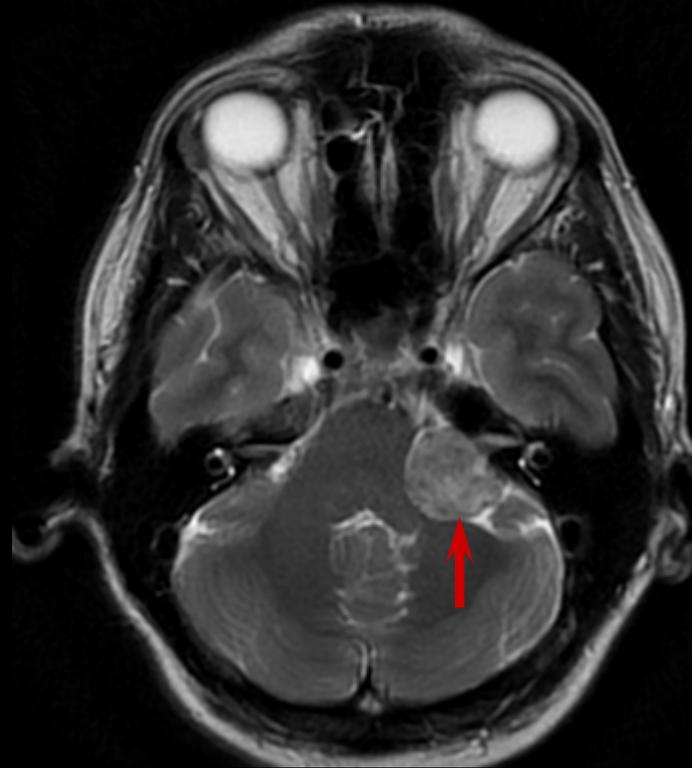


**Et spring fremad
i hørebevarende schwannom kirurgi
og
bevarelse af ansigtsnerven**

***Martin Nue Møller
ØNH, RH***



**Department of Oto-rhino-laryngology, Head & Neck Surgery, University Hospital Rigshospitalet and
Faculty of Health Sciences, University of Copenhagen, Denmark**

Naturhistorien - vækst

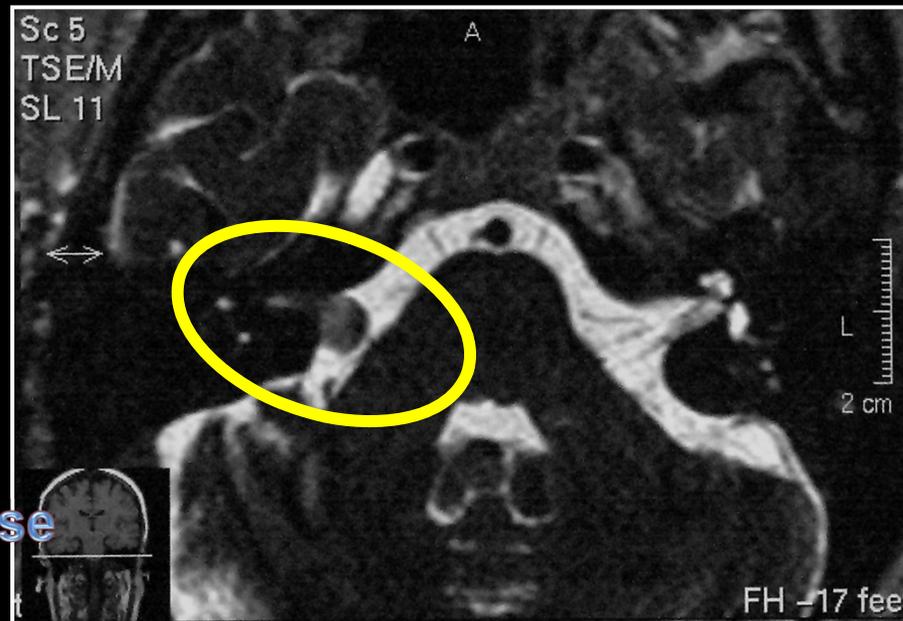
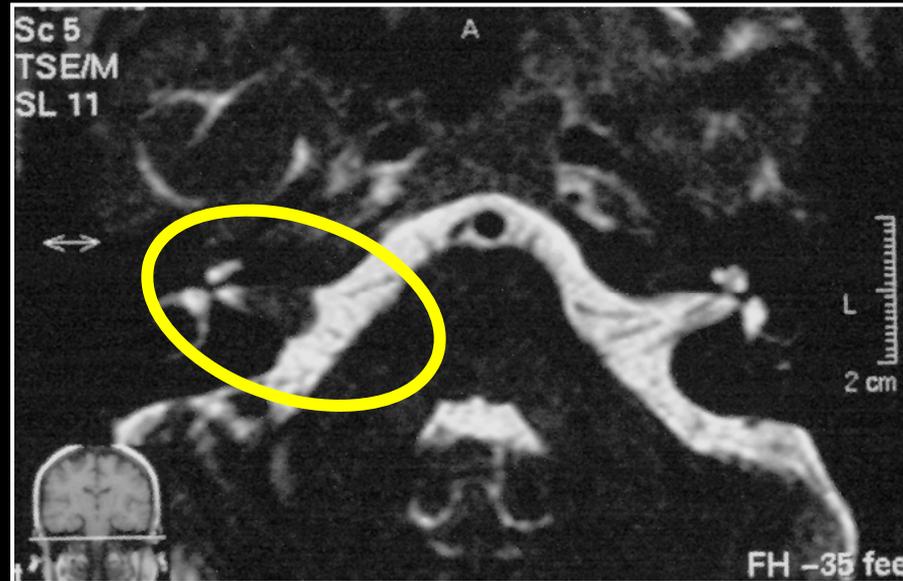
Definition af vækst - intrameatale tumorer

MR 01-06-2001

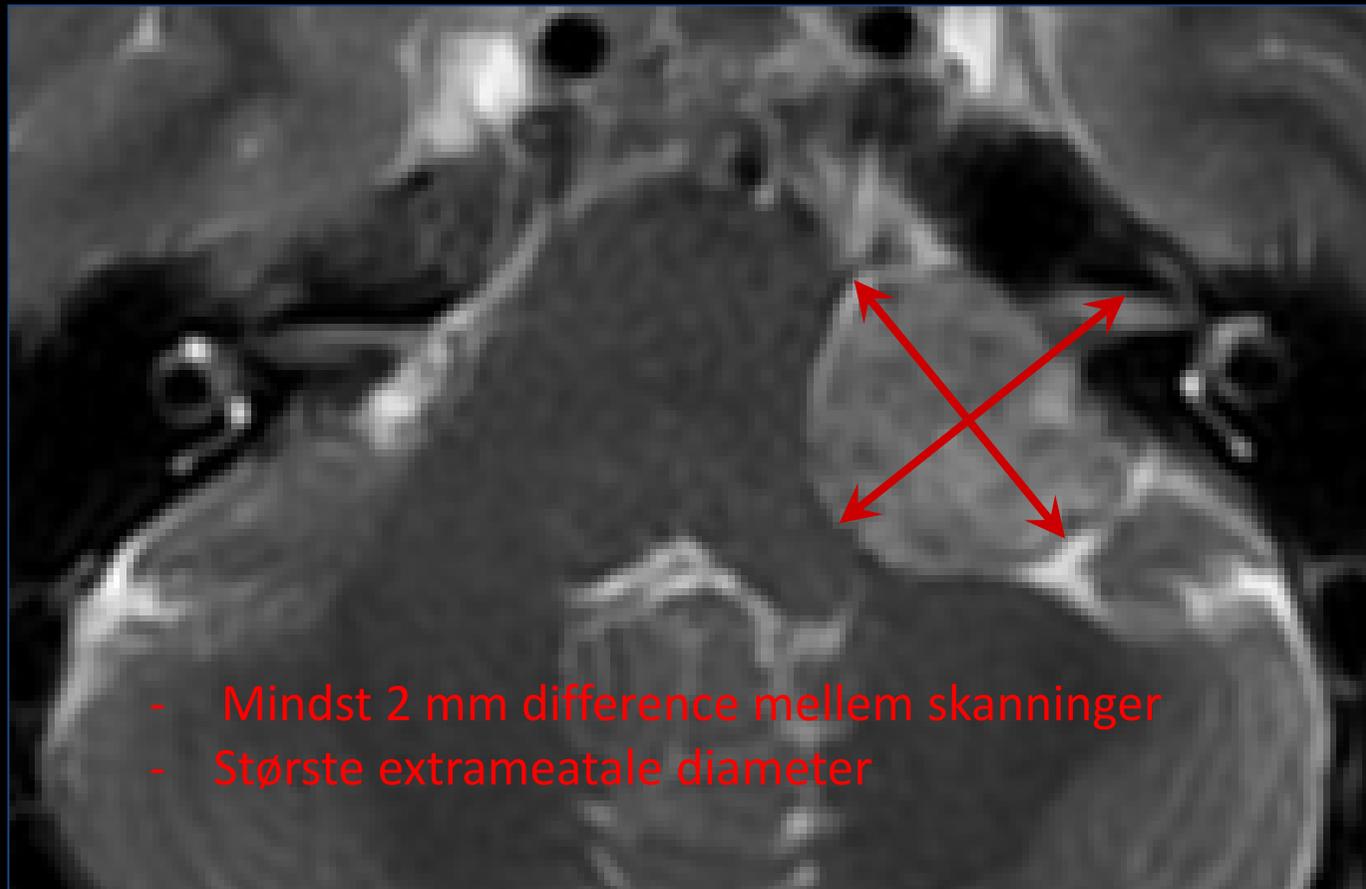


**06-06-2002
Et år senere**

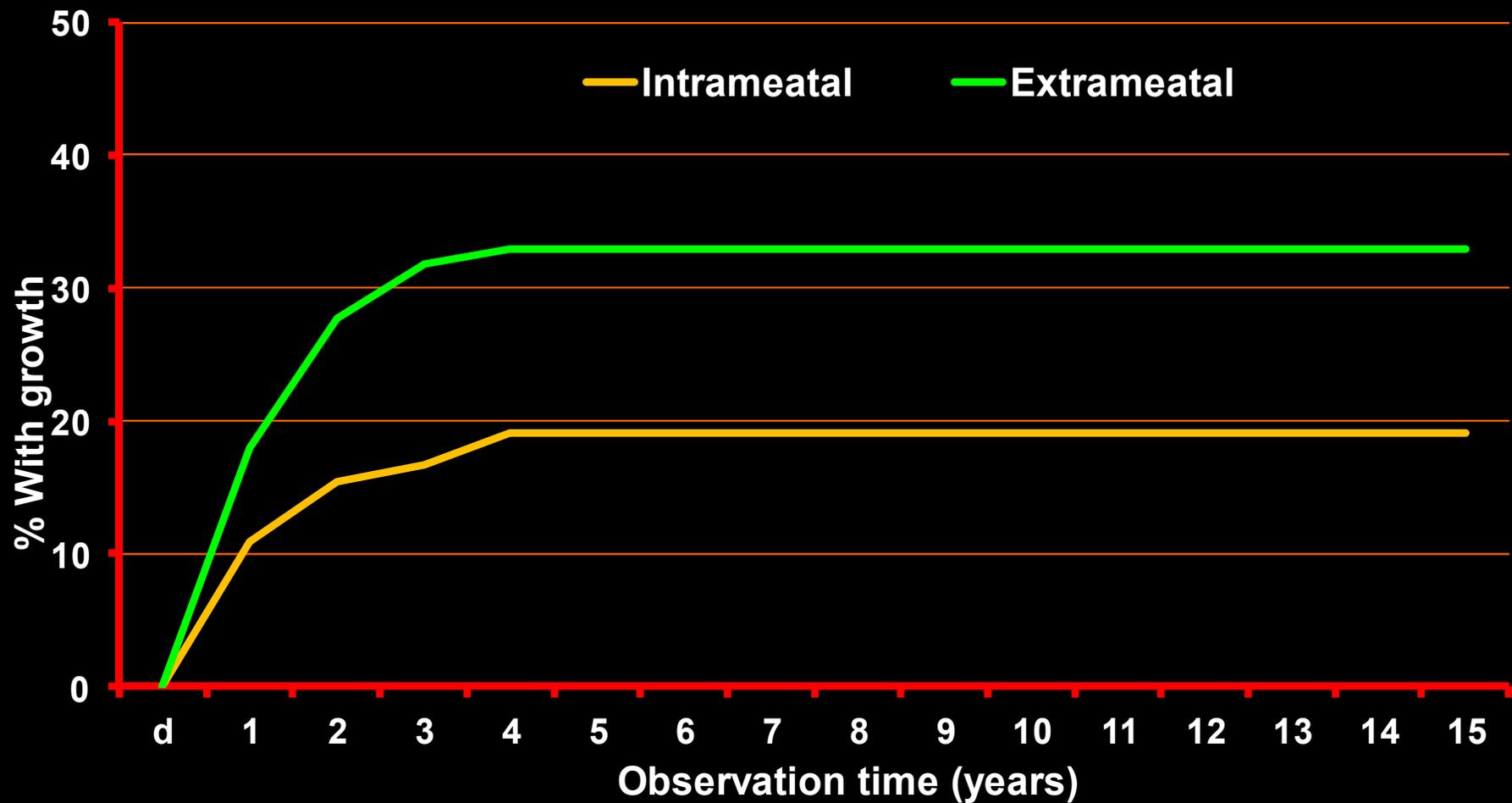
Vækst til extrameatal udbredelse



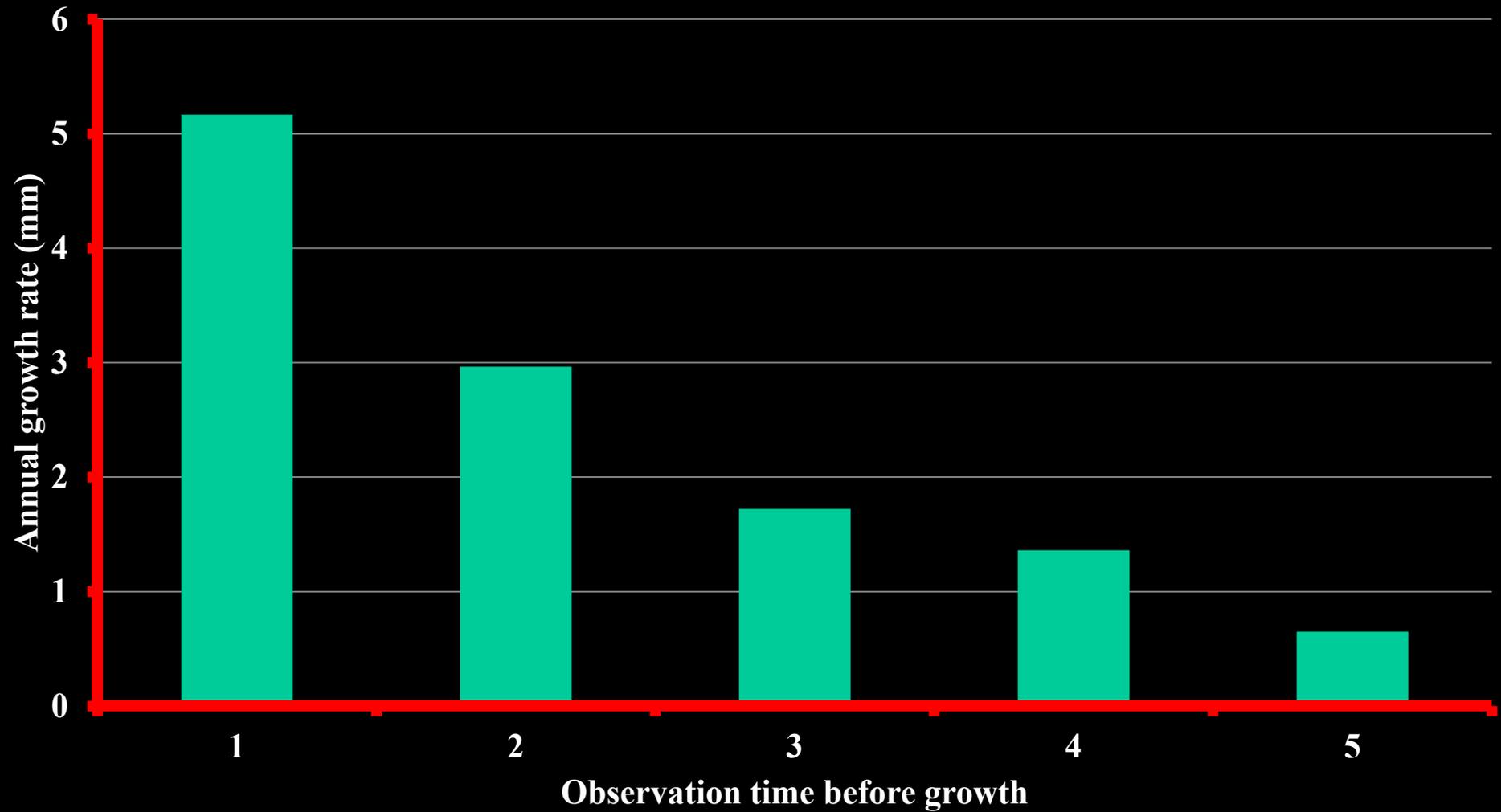
Definition af vækst- extrameatale tumorer



Kumuleret vækst Intrameatal and extrameatal VS



Vækst rate extrameatal tumorer



Opsummering

Vækst

Vækst efter diagnose:

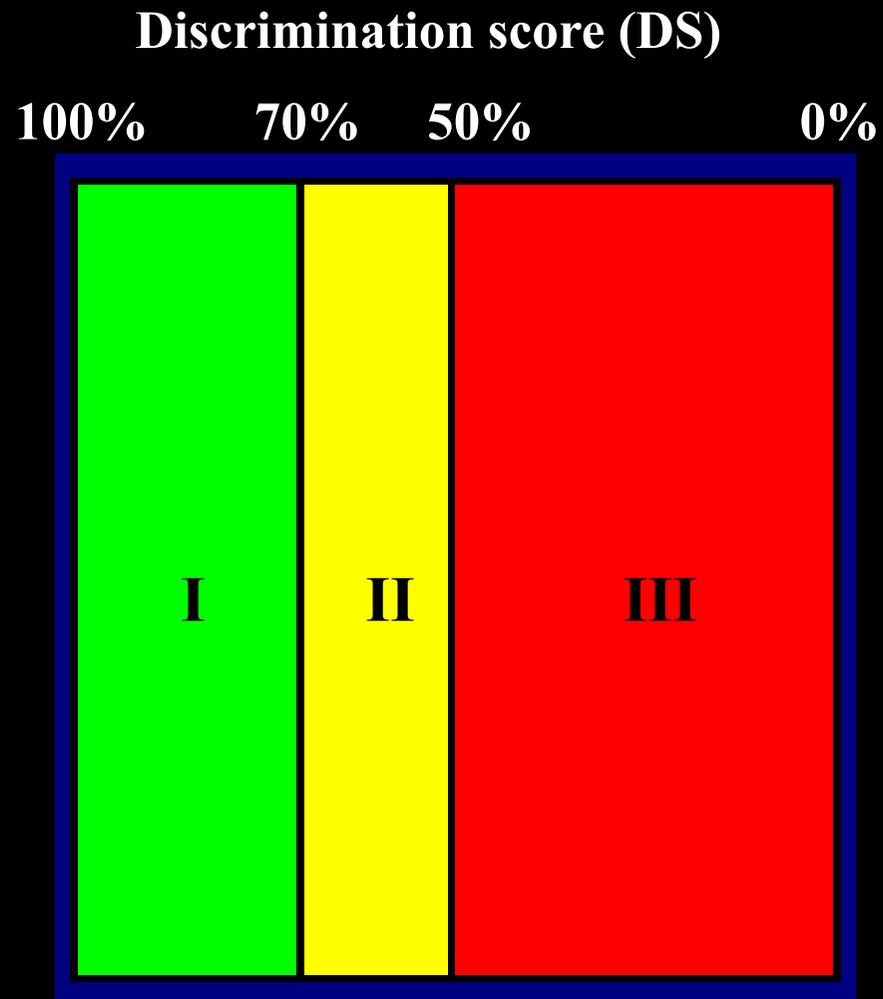
20% af intrameatal tumorer

35% af extrameatal tumorer

Vækst forekommer indenfor 5 år efter diagnose

Naturhistorien – hørelsen

Klassifikation af høre kvalitet ifølge Word Recognition Scoring classification (WRS)



Tale forståelse ved diagnose

Diagnosis

I (54%)

II (14%)

III (32%)

Tale forståelse - progression

Diagnosis

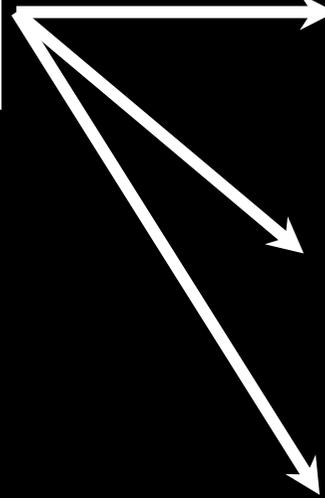
I

Last evaluation

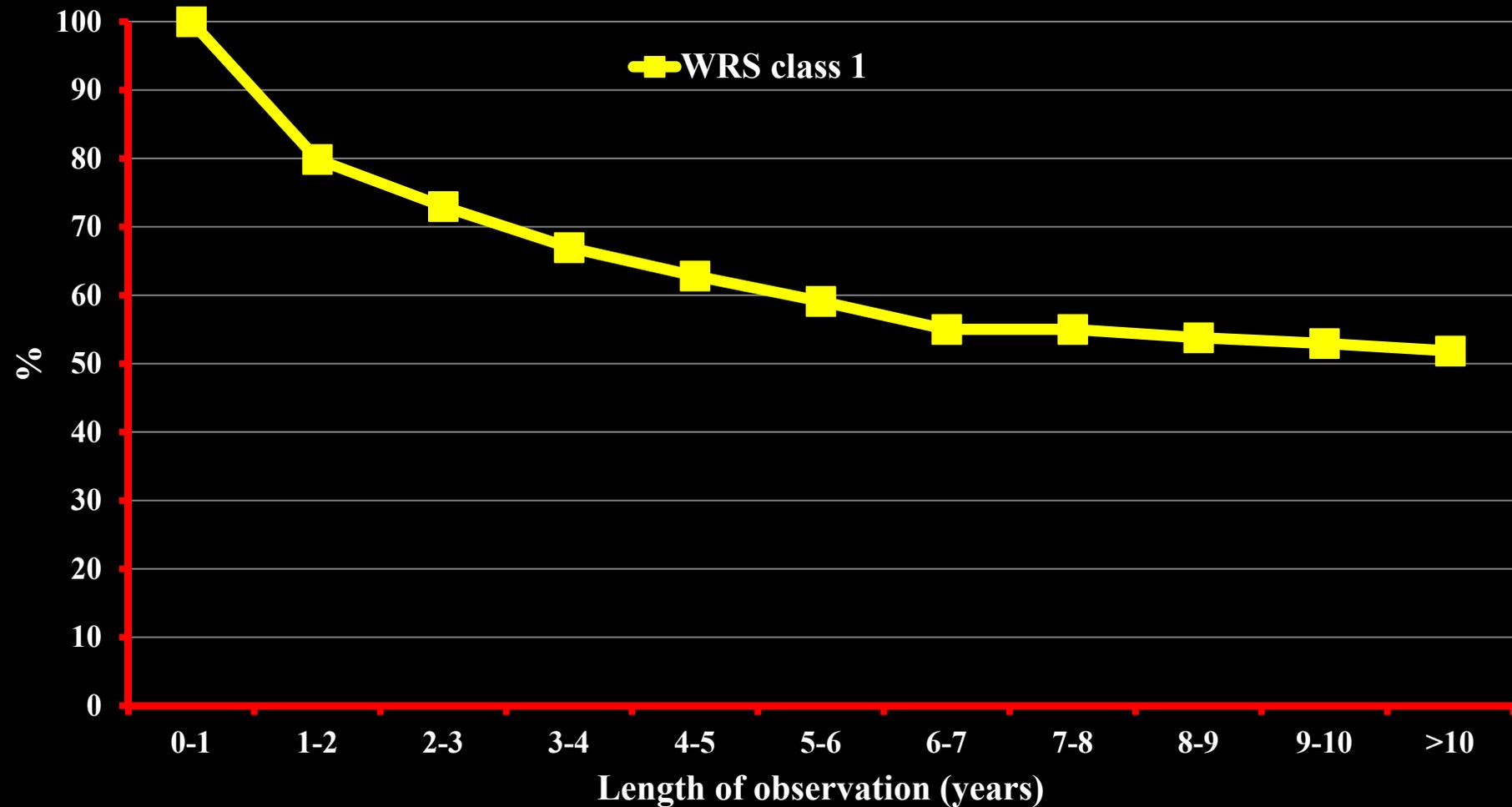
I: 58%

II: 14%

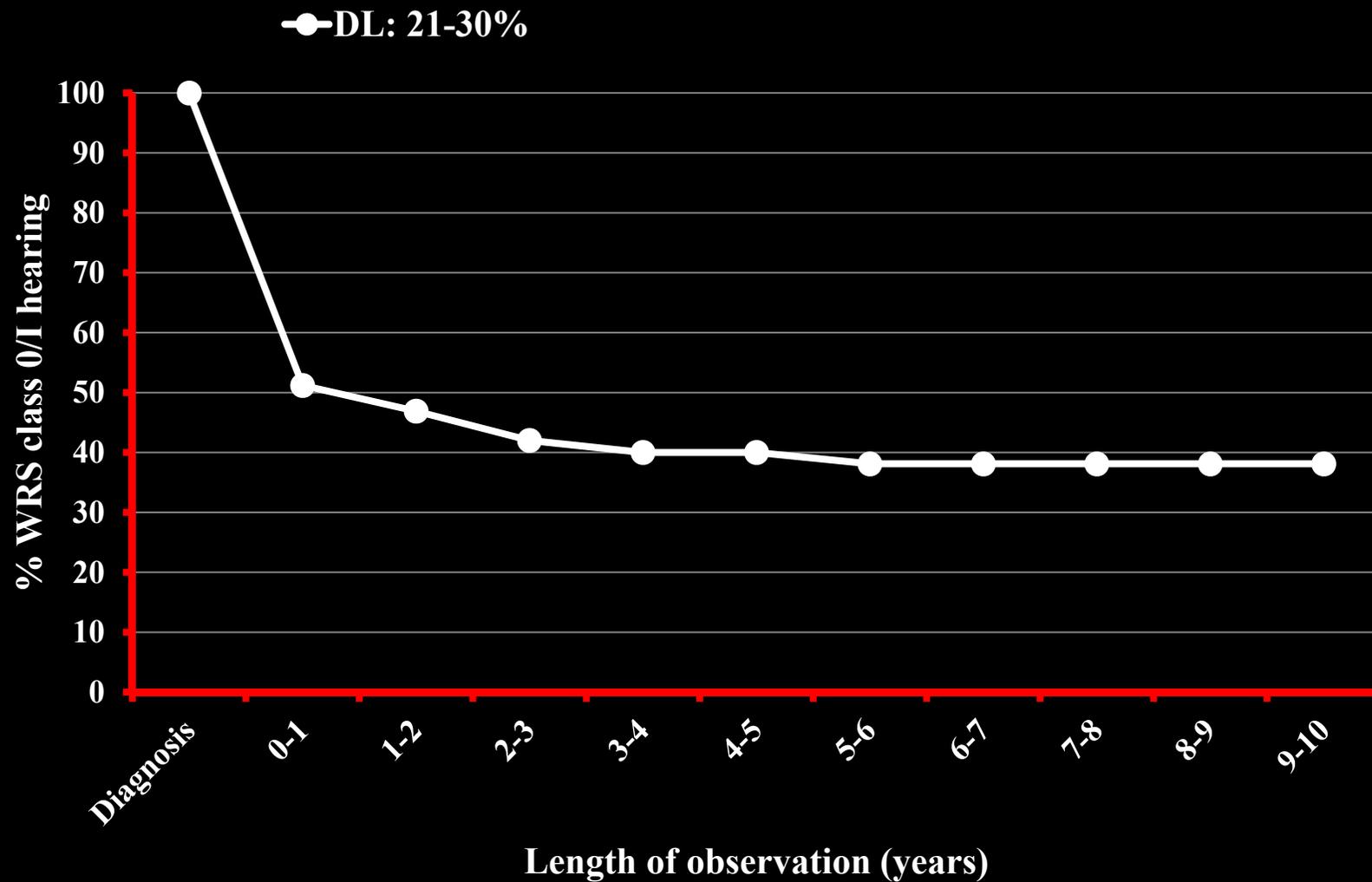
III: 28%



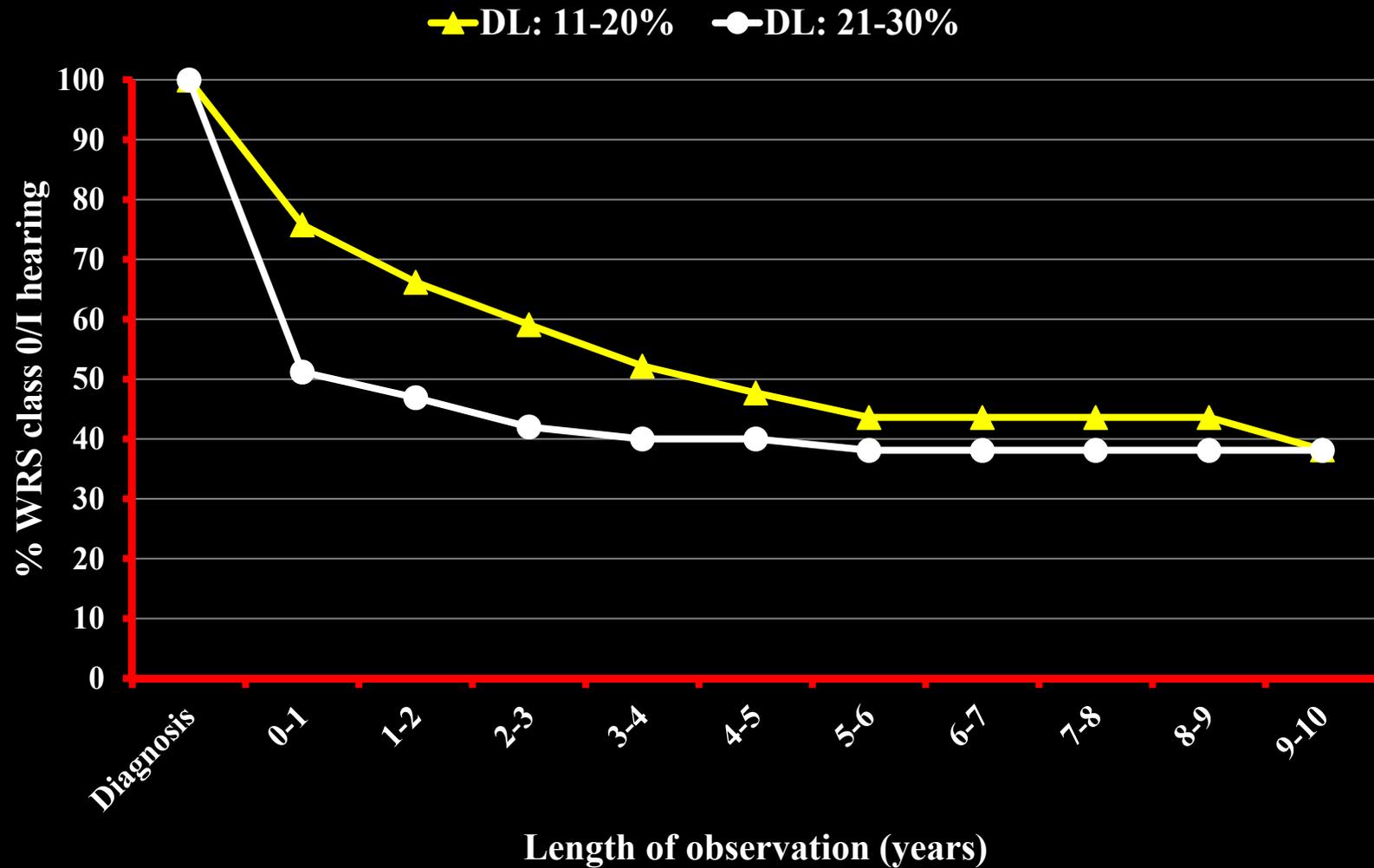
Tab af "god hørelse" under observation – wait and scan" for patienter med WRS class I



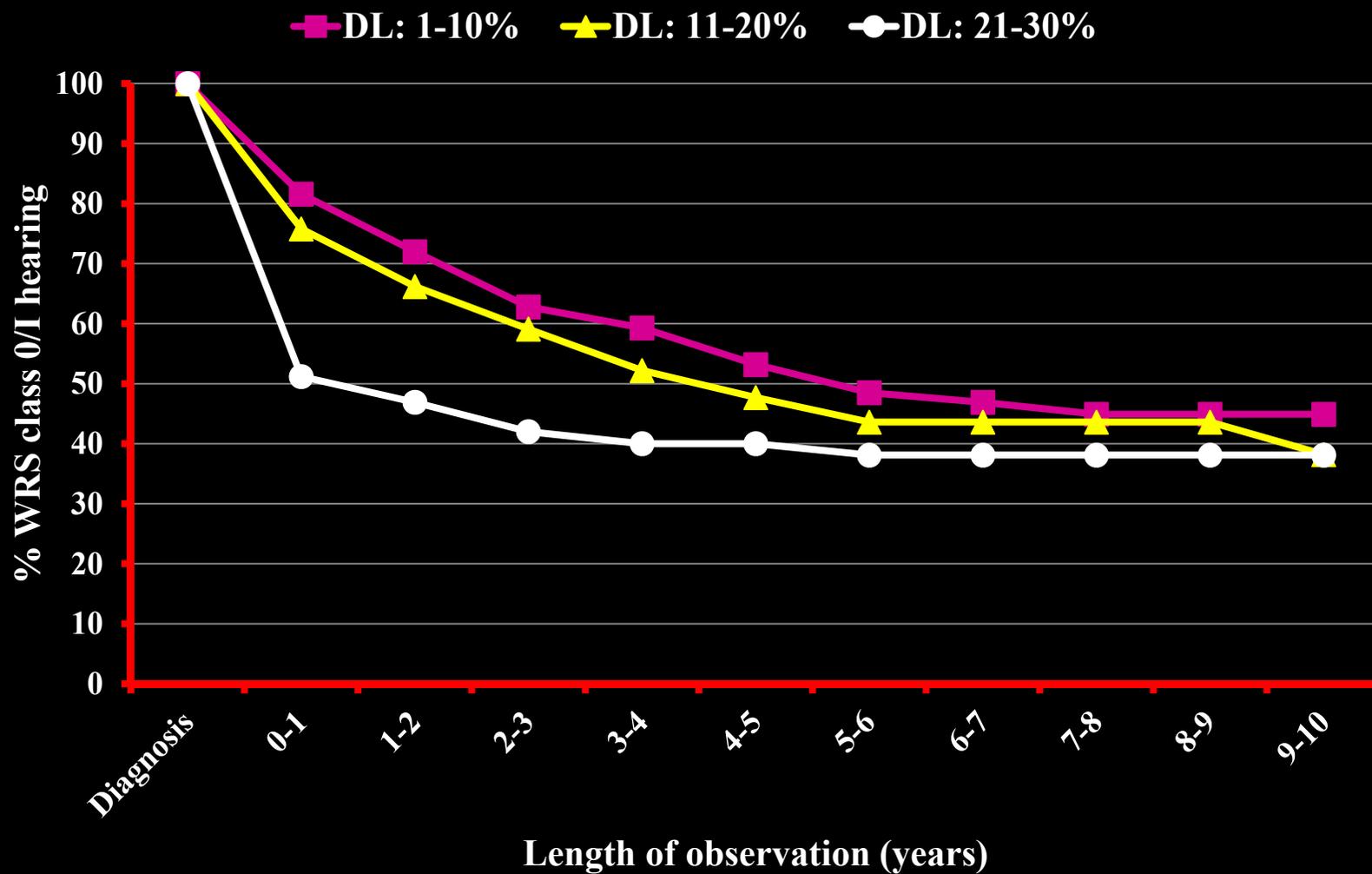
Tab af god hørelse (DL \leq 30%) in the different prognostic groups



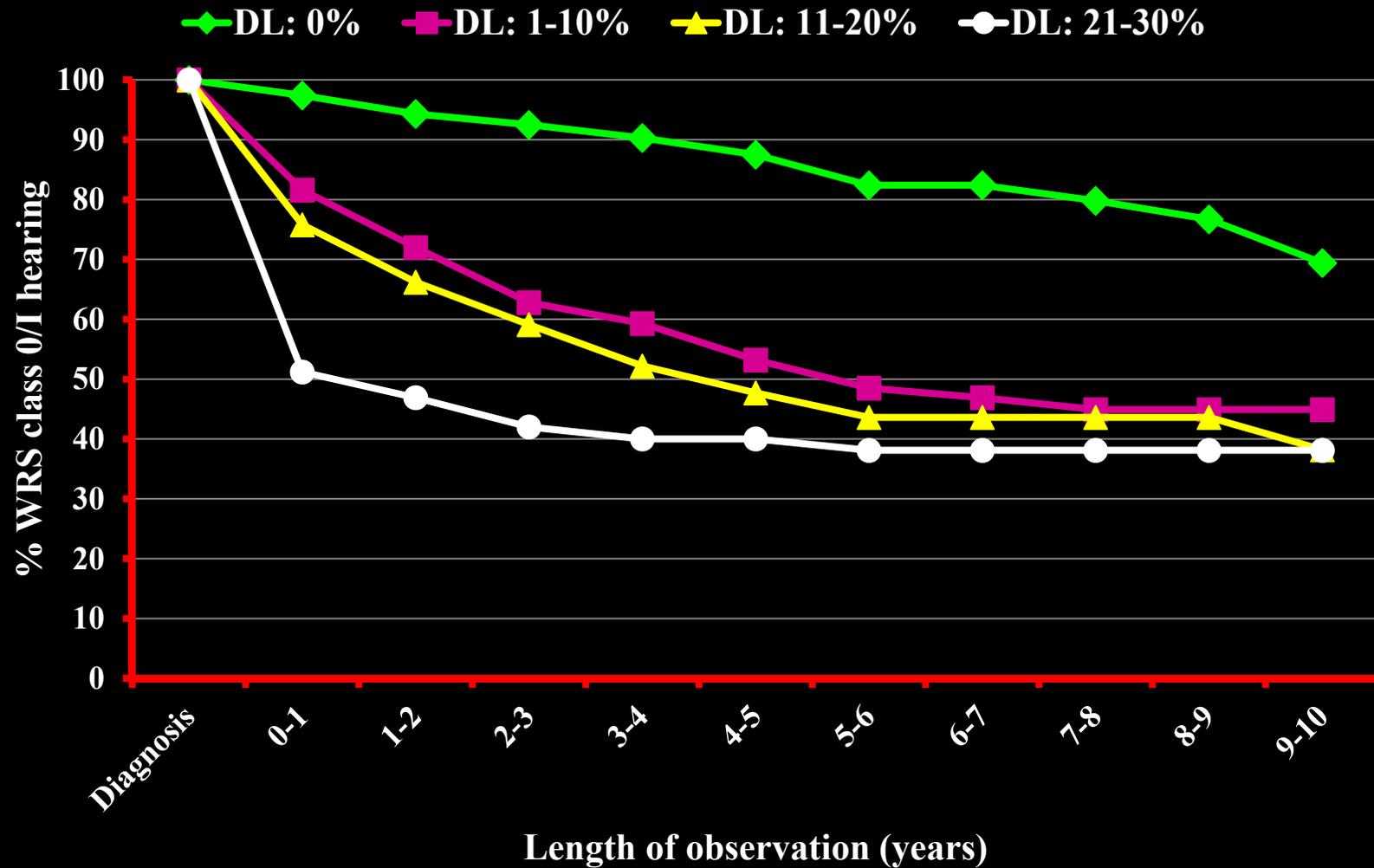
Loss of good hearing (DL \leq 30%) in the different prognostic groups



Tab af god hørelse (DL \leq 30%) i de forskellige grupper



Tab af god hørelse (DL ≤ 30%) i de forskellige grupper

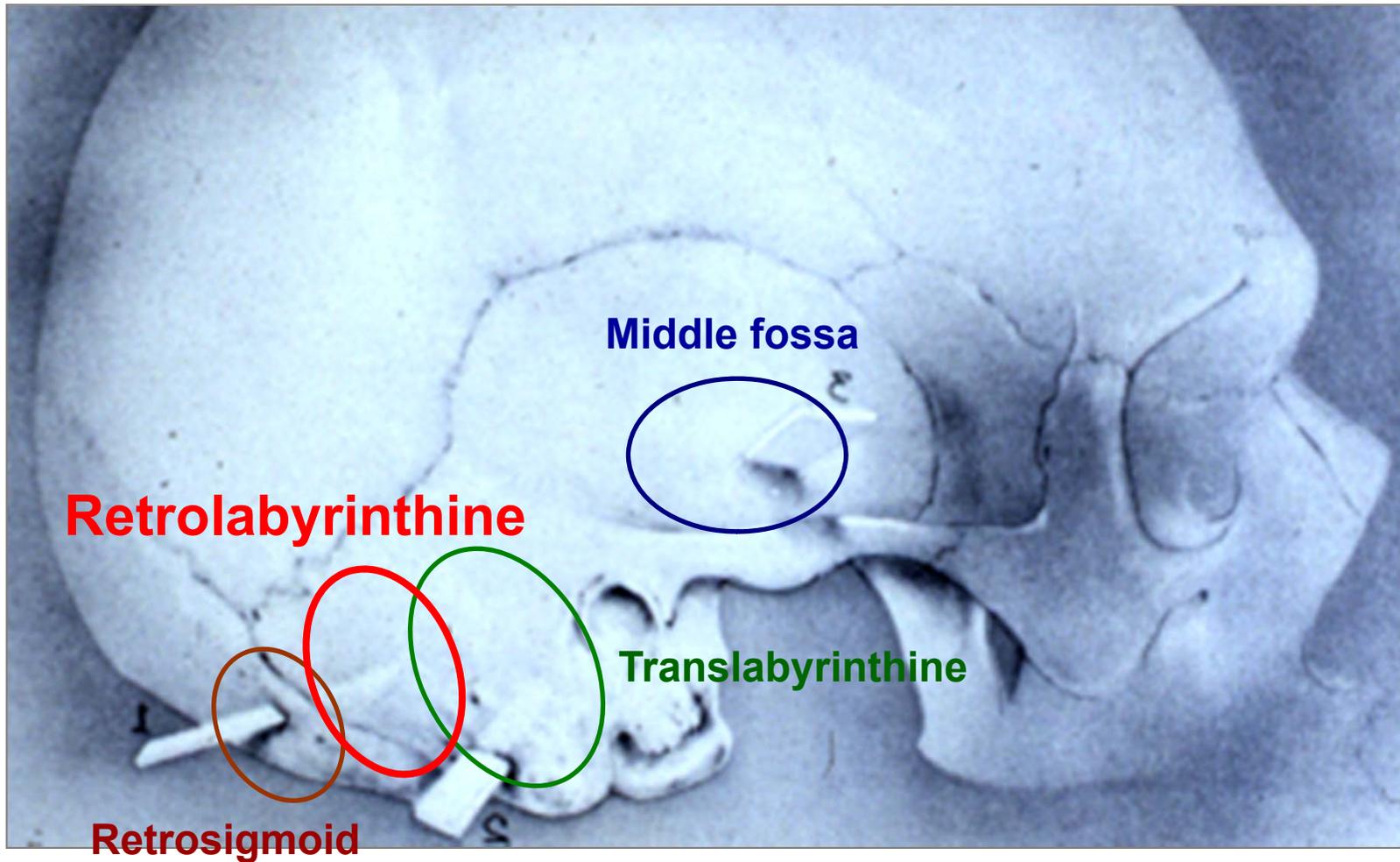


Opsummering Hørelse

- 50% har WRS class I Hørelse ved diagnosetidpunkt
- 60% bevarer class I hearing i wait & scan regime
- Patients with 100% talegenkendelse på diagnosetidspunk bevarer deres hørelse i mange år

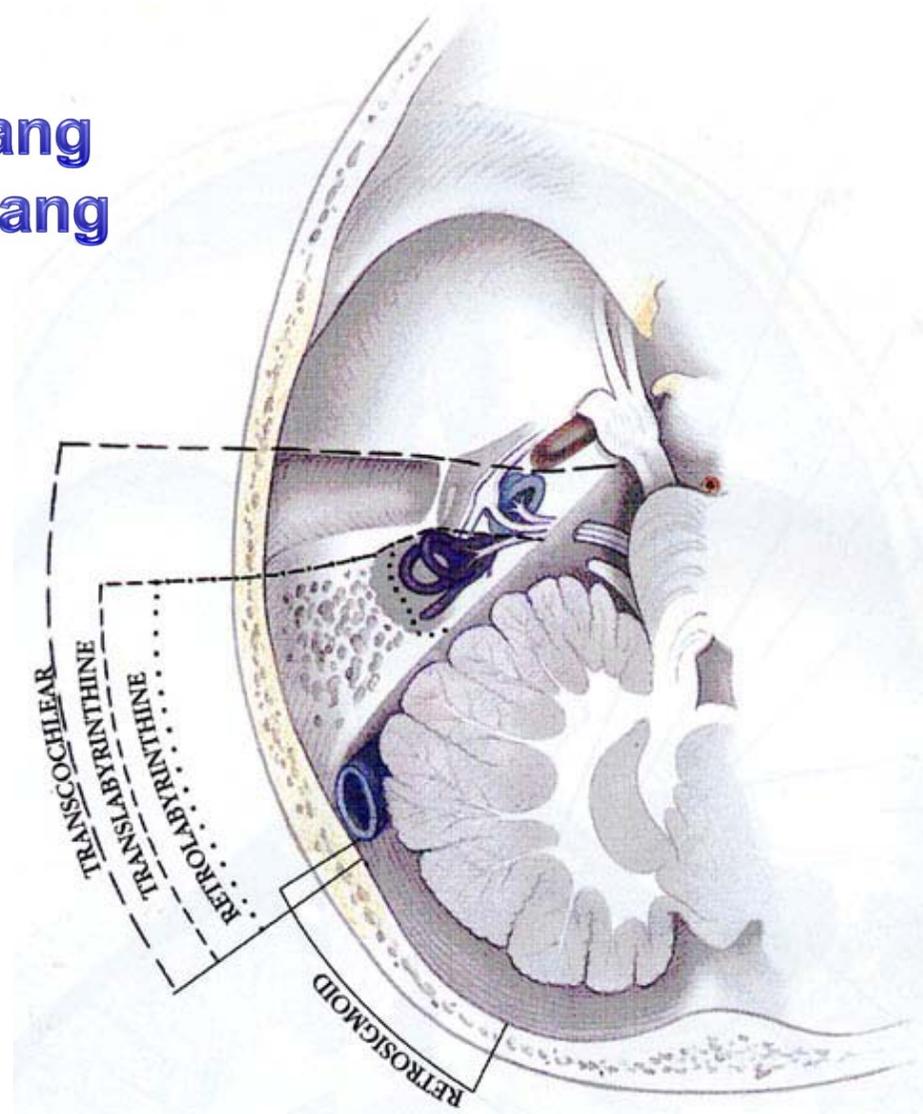
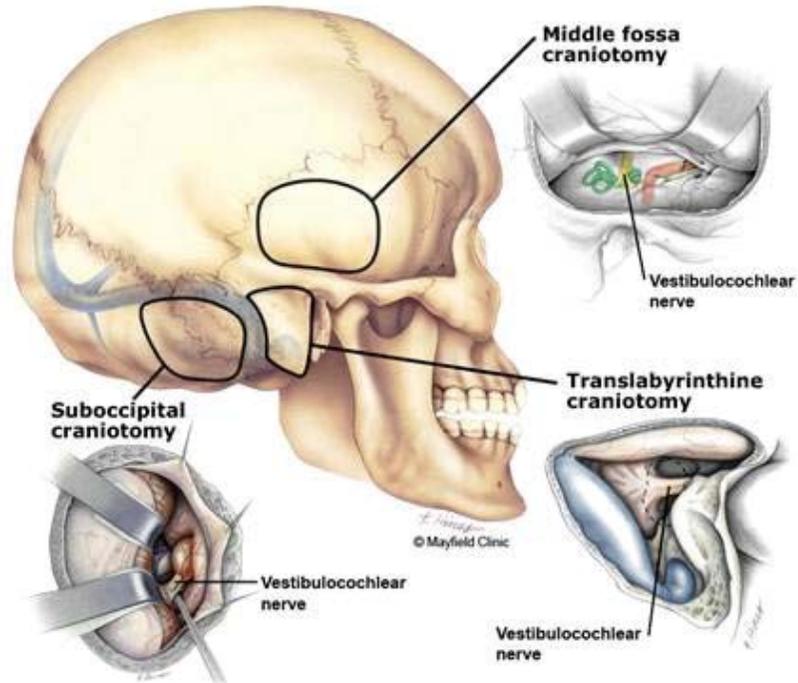
Vestibular schwannoma

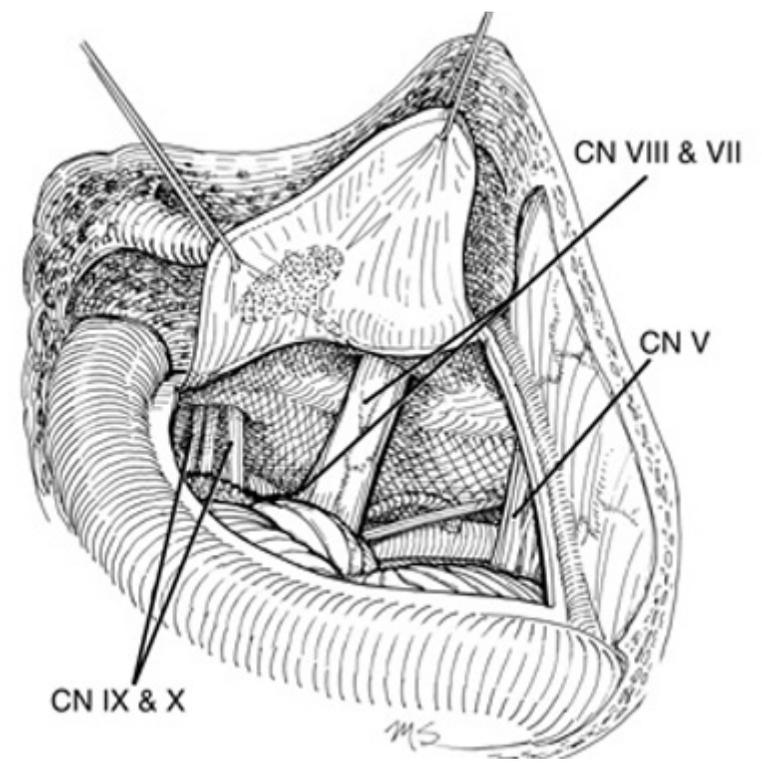
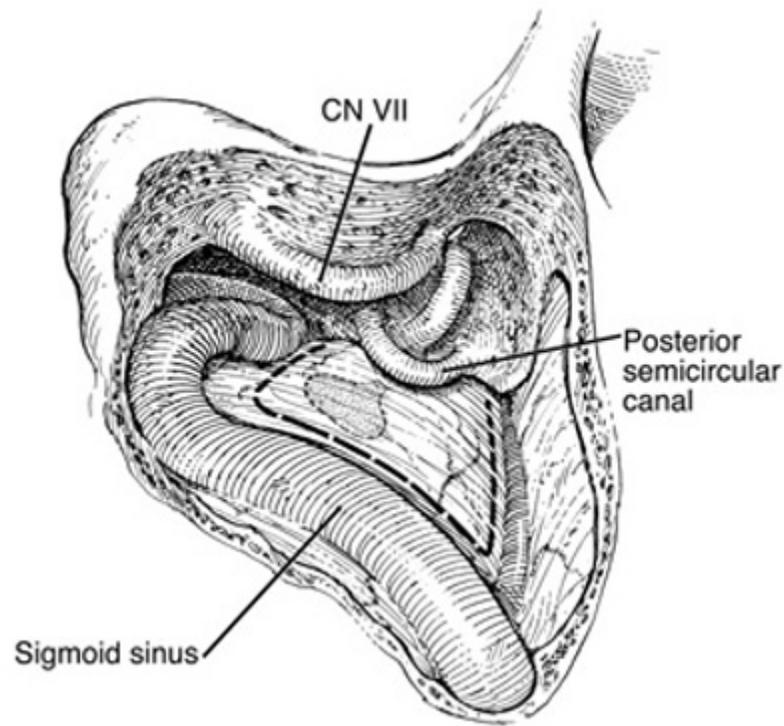
Kirurgisk adgange



ØNH RH

1. Translabyrinthær adgang
2. Retro-labyrinthær adgang





**Retrolabyrinthine adgang til et schwannom:
The Unsung Hero of Skull Base Surgery**

Forskelle mellem de to adgange

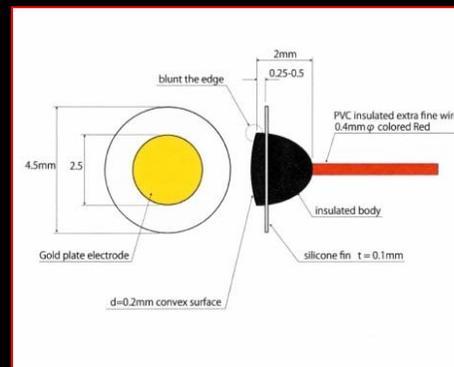
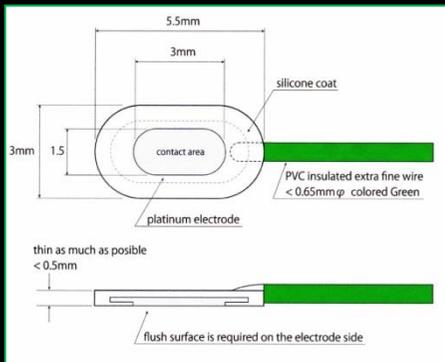
- Translabyrinthær:
 - Borer igennem indre øre.
 - Mister hørelse
 - Mister balance funktion

- Retrolabyrinthær
 - Borer bagom indre øre
 - Bevarer hørelsen
 - Mister balance funktion

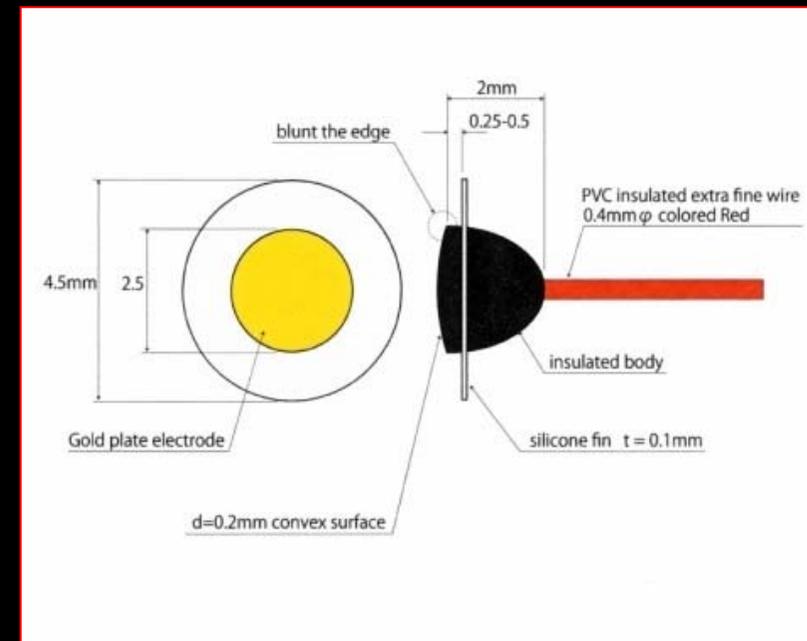
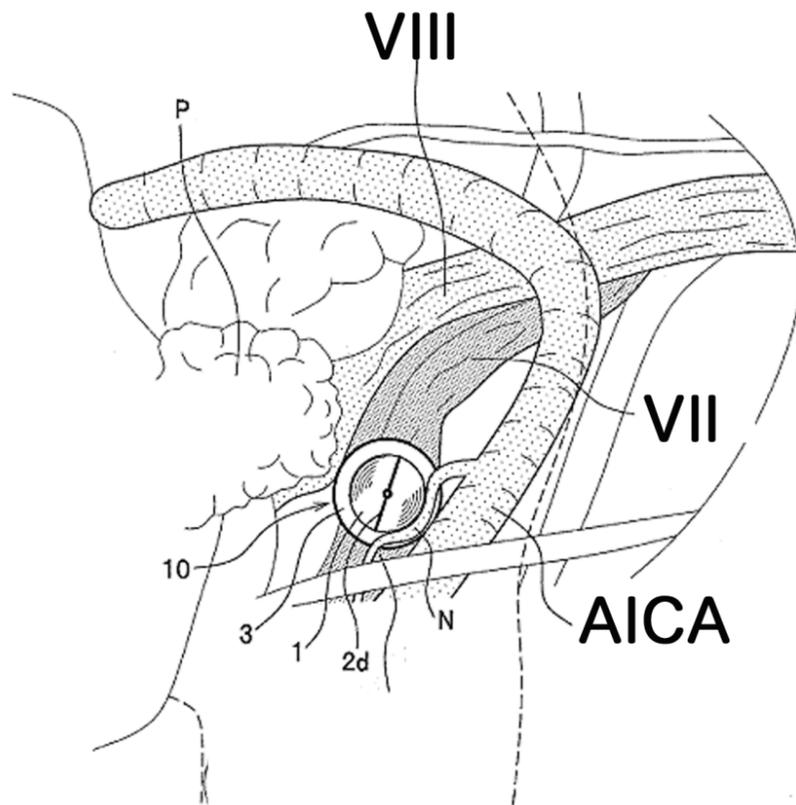
CPA neuro master

Hidemi MIYAZAKI, M.D.
Hirofumi NAKATOMI, M.D.

NIHON KOHDEN

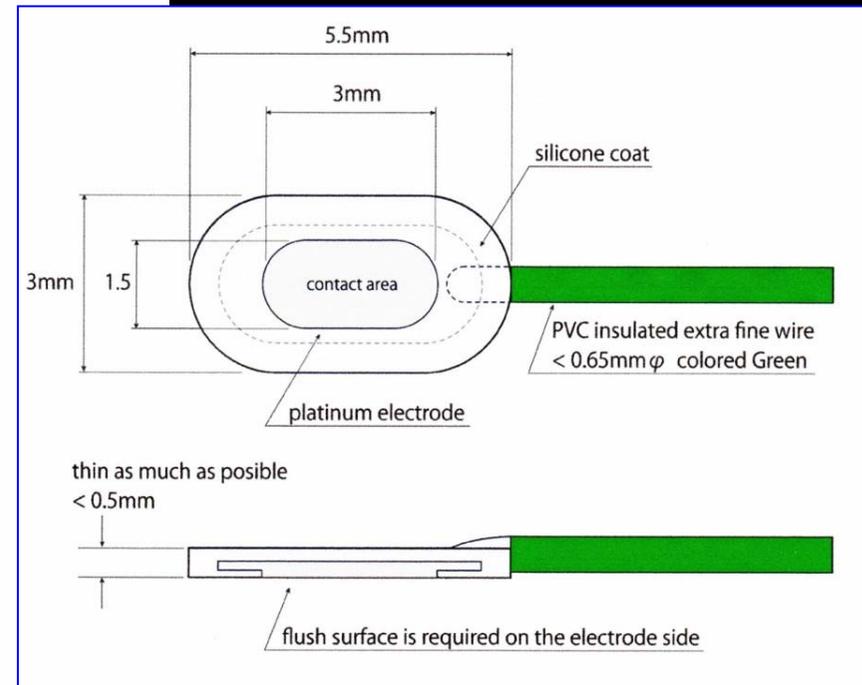
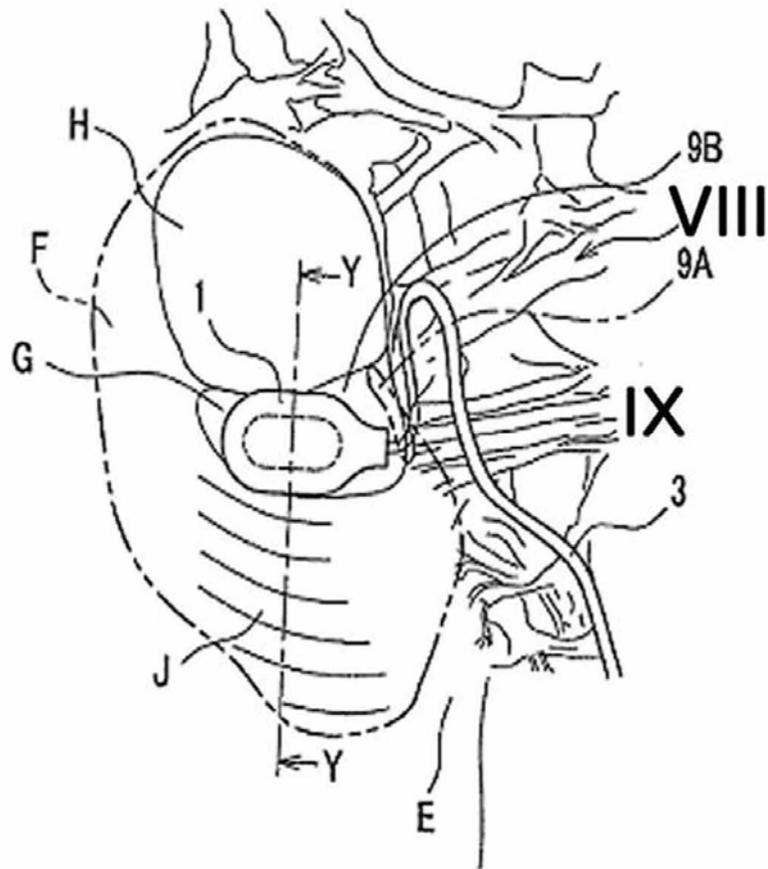


New continuous Facial nerve Root Evoked Muscle Action Potential (FREMAP) electrode & monitoring



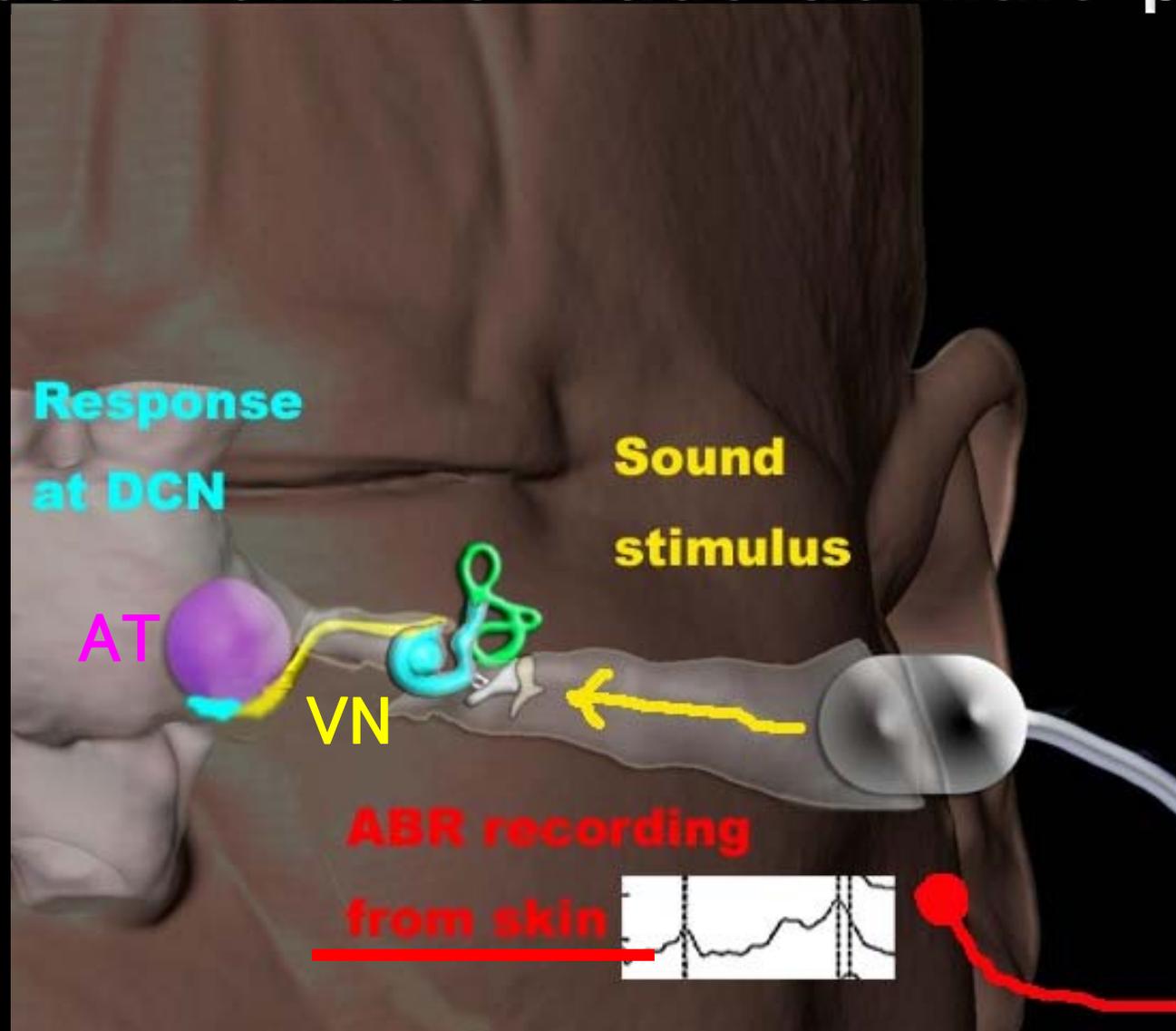
Measured every 3 sec

New continuous auditory evoked Dorsal cochlear Nucleus Action Potentials (DNAPs) monitoring electrode & device

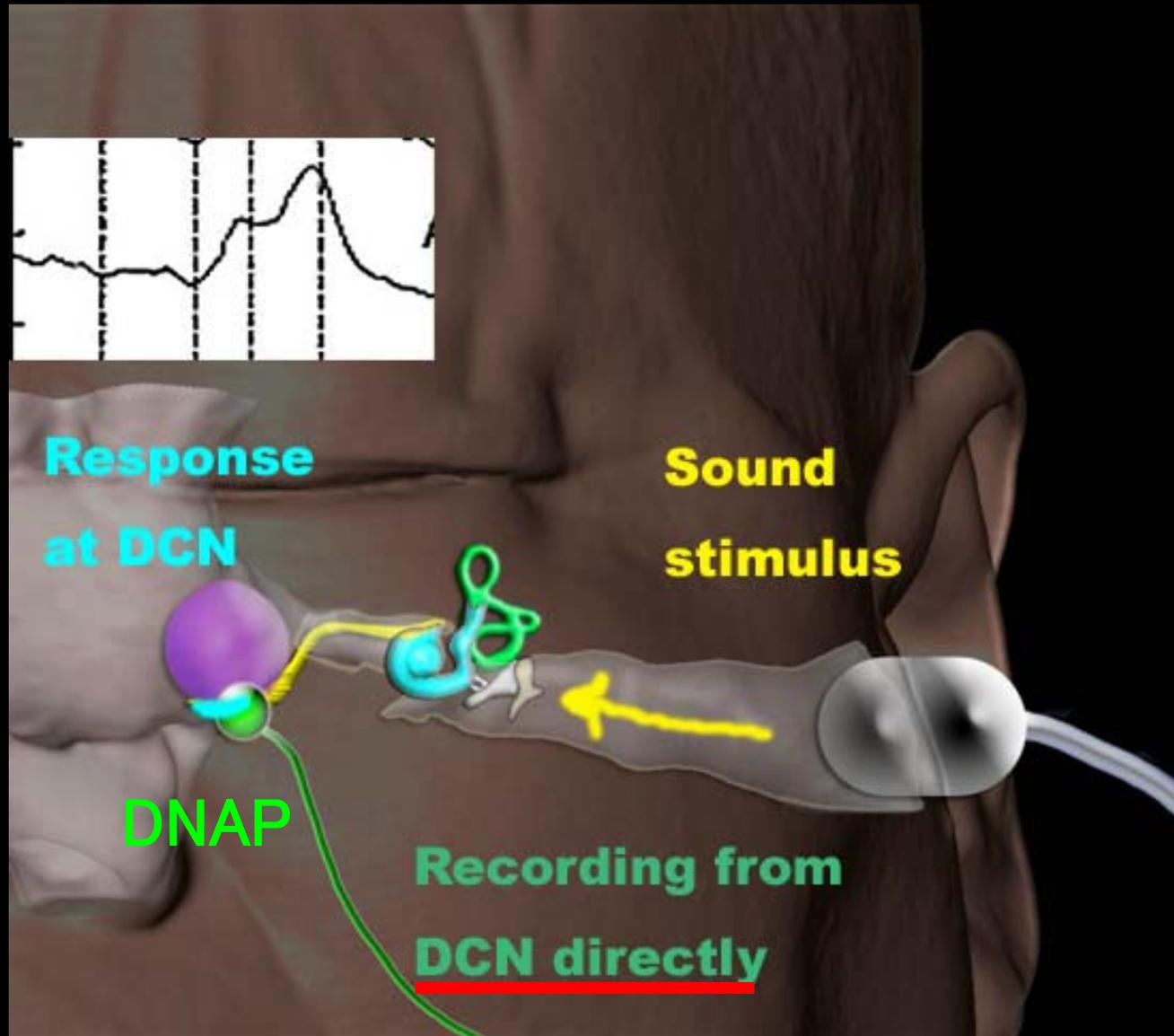


ABR

den normale måde at måle på

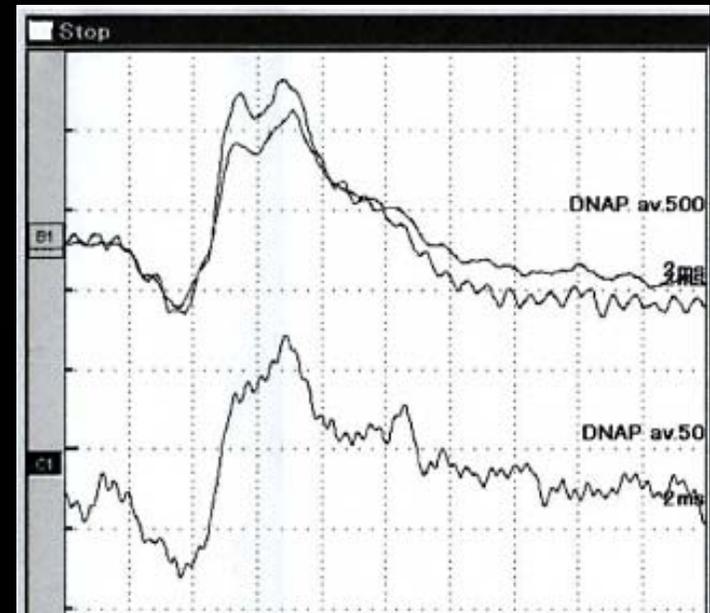


DNAP – det nye system



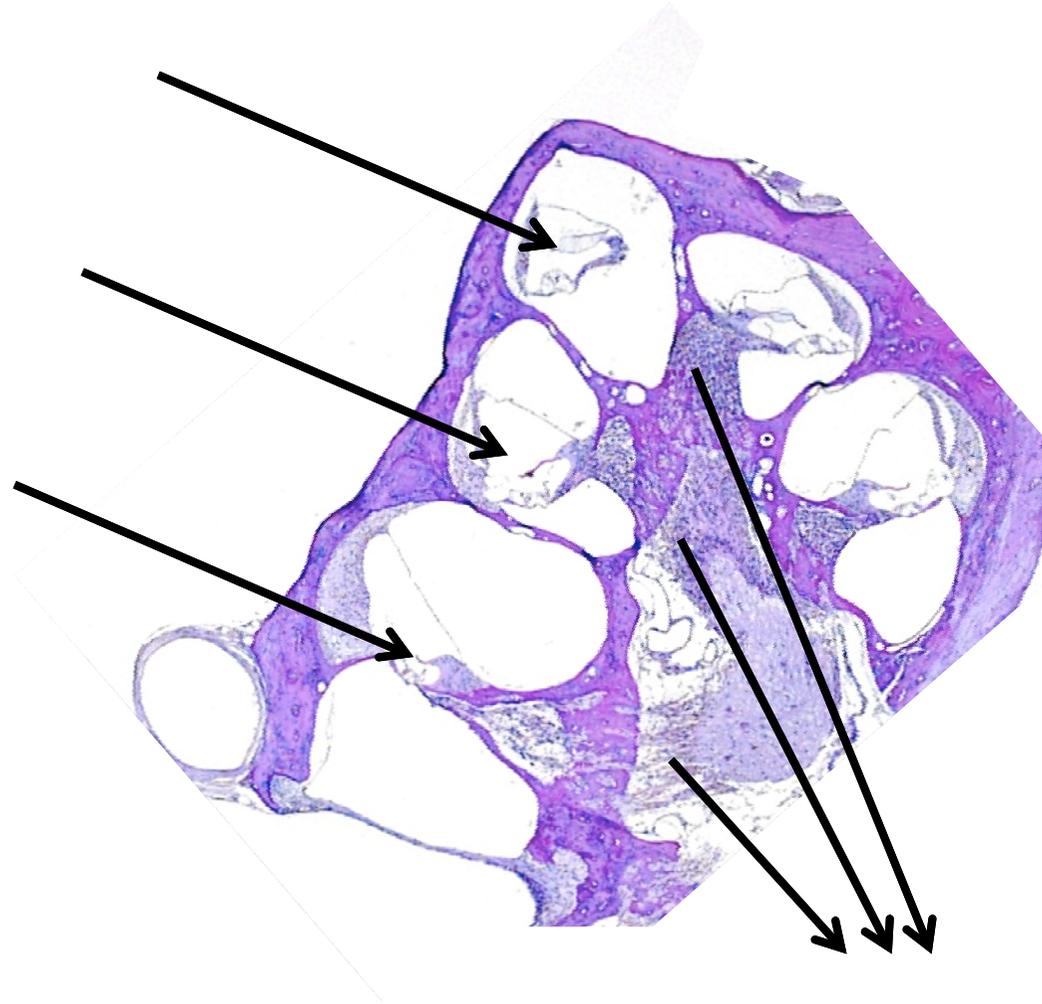
Fordele ved DNAP monitoring

- 10-50 x større amplitude end ABR (2-10 μ V)
- Tager kun 3 sec for svar
- Meget mere sensitivt end ABR
- Nær real-tids monitoring
- Nerve mapping



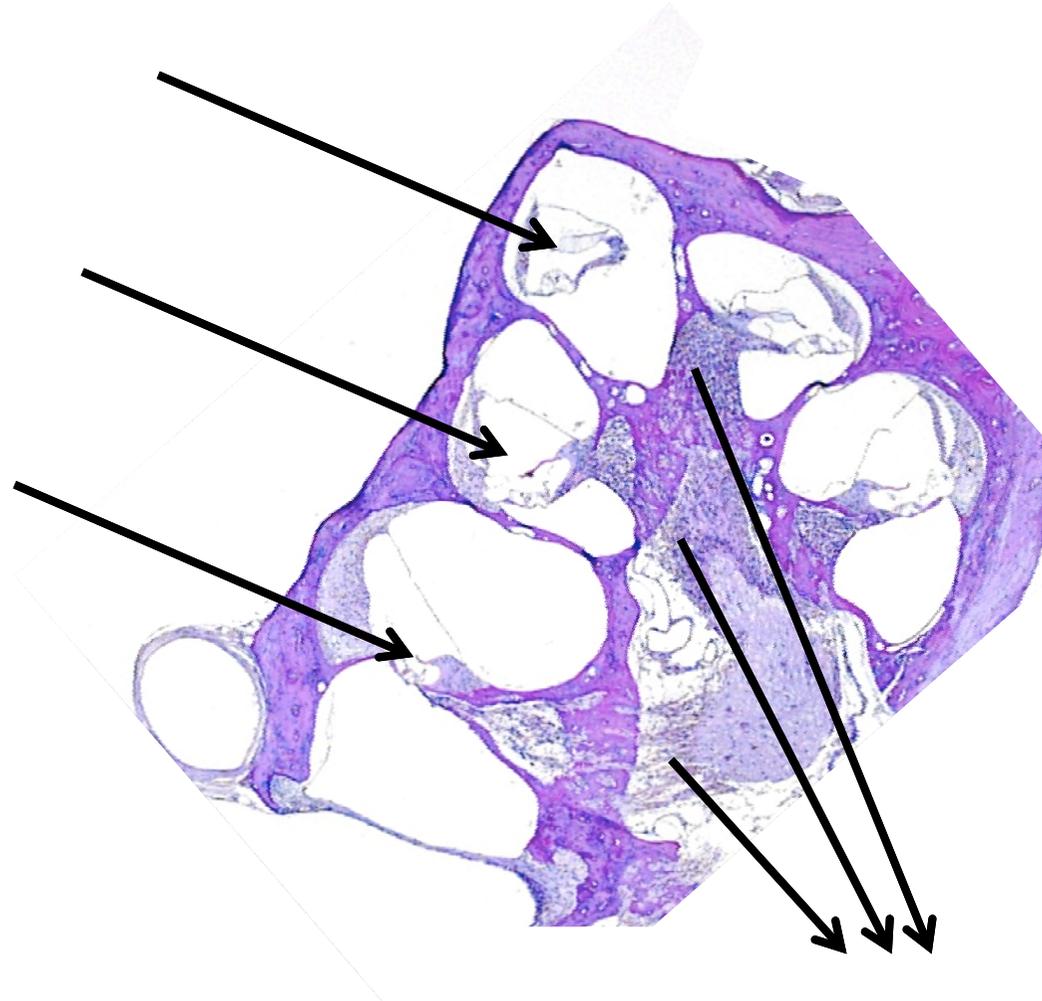
Normal “click” stimulus for ABR or DNAP

“click”



Normal “click” stimulus for ABR or DNAP

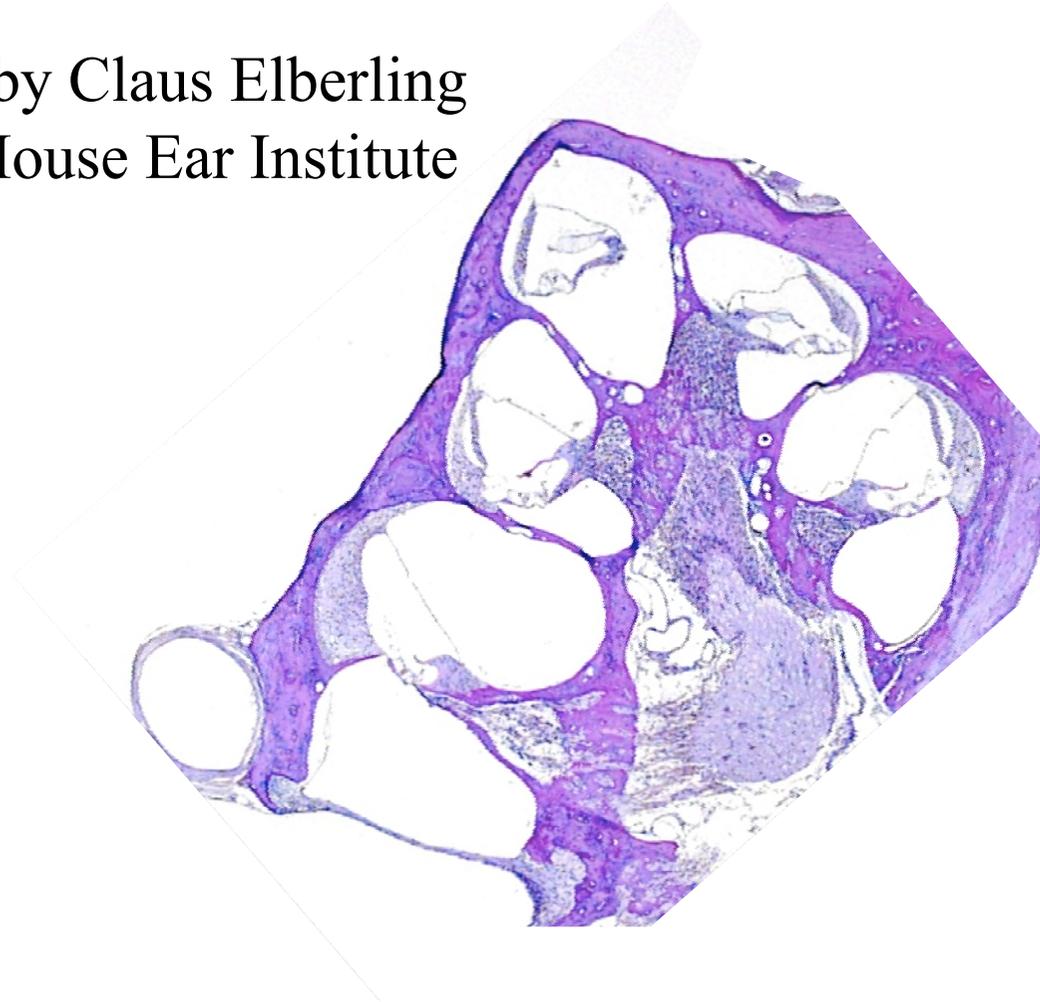
“click”



2 – 5 ms delay of stimulus from base to apex!

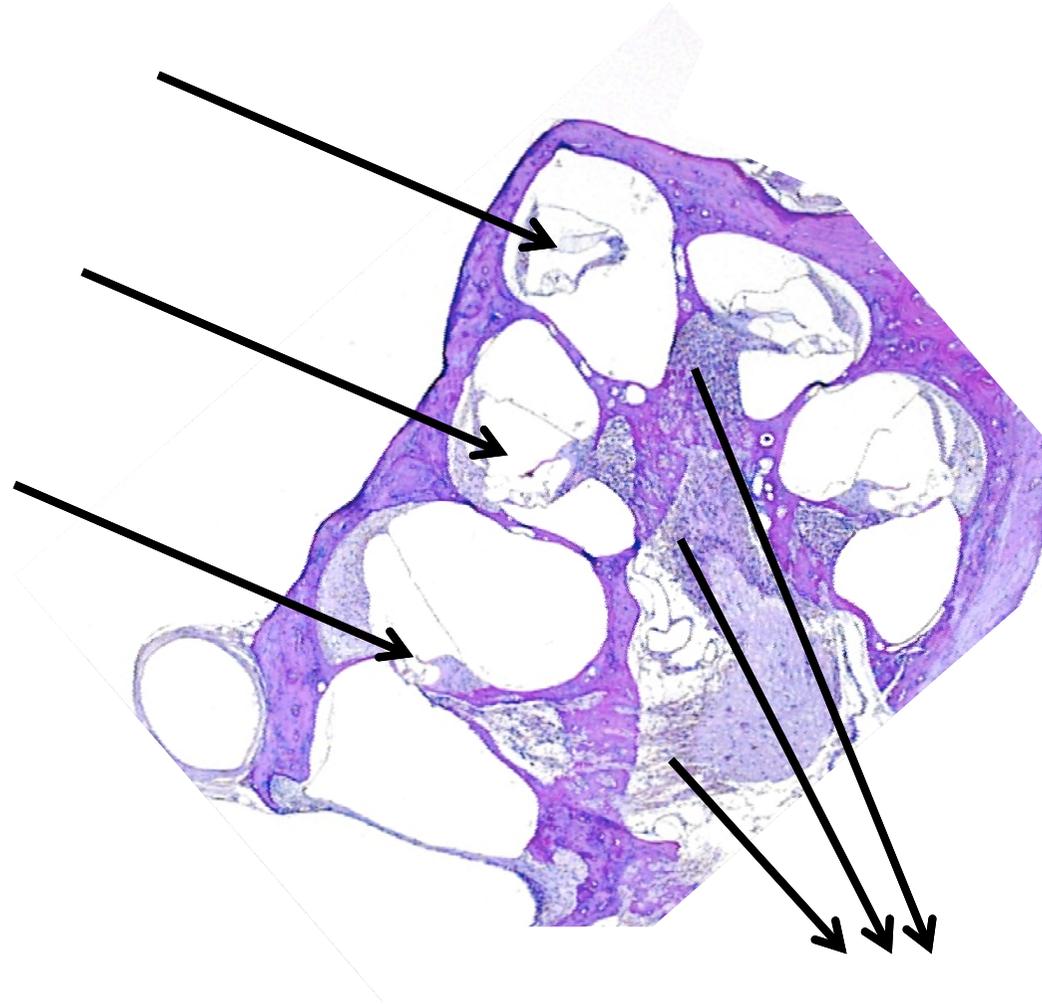
Chirp-stimulus for ABR or DNAP

Developed in Copenhagen by Claus Elberling
in collaboration with The House Ear Institute



Chirp-stimulus for ABR or DNAP

“chirp”



Chirp-stimulus for ABR or DNAP

“chirp”

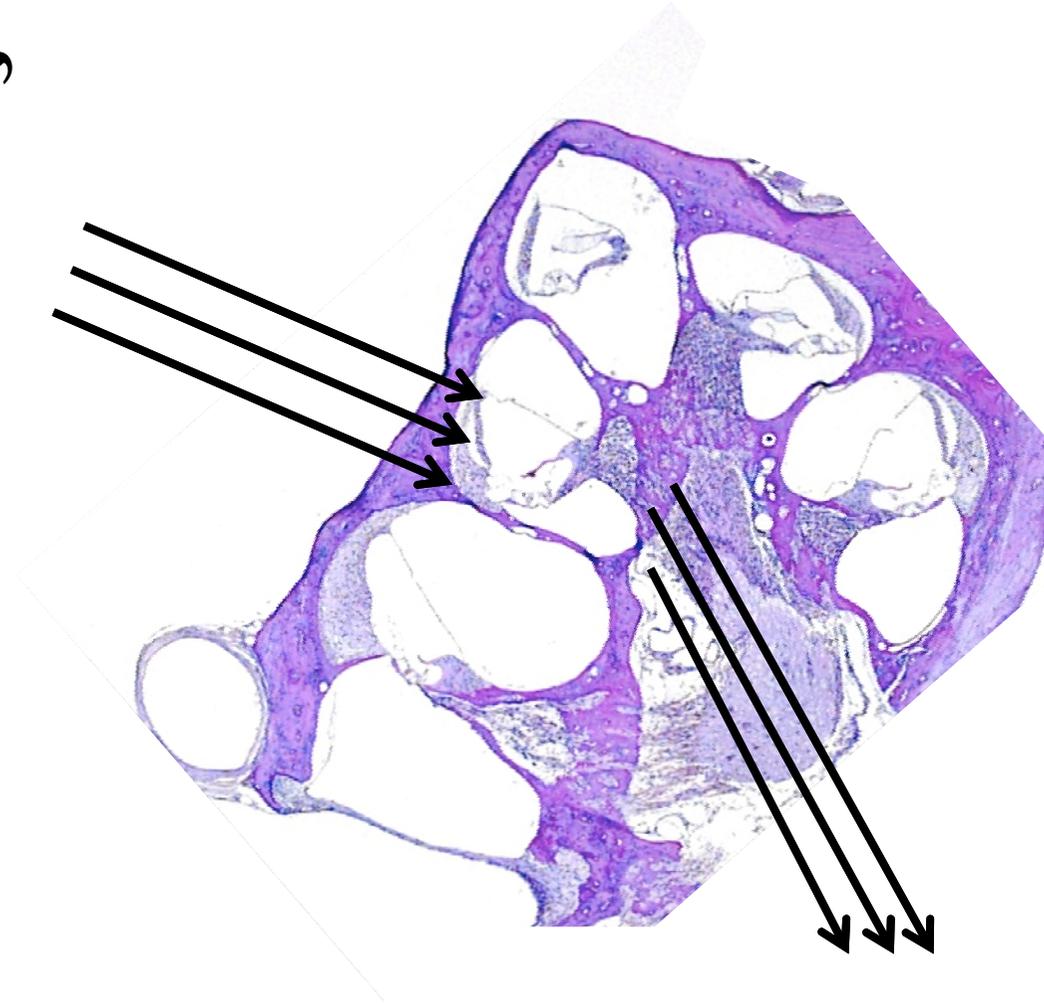


No delay of stimulus from base to apex

Advantage: higher amplitude, easy detection of potential

Narrow-band chirp-stimulus for ABR or DNAP

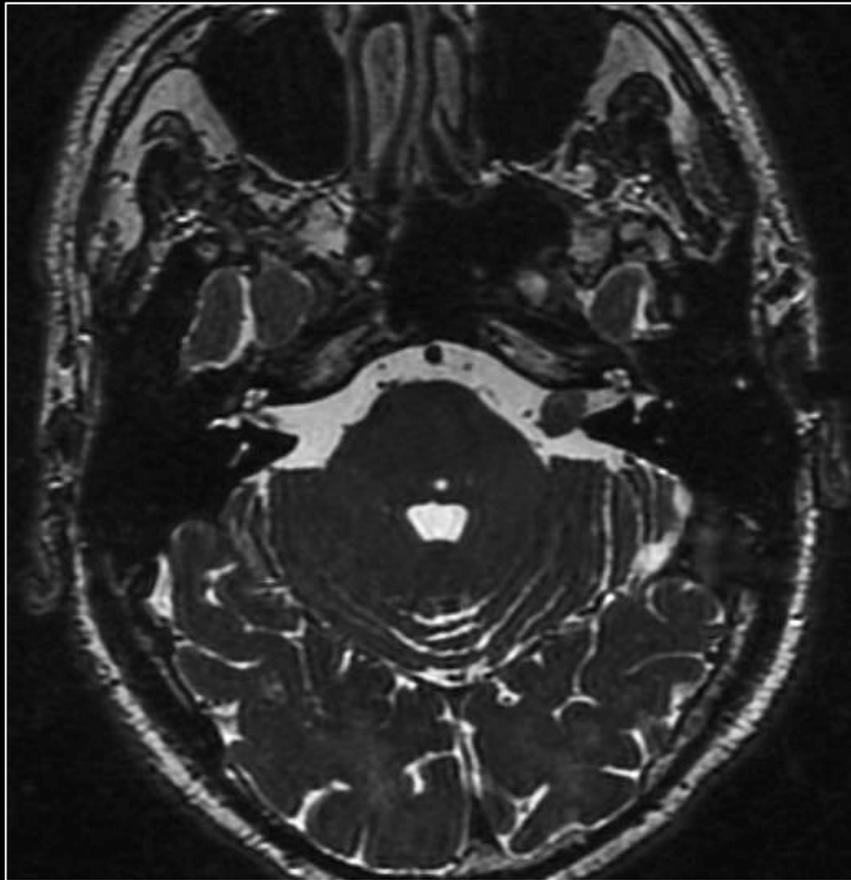
“chirp”



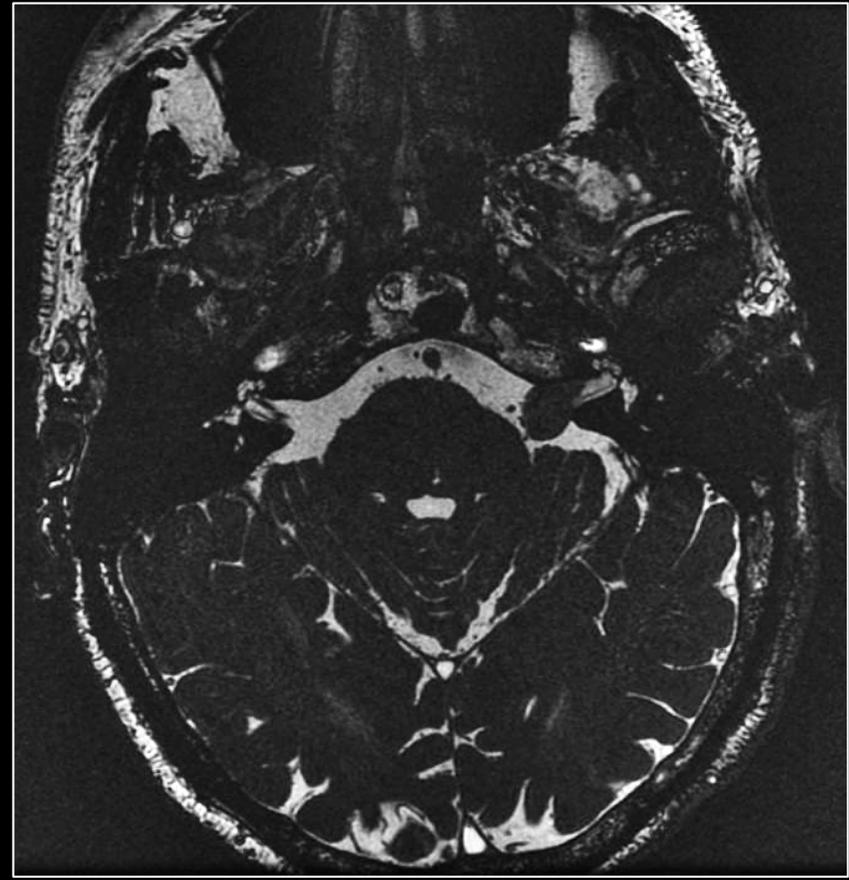
Advantage: patient-adapted, frequency-specific stimulation

**Chirp evoked DNAP i retrolabyrinthine hørebevarende
kirurgi
ved vestibular schwannoma**

Verdens første case!



MRI January 2011

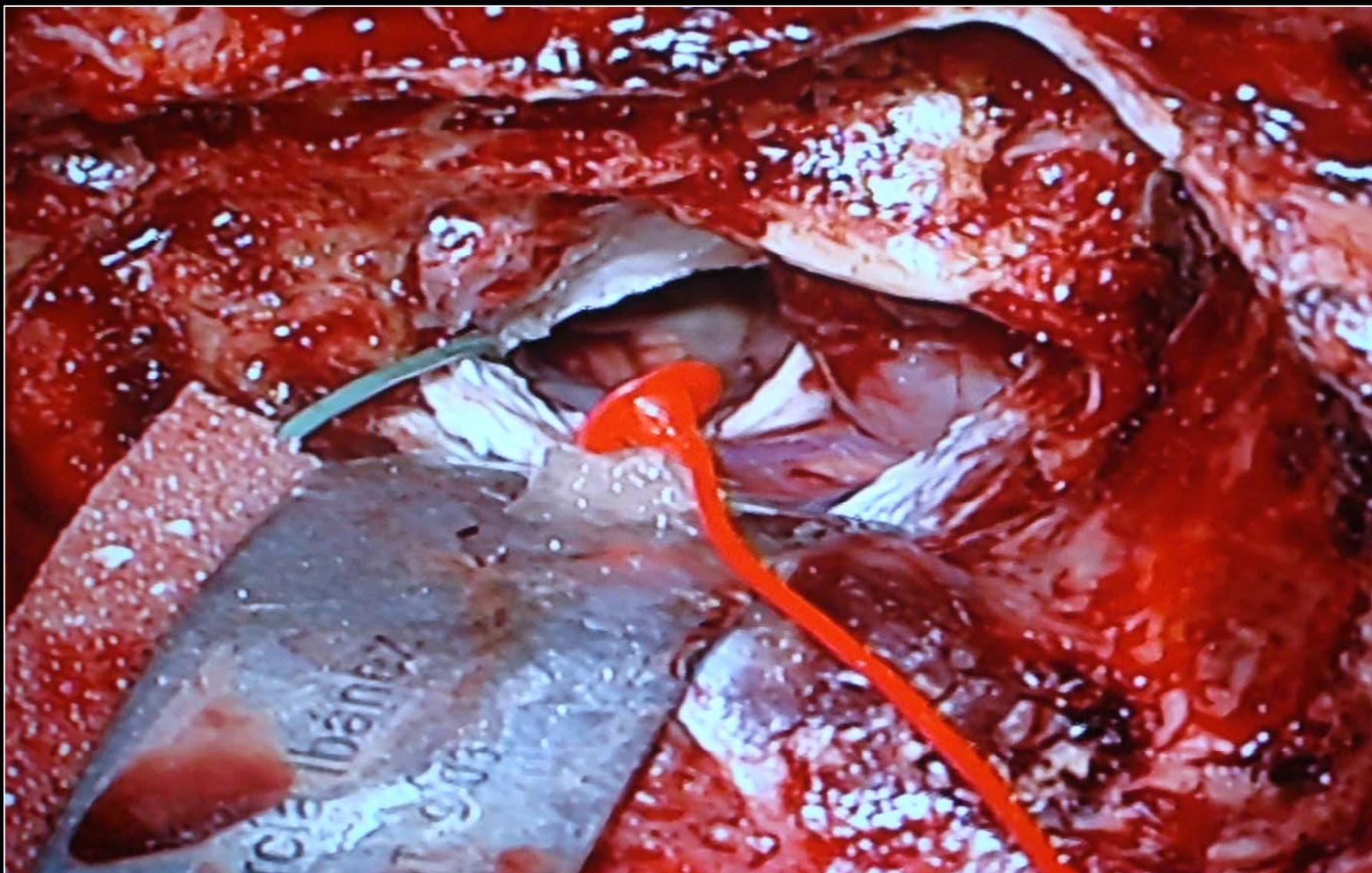


MRI January 2012

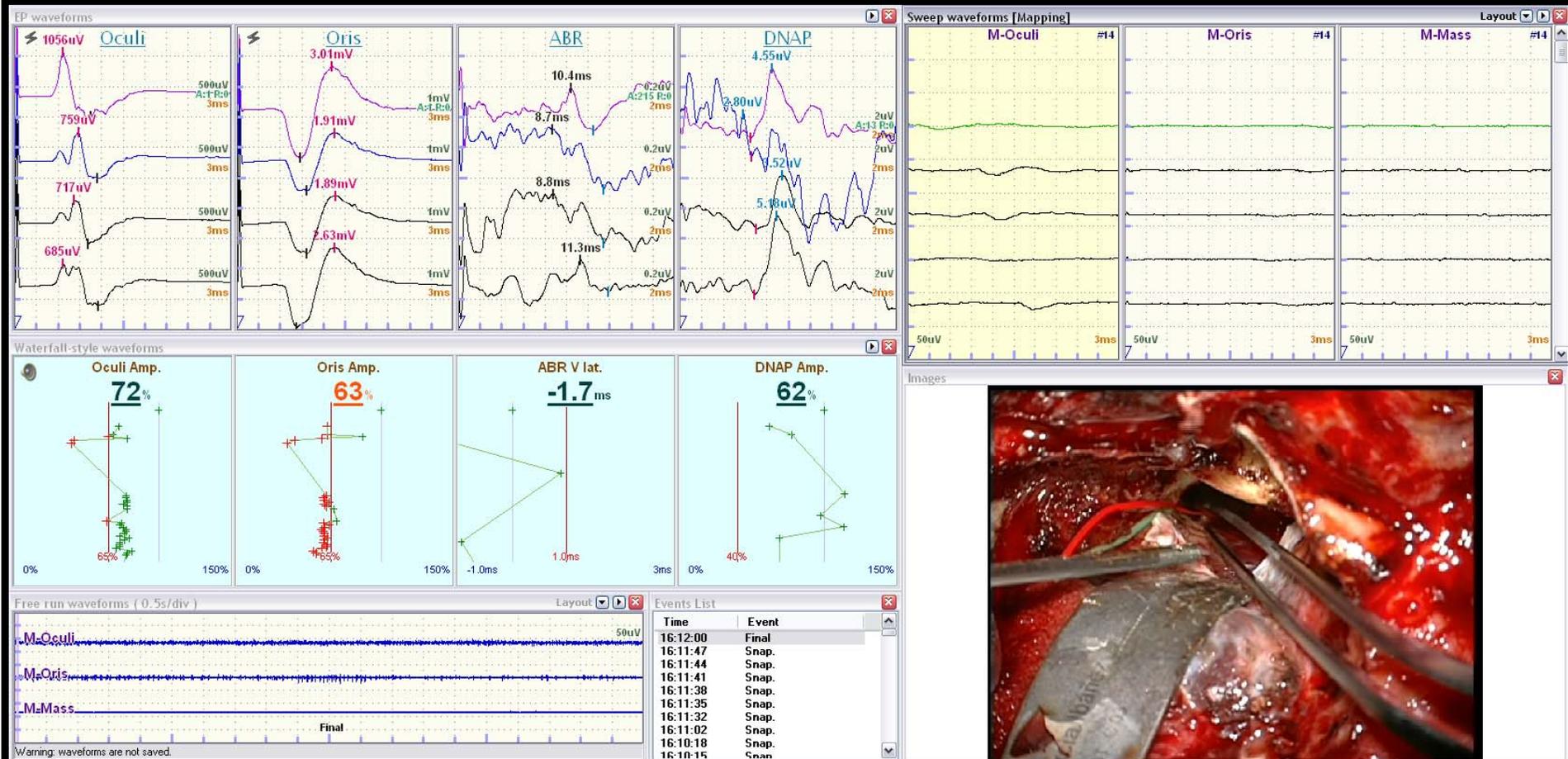




Retrolabyrinthine adgang



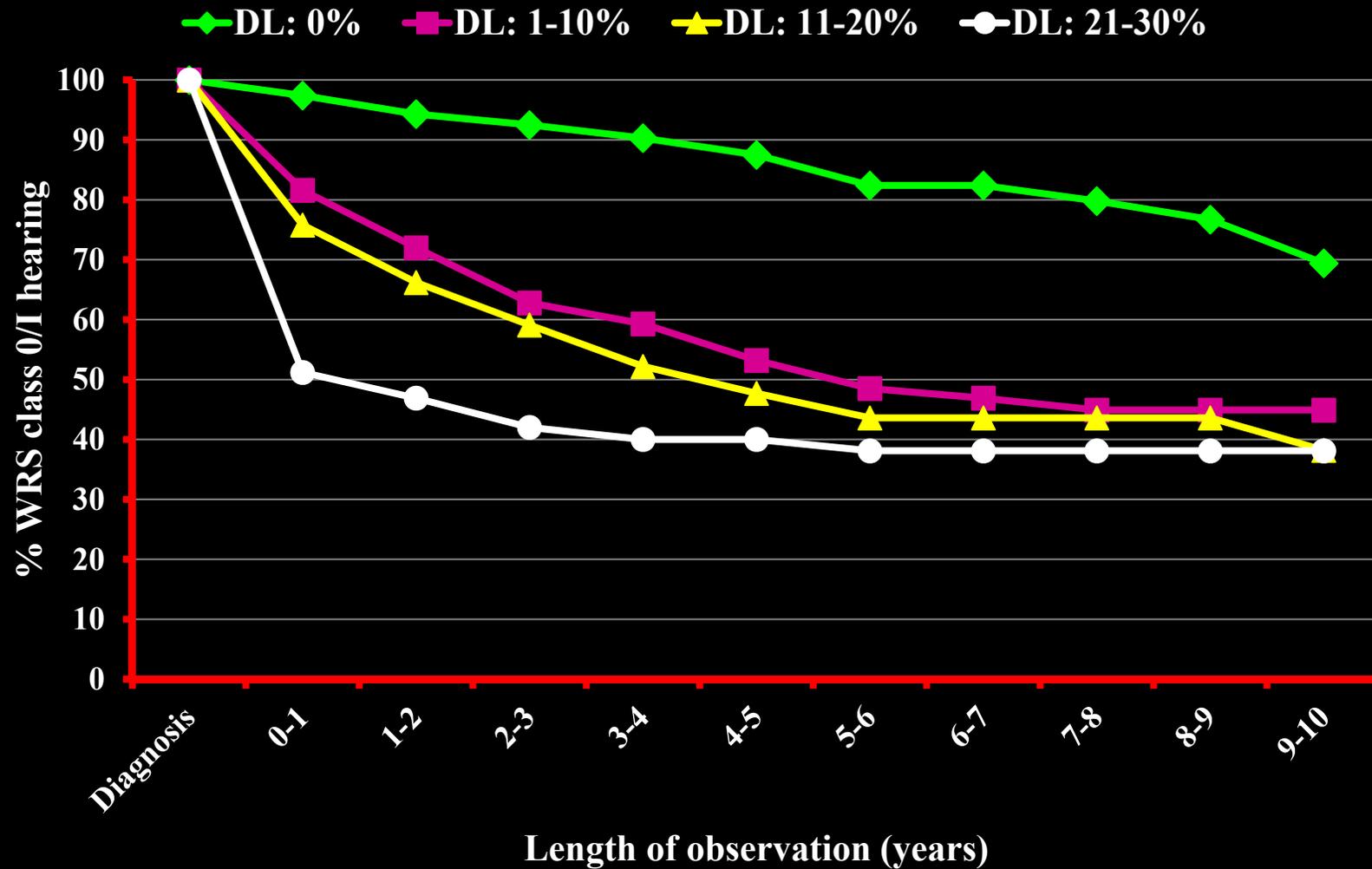
Per-operative screen dump

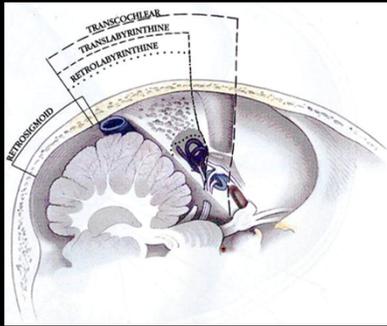


Resultater i København

- Tidligere: ca 50% succes for “serviceable hearing”
- Efter indførelsen af CPA Neuro Master: 80% succes rate for bevarelse af hørelsen ved schwannom kirurgi.

Tab af god hørelse (DL ≤ 30%) i de forskellige grupper





Take home

Near-real-time cochlear nerve monitoring by DNAP recording is feasible using the new electrode in VS surgery

The retrolabyrinthine approach offers advantages for placement of the electrode upon the brainstem

Simultaneous, continuous facial nerve monitoring

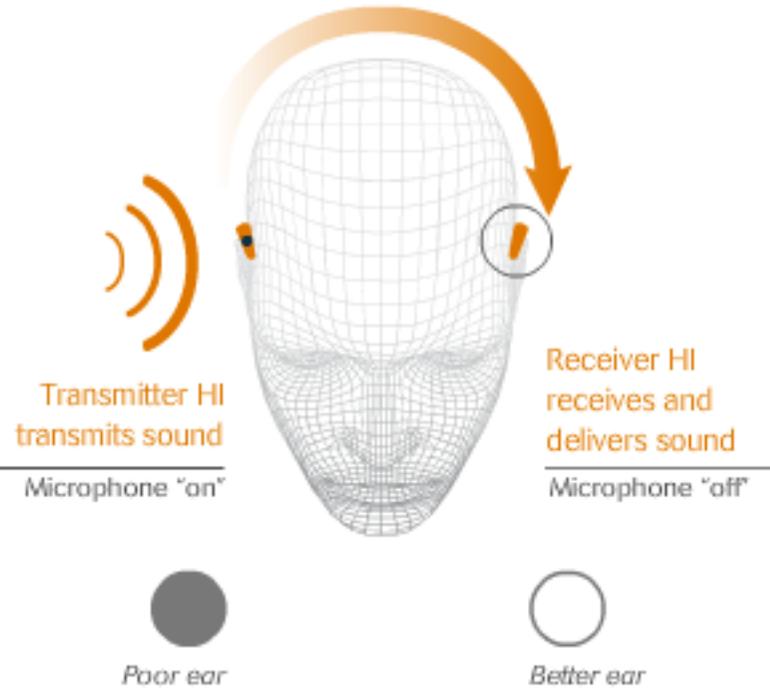
Chirp stimuli enhances the amplitude and detectability of DNAP

Andre nye tiltag

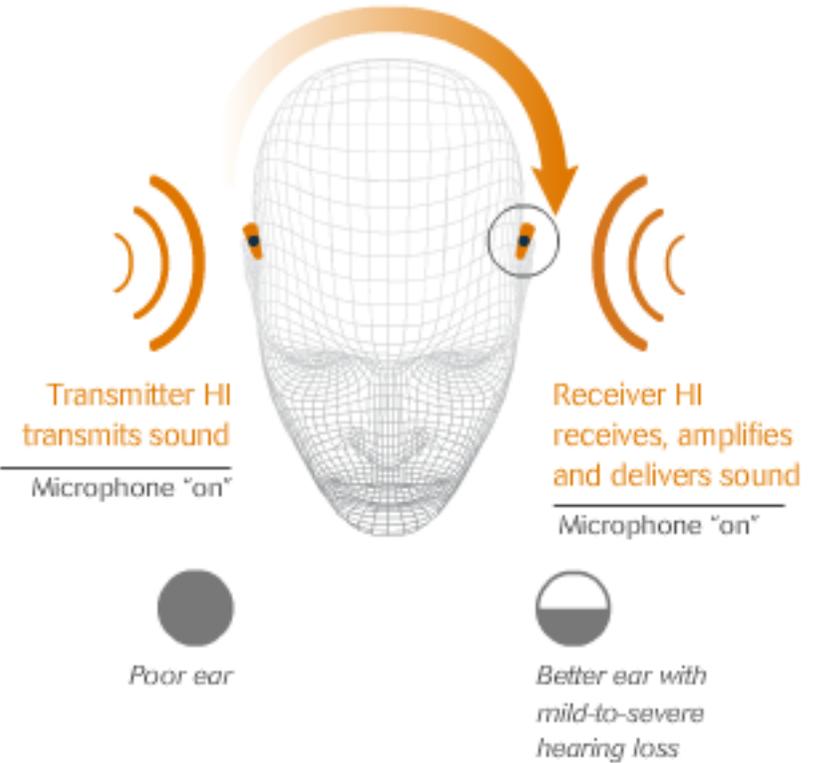
- Re-etablering af hørelse efter schwannom kirurgi
 - Cross høreapparat
 - BAHA
 - Bonebridge
 - Cochlear Implant

Cross Høreapparat

CROS



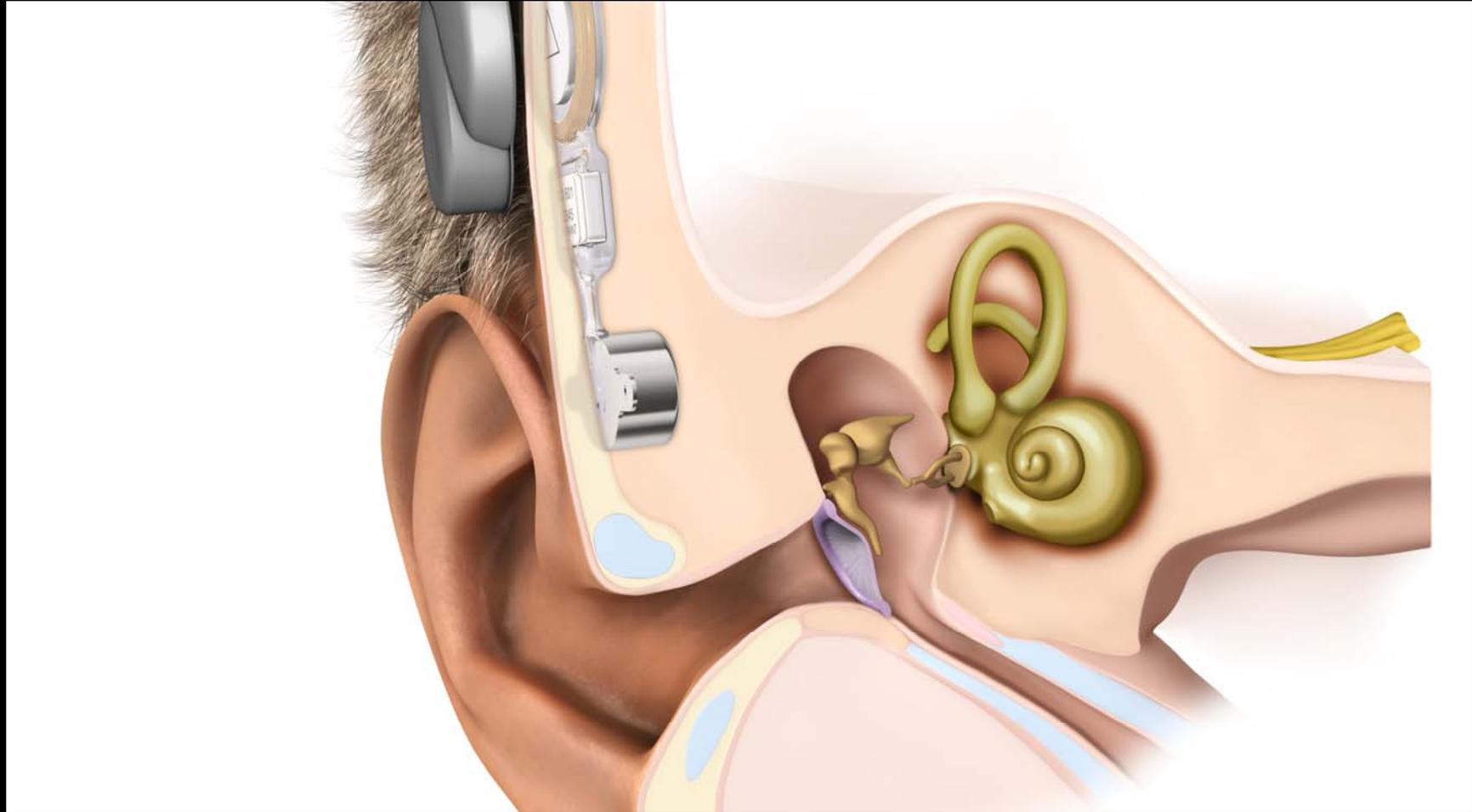
BiCROS



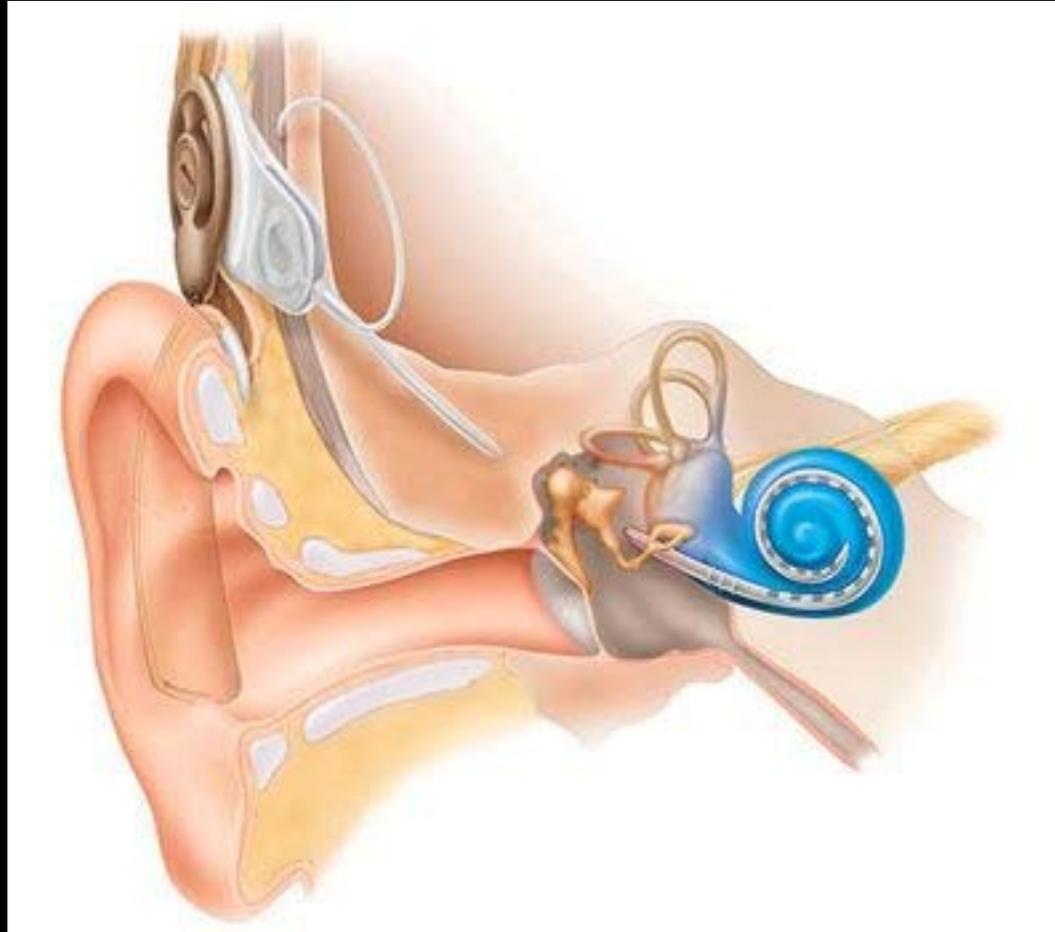
BAHA



Bonebridge



Cochlear Implant



Cochlear Implant – udviklingen idag



