



Title: **Acoustic Neuroma**

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Introduction or Patient History

A 45 year old female was referred to The Nebraska Medical Center in February 2006 from her physician in Kearney NE. The patient was experiencing symptoms such as dizziness, hearing loss and ringing in the ears (tinnitus) but otherwise felt normal. A routine brain MRI was ordered and performed on the same day. The MRI clearly demonstrated a 3 cm Acoustic Neuroma in the right internal auditory canal. The patient was then scheduled for surgery to remove the tumor. Since the tumor was quite large and close to the facial nerve the physicians knew they would have to leave some residual tumor so the patient would not have facial paralysis. Novalis shaped beam radio surgery was then planned to remove the rest of the tumor. Novalis radio surgery uses a high energy x-ray beam shaped to precisely obliterate tumors within the brain. Because of the precise nature of Novalis radio surgery, the patient must have a Novalis planning MRI which will demonstrate the exact location of the residual tumor. Upon the completion of the MRI, a Novalis treatment plan will be arranged. At this time the patient will require radiation to the brain which is given 30 times over several weeks to help spare her right facial nerve.

Patient Preparation and Scan Set up

This exam was performed on a 1.5 GE Signa scanner. The patient was screened for any ferrous materials that could be found in or on the body and then changed into a hospital gown. Once the patient was found not to have any metal on their bodies they were positioned in the scanner. The patient was positioned supine with their head placed in the 8 channel GE head coil. While in the head coil, the patient's head was aligned straight and a special mask that was made in Radiation Oncology was placed over the patients head. The patient was reminded to hold her head as still as possible and was given earplugs to help filter out the noise. The patient was also given a squeeze ball to use in an emergency situation.

MR Imaging Parameters

Five sequences were performed during the Novalis Planning to look for tumor recurrence and also to set up for radiation treatments.

Sequence	FOV	Slices	TR	TE	Spacing	Matrix	NSA
Axial T2	25	84	3500	102	2 skip Int	256	2
Administered 18 cc of Gadolinium Contrast							
Axial T1+C	25	88	400	11.7	2 skip Int	256	1
Sagittal T1+C	25	92	400	11.7	2 skip Int	256	1
Coronal T1+C	25	92	400	11.7	2 skip Int	256	1
Coronal T2 Fiesta	18	120	5.7	1.7	.8 skip -.4	448x256	4

Findings and Discussions

The results of the recent Novalis planning brain MRI demonstrated an increased contrast enhancement seen in the right internal auditory canal following a post right translabyrinthine craniectomy. There is a soft tissue mass within the right cerebellopontine angle which measures 9 mm by 7 mm and extends into the internal auditory canal. The mass does still enhance post contrast and is most likely residual acoustic neuroma. The brain is otherwise normal without any intercranial hemorrhage.

Conclusions

When studying this case I learned that Acoustic Neuromas are normally benign tumors that account for 8% of all brain tumors. This tumor which is called a schwannoma arises from the myelin forming cells of the 8th cranial nerve at the point where the peripheral part of the nerve meets the brain called the Hensen's node. Hensen's node is usually located in the inner ear canal that leads to our hearing apparatus, called the acoustic meatus. It is usually a slow-growing tumor and does not spread from its original site within the brain. They are most likely to be found in middle-aged adults and are more common in women than men. Acoustic neuroma may be found in people with the disease neurofibromatosis. For most people, surgery is the best form of treatment for acoustic neuroma. In many cases the tumor can be completely removed and no further treatment is necessary. In this case that tumor was not completely removed with surgery so the patient had to undergo Novalis shaped beam radiosurgery. Upon completion of the 30 fractions of radiation the tumor was completely gone and the patient had no facial paralysis or complications.

References



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Images

