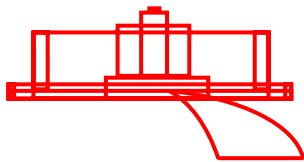


Vestibular schwannoma: Surgery or not ?

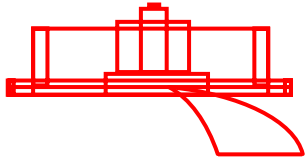
A. Bozorg Grayeli¹, M. Kalamarides², D. Bouccara¹,
A. Rey² & O. Sterkers¹

*Otolaryngology (1) and Neurosurgery (2) Departments
Hôpital Beaujon, Université Paris 7, France*



Introduction

The early detection of smaller vestibular schwannomas and a better knowledge of surgical outcome has led to a progressive change in the therapeutic strategy.

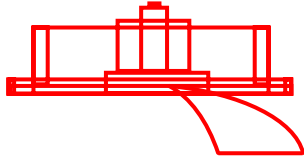


Decision making

- Therapeutic indications depend on :
 - ✓ size
 - ✓ ipsi- and contra lateral hearing
 - ✓ age and general status
 - ✓ growth rate (for stages 1 and 2)
- Consideration of individual benefit/risk ratio.

Management

- Surgery
- Conservative
- Radiotherapy

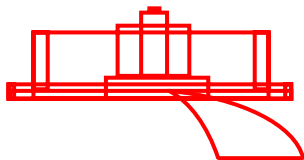


Surgery

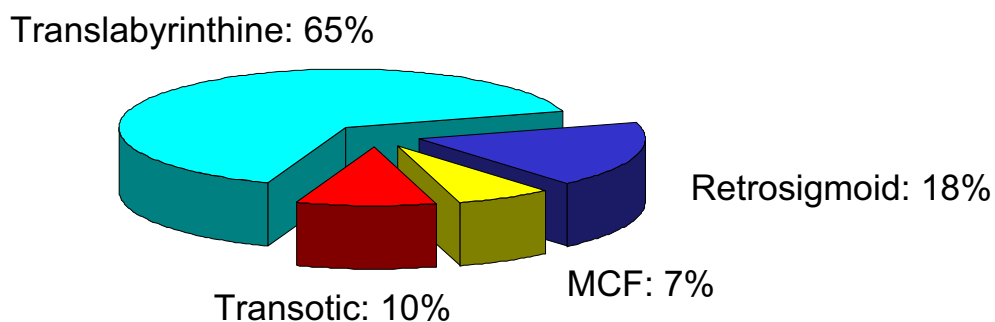
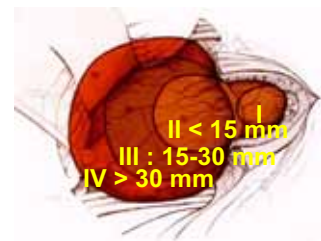
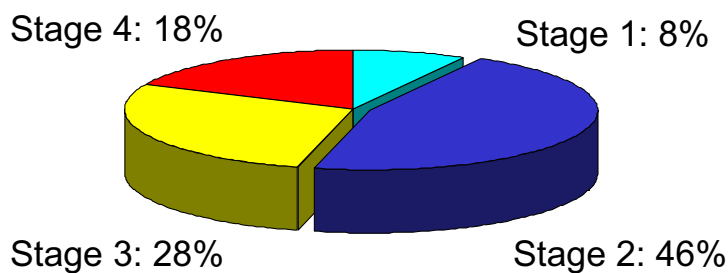
population and methods

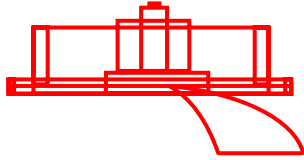
- 1990 - 2006 : 1006 operated solitary VS
- Mean age: 51 years (range: 13-85)
- 54 % of females and 46 % of males (sex ratio : 0,9)

- Types of approach :
 - **Middle cranial fossa (MCF):** intracanalicular VS with class A or B hearing (AAO-HNS)
 - **Retrosigmoid:** VS < 15 mm in CPA, class A ou B hearing, fundus free of tumor
 - **Translabyrinthine:** VS > 15 mm or < 15 mm with class C or D hearing or fundus involved
 - **Transotic:** SV > 15 mm with anterior or intracochlear extension

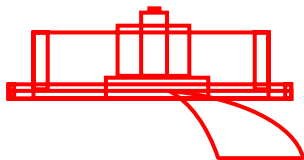
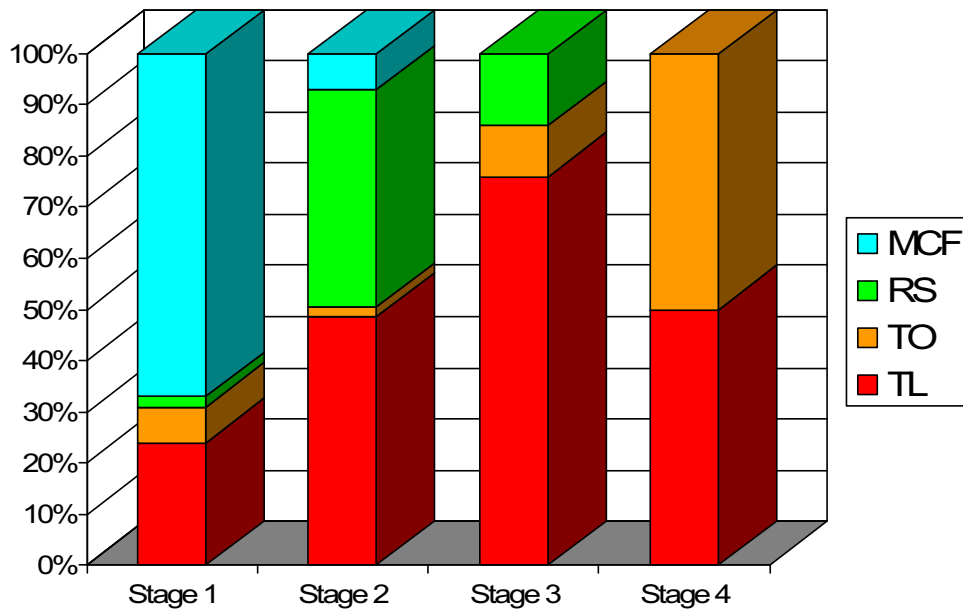


Tumor stages and approaches



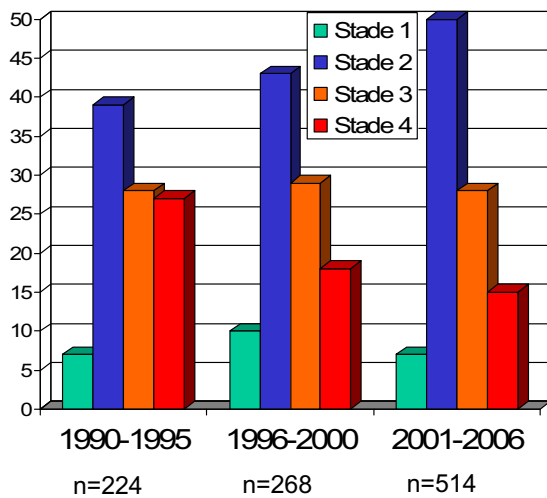


Approaches

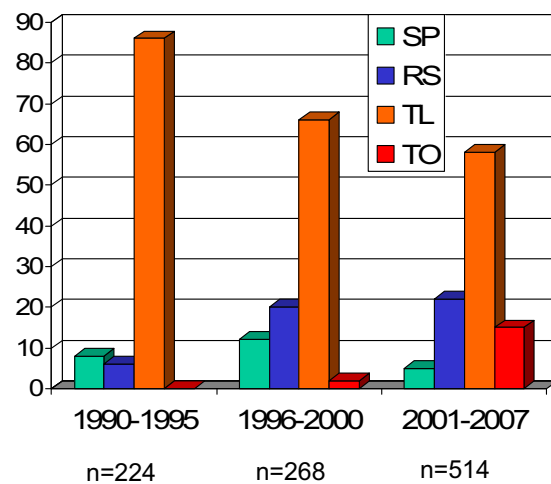


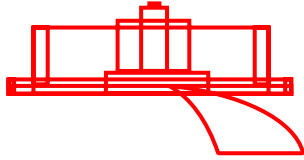
Evolution of tumor stages and approaches

% of cases



% of cases





Postoperative facial function

Grade 1: 61 %

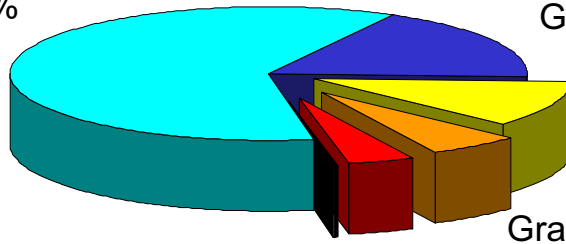
Grade 2: 18 %

Grade 3: 11 %

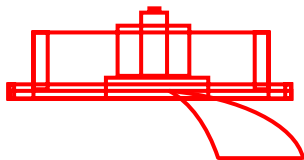
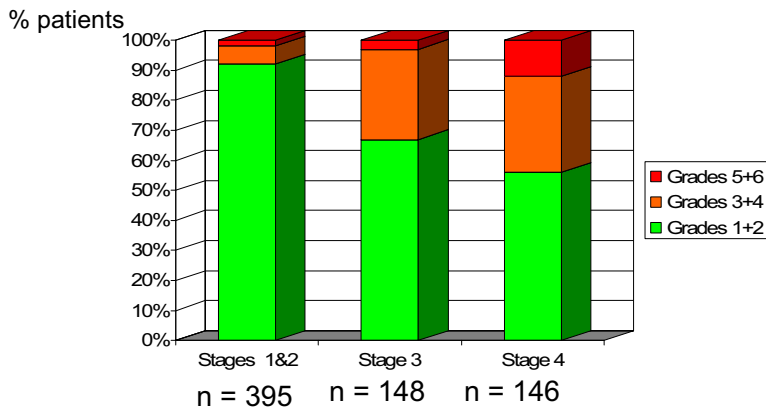
Grade 4: 6 %

Grade 5: 4 %

Grade 6: 0.4 %



House et Brackmann, 1 year postop., n=740



Prognosis of facial function

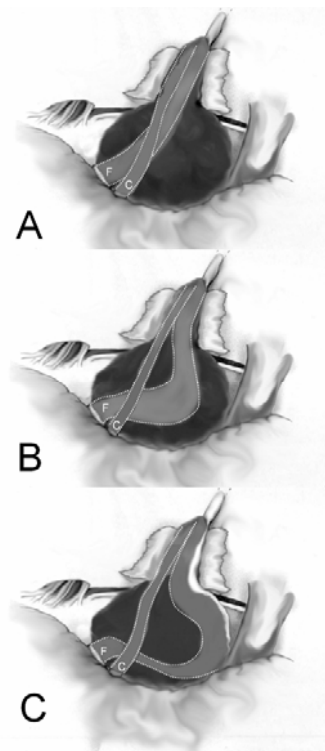
•Anatomical factors:

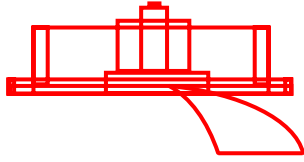
- Tumor size
- Adhesion
- Stretch
- Position



•Electrophysiological factors:

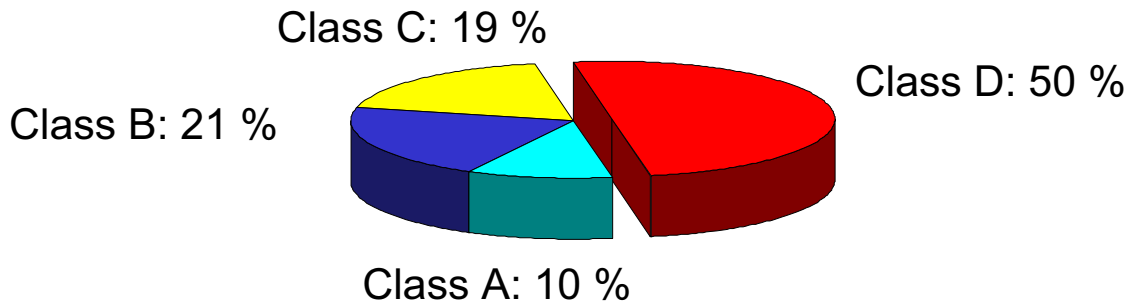
- Stimulation thresholds
- Response to supramaximal stimulation





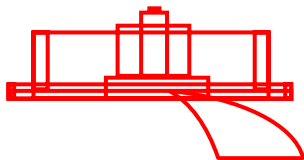
Hearing preservation

■ Preoperative hearing class A, B or C operated through MCF or retrosigmoid approach (n = 141)



■ Prognostic factors:

- Tumor stage
- MAI involvement
- Preoperative hearing



Complications

- Neurological: 1,6 %
- Infectious: 3 %
- Miscellaneous: 3 %
- Décès : 0,4 %

Resection quality

- Near total resection: 0,4%
- In case of total resection:
 - Nodular enhancements on postsop MRI: 2 % (n=640)
 - Documented recurrences: 0,2 %

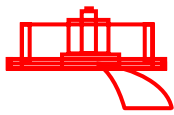


Conservative management

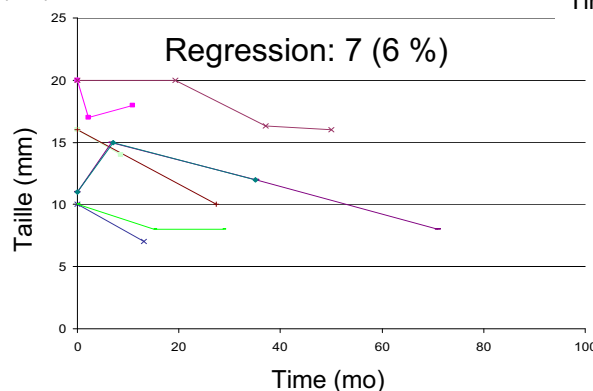
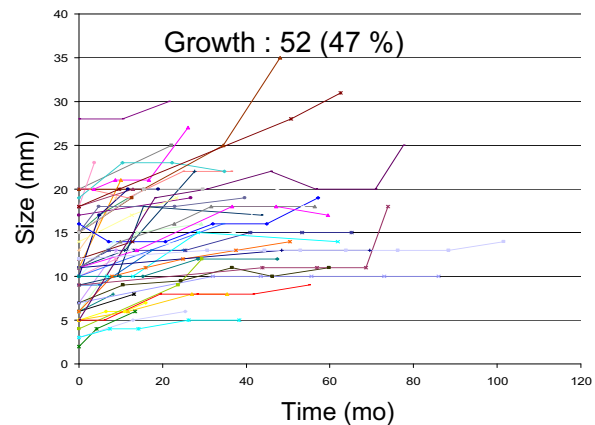
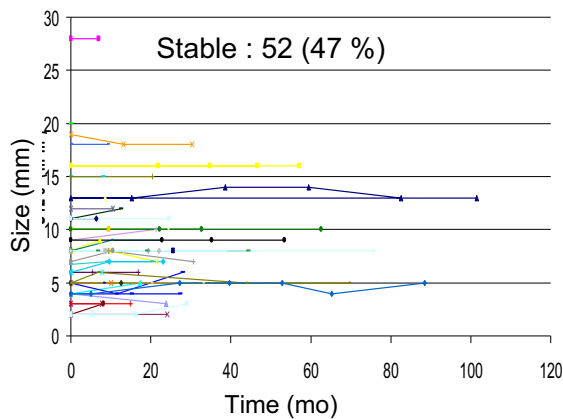
Material and methods

- 1990 – 2001: 111 patients
- Mean age = 59 years (range: 19-87)
- Mean follow-up period: 33.4 months (6-111 months)
- **Inclusion criteria :**
 - Intracanal (stage 1, 57%) tumours or tumours extending less than 15 mm in CPA (stage 2, 43%)
 - + Age > 60 years and/or surgical contra-indication
 - + No past history of tumour growth at first visit
 - or surgery refusal, and stable stage 1 or 2 tumours

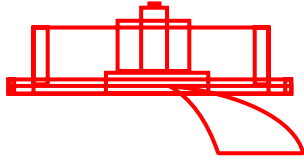
A. Bozorg Grayeli, et al. Acta Otolaryngol 2005, 125 :1063-8.



Tumor size



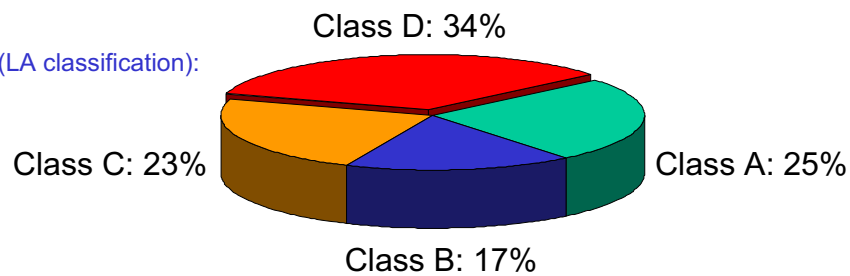
1-2 mm / yr : 18 (16 %)
2-4 mm / yr : 15 (14 %)
> 4 mm / yr : 7 (6 %)



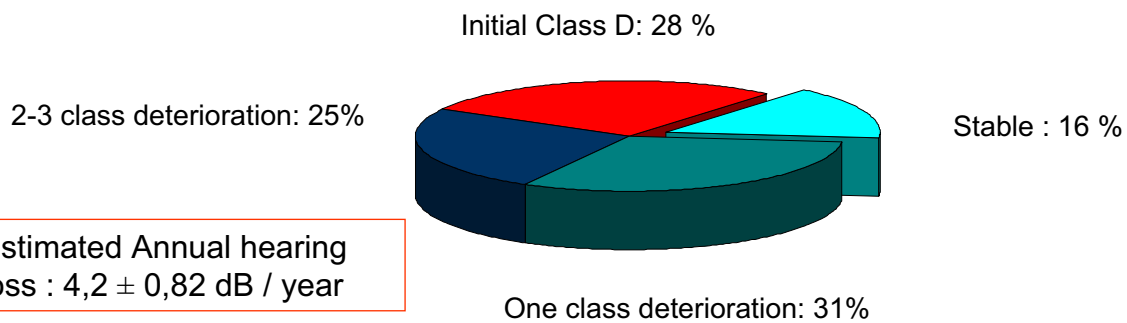
Results

Hearing function during Conservative management
(n=105)

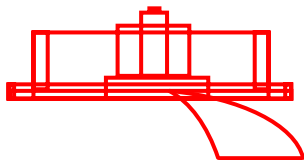
First visit (LA classification):



Last visit with follow-up > 36 months (n=32):

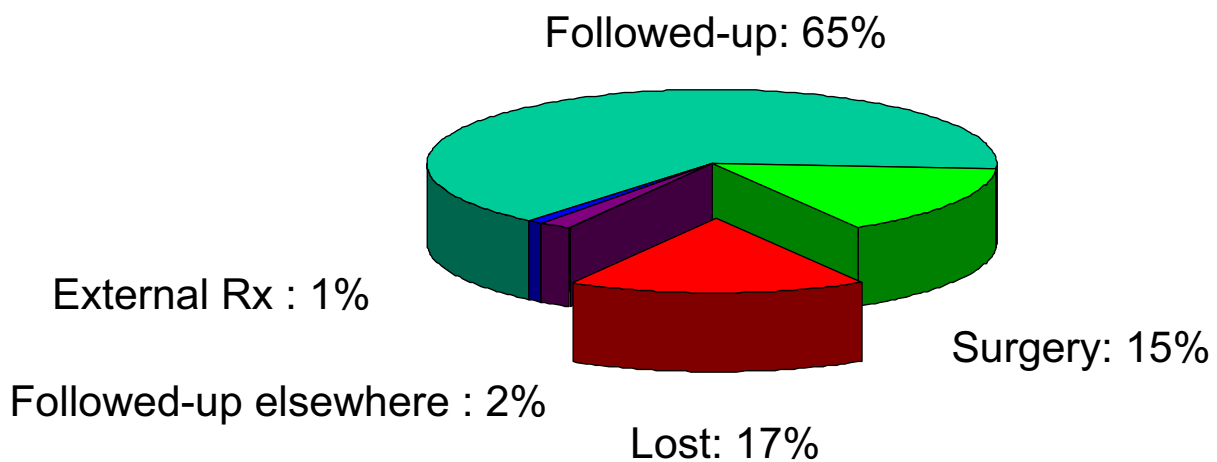


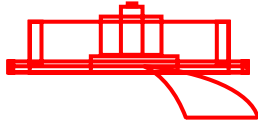
Estimated Annual hearing loss : $4,2 \pm 0,82$ dB / year



Results

Follow-up status at the end of the study

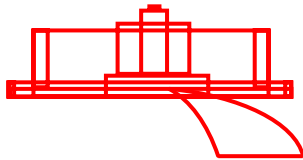




Conservative management

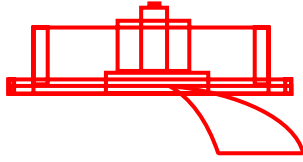
- The rapidly growing schwannomas justify a first follow-up MRI 6 months after the diagnosis.
- Hearing function deterioration concerns the majority of patients, and is correlated to tumour growth.
- Except in the elderly, there is no advantage for conservative treatment if there is no serviceable hearing.

A. Bozorg Grayeli, et al. Acta Otolaryngol 2005, 125 :1063-8.



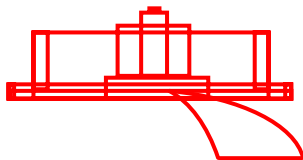
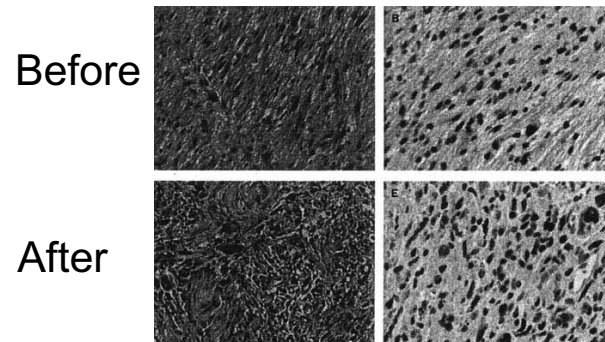
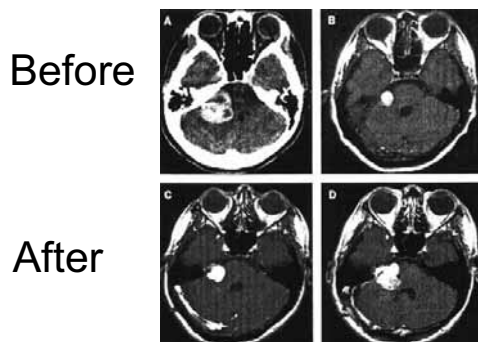
Radiosurgery

- Two techniques: Stereotactic radiosurgery (SR), and fractionated stereotactic radiosurgery (FSR)
- SR used extensively in a variety of benign intracranial lesions
- No controlled study showed that SR or FRS are better than no treatment



Limits of Radiosurgery

- Absence of tissue diagnosis
- Hampers secondary surgical resection
- Uncertain long-term risks:
 - Brainstem ischemia
 - Injury to cranial nerves
- Documented malignant change (*Shin et al., The Lancet, 2002*)

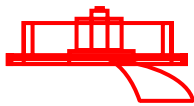
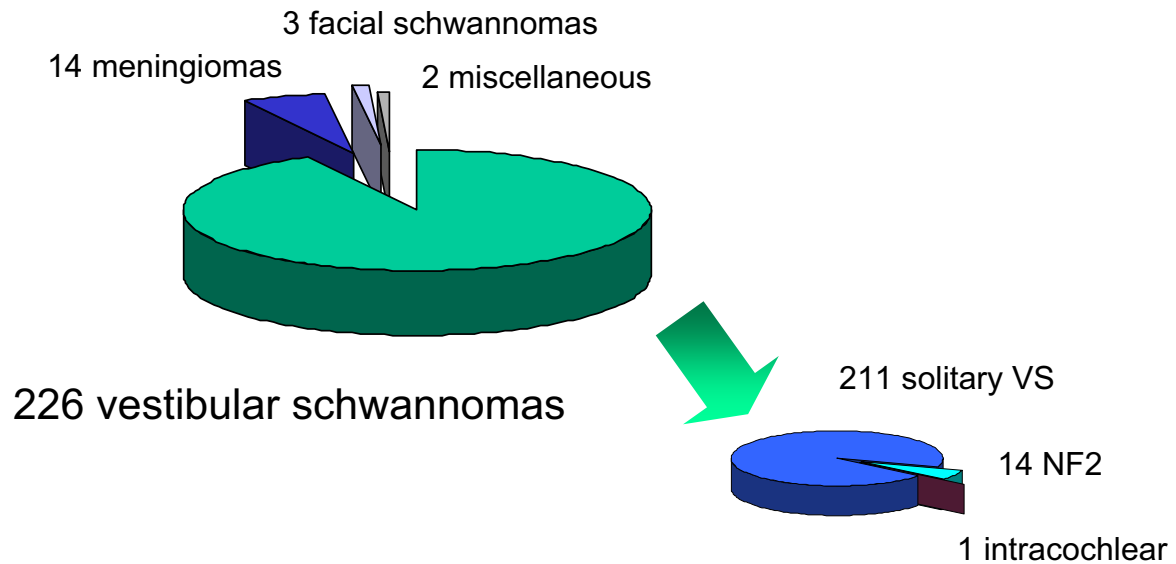


Radiosurgery

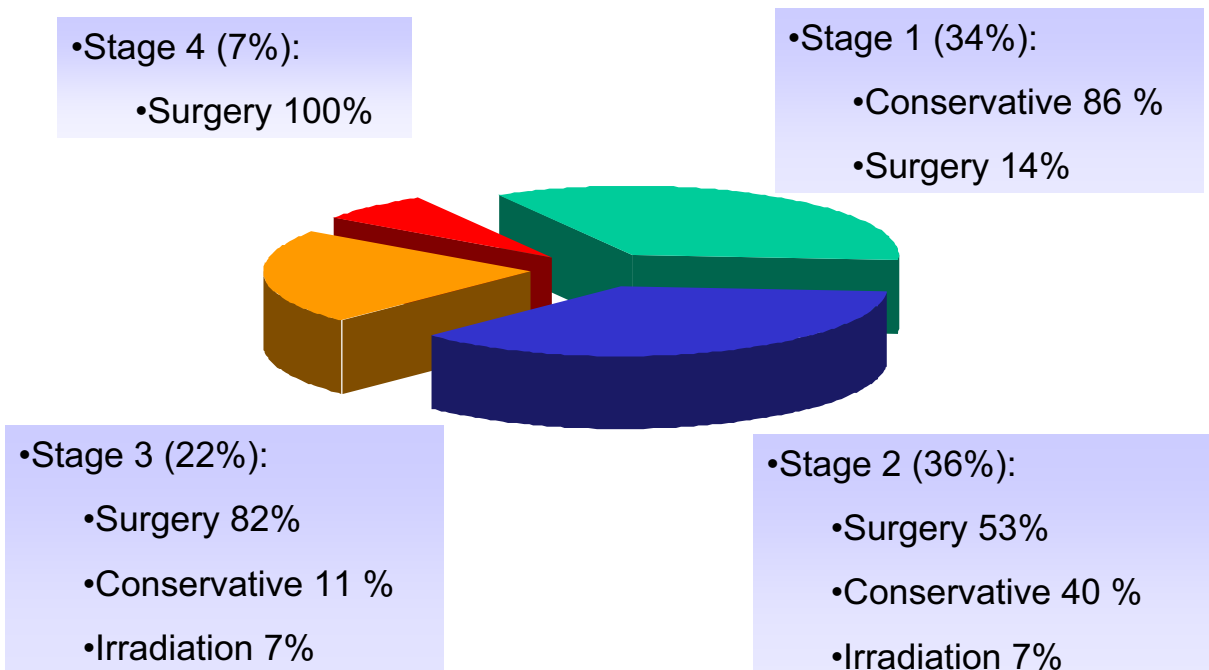
- With appropriate constraints, and safeguards, SR can be a safe, and effective therapy
- In case of contra-indicated surgery
- In small lesions

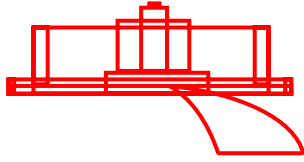


245 CPA tumors managed in 2005



Management in 2005





Conclusions

- The functional outcome of surgery improves with an earlier detection of VS.
- Improvements of imaging and intra operative electrophysiology lead to a more precise planning and prognostic information.
- Today, surgery remains the main therapeutic option especially in mid-size and large lesions.