CONDITION

Glomus tympanicum tumor

A glomus tympanicum tumor is a usually noncancerous growth arising from specialized cells in the middle ear.

WHAT IT IS
A usually noncancerous, blood-vessel-rich middle ear tumor

BODY SYSTEM
Ear and hearing

MAIN SYMPTOMS
Pulse-synchronous tinnitus, hearing loss, ear fullness, ear bleeding

WHAT CAUSES IT
Usually unknown; rarely linked to inherited gene changes

HOW IT IS DIAGNOSED
Ear examination, hearing tests, CT and MRI scans

MAIN TREATMENT
Monitoring, surgery, or focused radiation

CAN IT BE CURED?
Sometimes - complete surgery can eliminate localized tumors

IS IT AN EMERGENCY?
Sometimes - heavy ear bleeding needs emergency care

LONG-TERM OUTLOOK
Usually slow-growing, with good long-term tumor control

Overview

A glomus tympanicum tumor is a type of paraganglioma that develops in the middle ear. Paragangliomas grow from specialized cells associated with nerves and blood vessels. Most glomus tympanicum tumors begin on the cochlear promontory, a bony area behind the eardrum.

These tumors are usually noncancerous and tend to grow slowly. However, they contain many blood vessels. Even a small tumor can cause noticeable symptoms, especially a pulsing sound in the affected ear or hearing loss.

As a tumor grows, it may fill more of the middle ear and sometimes extend into nearby spaces. Early assessment helps establish its size, effect on hearing, and whether it is changing. Treatment is not always needed immediately. The best approach is based on symptoms, tumor

size and growth, hearing, general health, and personal preferences.

Glomus tympanicum is not the same as a glomus tumor under a fingernail or elsewhere in the skin.

Symptoms

The most characteristic symptom is pulsatile tinnitus . This is a whooshing or thumping sound that often matches your heartbeat. It is usually heard in one ear.

Hearing loss is also common. It is often conductive hearing loss , meaning sound cannot travel normally through the eardrum and middle-ear bones. The inner ear may still work normally.

Other possible symptoms include:

Larger tumors can occasionally affect nearby nerves. This may lead to facial weakness, hoarseness, swallowing difficulty, shoulder weakness, or changes in tongue movement. These symptoms are less typical of a small tumor limited to the middle ear and need prompt assessment.

Symptoms can resemble an ear infection, earwax blockage, or other causes of tinnitus and hearing loss. Symptoms alone cannot confirm the condition.

- A feeling of pressure or fullness in one ear
- Ear pain or discomfort
- Dizziness or problems with balance
- Ear discharge or bleeding
- A visible reddish mass behind the eardrum

Causes and risk factors

Most glomus tympanicum tumors have no identifiable cause. They arise when paraganglion cells begin growing into a tumor, but it is often unclear why this happens.

Some paragangliomas are associated with inherited changes in genes such as the SDH genes , which help cells produce energy. An inherited change is more likely to be considered when someone is young, has several paragangliomas, has tumors in both sides of the head or neck, or has relatives with related tumors.

A family history is not present in most people with an isolated glomus tympanicum tumor. Having the condition does not mean that relatives will necessarily develop it.

Smoking, ear infections, noise exposure, and ordinary headphone use are not established causes.

A small number of paragangliomas release excess stress-related hormones called catecholamines. This is uncommon in middle-ear paragangliomas. Symptoms such as repeated episodes of pounding heartbeat, heavy sweating, headaches, or marked blood pressure changes may lead to hormone testing.

Diagnosis

An ear specialist usually begins by examining the ear with an otoscope or microscope. A glomus tympanicum tumor may appear as a red or reddish-blue mass behind the eardrum. Because several ear conditions can look similar, imaging is needed to define the mass.

A hearing test, called audiometry , checks the type and degree of hearing loss. Other hearing and middle-ear pressure tests may also be performed.

Imaging commonly includes:

Doctors use the scans to determine how far the tumor extends. This helps distinguish a glomus tympanicum tumor from a larger paraganglioma arising near the jugular vein beneath the ear.

A biopsy is usually avoided when imaging and examination strongly suggest this diagnosis. Taking tissue from such a blood-vessel-rich tumor can cause significant bleeding. A definite tissue diagnosis may instead be made after surgical removal.

For a large tumor or one planned for surgery, angiography may be used to map its blood supply. Blood or urine hormone tests and genetic counseling may be discussed when symptoms, age, family history, or the presence of multiple tumors suggests a broader paraganglioma condition.[1-4]

- CT scanning , which shows the middle-ear bones and whether there has been bone erosion
- MRI scanning with contrast , which shows the tumor, blood vessels, nerves, and nearby soft tissues

Treatment and management

Treatment is planned with an ear, nose, and throat specialist, often one who focuses on disorders of the ear and skull base. No single option is right for everyone.

Active monitoring may be reasonable for a small tumor that causes few symptoms, especially if surgery or radiation would carry greater risk. Monitoring usually involves repeated hearing tests, examinations, and MRI or CT scans. Treatment can be reconsidered if the tumor grows or symptoms become harder to manage.

Surgery aims to remove the tumor. Small tumors confined to the middle ear can sometimes be removed through the ear canal. More extensive tumors may require a wider surgical approach. Complete removal can be curative when the tumor is localized.

Possible surgical risks include bleeding, worse hearing, dizziness, tinnitus, changes in taste, eardrum problems, and injury to nearby nerves. The risks are strongly influenced by the tumor's size and location.

Radiation therapy , including focused stereotactic treatment in selected cases, aims to stop or slow further growth rather than make the tumor disappear immediately. It may be considered for tumors that are difficult to remove, tumors that have returned, or people for whom surgery is not a suitable choice. Long-term imaging is still needed because the treated tumor remains in place.

For some larger tumors, embolization may be performed before surgery. During this procedure, a specialist blocks selected vessels supplying the tumor to reduce bleeding. It is not needed for every tumor and has its own risks.

Hearing aids or other hearing support may help when hearing loss remains during monitoring or after treatment.[1,2,4]

Complications

Without treatment, a growing tumor may gradually worsen conductive hearing loss or damage the small middle-ear bones. It can extend into the mastoid bone, inner ear, or skull-base spaces.

Advanced tumors may affect nerves involved in facial movement, voice, swallowing, shoulder movement, or tongue control. Significant ear bleeding is possible because the tumor contains many blood vessels.

Most glomus tympanicum tumors do not spread to distant parts of the body. Rare paragangliomas can behave malignantly. In paragangliomas, malignancy is established by spread to sites where paraganglion tissue is not normally found, rather than by appearance alone.

Treatment can also have complications, particularly changes in hearing or nerve function. The care team should explain the risks that apply to the tumor's exact location.

Prevention

There is no established way to prevent most glomus tympanicum tumors. They are not known to result from everyday ear-care habits.

Inherited gene changes cannot be prevented. If an inherited paraganglioma condition is identified, genetic counseling and planned surveillance may help find additional tumors earlier. This is monitoring, not prevention.

Living with it and what to expect

Many glomus tympanicum tumors grow slowly over months or years. Some remain stable during periods of observation, while others gradually enlarge. Follow-up imaging is important because symptoms alone do not always show whether a tumor is growing.

Pulsatile tinnitus can affect sleep and concentration. Background sound, a fan, or a sound-generating device may make it less noticeable, although these measures do not treat the tumor. Hearing aids may improve communication when hearing loss is present.

After complete removal of a small tumor, no visible tumor may remain. Hearing and tinnitus may improve, but this cannot be guaranteed. Some people have persistent symptoms because of previous middle-ear damage or treatment effects.

Radiation often provides long-term growth control, but its effect develops over time and the mass usually remains visible on scans. Continued follow-up is therefore needed.

Recurrence or renewed growth can occur after either surgery or radiation, sometimes years later. Follow-up plans may include ear examinations, hearing tests, and periodic imaging. The schedule is based on the treatment used, scan findings, and whether an inherited risk is present.[1,2,4]

When to get medical help

Arrange a routine medical appointment if you develop a pulsing sound in one ear, ongoing one-sided hearing loss, persistent ear fullness, or unexplained ear discharge. These symptoms usually are not an emergency, but they should be assessed rather than assumed to be harmless tinnitus or an infection.

Seek prompt medical advice for:

Go to emergency care for heavy ear bleeding that does not stop, fainting, breathing difficulty,

or sudden neurological symptoms such as facial drooping, arm weakness, or difficulty speaking. These symptoms can have causes other than a glomus tympanicum tumor, but they need immediate assessment.

- New or rapidly worsening hearing loss
- Repeated ear bleeding
- New dizziness that affects walking
- Facial weakness, hoarseness, or trouble swallowing
- A known tumor with clearly changing symptoms

Common questions

Is a glomus tympanicum tumor cancer?

Usually not. Most are noncancerous paragangliomas that grow locally and slowly. Rare paragangliomas can spread, but this is not typical of a small tumor confined to the middle ear.

Can a glomus tympanicum tumor go away on its own?

It is not expected to disappear without treatment. A small tumor may remain stable for a long time, which is why monitoring can sometimes be chosen instead of immediate treatment.

Why can I hear my heartbeat in my ear?

The tumor contains many blood vessels. Blood moving through them can create a sound that travels through the middle ear, producing tinnitus that matches your pulse. Several other conditions can also cause pulse-synchronous tinnitus.

Does every glomus tympanicum tumor need surgery?

No. Monitoring or radiation may be appropriate in some situations. The choice considers tumor size and growth, symptoms, hearing, age, general health, treatment risks, and your preferences.

Will treatment restore my hearing?

Hearing may improve if treatment removes a blockage in the middle ear. It may not return fully if the hearing structures have been damaged or if treatment affects them. A hearing test helps estimate the type of loss.

Is this condition inherited?

Most isolated glomus tympanicum tumors are not clearly inherited. Genetic counseling or testing may be considered if you are young, have multiple tumors, or have a family history of paraganglioma or related tumors.[3,4]

Sources

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