PACIFIC HEAD & NECK℠

PACIFIC NEUROSCIENCE INSTITUTE®

Providence

VESTIBULAR SCHWANNOMA (ACOUSTIC NEUROMA)

Acoustic Neuroma

Vestibular Schwannoma is a benign (non-cancerous) tumor. It is the second most common tumor inside the head. The tumor forms from the Shwann cells that line the balance nerve fibers that connects the inner ear to the brain.

The tumor does not spread, but it does grow. As it enlarges, it infiltrates into the remaining balance and hearing nerves, causing disequilibrium and hearing loss. It can ultimately push on the brain or other nerves in the area if it gets large. In most cases, these tumors grow slowly over many years, but sometimes the rate of growth changes and becomes rapid.

WHY DID I GET VESTIBULAR SCHWANNOMA?

There are no known risk factors for most patients that have vestibular schwannoma. They are almost always only in one ear. Thus, for most patients, we don't really know. However, there is a rare genetic disease (neurofibromatosis type II) where patients get vestibular schwannoma in both ears (and sometimes other tumors inside the head such as meningioma). This disease is usually only diagnosed in children or very young adults.

SYMPTOMS

- Tinnitus (Ear noise/ringing in the ear)
- Hearing loss in one ear
- Facial numbness
- Facial twitch
- Vague disequilibrium, particularly with rapid head turns like when changing lanes on the highway

EVALUATION AND TREATMENT

A careful examination of the ear is needed. An audiogram tells the amount of hearing loss. An MRI of the Internal Auditory Canals with and without gadolinium contrast is necessary for the diagnosis.

TREATMENT OPTIONS, RISKS, AND EXPECTED OUTCOMES

These are very slow-growing, benign tumors, and it is rare for urgent treatment to be needed. There are **(3)** main management strategies:

1. **Observation:** Serial MRI scans (typically every **6-12 months**) can be obtained to see if the tumor is growing. On average, they grow **~ 1 mm/year**. If it is not growing and there is no change in the patient's symptoms, observation can be continued indefinitely. If the patient has serviceable hearing in the affected ear, one risk to observation is that the hearing loss can get worse. Unless the tumor is large and it would be risky to delay treatment, we typically recommend a period of observation for most patients to make the tumor "prove" that it needs treatment.
2. **Stereotactic radiation:** This is a highly conformal technique to deliver radiation to the tumor to stop it from growing. We typically use our Gamma Knife to deliver radiation. While tumors can shrink, they never completely go away, and they will still need to be followed with serial MRI scans to make sure the tumor does not start growing again later. This chance is very slow (**~1%** although it depends upon the size of the tumor and long-term data are lacking). The tumor swells after the radiation therapy, about **3-6** after the treatment. During this time, the tumor may compress the auditory nerve within its bony canal causing the hearing to drop. The chance of preserving hearing with radiation is roughly **50-60%** at **5 years** after treatment. The chance of preserving facial nerve function is **~98%-99%**. Stereotactic radiation should be considered for every patient, although it is often best used in smaller tumors and in older patients.

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3. **Microsurgical removal:** Removing the tumor is the most definitive treatment. We perform this surgery in partnership with our neurosurgical colleagues. Small tumors can usually be completely removed while a less-than-complete resection may be performed for large tumors to offer the best chance at preserving facial nerve function.

If a less-than-complete resection is performed, the tumor remnant will be followed with serial MRI scans and stereotactic radiation given if it demonstrates growth (remnants usually do not grow). We use all three surgical approaches (translabyrinthine, middle fossa, and retrosignmoid) and select the approach based on individual patient factors. The chance of preserving normal or near-normal facial nerve function is ~**98**%-**99**% at **1** year after surgery, although temporary weakness is more common and may last several months after surgery. Larger tumors (i.e., >**2.5** cm) have a lower rate of facial nerve preservation. Hearing preservation depends upon the tumor size and location but can be as high as **60**%-**70**% for small tumors. Other risks of surgery include cerebrospinal fluid leak requiring additional hospitalization or further surgery, bleeding, stroke, seizure, and incoordination of the arms or legs. It is also possible (but unlikely) that the tumor is in fact not a vestibular schwannoma, but a facial nerve schwannoma, meaning that facial weakness will occur.

POSTOPERATIVE RECOVERY

Your surgery will take up most of the day. Afterwards, you will stay in the Intensive Care Unit (ICU) one night so that you can be closely monitored. The next day you will usually be transferred to a regular unit for monitoring. If needed for balance problems after surgery, Physical Therapy will be ordered to help you get up and walk around. Some people need to use a walker after surgery to help prevent falls.

You are considered safe to go home when: you are steady on your feet, you are eating and drinking fluids without vomiting, you do not have extreme dizziness, your pain is controlled, and there are no complications. This can be anywhere from **2-6** days, but **4** days is our average.

Some people have weakness of half their face after surgery. This can occur immediately or have a delayed onset by a few days. If you have this, we will provide lubricating eye drops for you to use every **1-2** hours during the day. At night, we will provide lubricating eye ointment for you to apply, and we will teach you how to tape your eye shut so it does not get dried out, red, or scratched.

After surgery, it is normal to have some pain, discomfort, headaches, tiredness, dizziness, feelings of being off balance, and weak. You will have some difficulty focusing while reading or on the computer and will likely need frequent breaks. This may last several weeks to several months.

Try to stay as active as possible. However, you should not bend over, exert yourself, or lift anything heavy for at least **1** month after surgery.