PROCEDURE

Fine needle aspiration of the thyroid

A fine needle aspiration uses a thin needle to collect thyroid cells for laboratory testing.

PURPOSE
Collect thyroid cells to check for cancer or other changes

PROCEDURE TYPE
Diagnostic and sometimes therapeutic, minimally invasive needle procedure

WHERE IT IS DONE
Outpatient clinic

ANAESTHESIA
Local anaesthetic or none; usually no sedation

HOW LONG IT TAKES
About 15 to 30 minutes

PREPARATION
Usually no fasting; review blood thinners beforehand

RECOVERY
Same day; driving is usually allowed without sedation

MAIN RISKS
Bruising, bleeding, infection, or an inadequate sample

RESULTS
Usually several days after laboratory review

Overview

Fine needle aspiration of the thyroid is a procedure used to remove a small sample of cells from the thyroid gland. The thyroid is a butterfly-shaped gland at the front of your neck that produces hormones controlling metabolism.

A clinician passes a very thin needle through the skin and into a thyroid lump, called a nodule. Ultrasound is usually used to guide the needle to the correct area. The collected cells are examined under a microscope by a specialist called a cytopathologist.

Fine needle aspiration is often shortened to FNA. It is less invasive than surgery and usually does not require sedation or a hospital stay. It can also be used to drain fluid from a thyroid cyst.

Why the procedure is performed

You may be offered thyroid FNA when an examination or imaging test finds a thyroid nodule that needs closer assessment. Most thyroid nodules are not cancer, but their cause cannot always be determined from an ultrasound alone.

Whether FNA is recommended usually depends on:

FNA may also be used to sample a neck lymph node if there is concern that it is related to thyroid disease. If a fluid-filled cyst causes pressure or discomfort, aspiration may help drain it, although the fluid can return.

- The nodule's size and ultrasound appearance
- Whether it has grown or changed
- Abnormal lymph nodes in the neck
- Previous radiation exposure or other relevant medical history
- Findings from thyroid blood tests or a nuclear thyroid scan

Who should and should not have it

FNA is most useful when a thyroid nodule has features that make laboratory testing worthwhile. Small nodules with reassuring ultrasound features may be monitored instead. Biopsying every thyroid nodule can lead to unnecessary procedures and unclear results without improving care.

The procedure may be delayed if you have an infection in the skin over the biopsy area or a bleeding problem that has not been assessed. Blood-thinning medicines can increase bleeding risk, but they do not always need to be stopped. Your healthcare team should weigh the reason for the medicine against the procedure's bleeding risk.

It may also be unsuitable if you cannot remain still or safely position your neck. Sedation or another biopsy method may occasionally be considered.

Pregnancy does not usually prevent ultrasound-guided FNA because ultrasound does not use radiation. However, related tests or treatments may need different planning during pregnancy.

How to prepare

Follow the treating facility's own instructions first, because its preparation and medicine

policies take priority.

Tell the team about all prescription medicines, over-the-counter medicines, vitamins, and supplements you take. This is especially important for anticoagulants and antiplatelet medicines, which reduce blood clotting. Examples include warfarin, apixaban, rivaroxaban, dabigatran, clopidogrel, and aspirin.

Do not stop a blood thinner like warfarin or apixaban on your own. Stopping it may increase the risk of a blood clot or stroke. The clinician who manages that medicine may need to help plan any change.

Fasting is usually unnecessary when FNA is performed with local anaesthetic or no anaesthetic. Wear clothing that leaves the front of your neck easy to reach. Necklaces may need to be removed.

Tell the team if you have allergies, a bleeding disorder, difficulty lying flat, or a history of fainting during needle procedures.

What happens during the procedure

You will usually lie on your back with a support under your shoulders so your neck tilts slightly backward. Tell the clinician if this position causes pain, dizziness, or breathing difficulty.

The clinician examines your neck and uses ultrasound to locate the nodule. Gel is placed on the skin, and the ultrasound probe is moved over your neck. The skin is then cleaned.

Local anaesthetic may be injected to numb the area. The anaesthetic injection can briefly sting. Some clinicians do not use it because the biopsy needle is very thin and several injections could cause similar discomfort.

While watching the needle on the ultrasound screen, the clinician guides it into the nodule. You may be asked not to swallow or speak for a few seconds. Several samples are often taken from different parts of the nodule. Each pass usually lasts only a few seconds.

Pressure is applied afterward, and a small dressing may be placed over the site. Sedation is rarely needed.

Recovery and what to expect afterward

Mild soreness or tenderness is common. A cold pack wrapped in cloth may help. Use pain medicine only as directed by your healthcare team, particularly if you take blood thinners.

You can usually eat and drink normally immediately afterward.

Most people can return to ordinary activities the same day. Your facility may advise avoiding strenuous exercise or heavy lifting for the rest of the day if there is bruising or bleeding.

You can usually drive yourself home if you received no sedative and can move your neck comfortably. If sedation was used, arrange for someone to take you home and follow the facility's driving restrictions.

Many people return to work the same day or the following day. Work involving heavy physical activity may require a short break.

Risks and possible complications

Thyroid FNA is minimally invasive, but no procedure is completely risk-free.

Possible problems include:

Minor bleeding usually settles with pressure. A larger collection of blood in the neck is uncommon but needs prompt assessment, especially if swelling is increasing.

Temporary hoarseness or voice change can occur but is unusual. Persistent voice change should be reported.

Sometimes the sample does not contain enough cells to give a reliable result. This does not mean cancer is present. It means the test could not answer the question, and repeat FNA or another approach may be recommended.

- Temporary pain, tenderness, or bruising
- Bleeding under the skin, called a haematoma
- Infection at the needle site
- Feeling faint during or shortly after the procedure
- An inadequate sample that requires another biopsy

Results and follow up

The laboratory usually needs several days to prepare and examine the cells. Some results take longer if another specialist review or molecular testing is needed.

Results are commonly grouped into categories. They may be:

A benign result may lead to routine ultrasound monitoring rather than treatment. A nondiagnostic result often leads to repeat FNA, sometimes after allowing time for the area to settle.

For an indeterminate result, options may include repeat sampling, molecular testing of the collected cells, surveillance, or surgery. The best choice also depends on the ultrasound findings, nodule size, symptoms, and your preferences.

Ask when and how you will receive the result. Do not assume that no news means the result is normal.

- Benign: No cancer cells are seen
- Nondiagnostic: There are not enough suitable cells to interpret
- Indeterminate: The cells are abnormal, but the test cannot clearly classify them
- Suspicious for cancer: The changes raise substantial concern
- Malignant: Cancer cells are identified

Alternatives

The alternatives depend on why the biopsy was suggested.

Molecular testing is not usually a replacement for obtaining cells. It may help clarify some indeterminate FNA results, but it can add cost and does not always provide a definite answer.

- Ultrasound monitoring: Avoids an immediate procedure but provides less certainty. A concerning change may lead to biopsy later.
- Nuclear thyroid scan: May identify an overactive, or "hot," nodule when thyroid-stimulating hormone is low. It does not reliably classify most nodules as benign or cancerous.
- Core needle biopsy: Removes a larger piece of tissue and may help after repeated unclear FNA results. It uses a larger needle and may carry more discomfort or bleeding risk.
- Surgery: Removes part or all of the thyroid and provides more tissue for diagnosis. It requires anaesthesia and has greater risks, including scarring, voice-nerve injury, and the possible need for lifelong thyroid hormone medicine.
- No further testing: May be reasonable for some low-risk nodules or when testing would not change care. It trades diagnostic certainty for avoiding procedures.

When to call your healthcare team

Contact your healthcare team during routine hours if you have worsening pain, increasing redness, drainage, fever, persistent swelling, or a new voice change. Also call if you have questions about the dressing, medicines, or follow-up plan.

Seek urgent medical assessment for rapidly increasing neck swelling or bleeding that does not stop with firm pressure.

Call emergency services for trouble breathing, severe difficulty swallowing, collapse, or swelling that is quickly tightening the neck. These symptoms are not part of routine recovery.

Common questions

Will I be asleep?

Usually not. Most thyroid FNAs are performed with local anaesthetic or no anaesthetic. Sedation is rarely required, and you remain awake throughout the sampling.

Can I drive myself home?

Usually, yes, if you did not receive sedation and feel comfortable turning your neck. If sedation was used, you will need someone else to drive and supervise you as instructed.

How painful is a thyroid biopsy?

Most people feel a brief sting or pressure rather than severe pain. You may feel several quick needle passes. Mild tenderness afterward can last for a day or two.

When will I know the result?

Results are often available within several days, but some take longer. Ask the facility who will contact you and when you should follow up if you have not heard.

Can the needle spread thyroid cancer?

There is no evidence that routine thyroid FNA commonly spreads cancer. Needle-track implantation has been reported but is considered exceptionally unusual.

What if the biopsy does not give an answer?

An unclear or inadequate result does not automatically mean cancer. Your options may include another FNA, molecular testing, core needle biopsy, ultrasound monitoring, or surgery.

Sources

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- Tessler FN, et al. ACR Thyroid Imaging, Reporting and Data System: White Paper of the ACR TI-RADS Committee