CONDITION

Thyroid cancer - papillary carcinoma

Papillary thyroid carcinoma is a thyroid cancer that usually grows slowly and is often curable.

WHAT IT IS
Most common thyroid cancer arising from hormone-making cells

BODY SYSTEM
Endocrine system

MAIN SYMPTOMS
Thyroid lump, neck swelling, enlarged lymph nodes, persistent hoarseness

WHAT CAUSES IT
Usually unknown; DNA changes, radiation, rare inherited syndromes

HOW IT IS DIAGNOSED
Ultrasound and needle biopsy, confirmed by cell or tissue pathology

MAIN TREATMENT
Surgery, sometimes active surveillance or radioactive iodine

CAN IT BE CURED?
Yes - most localized cases are cured with treatment

IS IT AN EMERGENCY?
Sometimes - breathing difficulty or sudden postoperative neck swelling

LONG-TERM OUTLOOK
Usually excellent; recurrence risk guides long-term follow-up

Overview

Papillary thyroid carcinoma is the most common type of thyroid cancer. It begins in follicular cells, the thyroid cells that normally make and store thyroid hormones.

The thyroid is a small, butterfly-shaped gland at the front of your neck. Its hormones help control how your body uses energy. Papillary thyroid cancer usually does not stop the thyroid from making hormones, so thyroid blood tests may remain normal.

This cancer often grows slowly. It may spread to lymph nodes in the neck, but spread to nearby lymph nodes does not always mean the outlook is poor. Spread to distant organs, such as the lungs or bones, is less common.

Many cases are found while investigating a neck lump or during a scan performed for another

reason. Treatment is often successful, particularly when the cancer is limited to the thyroid or nearby lymph nodes. Some people need lifelong monitoring because the cancer can return years after treatment.

Symptoms

Papillary thyroid cancer often causes no symptoms at first. A clinician may find a thyroid nodule, meaning a lump within the thyroid, during an examination or imaging test.

Possible symptoms include:

These symptoms have many non-cancerous causes. Most thyroid nodules are not cancer. A painless lump also does not reveal whether it is harmless or cancerous, so it should be assessed rather than judged by how it feels.

Difficulty breathing is uncommon. If it occurs suddenly, or follows thyroid surgery with increasing neck swelling, it needs emergency assessment.

- A new lump or firm area at the front of the neck
- Swelling in the neck or enlarged lymph nodes
- A persistent change in your voice, such as hoarseness
- Difficulty swallowing or a feeling of pressure in the neck

Causes and risk factors

Papillary thyroid cancer develops when DNA changes cause thyroid cells to grow and divide abnormally. These changes are usually acquired during life rather than inherited from a parent. In most people, it is not possible to identify one clear cause.

Exposure to ionizing radiation is an established risk factor, especially exposure involving the head or neck during childhood. This can include past radiation treatment or significant environmental exposure. Radiation from medically necessary imaging is used carefully, and having an X-ray or scan does not mean you will develop thyroid cancer.

Other factors associated with a higher chance of papillary thyroid cancer include:

Papillary thyroid cancer is not caused by stress, touching a thyroid lump, or eating a particular food. Most people diagnosed with it have no inherited syndrome and could not have predicted or prevented it.

- A close relative with thyroid cancer

- Certain rare inherited genetic conditions
- A previous thyroid condition, including some forms of goitre
- Being female, although anyone can develop it

Diagnosis

Assessment usually begins with a neck examination and a thyroid ultrasound. Ultrasound uses sound waves to show the thyroid and nearby lymph nodes. It can identify features that make a nodule more or less concerning, but it cannot always confirm cancer by itself.

Blood tests usually include thyroid-stimulating hormone, or TSH. This shows how the thyroid is functioning. Normal thyroid hormone and TSH results do not rule out thyroid cancer.

A suspicious nodule is commonly sampled with fine-needle aspiration. A thin needle removes cells, often with ultrasound guidance. A pathologist then examines the cells under a microscope. Results may be benign, malignant, suspicious, indeterminate or inadequate.

An indeterminate result means the cells do not give a clear answer. Depending on the nodule, options may include repeating the biopsy, molecular testing for genetic changes, monitoring, or removing part of the thyroid for a definite tissue diagnosis.

After surgery, the removed tissue provides more detail about the tumour's size, subtype, edges and any growth into blood vessels or nearby structures. Imaging may be used to look for lymph-node or distant spread when the findings suggest this is necessary.

The cancer is then staged and assigned a recurrence risk. Stage describes how far it has spread. Recurrence risk estimates how likely it is to return and helps guide treatment and follow-up.

Treatment and management

Treatment is planned around the tumour's size and location, lymph-node involvement, spread outside the thyroid, biopsy findings, your general health and your preferences.

For a very small, low-risk papillary cancer, active surveillance may be an option. This means regular ultrasound and clinical review instead of immediate surgery. It is only suitable when the tumour has reassuring features, is not close to structures where growth could cause harm, and reliable follow-up is possible.

Surgery is the main treatment for most papillary thyroid cancers. A lobectomy removes the half of the thyroid containing the cancer. A total thyroidectomy removes the whole thyroid.

The appropriate operation depends on the cancer's features and whether it affects one or both sides. Lymph nodes may also be removed if cancer is known or strongly suspected to be present there.

After a total thyroidectomy, you need lifelong levothyroxine to replace thyroid hormone. Some people also need it after a lobectomy. The dose may be adjusted to keep TSH within a chosen range. In people with a higher recurrence risk, treatment may keep TSH somewhat lower because TSH can stimulate thyroid cells. Excessive suppression can affect the heart and bones, so the target is individualized.

Radioactive iodine may be recommended after total thyroidectomy for selected cancers. Thyroid cells absorb iodine, allowing the treatment to destroy remaining thyroid tissue or iodine-sensitive cancer cells. It is not routinely needed for every small, low-risk cancer.

Persistent or recurrent cancer may be treated with further surgery or radioactive iodine when appropriate. External-beam radiation or targeted medicines may be considered for cancer that cannot be removed, does not take up iodine or has spread and is progressing. Traditional chemotherapy is rarely the main treatment.

Follow-up can include neck ultrasound, examination, TSH testing and measurement of thyroglobulin, a protein made by thyroid cells. Thyroglobulin is particularly useful after total thyroidectomy, although antibodies can interfere with the result.

Complications

Papillary thyroid cancer can return in the thyroid area or neck lymph nodes. Less often, it spreads to the lungs, bones or other organs. A recurrence can sometimes be treated successfully, but advanced cancer may require long-term control rather than cure.

Possible complications of thyroid surgery include bleeding, infection and injury to nerves controlling the vocal cords. Damage or temporary disturbance to the nearby parathyroid glands can lower blood calcium. This may cause tingling around the mouth or fingers, muscle cramps or spasms.

Radioactive iodine can cause temporary neck discomfort, nausea, altered taste, dry mouth or inflammation of the salivary glands. Your treatment centre will explain radiation-safety measures and how treatment may affect pregnancy, breastfeeding or fertility planning.

Living with uncertainty, repeated testing or voice and hormone changes can also affect emotional wellbeing.

Prevention

Papillary thyroid cancer usually cannot be prevented. Most cases arise without an avoidable cause.

Avoiding unnecessary ionizing radiation, particularly during childhood, can reduce avoidable exposure. Medically needed imaging and radiation treatment may still provide benefits that outweigh their risks.

If several close relatives have thyroid cancer or your family has a related inherited syndrome, genetic counselling may help clarify whether genetic testing or tailored monitoring is appropriate. This does not apply to most people with papillary thyroid cancer.

Living with it and what to expect

Recovery after surgery usually takes weeks, although voice fatigue, neck tightness or changes in energy may take longer to settle. After total thyroidectomy, finding the right levothyroxine dose can require several blood tests and adjustments. Once levels are stable, most people can work, exercise, travel and eat normally.

Follow-up is more frequent at first and may become less frequent when results remain reassuring. The exact plan reflects the original cancer findings, treatment received and response over time. Because recurrence can appear years later, some level of long-term monitoring is common.

A rising thyroglobulin result does not by itself prove that visible cancer has returned. Your team will interpret the result alongside antibody levels, previous results and imaging. Small changes may lead to repeat testing rather than immediate treatment.

Most people treated for localized papillary thyroid cancer have a very good long-term outlook. Some need additional treatment for cancer in lymph nodes. A smaller group lives with persistent or distant cancer that is monitored or treated over years. No individual course can be predicted from the diagnosis alone.

Pregnancy is often possible after treatment. Timing may need planning, especially after radioactive iodine or while thyroid hormone levels are being adjusted.

When to get medical help

Arrange a routine medical appointment if you notice:

After thyroid surgery, contact your surgical team promptly for worsening wound redness,

discharge, fever, increasing pain or tingling and muscle cramps that could indicate low calcium.

Seek emergency help for:

A stable thyroid lump without breathing or swallowing problems is not usually an emergency, but it should still be assessed.

- A new or growing lump at the front of your neck
- Enlarged neck lymph nodes that do not settle
- Hoarseness, swallowing difficulty or neck pressure that persists
- New symptoms between planned cancer follow-up visits
- Possible thyroid hormone symptoms, such as ongoing palpitations, marked tiredness or unusual sensitivity to heat or cold
- New or severe difficulty breathing
- Rapidly increasing neck swelling, especially after surgery
- Neck swelling with choking, faintness or inability to swallow saliva
- Severe muscle spasms or seizures after thyroid surgery

Common questions

Is papillary thyroid cancer curable?

Most papillary thyroid cancers confined to the thyroid or nearby lymph nodes can be cured with treatment. Cure is less certain if the cancer has spread to distant organs or cannot be removed. Long-term follow-up is still important after successful treatment.

How fast does papillary thyroid cancer grow?

It often grows slowly, sometimes over years. However, growth rates are not the same for every tumour. Ultrasound findings, biopsy results, lymph-node involvement and changes during monitoring are more useful than assuming all papillary cancers behave alike.

Will I need my whole thyroid removed?

Not always. Removing one thyroid lobe may be enough for some cancers limited to one side. Total thyroidectomy may be recommended for larger, higher-risk or more extensive cancers. The choice also affects whether radioactive iodine and certain follow-up blood tests can be used effectively.

Will I need radioactive iodine?

Not everyone does. It is generally considered when the chance of remaining or returning

cancer is high enough that the likely benefit outweighs the unwanted effects. Many small, low-risk cancers are managed without it.

Can papillary thyroid cancer come back after treatment?

Yes. Recurrence most often appears in the thyroid area or neck lymph nodes and can occur years later. Many neck recurrences remain treatable. Your pathology results and response to initial treatment help determine how closely you need monitoring.

Will thyroid surgery make me gain weight?

Weight gain is not inevitable. Removing the whole thyroid means you need replacement thyroid hormone. If the dose is too low, an underactive thyroid can contribute to tiredness and weight gain. Blood tests and dose adjustments help keep hormone levels in the intended range.

Sources

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