What can objective measurements tell us?

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Type of measurements

- Impedances
- Electrically evoked stapedius reflexes ESRTs
- Evoked compound action potentials ECAP
- Implant electrically evoked Auditory Brainstem responses impEABRs
- Middle late responses
- Cortical respones
- PET, fMRI, ...

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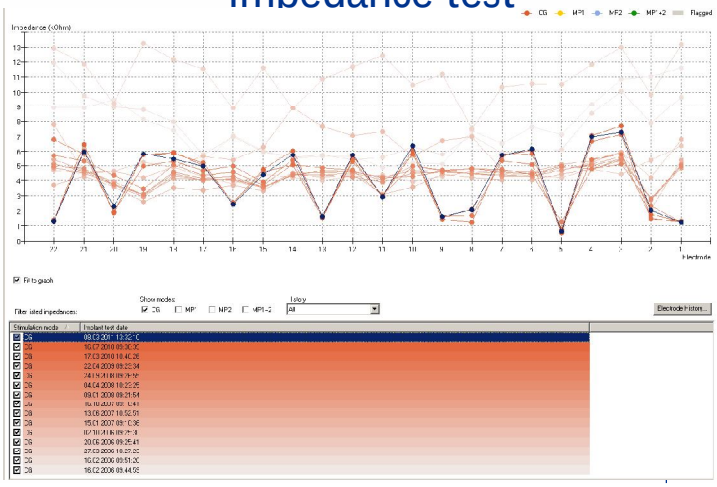
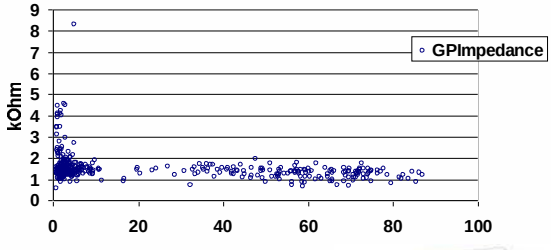
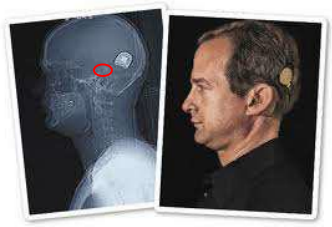
Impedance test

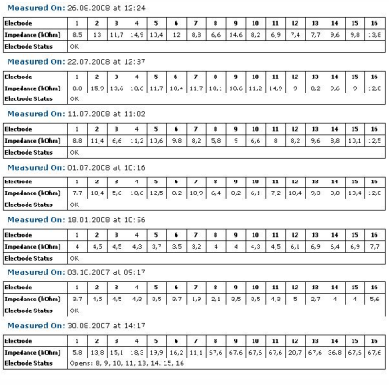


Ground Path Impedance





AB rising imp. while PW too short



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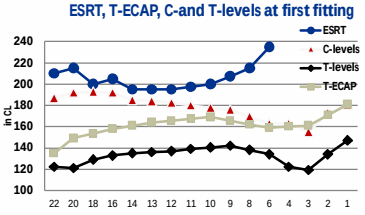
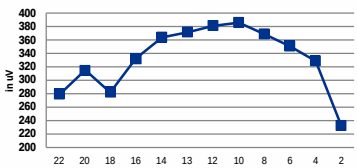
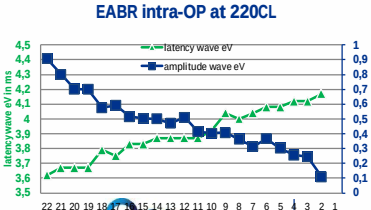


Objective Measurements Vs Fitting levels





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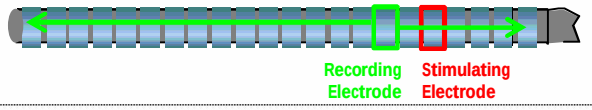
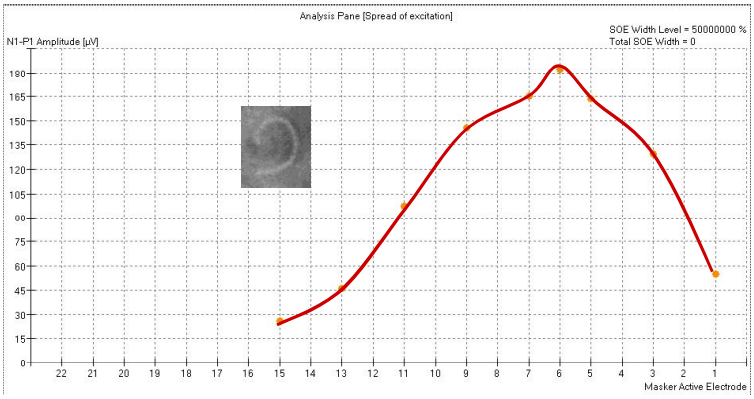
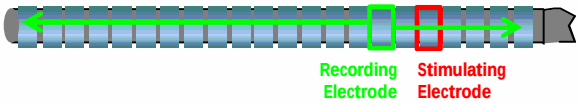
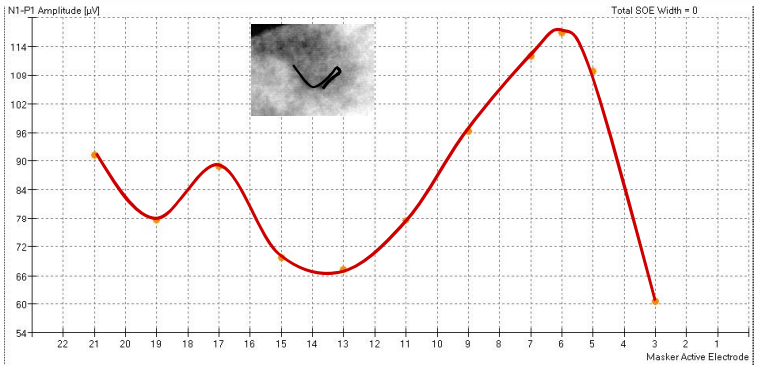
SOE normal insertion



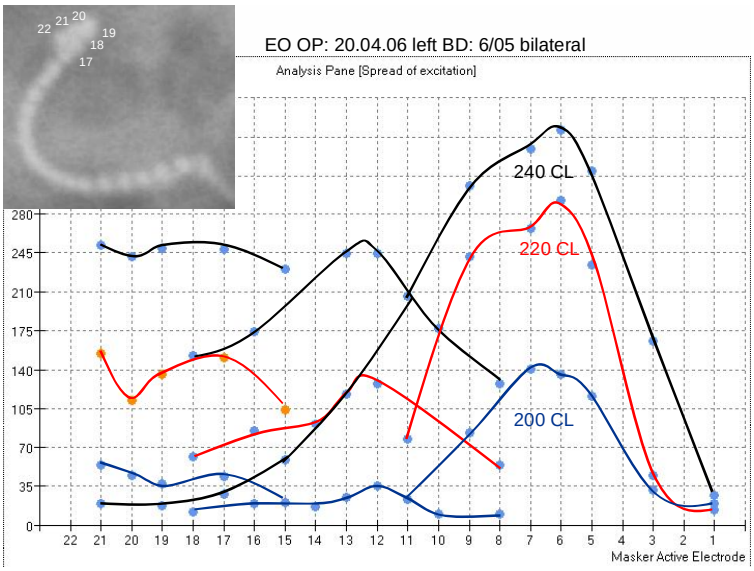


Spread of Excitation tip fold over

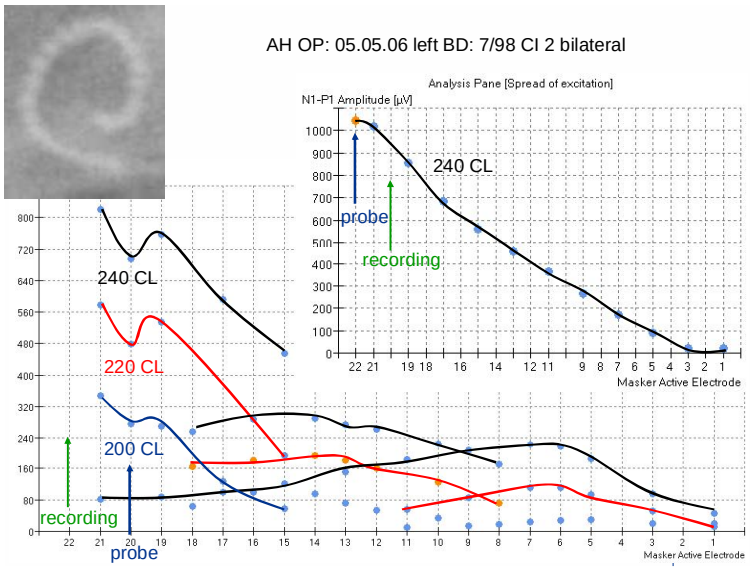


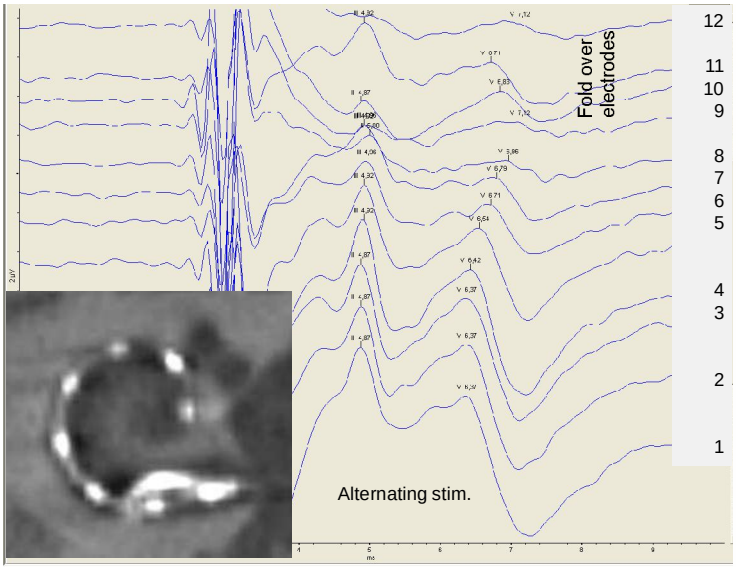


EO OP: 20.04.06 left BD: 6/05 bilateral

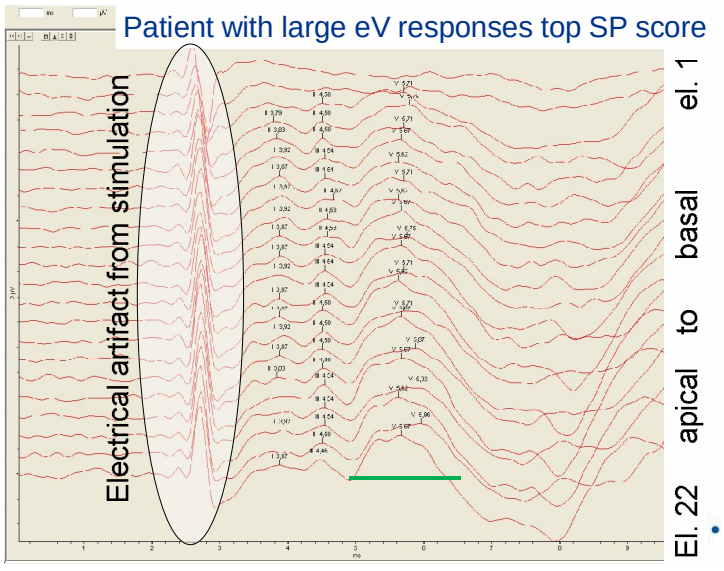


AH OP: 05.05.06 left BD: 7/98 CI 2 bilateral

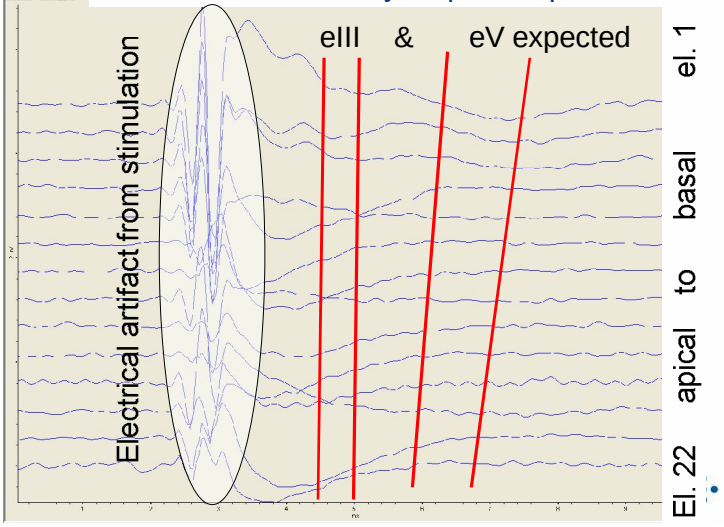




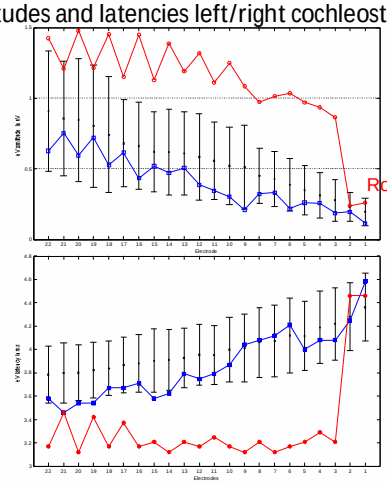
Patient with large eV responses top SP score



Patient with no auditory responses poor SP score



eV amplitudes and latencies left/right cochleostomy/round window



N=75 ears Mean values and STD

Round window insertion

Cochleostomy insertion

Cochleostomy insertion

Round window insertion

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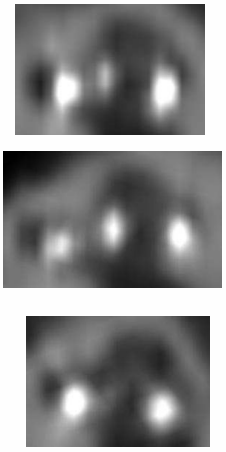
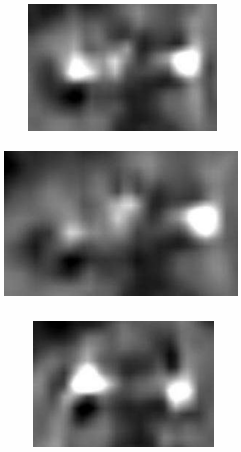
Right side CI2 RW

Left side CI1 cochleostomy





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impEABR vs speech performance

	Non users/ Cathegory «0»	Close speech performance	Open speech performance	Measured ears	Number of Patients
impEABR response	0	2	38	40	30
NO impEABR response	3	10	1	14	11
			Total:	54	41

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Conclusion

Objective measurements can …

- … be done in short time, do not extend surgical time and are not invasive.
- … indicate technical problems
- … give limited infomation about the thresholds
- … give some information about placement of the electrode
- … be used to follow the signal along the auditory pathways
- … roughly indicate what kind of performance can be expected (open/close SP)
- … may help in future to optimize surgical procedure/electrode placement
- … replace a fluoroscopy/CT scan

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