

# **Evolution in the Management of Acoustic Neuroma (Vestibular Schwannoma)**

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# **Acoustic Neuroma : *Evolution in Management***

- **Patient Presentation**
- **Detailed Disease Evaluation**
- **Natural History of the Condition**
- **Skull Base Team & Training**
- **Management Options**
- **Technical Innovations**
- **Outcomes Assessment**

# **Acoustic Neuroma : *Evolution in Management***

## **The Patient's Perspective**

- **Earlier presentation**
- **Better understanding of symptoms**
- **Information available to Patients**
  - Media / Internet*
- **Greater expectations of:**
  - Doctors*
  - What Technology can offer in 21<sup>st</sup> Century*

# Acoustic Neuroma : *Diagnosis*

**Presentation** is most commonly to ENT  
Surgeon

*Hearing Loss / Tinnitus*

*Imbalance*

*Other*

*Pain / Discomfort*

**Diagnostic Imaging**

*MRI - Screening Protocols*

*MRI - with Gadolinium **Gold Standard***

*Other*

# **Acoustic Neuroma : *Evolution in Management***

## **Disease Assessment**

<b>Tumour</b>	<b><i>Intracanalicular / CPA / &gt;2cm Fundus of IAC / Inner Ear Solid / Cystic</i></b>
<b>Hearing</b>	<b><i>SDS/PTA : 70%/30dB , 50%/50dB ABR Contralateral Hearing</i></b>
<b>Vestibular</b>	<b><i>Hypoactivity / Compensation</i></b>

# Acoustic Neuroma : *Evolution in Management 1*

**Pre 1980**    *Later diagnosis*

*Surgery the only treatment*

*Complete removal in “all” cases*

**Radiation**

**Q of L**        *Outcomes*    *Rx vs Rx*

*Rx vs No Rx*

**Implications of Treatment**

**Complications of Treatment**

# Acoustic Neuroma : *Evolution in Management 2*

## Natural History of the Condition

- Change of Management Practices

*Watch & Re-scan*

- Change of Treatment Practices

*Tumour Excision*

*Preservation of Function*

*Combined Therapy*

- 2019 : Complex Algorithm

# **Acoustic Neuroma : *Evolution in Management***

## **Team Approach to Management**

- **Training of Surgical & Medical Specialists**
- **Multi-Disciplinary Teams**
- **Case Load / Centralisation of Treatment Centres**
- **Institution Commitment (Hospital / University)**

***Staff / Equipment***

- **Financial Support for**  
***Service & Innovation***



# Acoustic Neuroma : *Evolution in Management*

## Observation

- Patient Symptoms

*Balance*

*Hearing*

- MRI

*First rescan at 6months*

*Then yearly*

- Hearing Monitoring

- Growth

*>2mm in any one dimension*

# **Acoustic Neuroma : *Evolution in Management***

## **Stereotactic Radiation Treatment**

- **Highly Focussed**
- **Tightly Conforming**  
*Rapid fall-off outside tumour volume*
- **Treatment Delivery**  
*Single vs Fractionated*  
*(Patient / Tumour / Hearing)*
- **Tumour Control >90%**

# Acoustic Neuroma : *Evolution in Management*

## Surgical Approaches

Via Inner Ear

*Trans Labyrinthine*

*Trans Otic*

*Trans Cochlear*

Sparing Inner Ear

*Middle Fossa*

*Retro Sigmoid*

*Retro Labyrinthine*

Combinations

# **Acoustic Neuroma : *Evolution in Management***

## **Surgical Aims**

### **Tumour Excision**

- ***Total***
- ***Near-Total***
- ***Sub-Total***
- ***Debulking***

### **Planned Incomplete**

***Single / Combined Treatment***

### **Unplanned Incomplete**

***Preservation : Nerve / Vessel / Brain***

**Follow-Up - *Additional Treatment***

# **Acoustic Neuroma : *Evolution in Management***

## **Surgical Techniques & Innovations**

- **Microsurgery**
- **Anaesthesia**
- **Technical Innovations**
  - Monitoring CNs*
  - Navigation*
- **Endoscopic Surgery**
  - Assisted*
  - Exclusive*

# **Acoustic Neuroma : *Evolution in Management***

## **Reporting Results**

**Facial Nerve Grading Systems**

**Hearing Outcome – *AAO HNS* (1995)**

**Levels of Evidence (Nikolokopoulos 2002)**

## **Research**

**Clinical Audit and Case Review**

**Presentation & Publication of Results**

**Meta Analyses**

# Acoustic Neuroma : *Evolution in Management*

## Implications & Complications (*Pooled Data*)

### Facial Nerve

Anatomical Preservation	> 93%
H-B Grades 1 & 2	80%
H-B Grades 3 & 4	15%
H-B Grades 5 & 6	5%

### Hearing Preservation

Cochlear Nerve Preservation	< 68%
Useable Hearing	< 60%

### Vertigo / Imbalance

?

### CSF Leak

2 -15%

### Headache

~ 10%

# Acoustic Neuroma : *Evolution in Management*

## Conclusions

- Practice is evolving
- We must embrace the change
- Critically evaluate patient outcomes
- Critically evaluate new

### *Technology/ Approaches / Techniques*

- Provide appropriate education and skills acquisition in standard and novel techniques
- Aim is to achieve the best patient outcomes