PROCEDURE

Retrosternal thyroid surgery

Retrosternal thyroid surgery removes thyroid tissue extending from the neck into the chest.

PURPOSE
Remove an enlarged thyroid extending into the chest

PROCEDURE TYPE
Both; surgical removal through neck, sometimes chest

WHERE IT IS DONE
Operating theatre

ANAESTHESIA
General

HOW LONG IT TAKES
About 2-4 hours, longer if chest access is needed

PREPARATION
Fasting, medication review, blood tests, imaging

RECOVERY
Usually overnight or several days; no driving initially

MAIN RISKS
Bleeding, voice change, low calcium, chest complications

RESULTS
Surgical findings immediately; pathology usually within several days

Overview

Retrosternal thyroid surgery removes part or all of a thyroid gland that has grown below the breastbone and into the chest. This is also called surgery for a substernal goitre. A goitre is an enlarged thyroid gland.

The thyroid normally sits at the front of your lower neck. When part of it extends into the chest, it may press on the windpipe, food pipe, blood vessels, or nearby nerves.

Most retrosternal thyroids can be removed through an incision at the lower front of the neck. A chest incision may be needed if the gland extends deeply, is attached to nearby structures, or cannot be delivered safely through the neck. This may involve dividing part or all of the breastbone, called a sternotomy.

The surgeon may remove one thyroid lobe or the whole gland. The choice is based on the gland's size, which parts are affected, thyroid function, imaging findings, and any concern about cancer.

Why the procedure is performed

Surgery may be offered when a retrosternal thyroid is causing pressure or is likely to create problems because of its size or position.

Reasons include:

Surgery provides tissue for examination under a microscope. This is the most reliable way to determine whether cancer is present, although most enlarged thyroid glands are not cancerous.

- Pressure on the windpipe causing breathlessness or noisy breathing
- Difficulty swallowing or a choking sensation
- Compression or displacement of major blood vessels
- An overactive thyroid that is not controlled appropriately
- Growth seen on scans or during follow-up
- A suspicious thyroid nodule or concern about cancer
- Difficulty monitoring or sampling the part inside the chest

Who should and should not have it

You may be considered for surgery if the thyroid is causing pressure, narrowing your airway, growing, producing too much thyroid hormone, or contains a suspicious area. Your overall health and the expected difficulty of surgery also matter.

Surgery may not be the right immediate choice if the gland is stable, is not causing significant compression, and the risks of an operation outweigh the likely benefit. Monitoring may be reasonable in selected people.

An operation may be delayed when thyroid hormone levels are not adequately controlled, because an overactive thyroid can increase anaesthetic and heart-related risks. It may also be postponed for an acute infection or an unstable heart or lung condition.

Pregnancy, blood-thinning treatment, previous neck or chest surgery, and serious medical conditions do not always prevent surgery. They may affect its timing, preparation, or surgical

approach.

Because retrosternal surgery can be more complex than a standard thyroid operation, it is usually planned by an experienced thyroid surgeon. A chest surgeon may also be involved if chest access could be needed.

How to prepare

Your treating facility's own instructions take priority over general information in this article.

A CT scan usually helps show how far the thyroid extends, whether the windpipe is narrowed, and its relationship to blood vessels. Blood tests assess thyroid function, calcium, and your general health. You may have a test of your vocal cord movement, especially if you have voice changes or previous neck surgery.

Tell the surgical team about all medicines, supplements, allergies, and previous reactions to anaesthesia. This is especially important for blood thinners like warfarin or apixaban , diabetes medicines, and medicines affecting thyroid function. Do not stop a prescribed medicine unless your treating team has given you a specific plan.

You will be told when to stop eating and drinking before general anaesthesia. Follow those times carefully. If you smoke, stopping before surgery can improve breathing and wound healing, even when the available time is short.

Arrange help getting home and during your early recovery. Pack your regular medicines and expect an overnight stay. A longer stay may be needed after a sternotomy or if breathing or calcium levels require monitoring.

What happens during the procedure

You will be asleep under general anaesthesia. A breathing tube is placed through your mouth into your windpipe. Monitoring equipment tracks your heart rate, blood pressure, oxygen level, and other vital signs.

The surgeon makes an incision across the lower front of your neck. The muscles over the thyroid are separated, and the thyroid is carefully freed from surrounding tissues.

The surgeon works to identify and protect the recurrent laryngeal nerves, which help move the vocal cords. The parathyroid glands are also protected where possible. These small glands sit near the thyroid and control calcium levels.

The portion inside the chest is usually eased upward and removed through the neck incision. If

this cannot be done safely, the surgeon may open part or all of the breastbone. This gives direct access to the thyroid and nearby chest structures.

A drain may be placed to remove fluid, although it is not always needed. The incision is then closed. Removed tissue is sent to a laboratory for examination.

Recovery and what to expect afterward

Pain is usually strongest around the neck incision and when swallowing. If the breastbone was opened, chest discomfort is often more significant and lasts longer. You will receive pain relief, and the team may advise supporting your chest when coughing after a sternotomy.

You can usually begin drinking and eating once you are awake and swallowing safely. A mild sore throat is common after the breathing tube. Temporary swallowing discomfort may also occur because of swelling around the operation site.

Gentle walking is encouraged soon after surgery. Avoid strenuous exercise, heavy lifting, and stretching the wound until your surgical team says these are safe. Sternotomy recovery requires additional limits while the breastbone heals.

Do not drive home. Resume driving only when you can turn your head comfortably, make an emergency stop, and are no longer taking medicines that impair alertness. Your insurer or local licensing authority may have additional requirements.

Returning to work may take one to several weeks, based on the extent of surgery and your job. Recovery is generally longer after a sternotomy or for work involving lifting.

After removal of the whole thyroid, you will need lifelong thyroid hormone replacement. After removal of one lobe, the remaining thyroid may produce enough hormone, but follow-up blood tests are needed.

Risks and possible complications

All surgery has risks from anaesthesia, blood clots, infection, and wound healing. Risks specific to retrosternal thyroid surgery include:

Low calcium can cause tingling around the mouth or in the fingers, muscle cramps, or spasms. It is often temporary, but some people need longer-term calcium and vitamin D treatment.

Voice changes are often temporary and may result from swelling or irritation. Lasting nerve injury is possible. Injury affecting both vocal cords can cause serious breathing difficulty, although this is uncommon.

- Bleeding in the neck, which can press on the airway
- Temporary or lasting hoarseness from nerve injury
- Low calcium if the parathyroid glands are affected
- Fluid collection, wound infection, or noticeable scarring
- Breathing or swallowing difficulties
- Injury to chest structures, blood vessels, or the windpipe
- Air around a lung, called a pneumothorax
- Chest wound problems if a sternotomy is required

Results and follow up

The surgeon can usually tell you soon afterward what was removed and whether chest access was needed. Laboratory examination of the thyroid tissue takes several days and may sometimes require additional testing.

Routine follow-up checks your wound, voice, swallowing, breathing, calcium level, and thyroid hormone level. If you had a sternotomy, healing of the breastbone will also be reviewed.

Your thyroid hormone dose may need adjustment using blood tests. If the laboratory finds cancer, your team will explain whether further treatment or longer-term surveillance is recommended.

Alternatives

Observation with examinations, thyroid blood tests, and imaging may be suitable if the gland is stable and not causing important pressure. This avoids surgery now, but it does not remove the gland. Growth or increasing compression may make a later operation necessary.

Antithyroid medicines can control excess hormone production. They do not remove the retrosternal thyroid or reliably relieve pressure caused by its size.

Radioactive iodine may shrink some goitres or treat an overactive thyroid when surgery is unsuitable. Shrinkage is gradual and may be limited in a large retrosternal gland. It does not provide the same tissue diagnosis as surgery, and it does not quickly relieve major compression.

A needle biopsy can assess an accessible suspicious nodule. It does not treat compression and may not reach or represent the portion deep inside the chest.

When to call your healthcare team

For routine advice, contact your surgical team if pain is not gradually improving, the wound becomes increasingly red or starts draining, your voice remains weak, or you have ongoing swallowing difficulty. Also call if you develop tingling, cramps, or other possible signs of low calcium.

Seek urgent medical assessment for rapidly increasing neck swelling, fever with worsening wound symptoms, new shortness of breath, persistent vomiting, or chest pain.

Call emergency services for severe breathing difficulty, sudden tight neck swelling, fainting, coughing up significant blood, or severe chest pain. Rapid swelling after thyroid surgery can place pressure on the airway and needs immediate treatment.

Common questions

Will I be asleep?

Yes. Retrosternal thyroid surgery is performed under general anaesthesia, so you will be unconscious and will not feel the operation.

Can I drive home?

No. Someone must take you home after discharge. Wait until you can move comfortably, react safely, and are no longer affected by sedating pain medicines.

How painful is it?

Neck discomfort and pain when swallowing are expected, especially during the first few days. Pain is usually greater and recovery longer if the breastbone is opened.

When will I know the results?

The surgeon can discuss the operation soon afterward. The final laboratory report usually takes several days, and complex testing may take longer.

Will I have a chest scar?

Usually not. Most retrosternal thyroids are removed through a neck incision. If a sternotomy is required, there will also be a scar over the breastbone.

Will I need thyroid medicine afterward?

You will need lifelong thyroid hormone after removal of the whole thyroid. After partial removal, blood tests determine whether replacement is necessary.

Sources

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