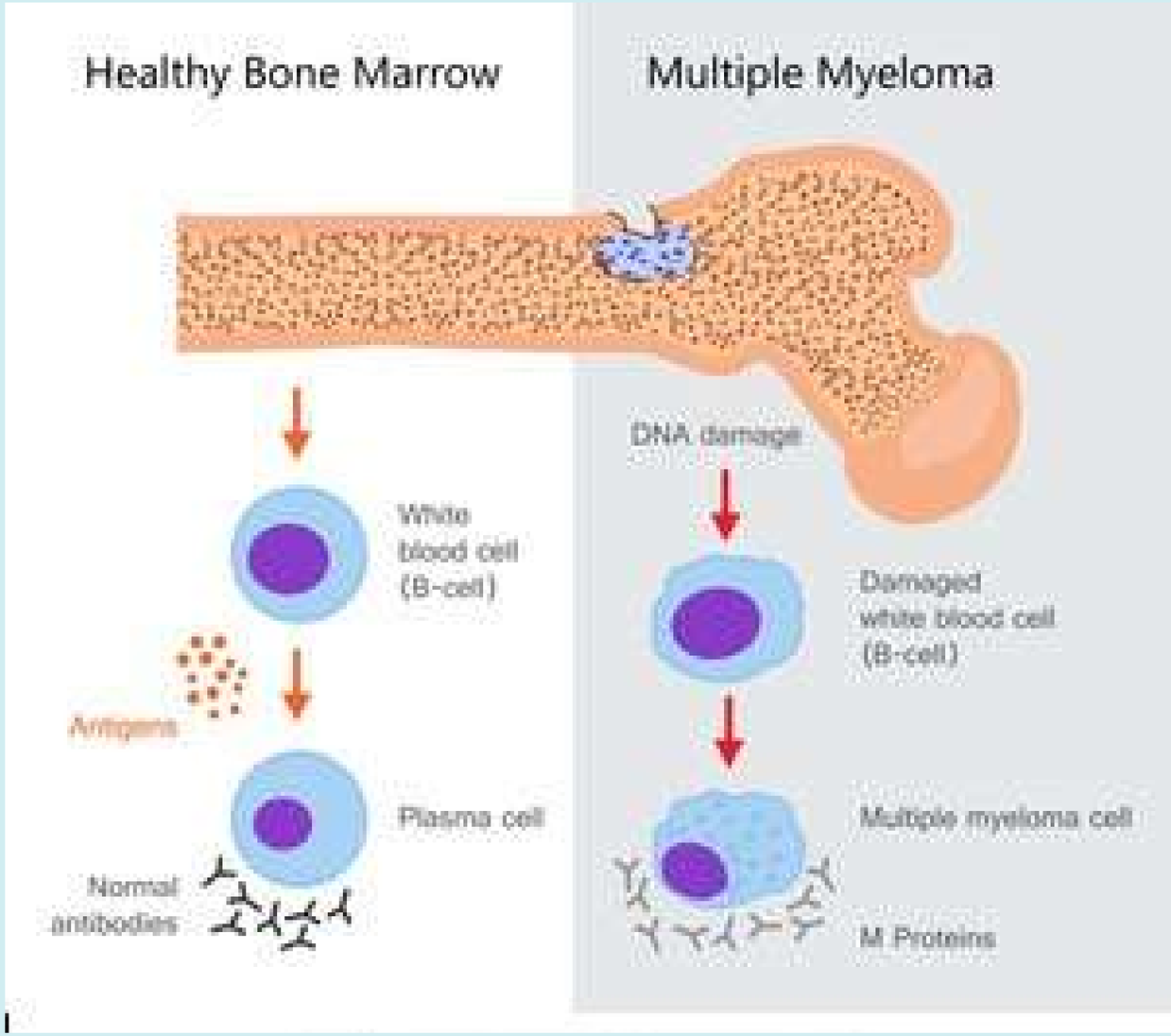




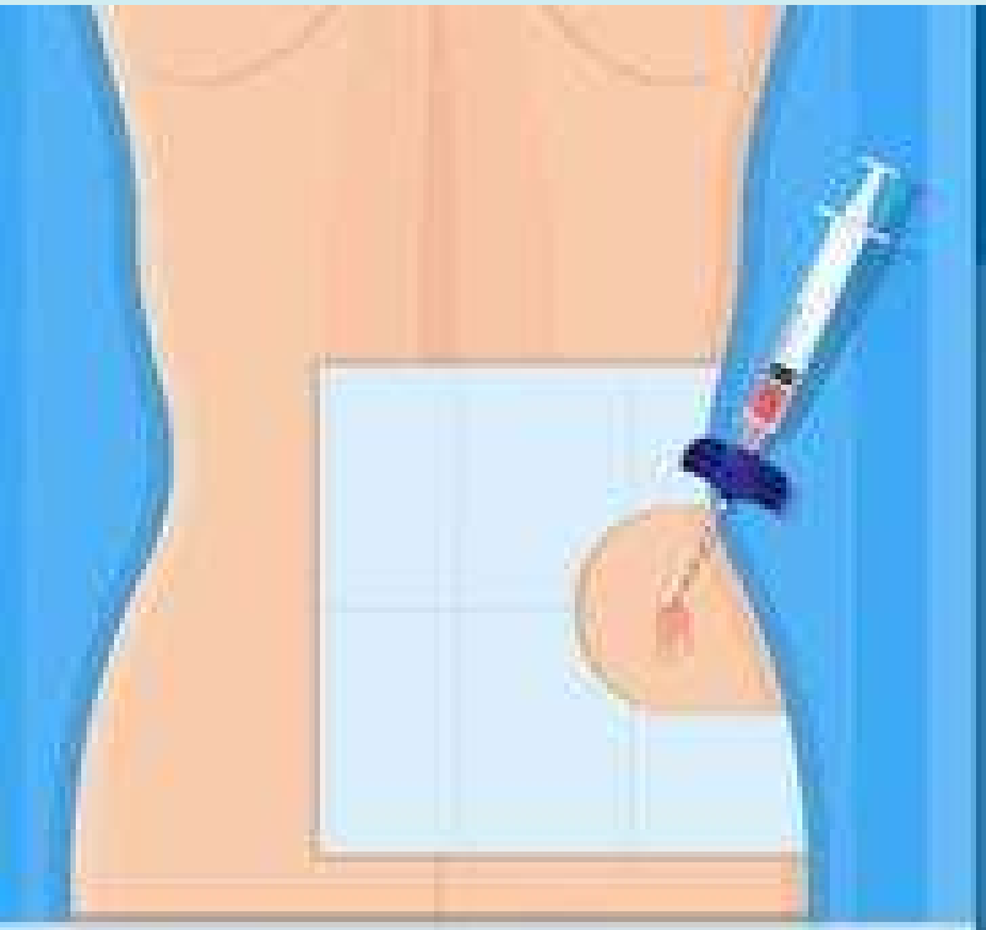
Bone marrow biopsies

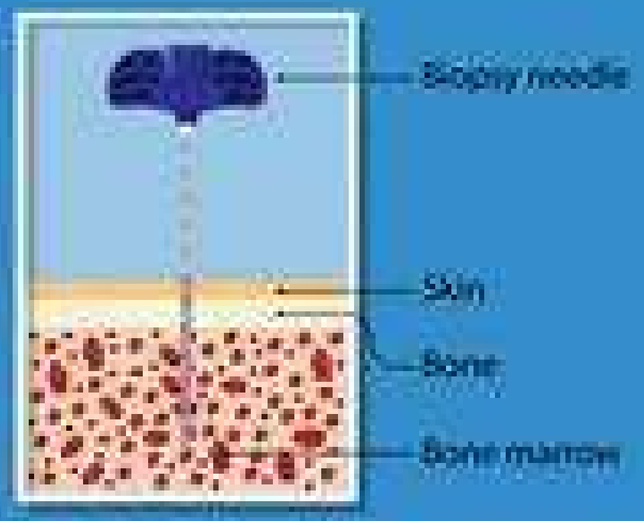
This involves taking tissue sample from the spongy soft tissue in the bone.

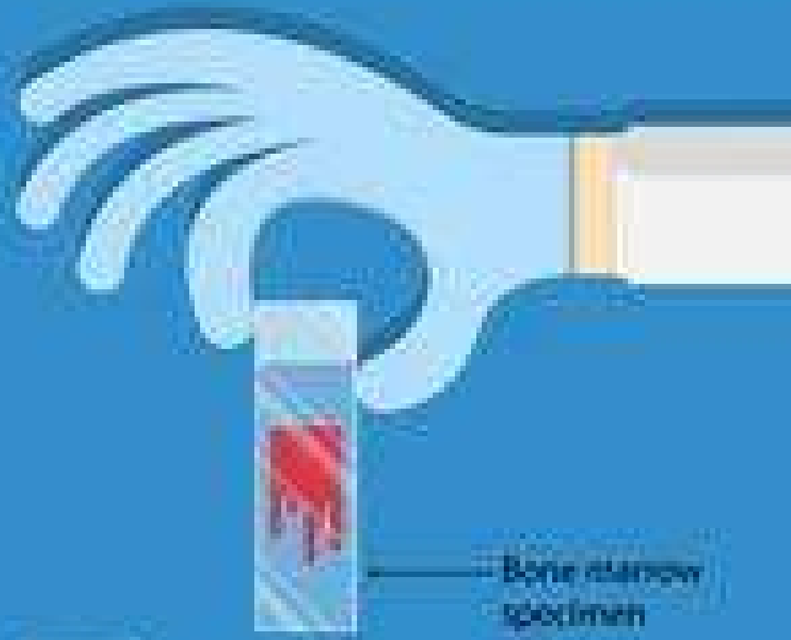
It is normally taken from the pelvic bone.

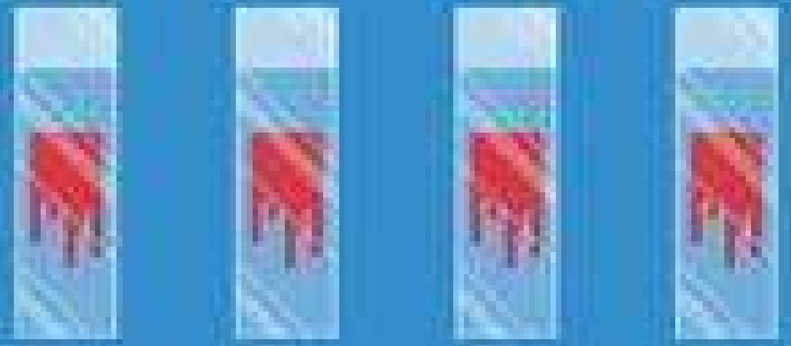


Bone Marrow Aspiration and Biopsy







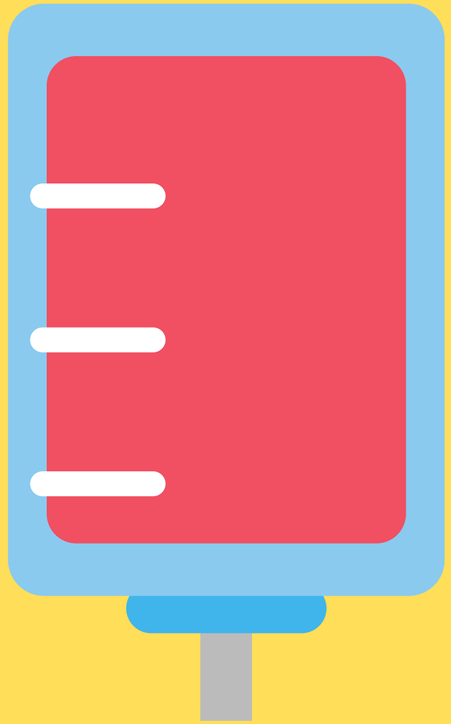


Bone marrow biopsies

It helps to detect whether there are high levels or low levels of red blood cells, white blood cells and platelets (blood-clotting cells)

Bone marrow biopsies

This helps to diagnose blood cancers such as leukaemia and lymphomas (Hodgkin).

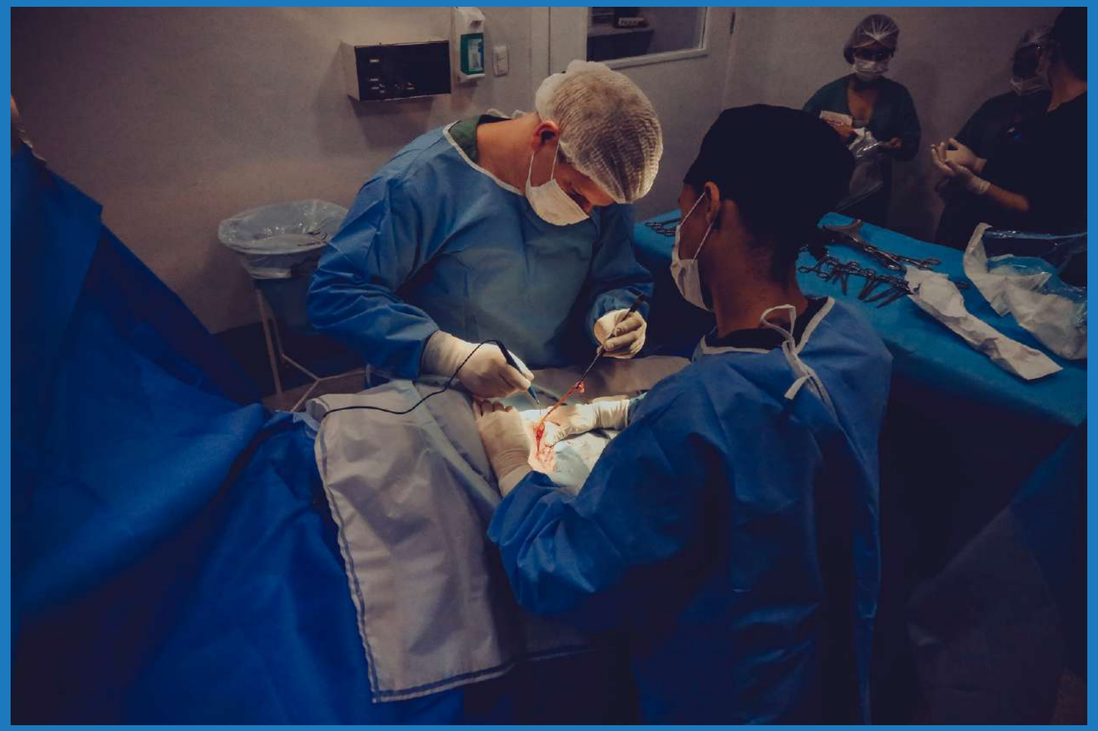


Surgical biopsies

Perioperative biopsy (surgery)

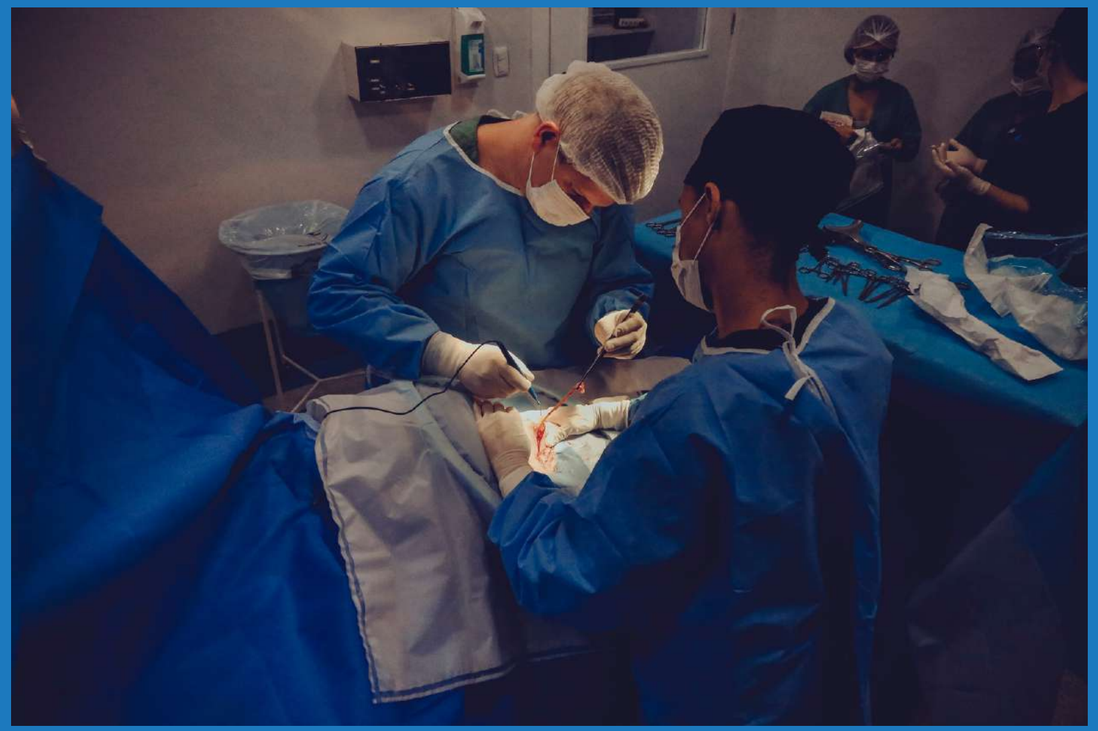
This is done using surgery and consent must be given prior to process.

Sample can be taken and gain results straight away (frozen section).



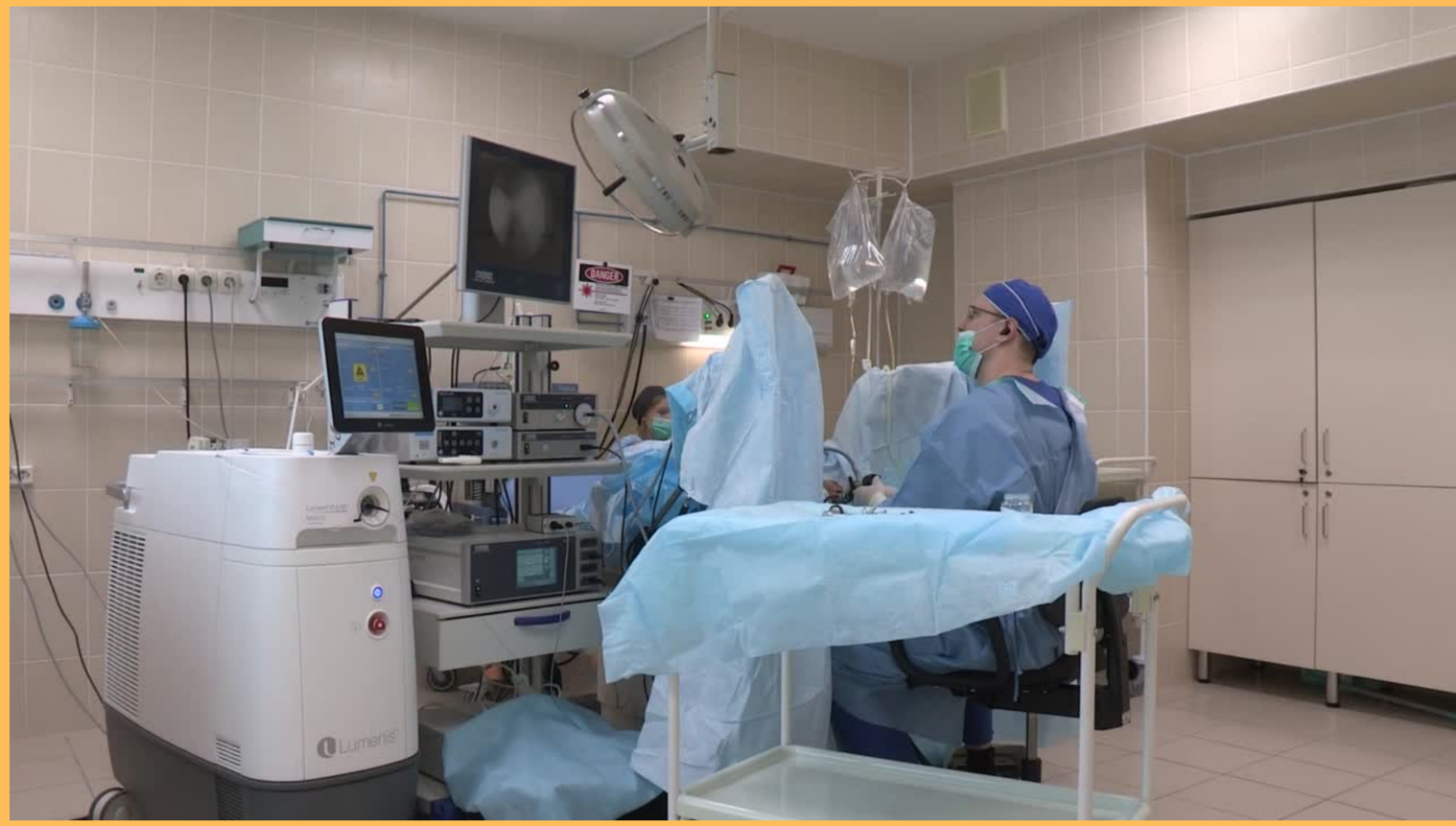
Surgical biopsies

This helps guide surgery and treatment.



Surgical biopsies

If the tissue is hard to reach, open surgery is done where a piece or a whole lump can be removed.



After the biopsy

Normal activity can be done.

This does not require an overnight stay unless general anaesthesia is used.

After the biopsy

There may be slight pain in the area and this can go in several days.

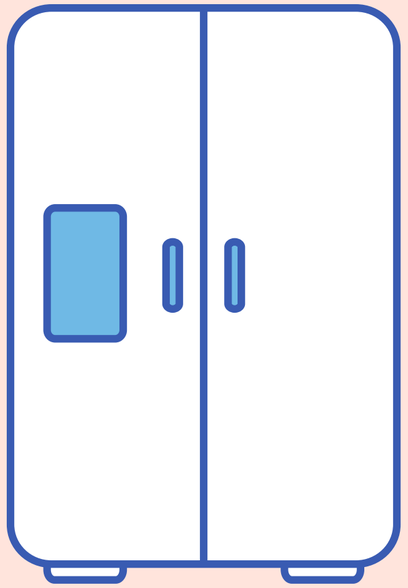
Pain killers do help.

After the biopsy

If sedation is given, the patient must ensure a family or friend takes them home and to avoid machinery or driving the following day.

What happens after the tissue is collected?

It is preserved or stored at appropriate conditions.

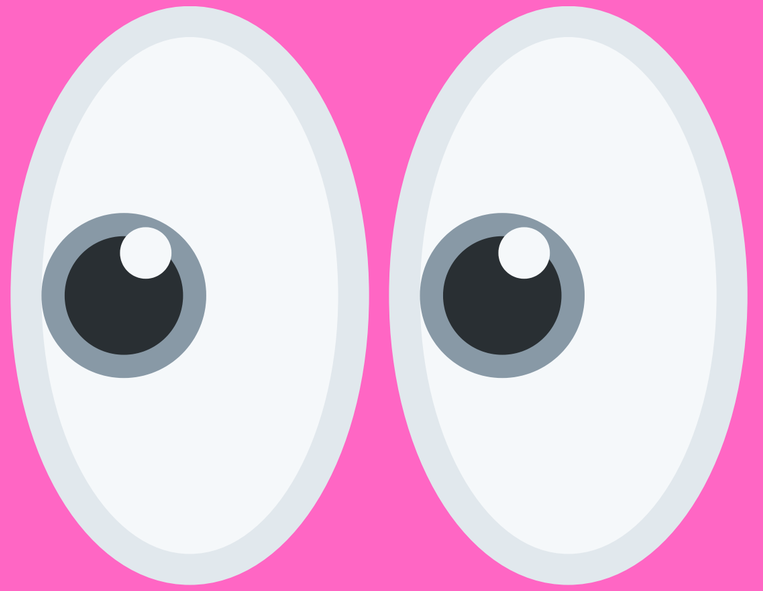


Histopathologist

The sample is examined by doctors called pathologists who specialise in examining tissue samples and other tests using a microscope.

Histopathologist

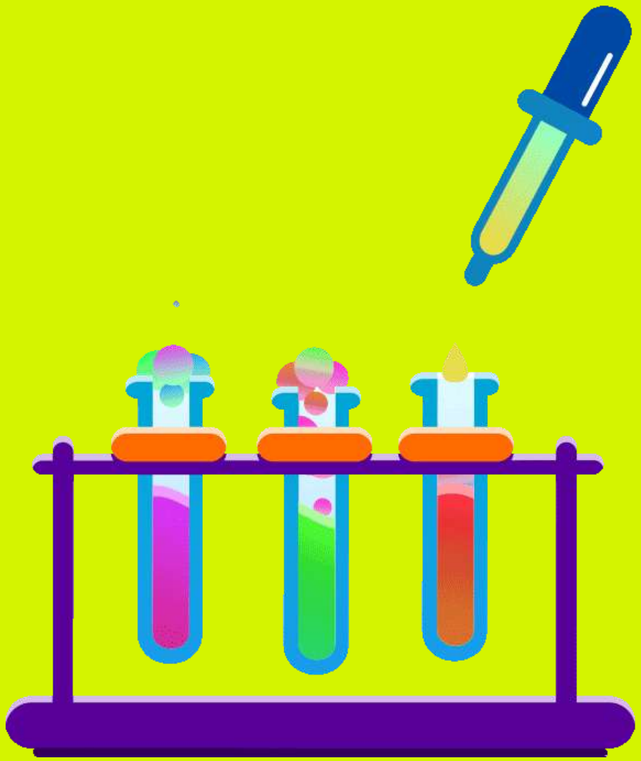
Before using a microscope, they examine with a naked eye to look for any abnormal structures or appearances.



They then select areas to examine further using a microscope.

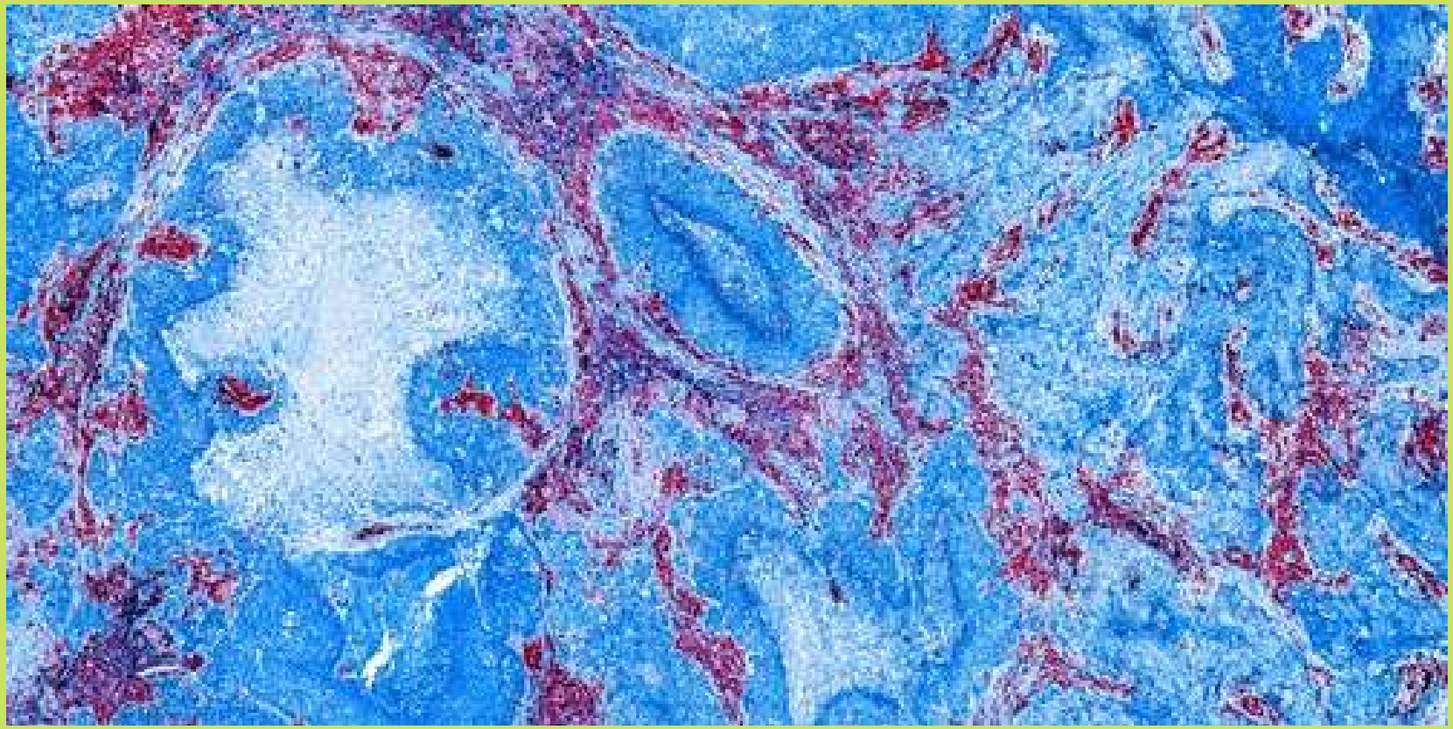
Preparing the sample

The selected tissue areas are treated with chemicals so they can be cut into thin slices



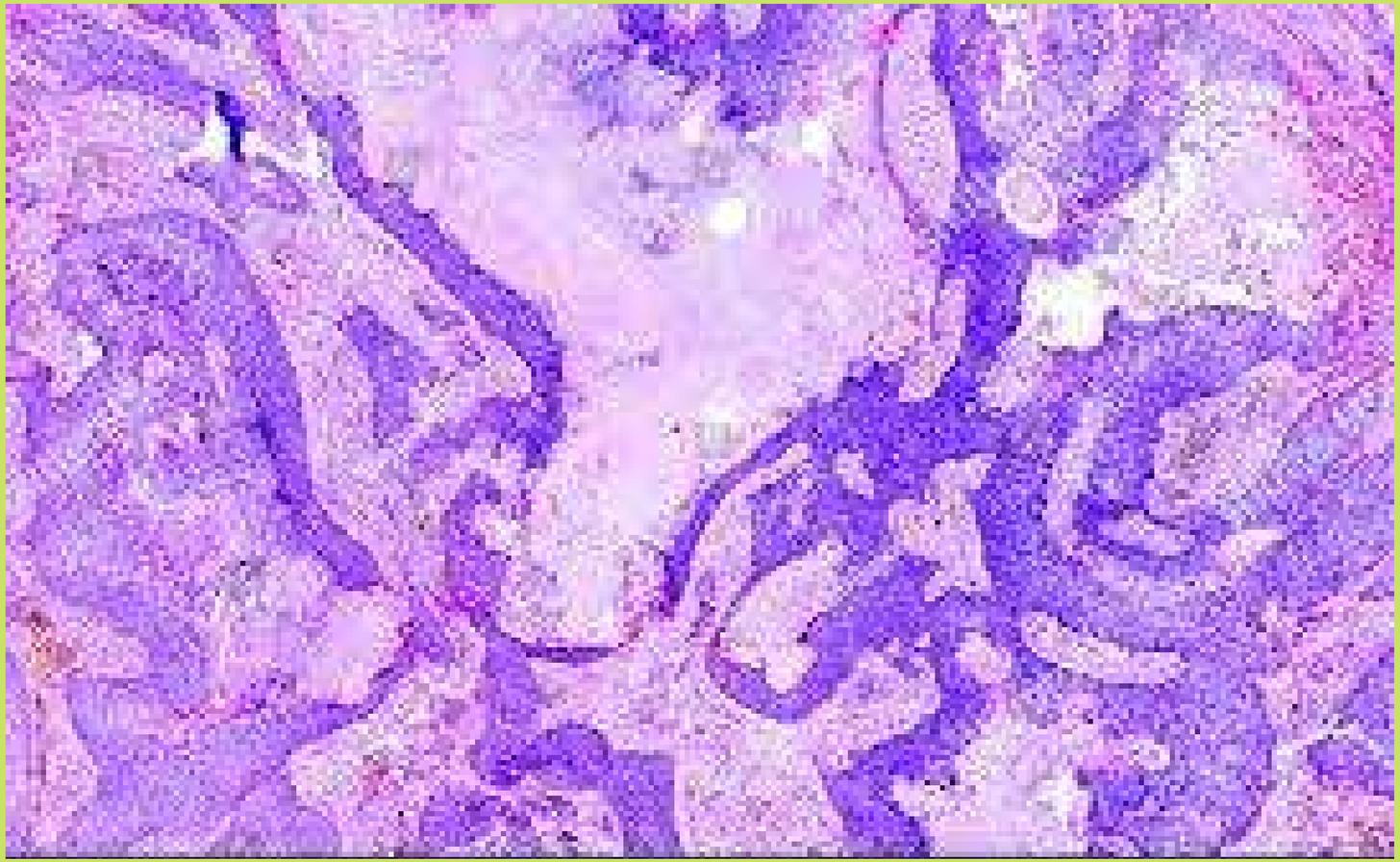
Preparing the sample

They are then stained to show different parts of the cell and see where abnormal areas are.



Tumour tissue

Preparing the sample



An example of a stained tissue sample

They look at the type of cell, shape and activity.

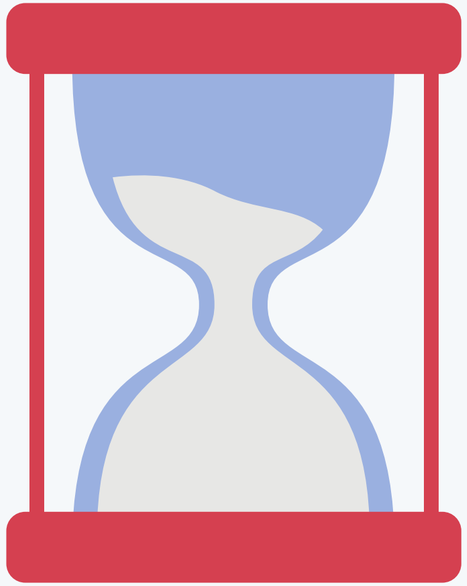
What does a Histopathologist do?

Depending on the type of medical condition, stains and tests are done to examine the tissue.

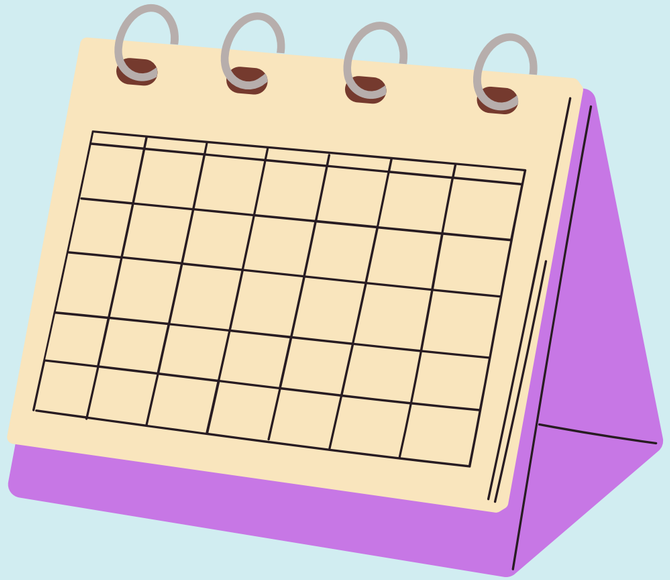
The time taken to do a biopsy result varies.

What does a Histopathologist do?

If in a surgery, they may report to the surgeon in a couple of minutes.



In other cases, it takes a few weeks.



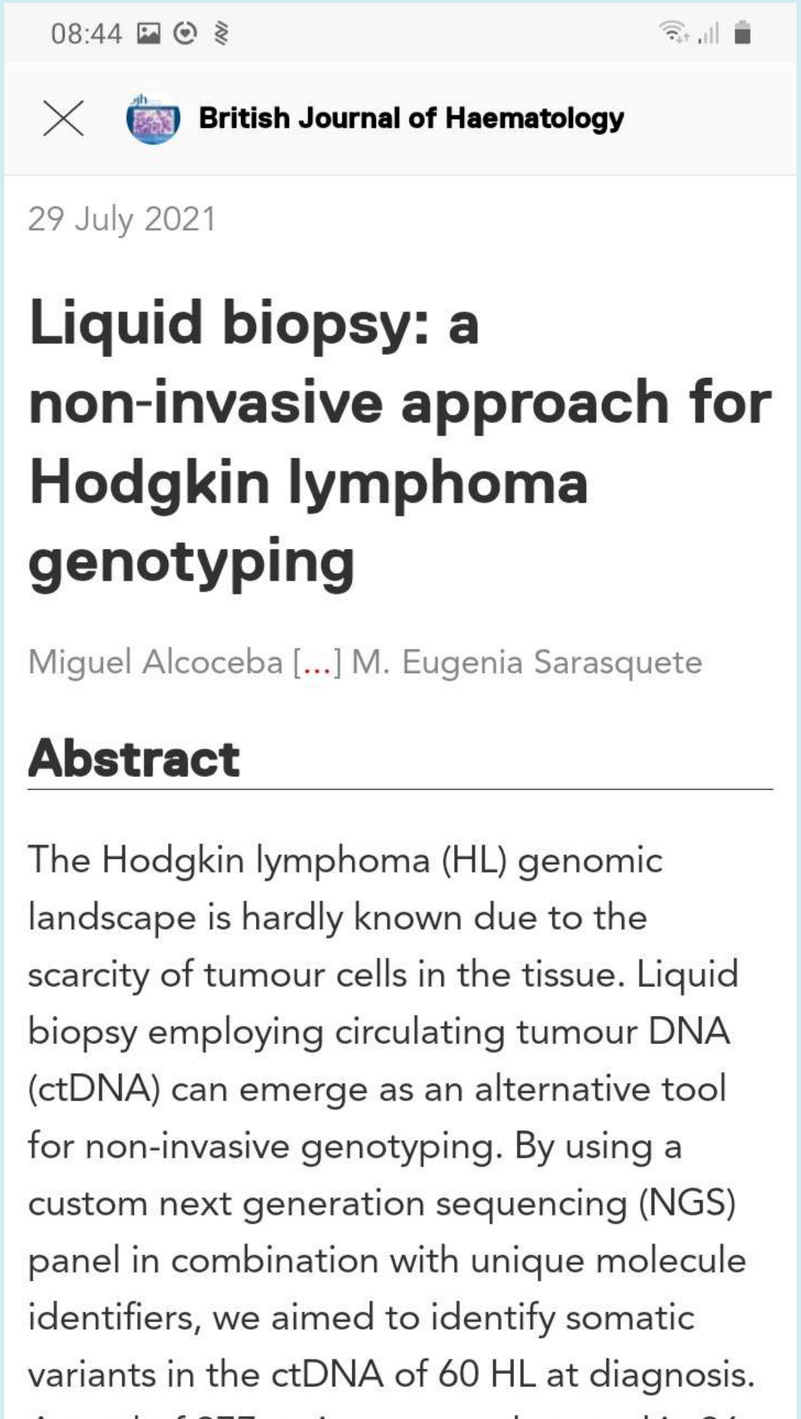
Results are also discussed in meetings where there are different healthcare professionals to help decide the patient's care and treatment.

What else does a Histopathologist do?

- They look at body fluids such as urine.
- Large specimens from surgery.
- Autopsies to find out how someone died.
- Research in many diseases such as CANCER

New discovery!

Liquid biopsy helps to diagnose Hodgkin Lymphoma!



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Part 15 : Diagnosis - What is the difference between tumour staging and grading?

UPCOMING VIDEO RELEASING SOON!

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Acknowledgements

Oxford Handbook of Oncology
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Thank you!