PROCEDURE

Aspiration

Aspiration uses a needle or small tube to remove fluid or cells for testing or treatment.

PURPOSE
Remove fluid or cells for testing, treatment, or both

PROCEDURE TYPE
Diagnostic or therapeutic; minimally invasive needle procedure

WHERE IT IS DONE
Outpatient clinic, bedside, or interventional radiology suite

ANAESTHESIA
Local anaesthetic; sedation sometimes used for deep targets

HOW LONG IT TAKES
About 10-60 minutes, based on target and imaging

PREPARATION
Medication review; fasting if sedation is planned

RECOVERY
Usually same day; no driving after sedation

MAIN RISKS
Bleeding, infection, nearby-organ injury, incomplete drainage

RESULTS
Drainage is immediate; laboratory results usually take several days

Overview

Aspiration is a procedure that removes fluid, cells, or other material from the body using a needle or a small flexible tube called a catheter. It may be done to find out what is causing a lump or fluid collection, to relieve pressure or discomfort, or both.

The exact procedure depends on what is being aspirated. Examples include removing fluid from a joint, drawing cells from a thyroid or breast lump, draining a cyst, or removing fluid from an abscess. An abscess is a pocket of infected fluid.

A superficial area may be aspirated by touch alone. For a deeper or smaller target, the clinician may use ultrasound, X-ray guidance, or a CT scan to position the needle safely.

Aspiration is not the same as accidentally breathing food or liquid into the airway, which is also called aspiration.

Why the procedure is performed

Aspiration may be recommended to:

Fine-needle aspiration uses a thin needle to collect cells. It can help assess a lump, but it does not remove a solid piece of tissue. A core biopsy uses a larger needle to collect small tissue samples and may provide more information about how cells are arranged.

For treatment, aspiration may empty a collection once. A catheter may be left in place if fluid is likely to keep forming or needs to drain over several days.

- Collect cells or fluid for laboratory testing
- Check for infection, inflammation, crystals, blood, or cancer cells
- Reduce pressure, swelling, or pain caused by fluid
- Drain a cyst, abscess, or fluid collection
- Help decide whether further imaging, biopsy, surgery, or treatment is needed

Who should and should not have it

Aspiration may be appropriate when imaging or an examination shows a lump or fluid collection that needs testing, drainage, or both. Your healthcare team should explain what question the procedure is intended to answer and how the result may affect your care.

The procedure may be delayed or avoided if:

An infection at the target itself may be the reason for drainage, so infection does not always prevent aspiration.

Tell the team if you are pregnant or could be pregnant. Ultrasound does not use radiation, but some image-guided procedures use X-rays or CT. Also report allergies, previous reactions to anaesthetic medicines, and any condition that affects blood clotting.

You can choose not to have the procedure. Before consenting, ask what may happen if you wait or choose another option.

- There is no safe path to the target without damaging nearby structures
- A bleeding problem has not been corrected
- Blood-thinning medicines create an unacceptable bleeding risk
- There is an infection in the skin where the needle would enter
- You cannot safely remain in the required position

- The collection is too small, solid, or difficult to reach
- Another test is more likely to provide the information needed

How to prepare

Follow the treating facility's own instructions, because they take priority over general advice.

Give the team an up-to-date list of prescription medicines, non-prescription medicines, supplements, and allergies. Make sure they know if you take anticoagulants or antiplatelet medicines, often called blood thinners. Examples include warfarin, apixaban, rivaroxaban, clopidogrel, and aspirin.

Do not stop a blood thinner like warfarin or apixaban on your own. The decision must balance the risk of bleeding against the risk of a blood clot.

Many aspirations performed with local anaesthetic do not require fasting. If sedation or general anaesthesia is planned, you will receive instructions about when to stop eating and drinking.

You may be asked to have blood tests to check blood counts or clotting. Arrange a ride home if you will receive sedation. Wear comfortable clothing and leave jewellery near the procedure area at home when possible.

What happens during the procedure

You will be positioned so the area can be reached safely. The skin is cleaned, and sterile covers may be placed around it.

A local anaesthetic may be injected to numb the skin and deeper tissue. This can sting briefly. You may still feel pressure or movement, but you should tell the team if you feel sharp or increasing pain.

The clinician guides a needle into the target. Ultrasound, X-ray imaging, or CT may be used to check its position. Fluid may be drawn into a syringe, while cells may be collected by moving a fine needle within a lump.

If ongoing drainage is needed, a thin catheter may be passed over a guide wire and left in place. It is secured to the skin and connected to a drainage bag.

The collected material may be sent for tests such as cell examination, bacterial culture, crystal analysis, or chemical testing. After the needle is removed, pressure and a dressing are applied.

Recovery and what to expect afterward

Mild soreness, bruising, or tenderness at the needle site is common. Simple pain relief may be suggested. Follow your discharge instructions, especially if a catheter remains in place.

You can usually eat and drink normally after a procedure done with local anaesthetic. After sedation, start according to the recovery team's instructions. Nausea can occur after sedating medicines.

Keep activity light for the period stated by your facility. Avoid strenuous exercise, heavy lifting, or movements that pull on a drainage catheter. Instructions for bathing and dressing care depend on the aspiration site.

Do not drive, cycle, operate machinery, drink alcohol, or make important decisions for at least the period specified by your facility after sedation or general anaesthesia. You will usually need a responsible adult to take you home.

Many people return to desk work the next day after a simple aspiration. A deeper procedure, a physically demanding job, or an indwelling drain may require more time away.

Risks and possible complications

Aspiration is less invasive than open surgery, but it still has risks. These include:

Procedures near the lung can allow air to collect around the lung, called a pneumothorax. Procedures involving abdominal or pelvic organs have site-specific risks. Your team should discuss the risks that apply to the location being treated.

- Bleeding or a collection of blood under the skin
- Infection at the needle site or within the treated area
- Pain, bruising, or swelling
- Injury to a nearby blood vessel, nerve, or organ
- Leakage of fluid along the needle or catheter path
- Failure to collect enough material for a diagnosis
- Incomplete drainage or fluid returning
- Catheter blockage, movement, or accidental removal

Results and follow up

If the purpose was drainage, the immediate result may be clear from the amount removed and whether pressure or discomfort improves.

Laboratory results take longer. Some findings may be available within a day, while cell analysis, bacterial cultures, or specialised tests can take several days. A sample may occasionally be too small or unclear, requiring repeat aspiration or another type of biopsy.

Ask when and how you will receive results. Routine follow-up may include a clinic appointment, repeat imaging, a dressing check, or catheter removal. If you have a drain, record the amount and appearance of fluid if instructed.

Alternatives

The alternatives depend on whether aspiration is being offered for diagnosis, treatment, or both.

Observation with repeat examination or imaging avoids an invasive procedure. However, it may delay diagnosis, and a fluid collection may remain uncomfortable or become more difficult to treat.

Imaging alone can show a lump or collection but often cannot identify the exact cells, crystals, or germs present.

A core-needle biopsy collects more tissue than fine-needle aspiration and may give a more definite diagnosis. It uses a larger needle and can cause more bleeding or soreness.

Surgical biopsy or removal provides a larger sample and may treat the whole abnormal area. It requires a larger incision, more recovery time, and sometimes general anaesthesia.

Antibiotics like amoxicillin or doxycycline may treat some infections, but a sizeable abscess often also needs drainage. Catheter drainage can treat fluid that is likely to return, but the tube requires ongoing care.

When to call your healthcare team

Contact your healthcare team promptly for increasing pain, redness, warmth, swelling, pus, fever, chills, continued fluid leakage, or bleeding that does not stop with firm pressure. Also call if a drain stops working, falls out, or suddenly changes position.

Seek emergency help for severe trouble breathing, new chest pain, fainting, confusion, rapidly increasing swelling, or heavy uncontrolled bleeding. These are not routine recovery symptoms.

Mild tenderness, a small bruise, and a little spotting on the dressing can be expected. Use the

contact instructions provided by your treating facility if you are unsure.

Common questions

Will I be asleep?

Usually not. Many aspirations need only local anaesthetic. Sedation or general anaesthesia may be used for deep, complex, or particularly uncomfortable procedures.

Can I drive home?

You may be able to drive after a simple aspiration using local anaesthetic, if the treated area does not affect safe driving. You must not drive after sedation or general anaesthesia. Follow your facility's restriction.

How painful is aspiration?

The numbing injection can sting. During the procedure, you may feel pressure, pulling, or brief discomfort. Tell the team if pain becomes sharp or severe.

When will I know the results?

You may notice the effect of drainage immediately. Laboratory results usually take several days, with some cultures or specialised tests taking longer.

Can the fluid or lump come back?

Yes. Aspiration removes sampled cells or existing fluid but may not remove the reason fluid formed. Repeat aspiration, catheter drainage, medicine, or surgery may be needed.

Will I need a drain afterward?

Not always. A catheter may be left in place when a collection is large, infected, or expected to refill. You will receive instructions for emptying, measuring, and protecting it.

Sources

- RadiologyInfo.org: Image-Guided Drainage of Fluid Collection
- RadiologyInfo.org: Thyroid Biopsy
- MedlinePlus: Synovial Fluid Analysis
- National Health Service: Biopsy
- American College of Radiology, Society of Interventional Radiology, and Society for Pediatric Radiology: Practice Parameter for Image-Guided Percutaneous Needle Biopsy