Poster 162: Intraoperative Electrocochleography in Response to Acoustic Stimulus Using the Cochlear Implant Electrode Array and Post-activation Speech Outcomes

Robert T. Dwyer, AuD[1], Jourdan T. Holder, AuD[1], Brendan P. O'Connell, MD[2], René H. Gifford, PhD[1,2], Jack H. Noble, PhD[2,3], George B. Wanna, MD[2], Marc Bennett, MD[2], Alejandro Rivas, MD[2], David S. Haynes, MD[2], and Robert F. Labadie, MD[2,3]

[1]Department of Hearing and Speech Sciences, Vanderbilt University Medical Center, Nashville, TN
[2]Department of Otolaryngology, Vanderbilt University Medical Center, Nashville, TN
[3]Department of Computer Science and Electrical Engineering, Vanderbilt University, Nashville, TN

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Disclosures

- RG is on the audiology advisory board for Advanced Bionics and Cochlear Americas and the clinical advisory board for Frequency Therapeutics
- RL is a consultant for Advanced Bionics, Cochlear Americas, and Ototronix
- DH is on the surgical advisory boards for Cochlear, MED-EL, AB, Stryker, Anspach, and Oticon Medical
- MB is on the surgical advisory board for MED-EL and is a consultant for Oticon Medical
- AR is on the surgical advisory boards for Cochlear, MED-EL, AB, Stryker, Olympus, and Grace Medical
- GW is on the surgical advisory board for Oticon Medical and is a consultant for AB, Cochlear, and MED-EL

The other authors declare that the research was conducted in the absence of any commercial or financial relationships that directly affected the current research.

Background and Study Motivation

- Considerable variability in CI outcomes
- Relationship between electrocochleography (ECochG) and
  - postop word recognition in adults (e.g., Scott et al., 2016; Fitzpatrick et al., 2014 and McClellan et al., 2014) and children (Formeister et al., 2015).
  - postop behavioral audiometric thresholds in patients with residual hearing (O'Connell et al., 2017; Koka et al., 2016)
- What is the relationship between the magnitude of the ECochG response *recorded from a standard length, pre-curved electrode array after insertion* and postoperative speech understanding?

Methods

Participants

- 36 adults (38 ears) with Advanced Bionics (AB) HiRes 90K Advantage with mid-scala electrode

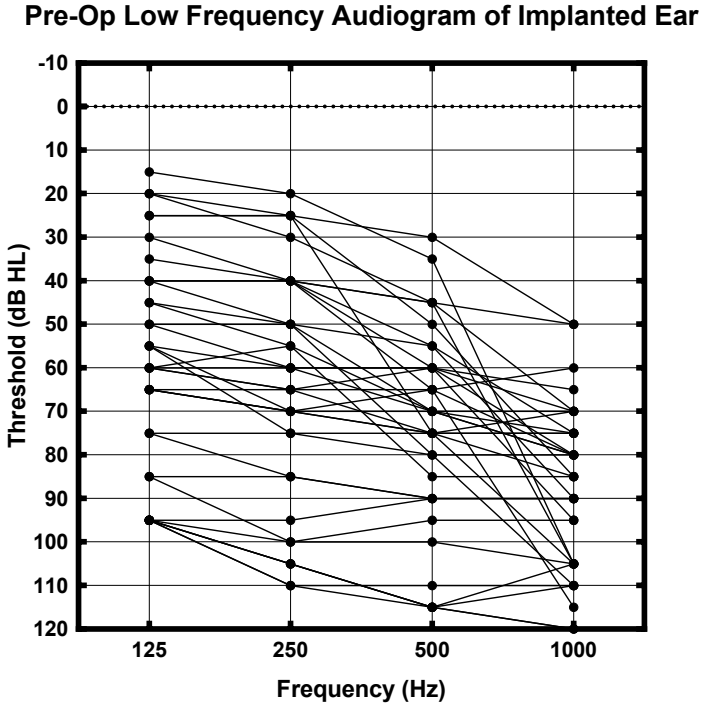
ECochG

- Alternating polarity acoustic tonebursts: 125, 250, 500, 1000 & 2000 Hz
- Amplitude of the response was measured from E1 and calculated using FFT analysis
- Evoked potentials recorded at 5 different times points (surgery, activation, 1, 3 and 6 months post-op)

Speech Understanding

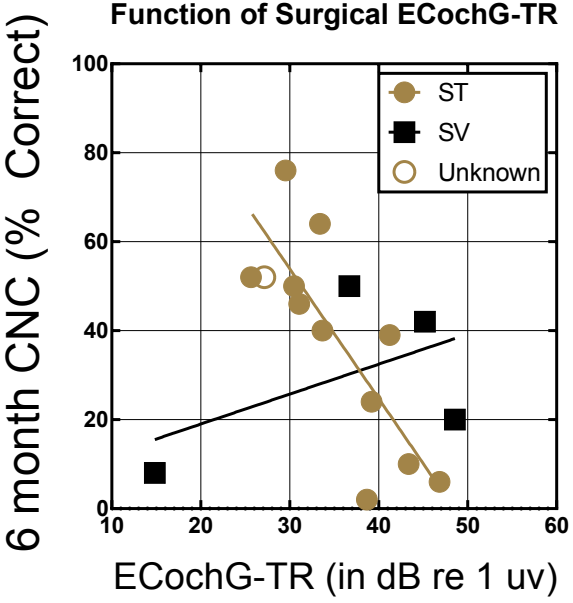
CT Imaging

- 32 of 36 participants had postoperative CT scans to verify scalar placement
- Scans analyzed using methods by Noble et al., 2011



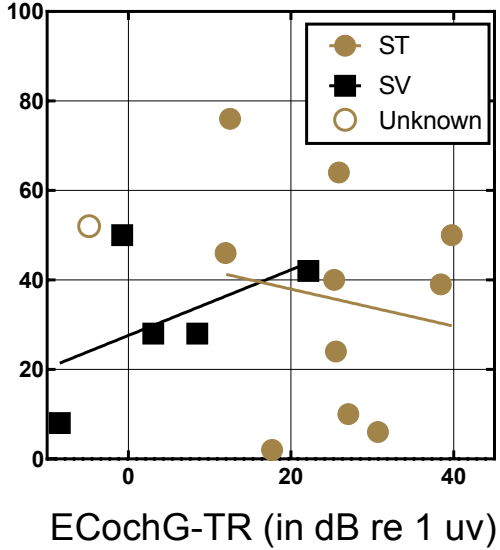
Intraop ECochG-TR did not significantly correlate with CNC

6 Month CNC Word Score as a Function of Surgical ECochG-TR



ECochG-TR did not significantly correlate with speech scores

6 Month CNC as a Function of 6 Month ECochG-TR



Change in ECochG-TR over time did not significantly correlate with speech scores

Change in ECochG-TR from Activation to 6 Months Post