CONDITION

Glomus jugulare tumor

A glomus jugulare tumor is a usually slow-growing tumor near the inner ear and major nerves at the skull base.

WHAT IT IS
Usually noncancerous skull-base paraganglioma

BODY SYSTEM
Nervous system, ear, and skull base

MAIN SYMPTOMS
Pulsing ear noise, hearing loss, hoarseness, swallowing difficulty

WHAT CAUSES IT
Usually unknown; sometimes inherited gene changes

HOW IT IS DIAGNOSED
Contrast MRI and temporal bone CT

MAIN TREATMENT
Observation, radiation therapy, or surgery

CAN IT BE CURED?
Sometimes - surgery removes some localized tumors

IS IT AN EMERGENCY?
Sometimes - with breathing trouble or stroke-like symptoms

LONG-TERM OUTLOOK
Often slow-growing; long-term control is common

Overview

A glomus jugulare tumor is a rare growth at the base of the skull, close to the middle and inner ear. It begins near the jugular bulb, a widened part of a major vein that carries blood away from the brain. The modern medical term is a jugular paraganglioma .

Most grow slowly and do not spread to distant organs. However, they form in a crowded area containing blood vessels, nerves, and structures involved in hearing and balance. Even a noncancerous tumor can cause significant problems as it grows.

Nearby nerves control swallowing, the voice, shoulder movement, and tongue movement. The tumor may also affect hearing or produce a rhythmic noise in the ear. Because it contains many blood vessels, it can bleed heavily if sampled or removed.

This condition is different from the small, often painful glomus tumors that develop under a fingernail or elsewhere in the skin.

Symptoms

Symptoms usually develop gradually and occur on the same side as the tumor.

A common early symptom is pulsatile tinnitus : a pulsing, whooshing, or thumping sound that may match your heartbeat. Hearing loss in one ear is also common. Some people notice ear fullness, discharge, or a reddish mass behind the eardrum.

Pressure on nearby nerves may cause:

Some paragangliomas release hormones called catecholamines , such as adrenaline. This is uncommon in head and neck tumors but may cause episodes of a pounding heartbeat, sweating, headache, tremor, or high blood pressure.

These symptoms have many possible causes and do not necessarily mean you have this tumor.

- A hoarse, weak, or changing voice
- Coughing or choking while eating or drinking
- Difficulty swallowing
- Weakness when lifting one shoulder
- Reduced tongue movement or unclear speech
- Dizziness, poor balance, or headaches
- Facial weakness, which is less common

Causes and risk factors

A glomus jugulare tumor develops from paraganglion cells, which are part of the nervous system. It is usually unclear why these cells begin growing into a tumor.

Some paragangliomas are related to inherited changes in SDH genes or other genes. An inherited change may be more likely in someone with:

A pheochromocytoma is a related tumor arising in an adrenal gland above the kidney.

Most people have done nothing to cause a glomus jugulare tumor. Smoking, diet, ear infections, and noise exposure are not established causes.

- More than one paraganglioma
- A tumor at a younger age
- A family history of paraganglioma or pheochromocytoma
- Tumors on both sides of the head or neck
- A tumor that has spread

Diagnosis

Assessment includes a review of symptoms and an examination of the ears, voice, swallowing, balance, and nerve function. A hearing test measures the type and degree of hearing loss.

Imaging is central to diagnosis. Contrast-enhanced MRI shows the tumor's relationship to nerves, blood vessels, the brain, and nearby soft tissues. A detailed temporal bone CT shows changes in the skull base and middle ear.

The tumor's location and appearance on these scans can often establish the diagnosis. A biopsy is not routinely needed and may be avoided because the tumor can bleed substantially.

Angiography uses contrast dye and X-rays to map the tumor's blood supply. It is mainly used for treatment planning, particularly before surgery or a procedure to block selected blood vessels.

Blood or urine tests may measure metanephrines, substances produced when catecholamines break down. Testing is especially important if symptoms suggest hormone release or before an operation.

Genetic counseling and testing may also be offered. A genetic counselor can explain what the results could mean for you and your biological relatives.

Treatment and management

Treatment depends on the tumor's size, growth, symptoms, location, hormone activity, and effects on nearby nerves. Your age, general health, hearing, and preferences also matter.

Care is often coordinated by a skull-base team that may include surgeons, radiation specialists, hearing professionals, endocrinologists, genetic specialists, and speech or swallowing therapists.

Active observation may be appropriate for a small tumor causing few symptoms, particularly when treatment risks outweigh the immediate risk from growth. It involves planned MRI scans,

hearing tests, and nerve assessments. Treatment can be reconsidered if the tumor grows or symptoms change.

Surgery aims to remove the tumor. Complete removal may be possible for smaller tumors, but larger tumors can surround nerves or major blood vessels. Risks include hearing loss, swallowing problems, voice changes, shoulder or tongue weakness, bleeding, and leakage of the fluid surrounding the brain.

Before some operations, an interventional radiologist may block selected blood vessels supplying the tumor. This procedure, called embolization , may reduce blood loss but is not needed in every case.

Radiation therapy damages tumor cells so they stop growing. Focused stereotactic treatment may be used for selected smaller tumors, while fractionated radiotherapy is delivered in smaller portions over several visits. Radiation often provides long-term control but does not remove the mass. Hearing or nerve effects can appear later, so follow-up remains important.

If the tumor releases catecholamines, an endocrine team must control the hormone effects before surgery or another procedure. This reduces the risk of dangerous blood pressure and heart rate changes.

Tumors that spread are uncommon. Treatment may include surgery, radiation, medicines, or radioactive therapies designed to enter paraganglioma cells.

Complications

A growing tumor may cause lasting hoarseness, swallowing difficulty, shoulder or tongue weakness, or hearing loss.

Poor swallowing can allow food, drink, or saliva to enter the airway. This is called aspiration and may cause pneumonia. Speech and swallowing therapy can reduce the risk.

Other complications include balance problems, pressure on blood vessels, and extension farther into the skull. A hormone-producing tumor can affect blood pressure and heart rhythm.

Treatment also carries risks because of the tumor's location and rich blood supply. Rehabilitation, hearing devices, voice treatment, and nutritional support can help manage lasting effects.

A paraganglioma is considered malignant when it spreads to places where paraganglion tissue is not normally found, such as lymph nodes, bone, lungs, or liver. Its appearance under a microscope cannot always predict whether it will spread.

Prevention

There is no established way to prevent a glomus jugulare tumor. It is not known to result from everyday behavior or failure to protect your hearing.

Inherited gene changes cannot be prevented. If testing identifies one, genetic counseling can help relatives decide whether testing or planned screening is appropriate. Screening cannot prevent a tumor but may find one before it causes major symptoms.

Living with it and what to expect

Many glomus jugulare tumors grow slowly, and some remain stable for long periods. Because one scan cannot reliably predict the future course, doctors compare imaging over time.

During observation, follow-up commonly includes repeat scans and checks of hearing, swallowing, voice, and nerve function. Keep these appointments even if you feel well, because imaging may detect growth before symptoms change.

Scans are also needed after surgery or radiation. Some tumor may remain after surgery, while a treated tumor may remain visible after radiation even when it is no longer growing. People with an inherited condition, multiple tumors, or previous spread may need broader, longer follow-up.

Some symptoms improve after the tumor is controlled, but those caused by existing nerve damage may continue. Hearing aids, bone-conduction devices, voice procedures, swallowing therapy, shoulder physiotherapy, and nutrition support can make daily activities safer and easier.

Most people can continue many usual activities, although hearing, balance, fatigue, or swallowing problems may require adjustments. The long-term course depends largely on the tumor's location, growth, and effects on nerves.

When to get medical help

Arrange a medical assessment if you develop persistent pulsing noise in one ear, gradual one-sided hearing loss, unexplained hoarseness, or repeated swallowing difficulty. These symptoms are usually not emergencies but should be assessed.

If you have a diagnosed tumor, contact your care team promptly about new or worsening choking, voice changes, facial or tongue weakness, shoulder weakness, severe balance

problems, or episodes of pounding heartbeat with sweating and headache.

Seek urgent or emergency care for:

Continue scheduled surveillance scans and hearing checks even when you have no new symptoms.

- Difficulty breathing or an inability to swallow saliva
- Heavy or uncontrolled bleeding from the ear
- Sudden facial drooping, arm weakness, speech difficulty, or confusion
- Fainting, severe chest pain, or a sustained racing heartbeat
- A sudden severe headache with new neurological symptoms

Common questions

Is a glomus jugulare tumor cancer?

Most are not cancerous and never spread to distant organs. They can still cause serious local problems by pressing on nerves and blood vessels. A paraganglioma is considered malignant only when it has spread elsewhere.

Can a glomus jugulare tumor be cured?

Sometimes. Surgery can completely remove some localized tumors. Radiation may provide lasting control without removing the mass. Cure or control is harder to define if the tumor surrounds important structures, remains after treatment, or has spread.

How fast does a glomus jugulare tumor grow?

Many grow slowly, but rates vary. Doctors compare scans over time rather than judging growth from symptoms or one scan.

Do I need a biopsy?

Often not. MRI and CT findings may be characteristic enough for diagnosis. Because the tumor has many blood vessels, biopsy can cause substantial bleeding and is generally considered only when imaging leaves important uncertainty.

Will treatment restore my hearing?

Not always. Hearing may improve if middle-ear blockage is responsible, but nerve-related hearing loss can be permanent. Surgery and radiation can also affect hearing. Hearing tests help estimate likely outcomes and guide rehabilitation.

Is it the same as a glomus tumor under a fingernail?

No. A glomus jugulare tumor is a paraganglioma at the skull base. A glomus tumor under a nail arises from a different type of tissue.

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