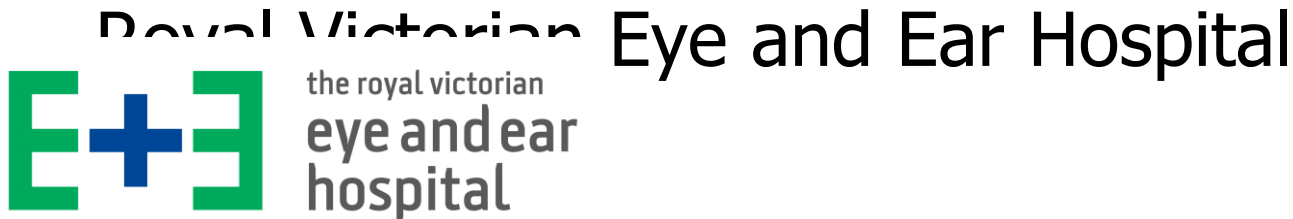


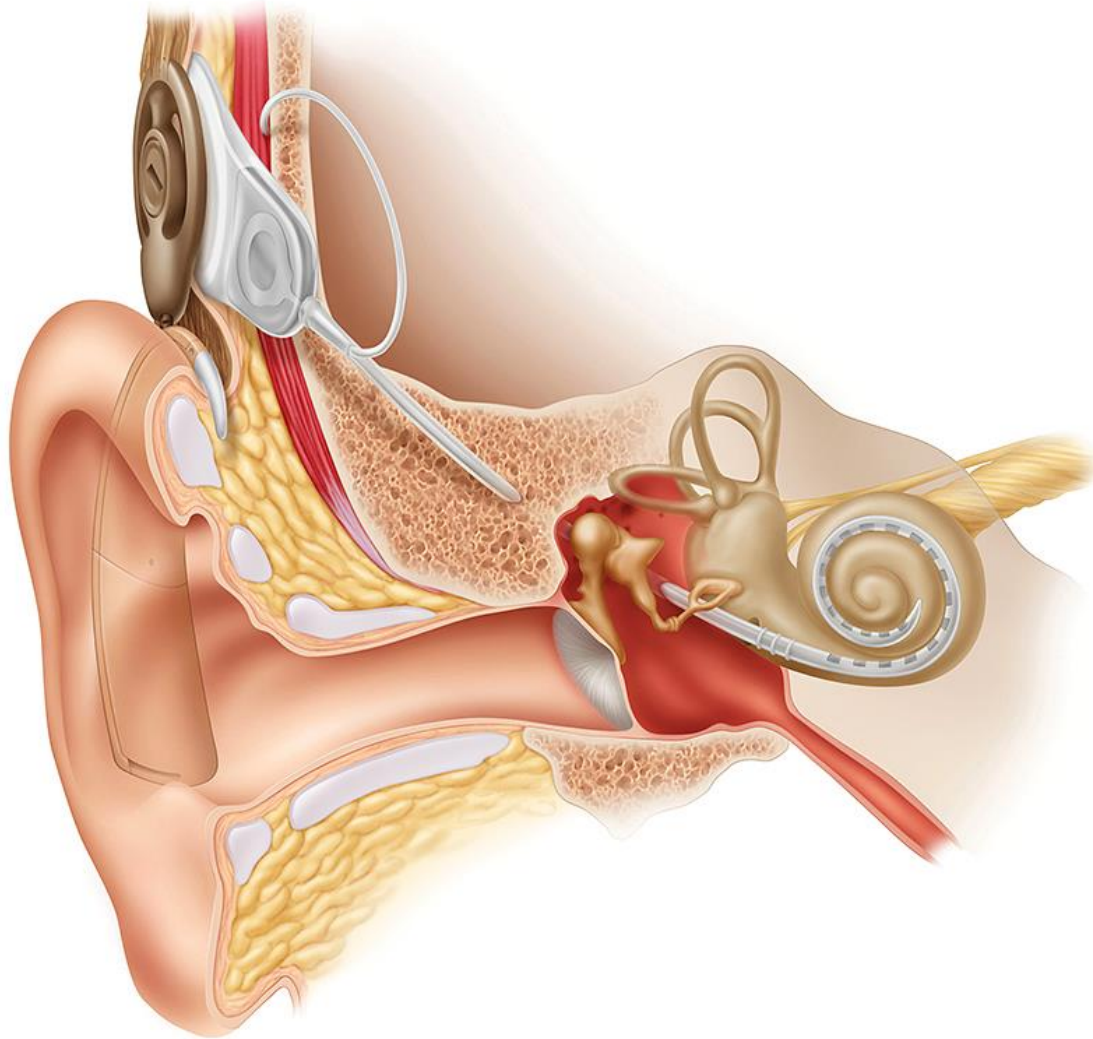
Stephen O'Leary

Chair of Otolaryngology, University of Melbourne
Cochlear Implant Clinic, Melbourne

How to be confident that your patient will benefit from a Cochlear Implant



The Cochlear Implant



Ensuring excellent CI outcomes

- Candidature- selecting the right patients
- Managing expectations – counselling
- Surgical considerations

Main indication for CI

Clarity, not loudness, of speech

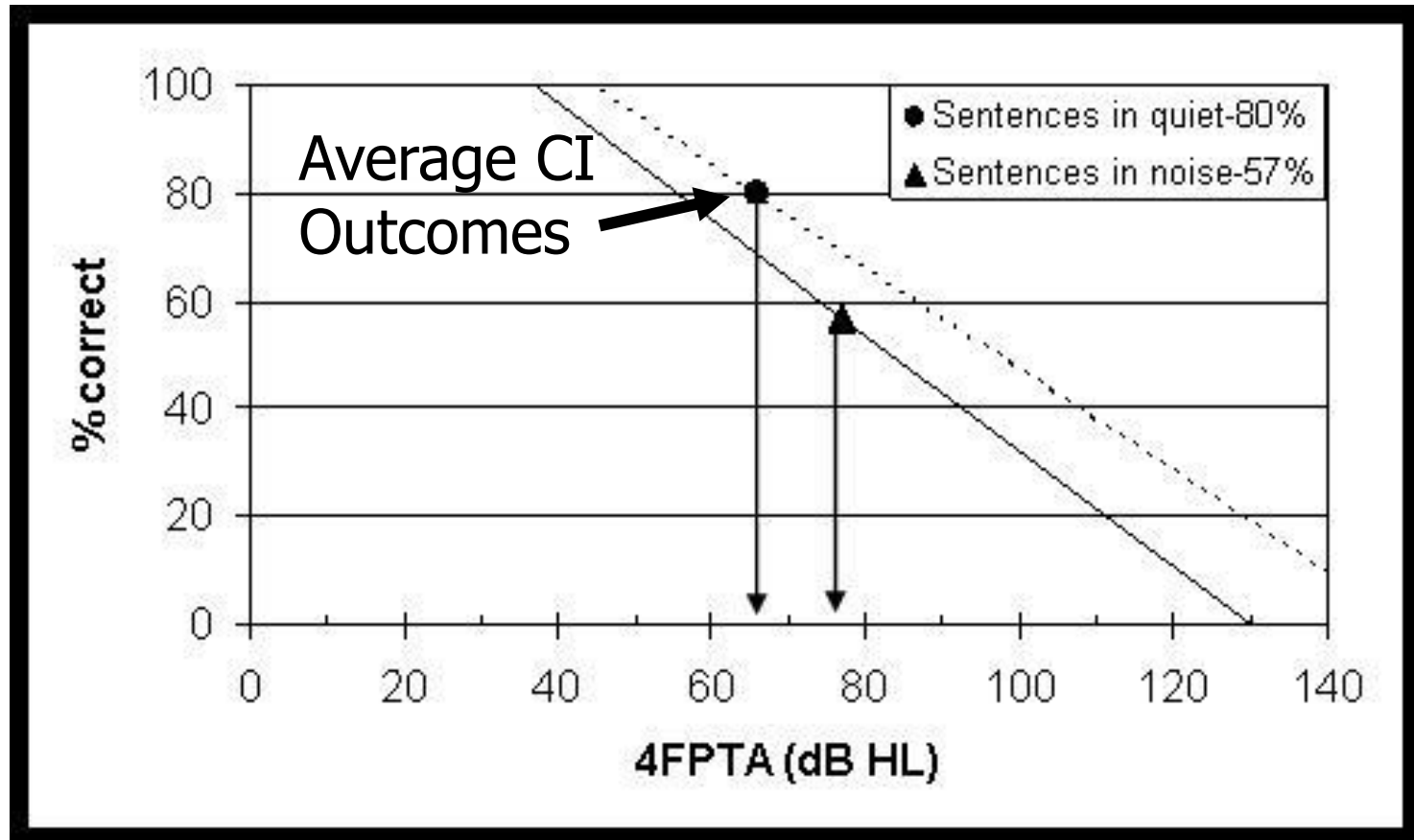
Candidature

- Acquired hearing loss
- Congenital hearing loss

Basic Questions

- Is patient becoming socially isolated?
- Can they use the telephone, understand TV?
- Do they have a properly fitting hearing aid?
- *When* did hearing aids stop helping?

Hearing Level to consider CI?



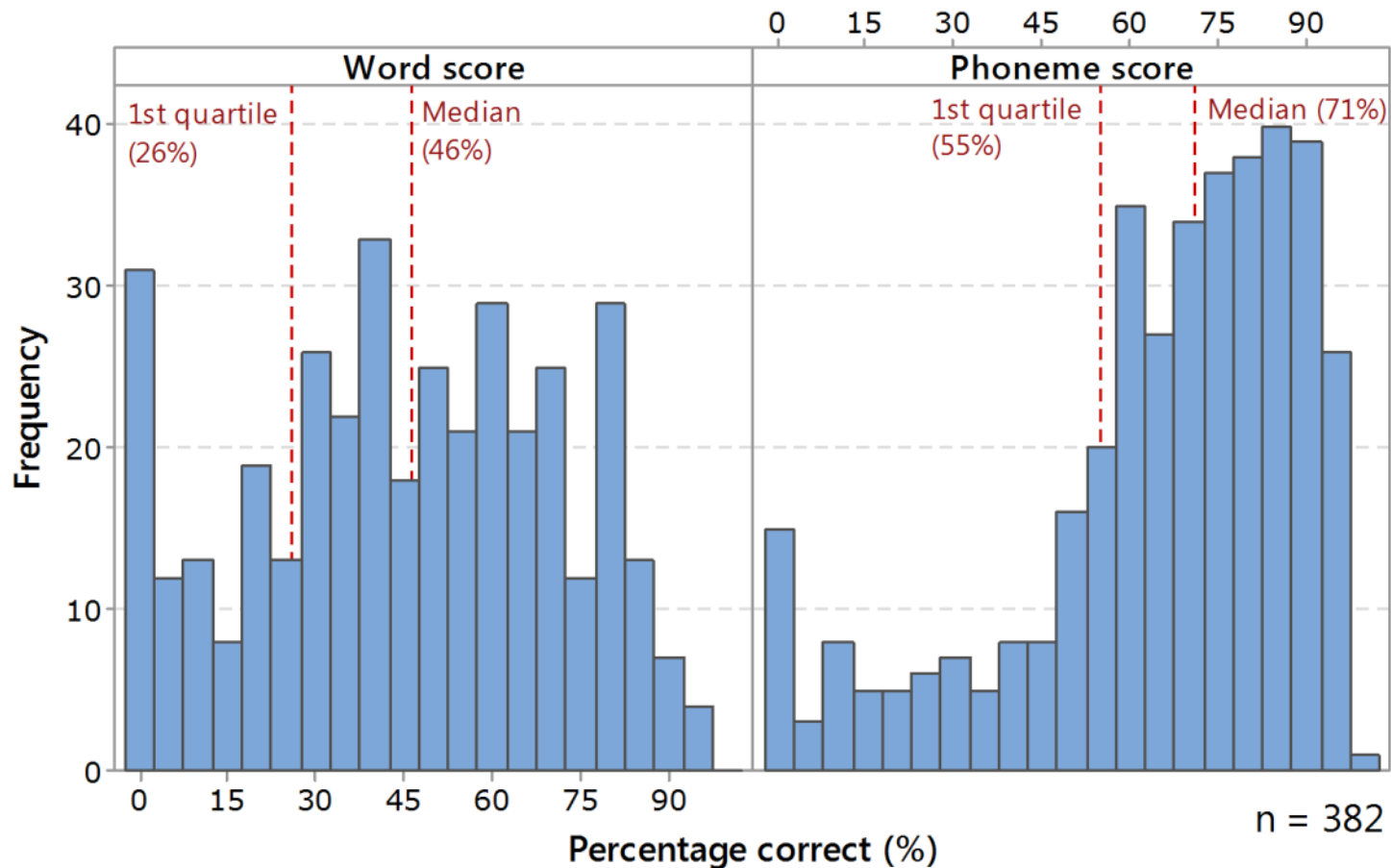
SRT

AUDIOGRAM - PURE TONE AVERAGE

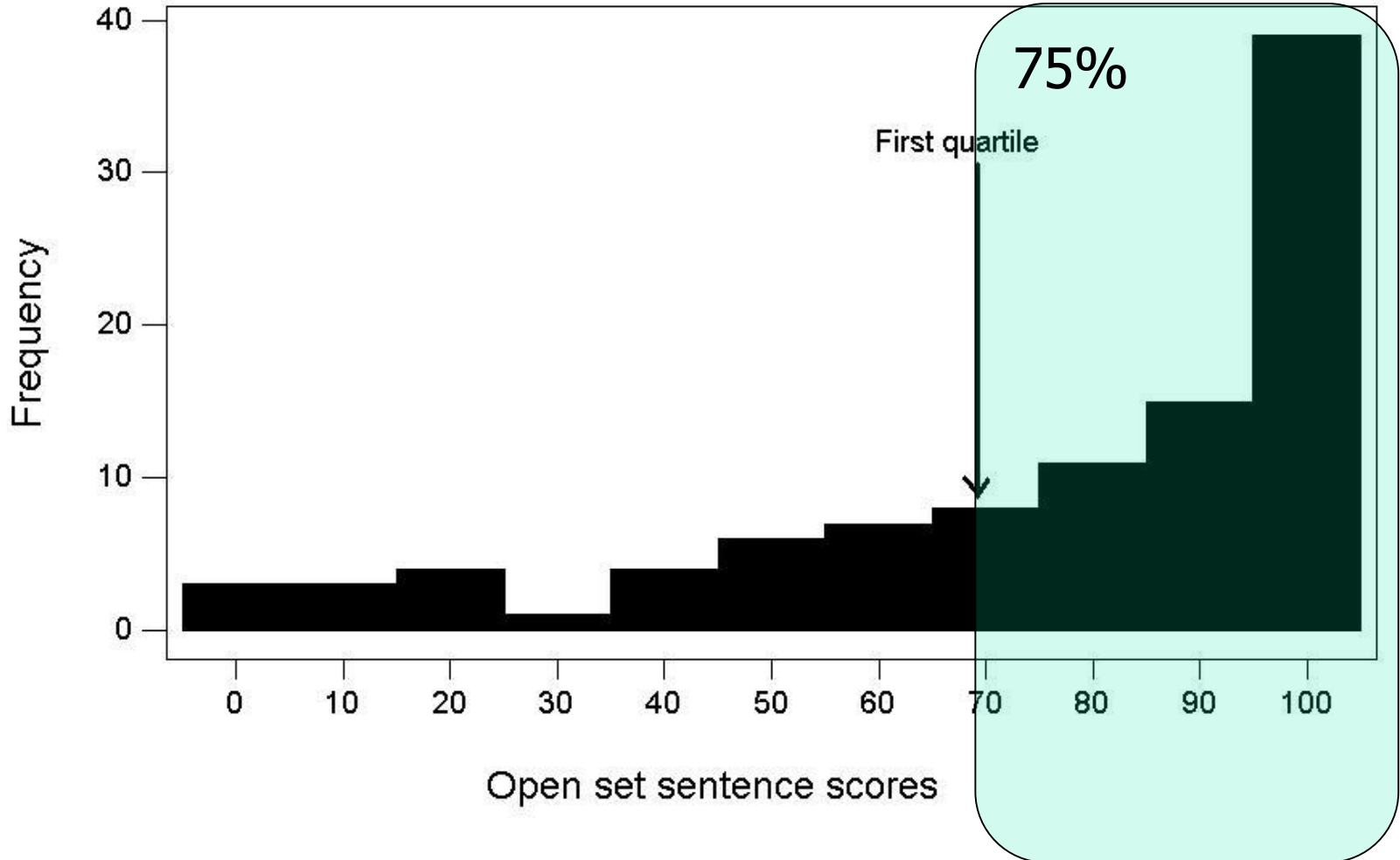
Limitations of Audiometry

- Severe hearing loss could be candidate
- *Speech perception can vary markedly* for same hearing: audiogram is “ball-park” only
- AIDED-Audiogram more important
- Speech perception is Gold Standard

Post-lingual adults: monosyllabic words



CUNY sentences in quiet



CI in Children





E. Phillips FOX *(Mother and child)*



E. Phillips FOX *The lesson*

Assessment

- Objective measures needed (ASSR, ABR)
- Audiometric measures important (90 dB PTA – a clear candidate)
- Hearing aid trial important- monitor speech and language. Implant if poor progress.

Implant as early as possible

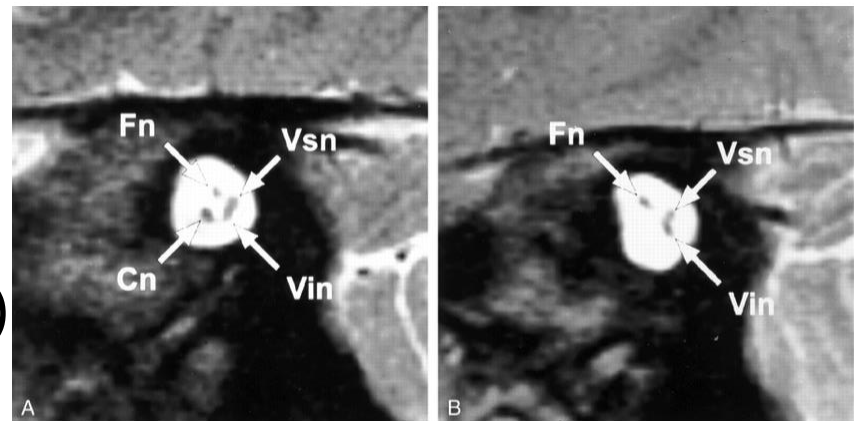
Is the cochlear nerve present?

Evidence for a present NVIII

- **MRI: T2 weighted images, parasagittal images**
- CT-scan: patent cochlear aperture
- audiogram: hearing thresholds (unaided, aided)
- eABR: (electric) auditory brainstem responses

(Slide...
Thanks to Emmanuel Mylanus)

Glastonbury et al. AJNR 2002



Case

- Adult, progressive deafness
- Severe loss
- CUNY sentence score in quiet 20%



Expected outcomes

- Would you implant?
- Speech perception – should it improve?
- Clarity of speech expression (speaking)?
- Awareness of environmental sounds?

Case

- 18 month old child
- Diagnosed at 6 months, bilat. profound loss
- Worn hearing aids from 6 months
- No speech expression



Expected outcomes

- Would you implant?
- Speech perception – should it improve?
- Clarity of speech expression (speaking)?
- Awareness of environmental sounds?

Case

- 10 year old child
- Diagnosed at 2 years with bilat. profound loss
- Worn hearing aids since 2 years
- No speech expression, uses sign language

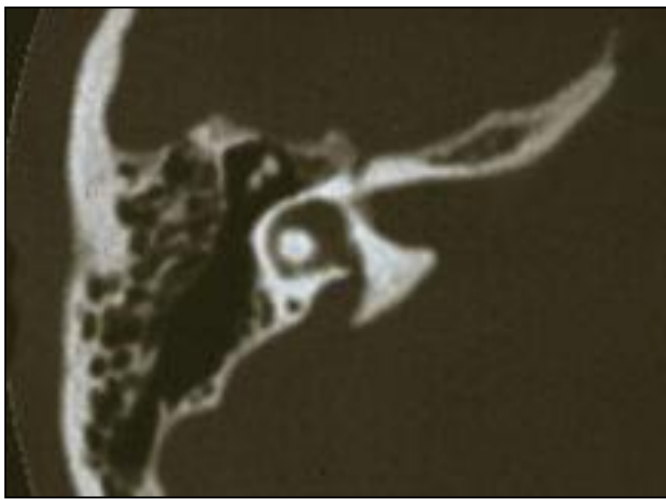


Expected outcomes

- Speech perception – should it improve?
- Clarity of speech expression (speaking)?
- Awareness of environmental sounds?
- Implant?

Case

- 4 year old
- Progressive loss, now severe-profound
- Diagnosed at 12 months, aided bilaterally
- Language is behind, not progressing
- Speech intelligible but unclear



Expected outcomes

- Speech perception – should it improve?
- Clarity of speech expression (speaking)?
- Awareness of environmental sounds?
- Implant?

Case

- 5 year old child
- Diagnosed at 2 years, profound loss
- Aided at 2 years
- No speech, poor speech recognition
- Language development 3 years behind age
- Normal cochleae on CT/ MRI

Expected outcomes

- Speech perception – should it improve?
- Clarity of speech expression (speaking)?
- Awareness of environmental sounds?
- Would you implant?

Children- special cases

- Middle ear disease
- Multiple disabilities
- Auditory neuropathy

Adults – special cases

- Older patients
- Long standing dead ear

Congenitally-deaf adults

- Expectations are GREATLY reduced
- Key questions:
 - Do they want to talk/ speak?
 - Do they want to hear environmental sounds only?

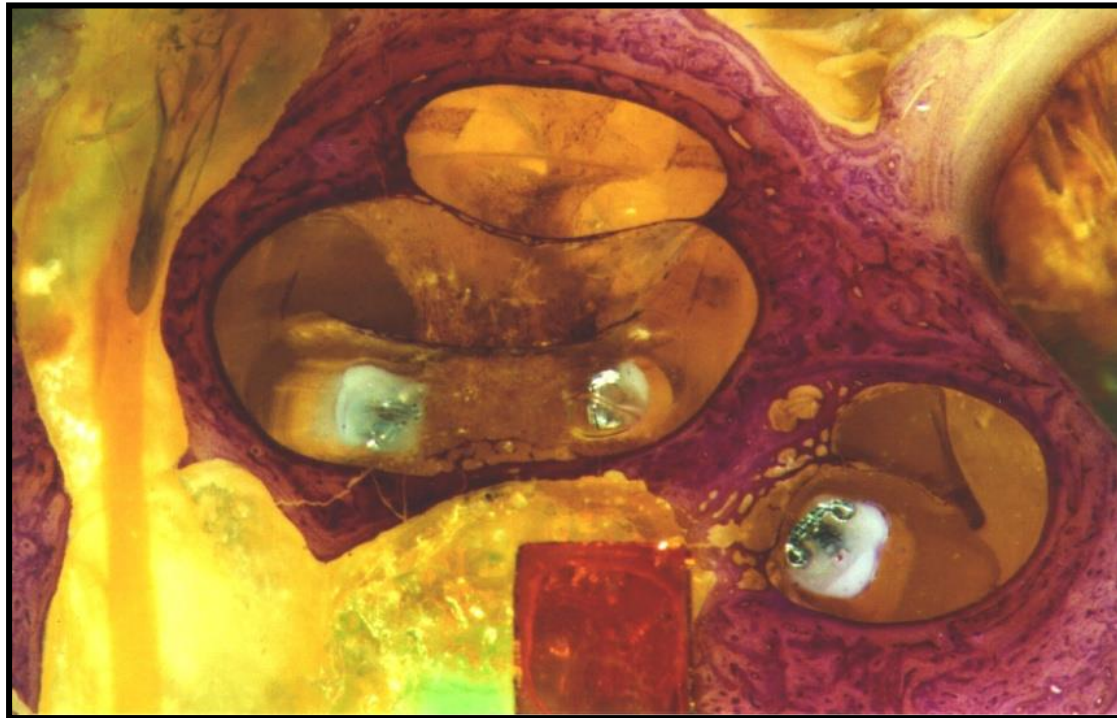
Where to place a CI:
Proper electrode placement

Correct implant placement?



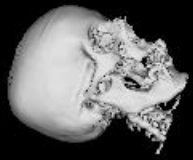
NO! – IT IS IN SCALA VESTIBULI

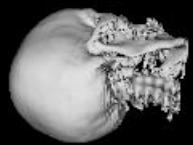
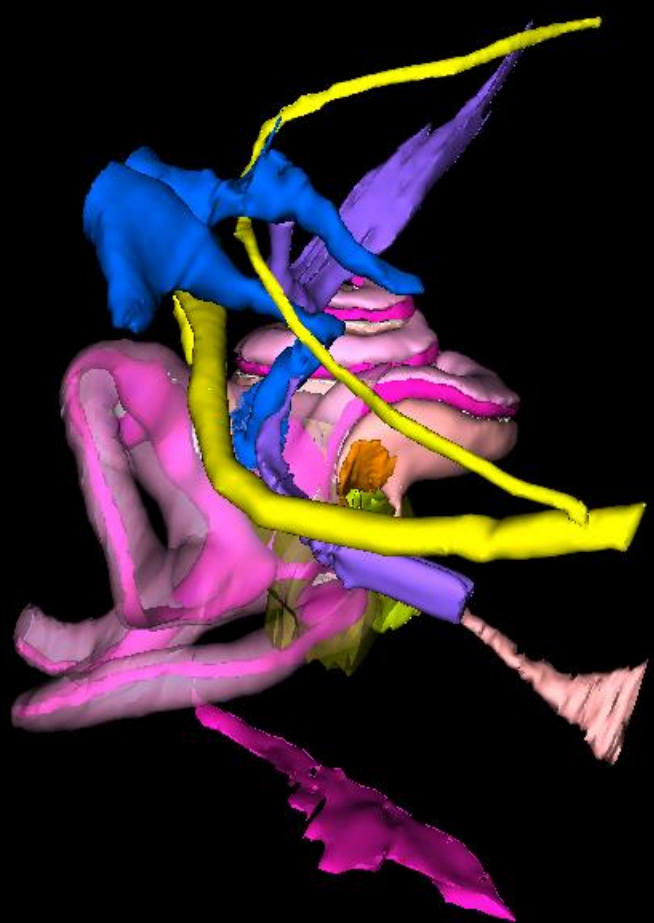
Is this in the right place?

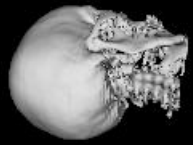


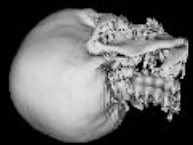
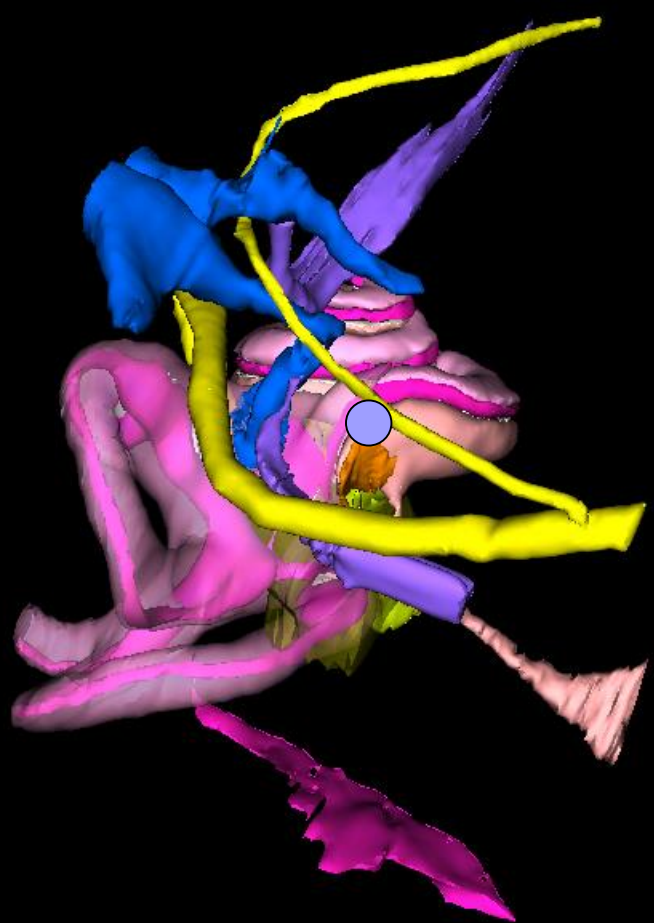
Preparation for CI insertion

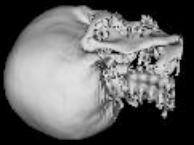
- Widely open the facial recess
 - Remove overhanging bone from facial nerve and chorda tympani
- **Identify and expose the round window**
- Understand the anatomy of the basilar membrane and osseous spiral lamina near round window

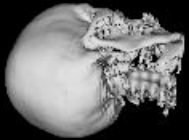


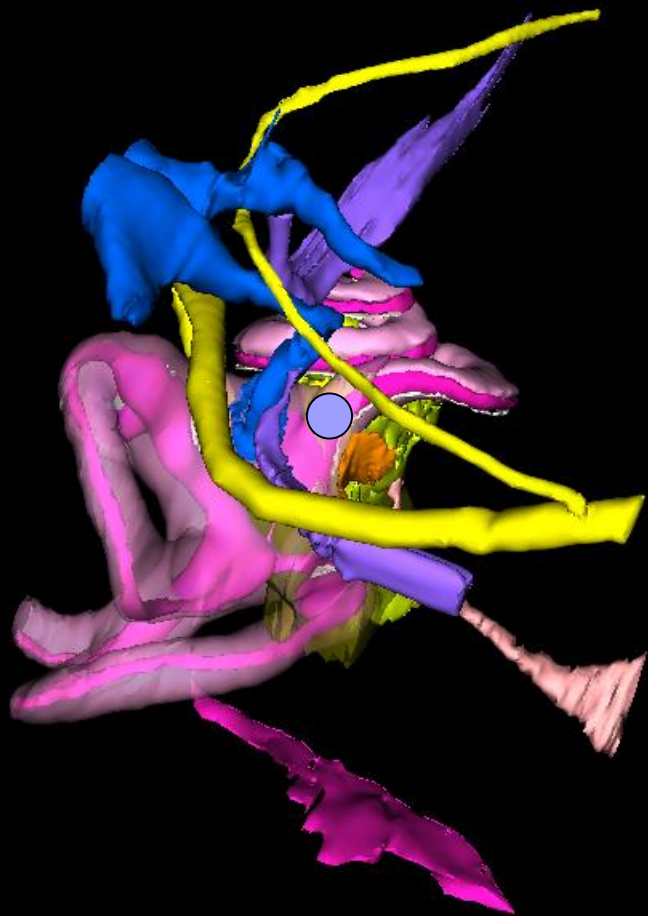
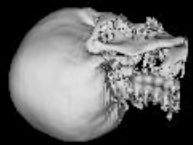


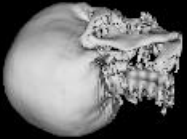


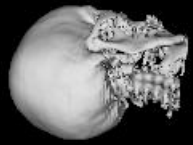


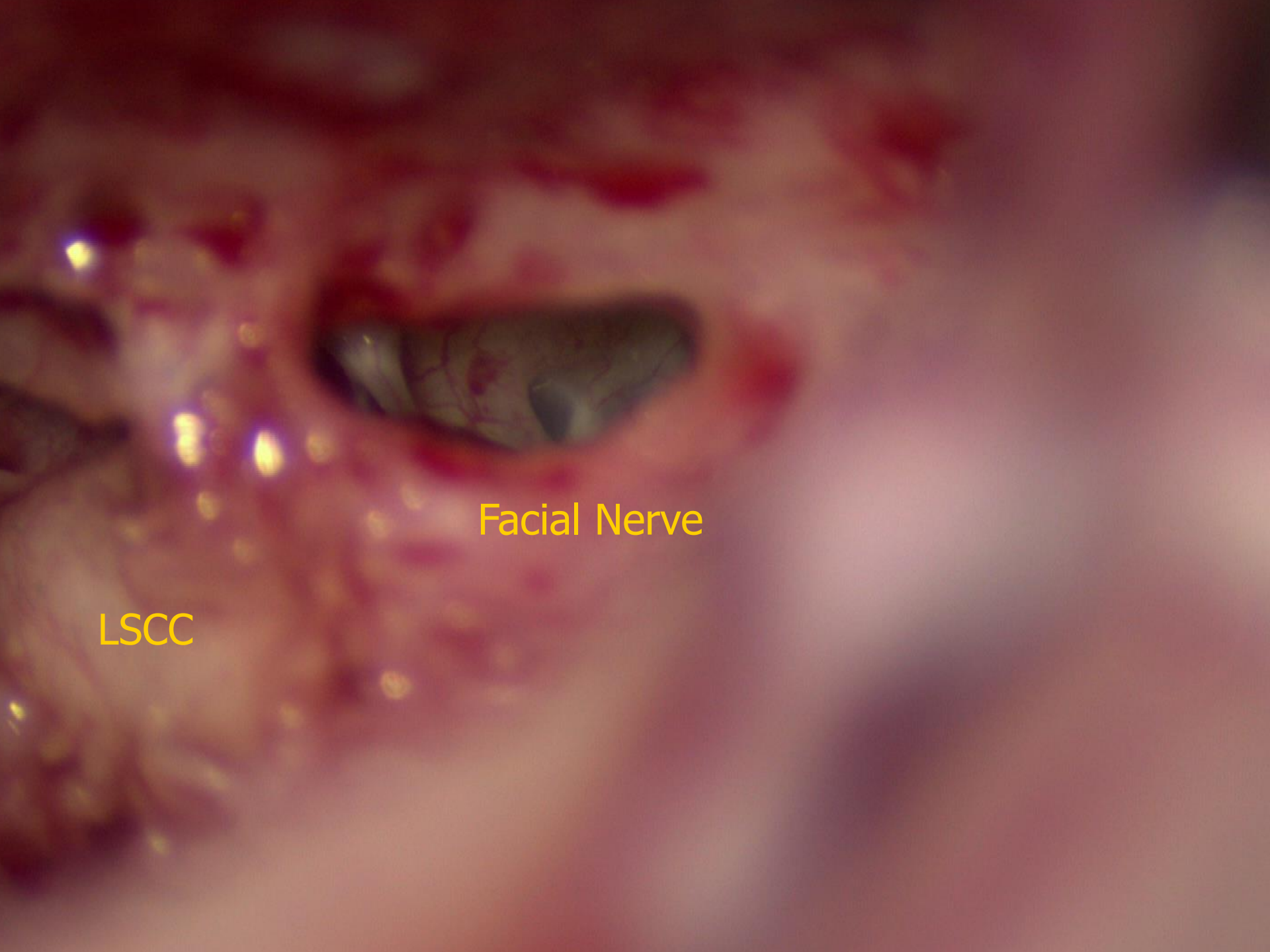






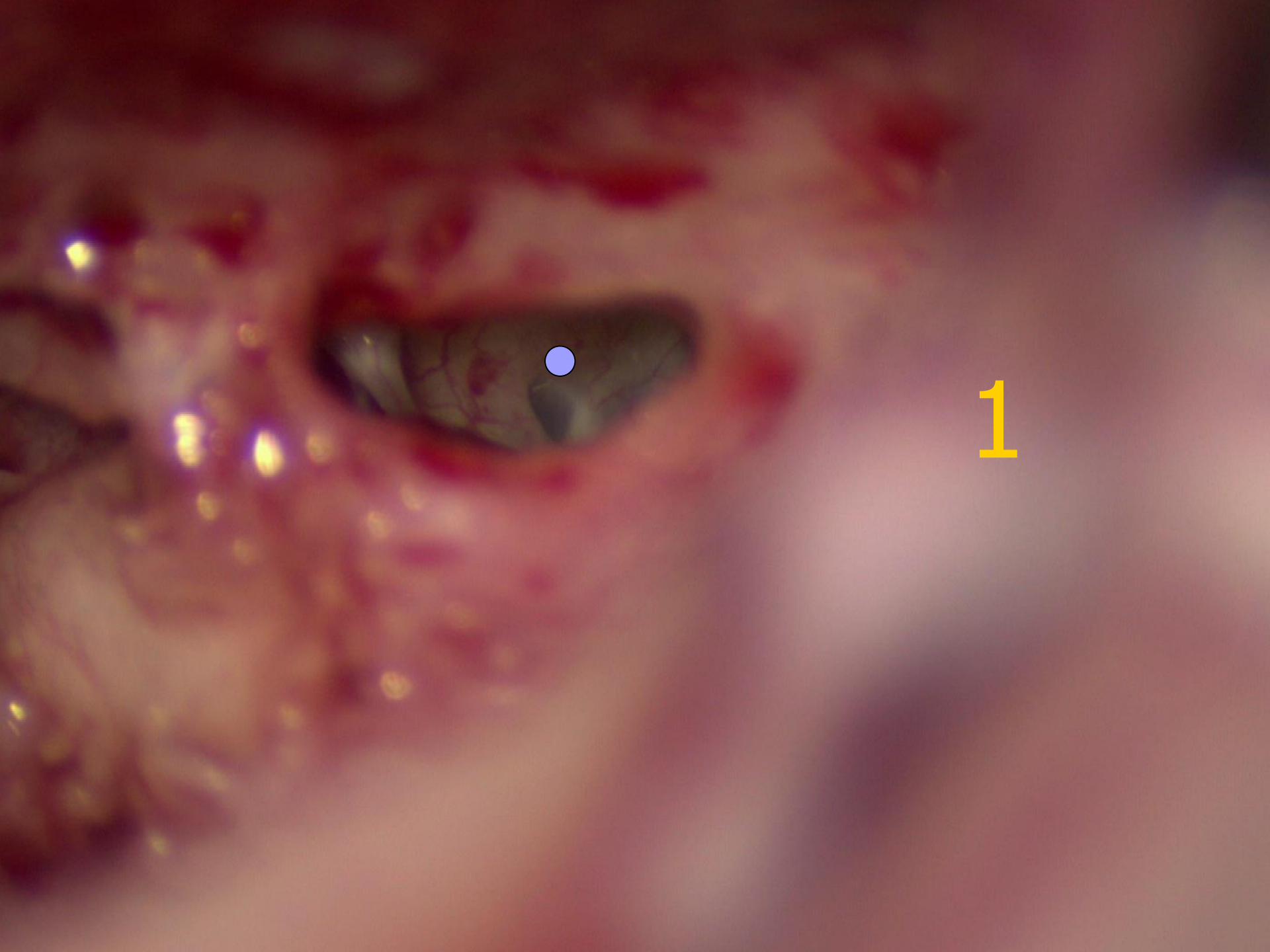


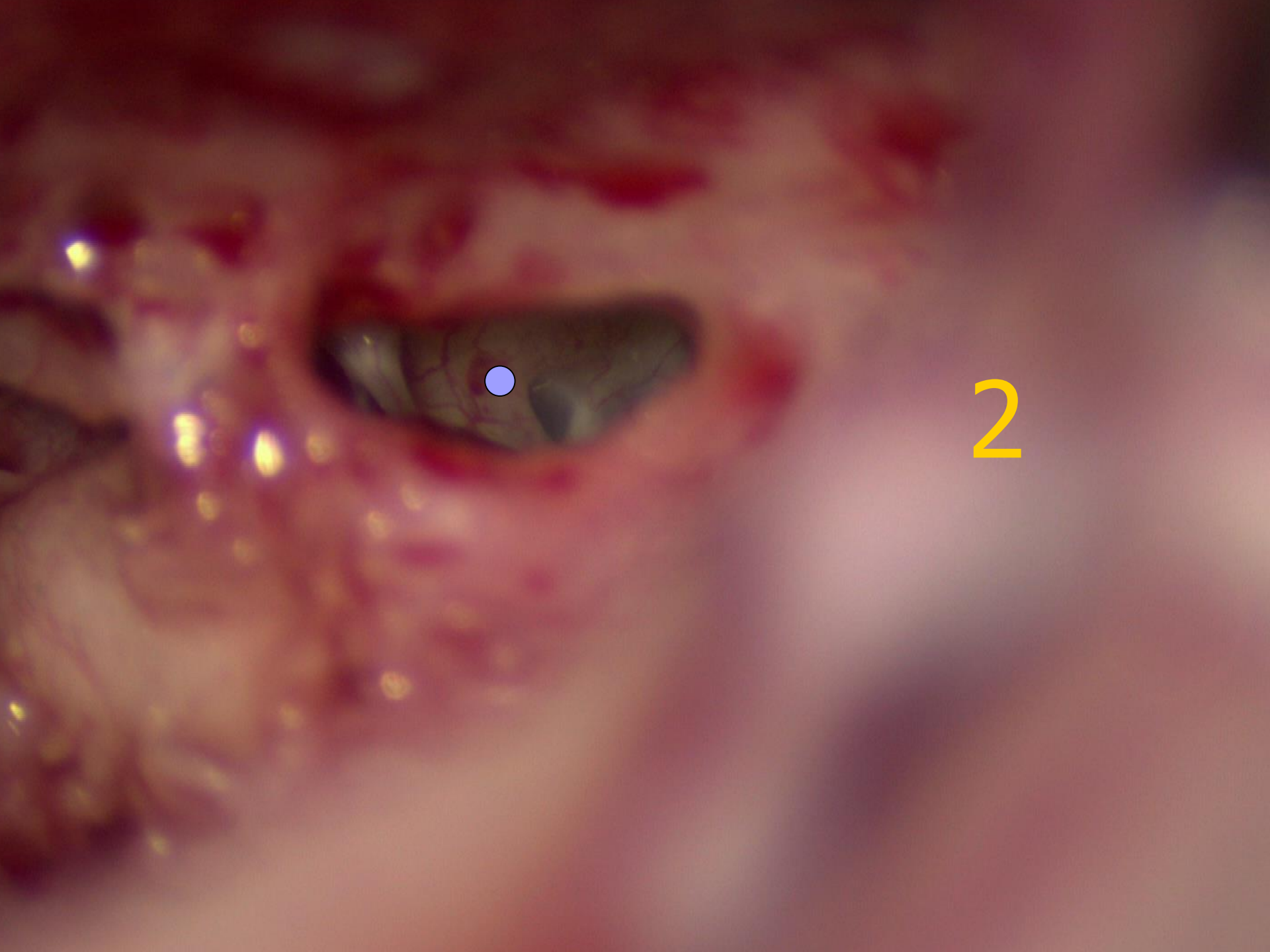


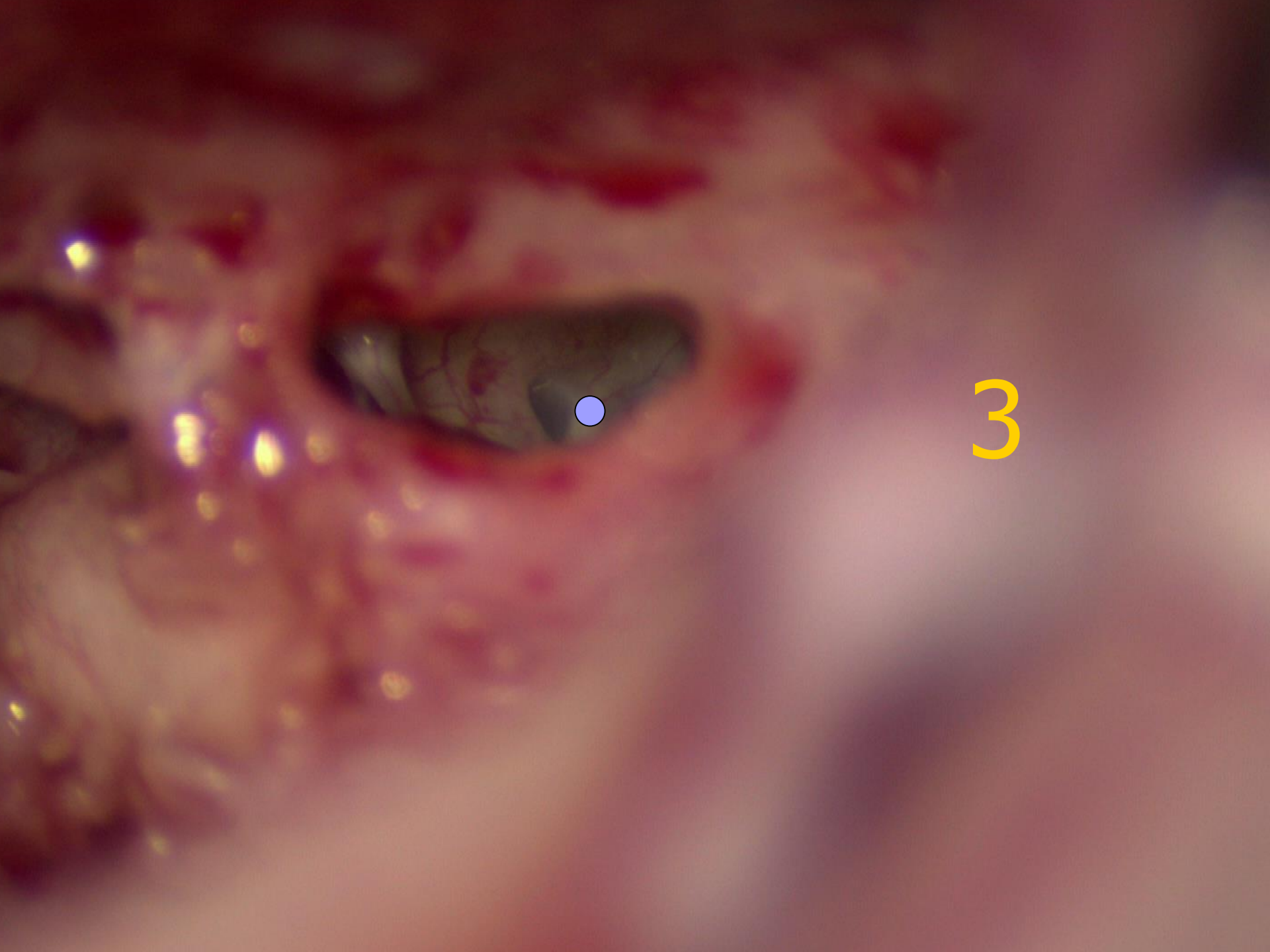


Facial Nerve

LSCC





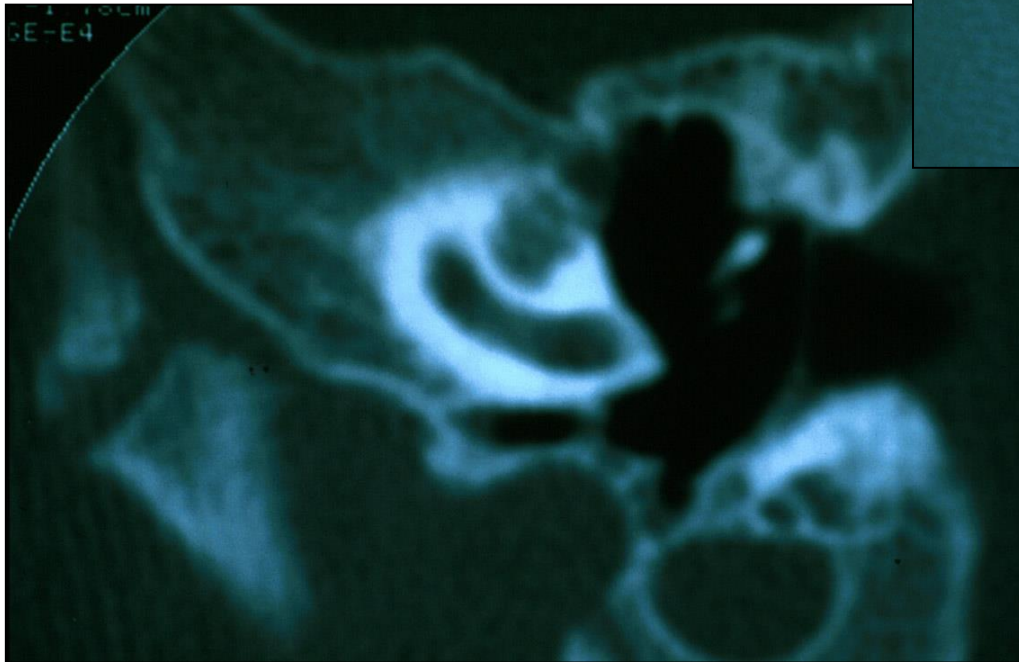
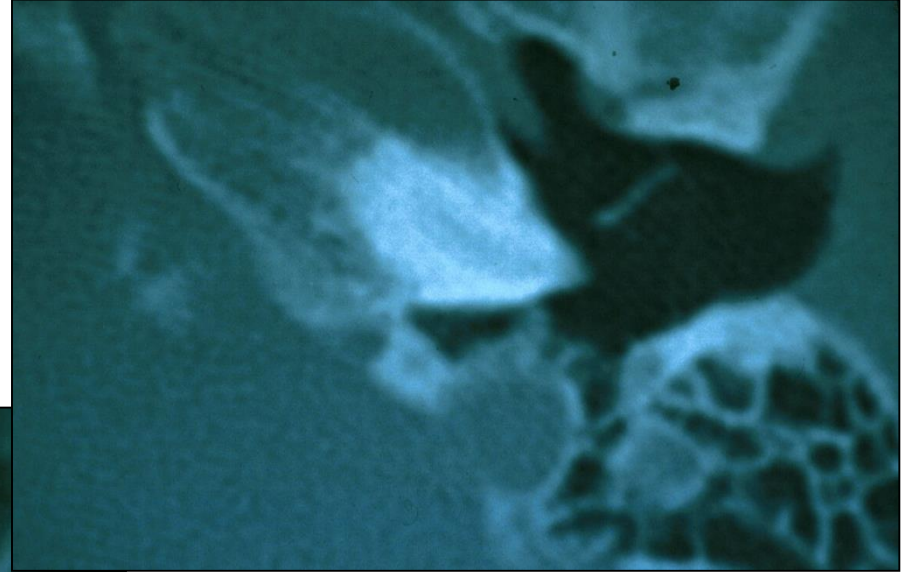


3

Round window insertion

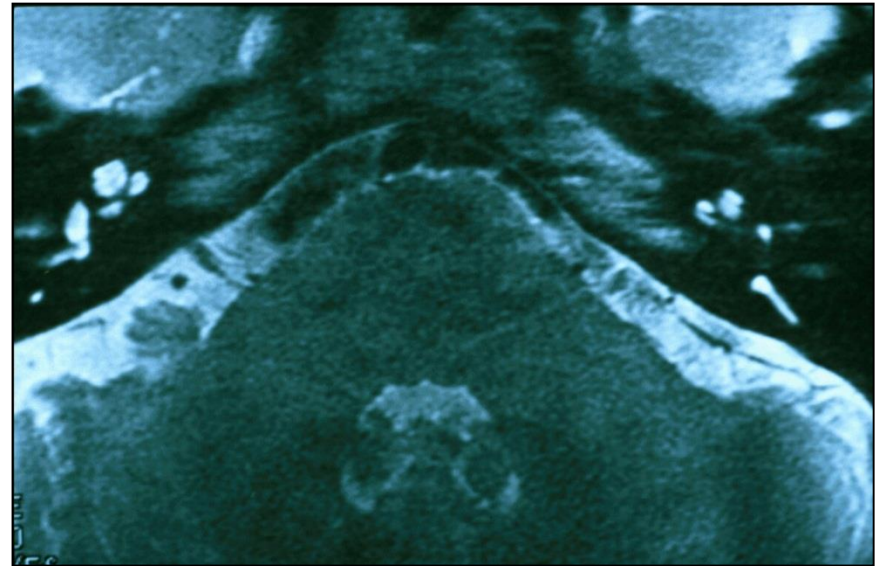
- Benefits
 - Reliable landmark
 - No bone drilling, bone dust, risk of CSF leak
- Risks
 - Implant trajectory “less ideal”
 - Basilar membrane, modiolar injury
 - **Needs to be an appropriate electrode**
- No difference in hearing preservation

Meningitis



**Ossification can
happen within
weeks**

Urgent MRI Justified



Any questions?

