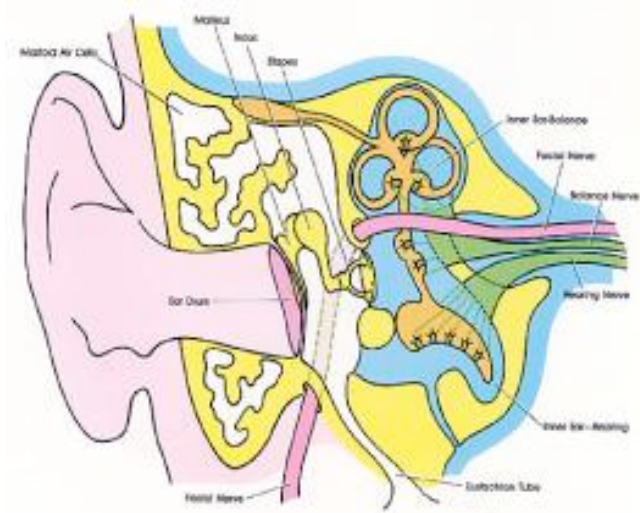




## Acoustic Neuroma



An acoustic neuroma is a benign or non-cancerous growth that arises from the 8th or vestibulo-cochlear nerve.

The neuroma is found near the part of the nervous system that connects the brain to the spinal cord.

The nerves that may be affected by the tumour are involved with hearing (Cochlear), balance (Vestibular), movement of the facial muscles (Facial) and sensation of the face (Trigeminal). The cerebellum, the part of the brain controlling coordination can also be affected. An acoustic neuroma is a slow growing tumour which and is usually present for a number of years before symptoms start.

These nerves lie adjacent to each other as they pass through a bony canal, from the inner ear to the brainstem. This bony canal is called the internal auditory canal (IAC) and it varies in length. The tumour can extend into the auditory canal and compress the nerves found within.

### CAUSE

The cause of acoustic neuroma is unknown.

Acoustic neuromas usually grow very slowly over a period of many years in the internal auditory canal of the ear. They typically remain within their capsule or lining and displace the surrounding nerves and brain tissue very slowly pressing on the nerves causing signs and symptoms described following.

### SIGNS AND SYMPTOMS

Patients with acoustic neuroma may present with the following symptoms:

- Hearing loss.
- Ringing in the ears (tinnitus).
- Dizziness (vertigo).
- Difficulty in balance (imbalance or dysequilibrium).
- Fullness or pressure in the ears.
- Facial numbness or paralysis.  
(for very large tumours).

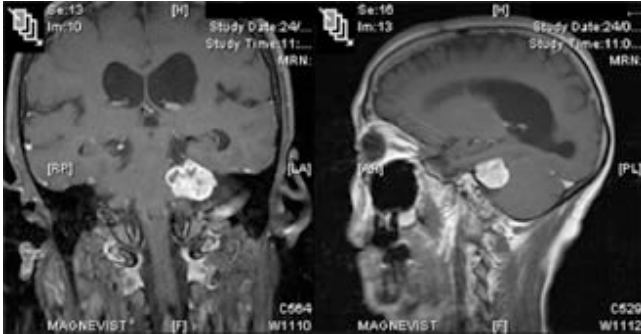
#### Hearing Loss

Over 90% of the patients with AN, the first symptom is a reduction in hearing in one ear due to involvement of the VIII nerve. This is usually accompanied by ringing in the ears or ear noise-also called "tinnitus". The hearing loss is usually subtle and worsens very slowly over a period of time. In some cases, there maybe a sudden loss of hearing. Some patients may experience a sense of fullness in the affected ear.

#### Vertigo & Imbalance

Since the tumour usually arises from the vestibular nerve, which is responsible for balance, unsteadiness or balance problems may be one of the earlier symptoms in the growth of the tumour. Since the remainder of the balance system compensates for this loss, balance problems may be forgotten after some time.

As the tumour grows larger in size and starts pressing over other nerves, mainly the trigeminal nerve, facial sensation may be affected. You may then experience numbness and facial tingling, constantly or intermittently. Patients may also have facial tics or spasms. As the tumour grows larger or presses on the brainstem, the patient will experience headaches, facial weakness, vertigo and unsteady gait due to raised intracranial pressure.



*Left – Coronal MRI of Acoustic Neuroma*

*Right – Sagittal MRI of Acoustic Neuroma*

## INVESTIGATIONS

- Blood tests – there are no specific blood tests to diagnose an acoustic neuroma. Routine FBE, electrolytes and clotting profiles will be performed prior to operative removal of an acoustic neuroma.
- Radiological imaging
  - CT Head/Base of skull – this will identify large tumours and give an indication of the bony structures to assist in surgery
  - MRI Head/Base of skull – this is the gold standard in diagnosis of an acoustic neuroma. It gives detailed images of the tumour and surrounding structures to plan and facilitate surgery.
- Acoustic Neuroma MRIs.
- Hearing tests
  - In most cases the patient will need to have hearing tests to see the amount of hearing loss due to the tumour. This may be performed as the initial test for hearing loss, or as a baseline once an acoustic neuroma is diagnosed.