

GAMMA KNIFE SURGERY

WEBINAR SUMMARY

Presented by Dr Annie Ho, Radiation Oncologist at Macquarie University Hospital



HOW COMMON ARE VESTIBULAR SCHWANNOMAS?

Vestibular Schwannomas (formally known as acoustic neuromas) are two different terms for the same tumour. They occur in the general population (people without a diagnosis of NF2) and have an incidence of 1:100,000. They are made up of Schwann cells and 95% are unilateral (one side only).

The incidence of NF2 is approximately 1:25,000-40,000.

WHAT MIGHT BE SIGNS AND SYMPTOMS OF VESTIBULAR SCHWANNOMAS?



High frequency hearing loss or a feeling of congestion in the ear



Tingling or facial numbness



Tinnitus (ringing in the ear)



Headaches



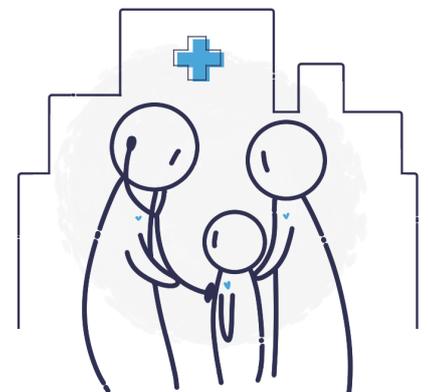
Dizziness and gait disturbances



Disorientation

WHAT DETERMINES TREATMENT OPTIONS?

- Age
- Size of tumour
- Patient expectations
- General health
- Quality of life factors
- Location of tumour - if bilateral, then hearing is considered.



WHAT ARE THE CURRENT TREATMENT OPTIONS?

Observation (Watch and wait / monitoring only). In a lot of cases, the growth rate can be less than one millimeter per year.

Microsurgery - surgery aims to reduce the size of the tumour and to preserve hearing. Surgery will also be determined by the type of tumour. There are risks associated with any surgery including infection, hearing loss, headaches and bleeding.

Surgeons try to preserve other cranial nerves (especially the trigeminal), but the facial nerve can be damaged in 10-40% of cases.

Radiotherapy - gamma knife / LINAC (linear accelerator - single dose of radiotherapy)

Fractionated Radiotherapy - several doses given in a course of treatment.

WHAT IS A GAMMA KNIFE?

Gamma Knife is a form of stereotactic radio-surgery that uses computer planning software to treat brain tumours with radiation therapy,

It delivers 192 cobalt sources of intense radiation which all converge onto the precise location of the tumour without impacting the surrounding tissue.

A frame is fixed to the patient's head to ensure stability and pinpoint accuracy.

Patients can be treated in a single day and it reduce the need for invasive surgery.

Watch the clips here:

- [Macquarie University Hospital](#), NSW
- [Princess Alexandra Hospital](#), QLD

WHAT DOES IT REALLY DO?

Radiotherapy hits the tumour cells and damages the DNA so that these cells can no longer multiply or reproduce.

Benign tumour cells have a very long life cycle, so changes to the tumour size may not be evident for 1-2 years after treatment.

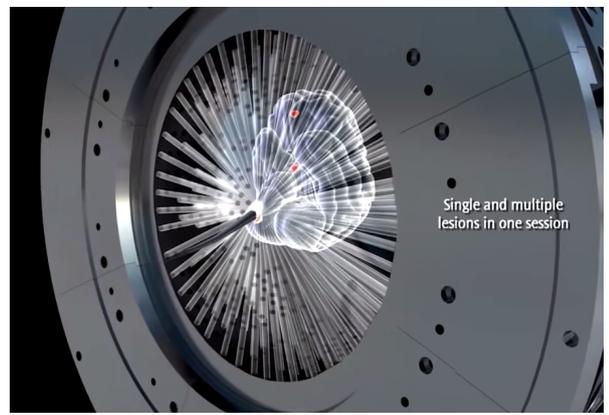
IT SOUNDS TOO GOOD TO BE TRUE, WHAT ARE THE DOWN SIDES?

Side Effects: the day of treatment can cause soreness, numbness or bruising. The tumour may continue to swell for the next three months, which may exacerbate symptoms (but can usually be treated with steroids).

Nasty side effects such as malignant transformation in NF2 (another tumour forming because of treatment) are rare at only 0.3% risk.

Availability: there are two Gamma Knife machines in Australia. One at Macquarie University Hospital (Private) in Sydney and one at the Princess Alexandra Hospital in Brisbane (Public, but for Queensland residents only).

Cost: Treatment is approximately \$26,000, but Medicare rebate 80% of this (out of pocket expenses are approx. \$4,000). A [foundation](#) has been established to assist in costs for treatment at Macquarie University Hospital.



HOW EFFECTIVE IS THE TREATMENT?

As stated, it can be some time until results are obvious; however, studies show that the tumours are controlled in 89-99% of cases after 5 years.

Most (50-80%) of these people had preserved hearing depending on the tumour location. Only half had preserved hearing if the tumour was located close to the cochlear, but people had an 80% chance of preserving hearing if the tumour was further away as the cochlear is sensitive to radiation.

Over 90% had undamaged facial and trigeminal nerves.

FOR MORE INFORMATION CONTACT

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