Indications and outcomes of cochlear implant reimplantation surgery for legacy internal devices

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Introduction

Cochlear Implant Reimplantation (CIR) surgery

- Surgical and medical complications are minimal \(^1\)
- Audiological outcomes are generally very good \(^1-7\)
- Previous authors acknowledge technological upgrade as a possible reason for CIR\(^2-4\)
- Patients will require variable time to adapt to their new device and achieve these stable or improved scores \(^8\)
Introduction

AB Clarion 1.2 internal device

- External processor compatibility:
  - Harmony ✓
  - PSP ✓
  - Naida X
  - Neptune X

- Differences:
  - Microphone technology
  - Signal processing
  - Current steering
  - Battery life
  - Waterproof ability
  - Accessories
  - MRI compatibility
Objective

To determine indications, surgical efficacy, and audiologic outcomes of cochlear implant reimplantation for individuals with Advanced Bionics Clarion C1.2 internal devices, including those reimplanted as a means of technology upgrade.
Study Design, Subjects, Methods

**Study Design:** Retrospective review and pre- vs. post- intervention analysis of patients initially implanted with AB C1.2 internal device and reimplanted with AB HiRes90k Advantage HiFocus Mid Scala internal device.

**Subjects:**
Seven patients (7 ears)
  5 females, 2 males
Mean age of first CI = 3.8 years (range: 0.98-9.6)
Mean age at reimplantation = 18.8 years (range: 14.84-23.52)

**Methods:** Demographic data and pre- and post- cochlear implant reimplantation speech perception scores were collected.
Results

- Primary motivation for CIR: technology upgrade (6/7), soft failure (1/7)
- No surgical complications reported
- Full insertion (6/7), two electrodes extra-cochlear (1/7)
- Speech perception improvements post-CIR:
  - Words
  - Phonemes
  - Sentences in noise
- Due to the small sample size no significant differences were found (all p>0.05)
Mean Speech Recognition Scores
Pre- and Post-CIR

Percent Correct Score

CNC Words  CNC Phonemes  HINT Q  AzBio Q  AzBio +10SNR

Pre  Post

Mean Speech Recognition Scores
Pre- and Post-CIR

Percent Correct Score

CNC Words  CNC Phonemes  HINT Q  AzBio Q  AzBio +10SNR

Pre  Post
CNC Words
Pre- and Post-CIR

Subject #

Percent Correct

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

CNC Words

1 2 3 4 5 6 7

Pre
Post

Changing What’s Possible | MUSCHealth.org
CNC Phonemes
Pre- and Post- CIR

CNC Phonemes

Percent Correct

Subject #

Pre
Post
AzBio +10
Pre- and Post-CIR

Percent Correct

Subject #

Pre
Post
Conclusions

• Post-CI reimplantation audiological benefit was stable or improved compared to pre-CI reimplantation performance in all patients.

• Patients with AB CI.2 internal devices should be considered for reimplantation to optimize their overall performance with a cochlear implant.

• Patient should be counseled cautiously.
References