

**Otology Outpatient Case Report**  
**Report # 1**  
**Prepared by Adrian KC Lee**  
**16 February 2004**

***Synopsis***

This report details the evaluation of cochlear implant candidacy of a 63-year-old male. Initial medical examination was performed by Dr Rho on 12 February 2004. An audiologic evaluation was carried out and based on these results, a diagnosis and a treatment plan was formulated by Dr Nadol on the same day.

***Medical History***

The chief complaint of the patient is his progressive hearing loss that was first noticed 10 years ago. He has been using hearing aids bilaterally for 10 years but the present complaint is that the hearing aids do not help him in speech recognition anymore, and was thus referred by his primary care doctor.

The patient reports bilateral tinnitus, but does not have any dizziness. There is no family history of hearing loss or dizziness. He has been working in a power company as a linesman, and had constant exposure to high-level industrial sound during his working career. He was also in the military, exposed to noise of Navy aircraft carriers. He is now a retiree.

He is currently on medications for his hypercholesterolemia and hypertension. He had deep vein thrombosis in his left leg 3 years ago and surgery was performed. He is on Atenolol, Zocor and aspirin.

***Exam Findings***

Dermatitis was evident in the external auditory meatus bilaterally under otoscopic examinations. Both tympanic membranes are intact and there is no visible fluid in the middle ears. Nasal cavity, nasopharynx, mouth, pharynx, larynx and neck all appeared to be normal and there is no evidence of cranial nerve dysfunctions.

The patient cannot perceive the tonal stimulus in the Weber test or the Rinne test with his hearing aid taken out. Using a noise box to mask the contralateral ear, the patient cannot repeat any words presented at a very high sound level in the ipsilateral ear. The patient reports that he is aware of the presence of the sound but fails in speech recognition.

***Test Results (Audiologic Evaluation)***

In his speech intelligibility test, whole word score at 115dB HL of 4% binaurally for unaided whole word open set recognition and 16% aided was reported. Phoneme score at the same presentation level was 25%/21% (AD/AS) unaided and 37% aided.

Audiogram shows that there is little residual hearing at low frequencies, and at high frequencies, there are no responses to 120dB HL of tonal stimuli. His left ear is slightly poorer in low frequency by 10%.

The audiology department reports that benefit from amplification is limited and cochlear implantation is recommended.

**Diagnosis**

Audiologic evaluation reveals that this patient has bilateral profound sensorineural hearing loss. There is also chronic inflammation in the external auditory meatus bilaterally (worse on left side), which is possibly caused by dermal allergic reactions to the hearing aids and the patient exposing his ear canals with vinegar, alcohol and water. (*Etiology of the loss was not documented.*)

**Treatment Plan**

Since the patient has bilateral progressive profound sensorineural hearing loss and hearing aids can only provide sound awareness with no speech discrimination ability, he is now considered to be a candidate for cochlear implant. However, chronic dermatitis on the potentially implanted ear needs to be treated first. The left ear shows slightly worse residual hearing and after discussing with the patient, this ear is chosen to be the potential ear for cochlear implantation. Antibiotic drops (Tobradex) is given to clear otitis externa in this ear and the patient is advised to cease using hearing aid in this ear. The patient is also told to keep water out of this ear with cotton and vaseline.

The patient expresses interest in pursuing the option of cochlear implantation. He and his wife are given reading material to be further informed on the subject matter. CAT scan is scheduled in the coming months to check the patency of the cochlea and the mastoid area. Information and training sessions for pre-operation cochlear implantation are also planned and social service department will carry out psychological and social assessment regarding to his cochlear implantation candidacy. The different options of signal processing strategies will be explained by Dr Eddington at the CIRL here at MEEI.

**Follow Up Visit**

The health of the left ear (the intended ear of implantation), especially the condition of the current external otitis will be reviewed. Upon CAT scan results, the recovery of the current inflammation in the ear canal and the approval of the other screening processes for his implant candidacy, a pre-operation session will be conducted and the risks of the surgery will be discussed.

**Personal Observations / Thoughts**

It is of special interest to me to observe the evaluation and the screening process of implant candidacy since I have been working on implant research for the last 2 years (and hopefully to pursue further here at MEEI for the next few years). In my personal opinion, the media, and indeed some of the promotional material of the implant companies, sometimes portray cochlear implant as a miracle cure for hearing loss. It is very important for clinical professionals to present cochlear implantations objectively. Just like any other operations, the statistics of success and failure rates of the procedures are presented to the patients. It is also excellent practice to ensure that there is a "cooling off" period for patients to think about these elective surgical procedures. However, it is even more important for the patient to understand the realistic success rate of cochlear implant as an aid for speech communication. The patient also needs the motivation and be prepared for the time commitment in order to learn how to capture the electrical cues provided by the implant, which are drastically different from the acoustically stimulated signals.

Understanding the process in place in the screening for implant candidacy helps me realize what mechanisms are in place to ensure that the patients do not have a misconception and / or over-expectation for the implant technology. In so doing, the patient has the best chance to get the most out of this device and hopefully, the implant can indeed improve one's quality of life.