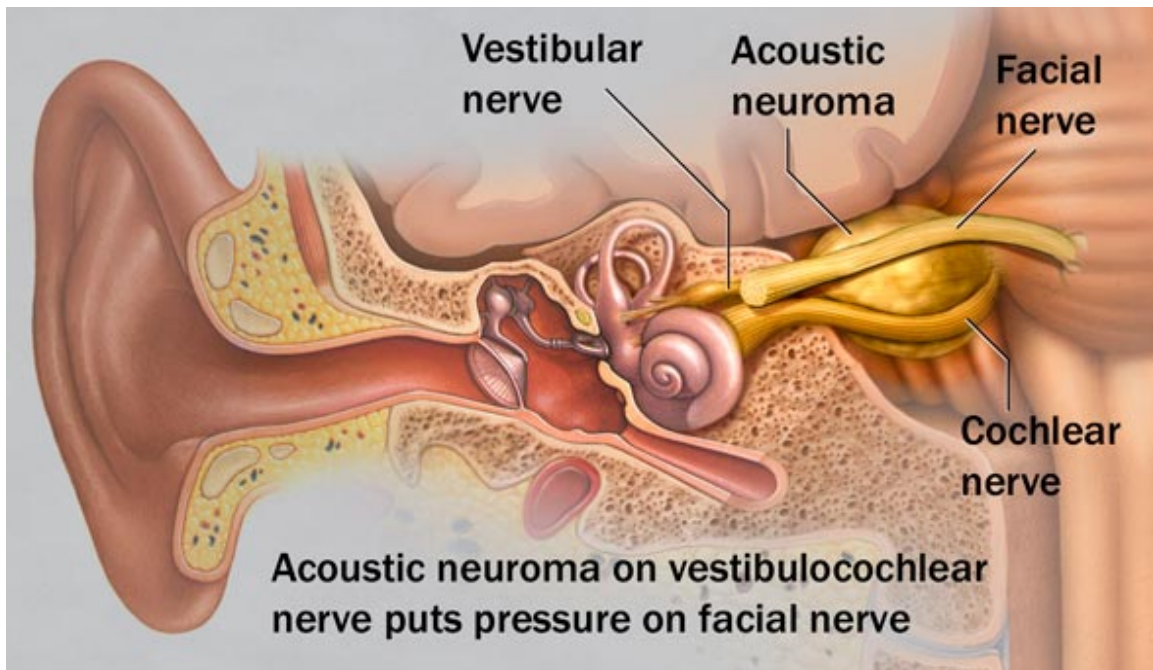


Acoustic Neuroma

What is an Acoustic Neuroma?

An acoustic neuroma is a benign tumour that grows on the eighth cranial nerve. Another term for this is *vestibular schwannoma*. This is a more correct term, as the tumour affects the vestibular portion of the eighth nerve. Occasionally, these tumours will affect both the left and the right eighth nerves through a disorder called *neurofibromatosis type II*. However, this is very rare, and symptoms of this disorder will typically be present by the time a person reaches age 21.



What are the symptoms of an Acoustic Neuroma?

Early signs of an acoustic neuroma include single-sided sensorineural hearing loss (or double-sided in neurofibromatosis type II), tinnitus (sound in the ear, often a high-pitched ringing or a roaring sound), problems with balance (either vertigo or an off-balance feeling) and feelings of fullness in the ear(s) affected.

As the tumour slowly increases in size, it may begin to affect other cranial nerves (usually the V and the VII). This may produce symptoms like facial weakness and loss of sensation in the face on the affected side.

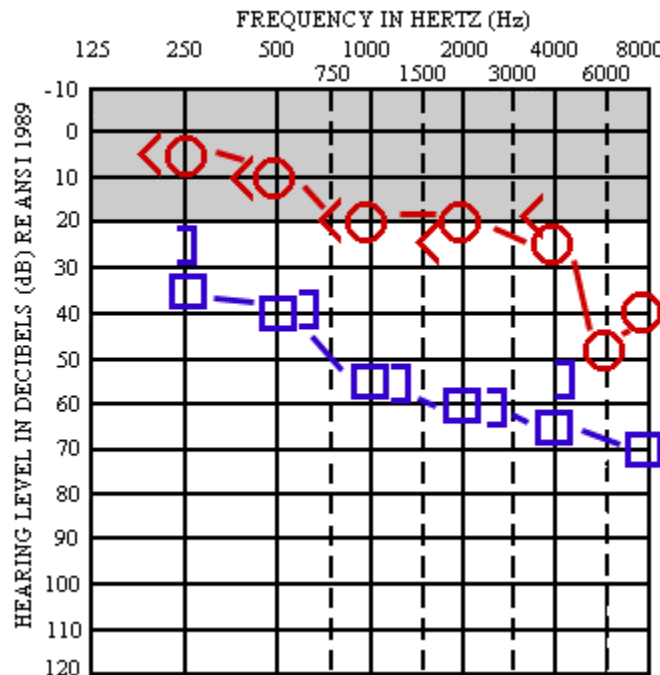
Large tumours may cause additional symptoms such as headaches and vomiting.

How do Acoustic Neuromas cause hearing impairment?

Acoustic neuromas cause hearing impairment because they grow on the eighth cranial nerve, also called the *vestibulocochlear* (hearing and balance) nerve. A growth on this nerve prevents the sound from travelling efficiently from the inner ear to the auditory processing centres of the brain, causing sensorineural hearing loss.

How is an Acoustic Neuroma diagnosed?

“Red-flags” for an acoustic neuroma can be seen in an audiogram, or a hearing test. These red flags include, asymmetrical hearing loss, poor word understanding, and absent reflexes on the affected side.



These red flags will prompt the clinician to refer to an ear, nose, and throat specialist (ENT), who will use scans such as an MRI or CT to diagnose an acoustic neuroma.

What causes Acoustic Neuromas?

It is thought that acoustic neuromas arise because of a defect in a gene that typically prevents tumours from growing. It is unclear why this gene is defective in some people. As mentioned earlier, acoustic neuromas are also sometimes associated with neurofibromatosis type II. Because these tumours are so slow-growing, people typically do not begin experiencing symptoms until after the age of thirty.

How are Acoustic Neuromas treated?

Treatment begins with a period (usually a long period) of medical monitoring. This involves check-ups to monitor symptoms, repeated imaging studies, and the use of hearing aids if appropriate. Annual visits to an ENT will usually suffice due to the slow growth of the tumours.

If the tumour grows large enough, an ENT may opt for one of two other treatments: radiation or surgery. Radiation does not remove the tumour; rather it prevents it from growing more. Surgery is dependent on the person's age, medical condition, and the size of the tumour. Because the tumour grows on the vestibulocochlear nerve, a person will often have no measurable hearing post-surgery. Balance problems may also be present following surgery, but these balance issues usually improve quickly because of compensation from the vestibular system of the unaffected side. The fifth and seventh cranial nerves can be at risk during surgery as well, leaving a chance of facial weakness or numbness following the surgery.

What research is being done on Acoustic Neuromas?

In order to improve our understanding of acoustic neuromas, researchers are currently looking into causes of acoustic neuromas and improvements in surgical techniques. Genetic studies are being conducted in attempts to isolate the specific gene(s) associated with acoustic neuromas and the reasons they may become defective. Surgical techniques are also being investigated in order to minimize damage to surrounding nerves when removing tumours.

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