UNIVERSITY OF Southampton

Institute of Sound and Vibration Research

Audiological Findings, Surgical Complications and Outcomes Data for Cochlear Implant Patients with Mondini Deformities

Mondini Deformity:

Dysplasia of the bony labyrinth characterized by a normal basal turn of the cochlea, with a sac instead of the apical turns, a grossly dilated vestibulr aqueduct and a dilated vestibule.[1]

Patient Details

12 cases, 13 ears implanted

5 adults, 7 children; age range 3 – 48 years

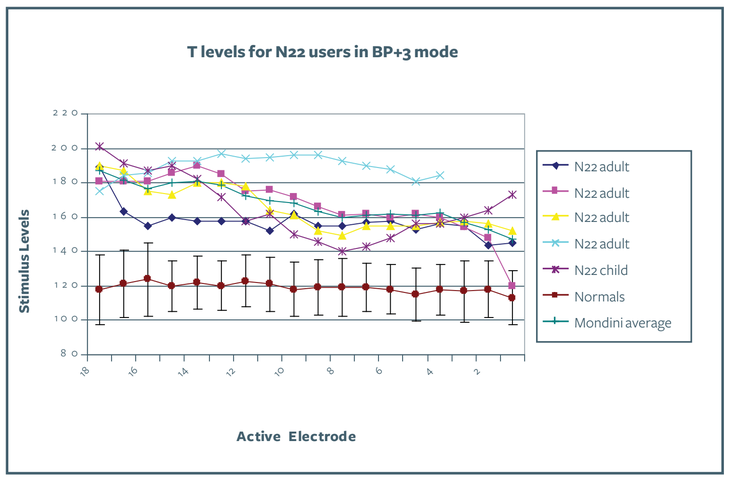
6 N22,1 CI24M, 3 Med-El C40+, 3 Nucleus Freedom

Surgical complications

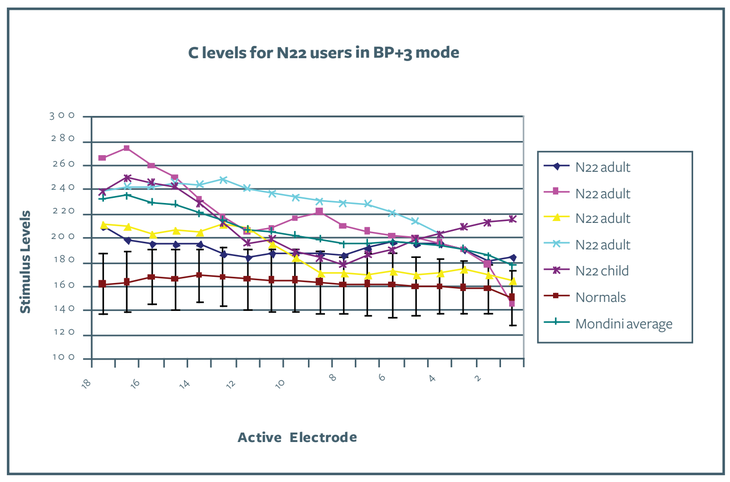
- CSF gusher occurred in 10 out of 13 surgeries
- Gusher varied from 'minimal' to 'furious'
- 1 patient required further surgery to plug leak
- Balance problems were reported following surgery in 6 cases (often associated with vomiting and long-lasting in 1 case)
- Headaches were reported by 2 patients post-operatively

Audiological Findings

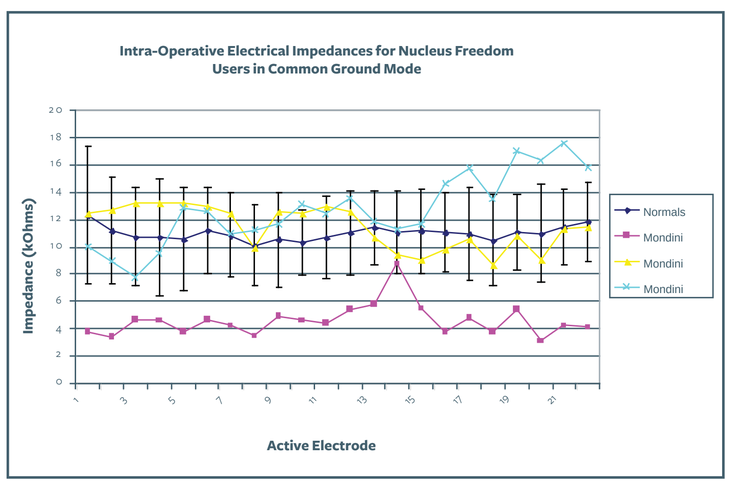
- 1 patient has a kink in the electrode array requiring deactivation of some electrodes
- All Nucleus 22 and 24 patients have high T and C levels
- All of these also had CSF gushers during surgery
- Majority have increased pulse widths or stimulation modes to accommodate the high current requirements
- Of the 3 Med-El users, 2 have increased pulse durations but MCLs are still within the normal range



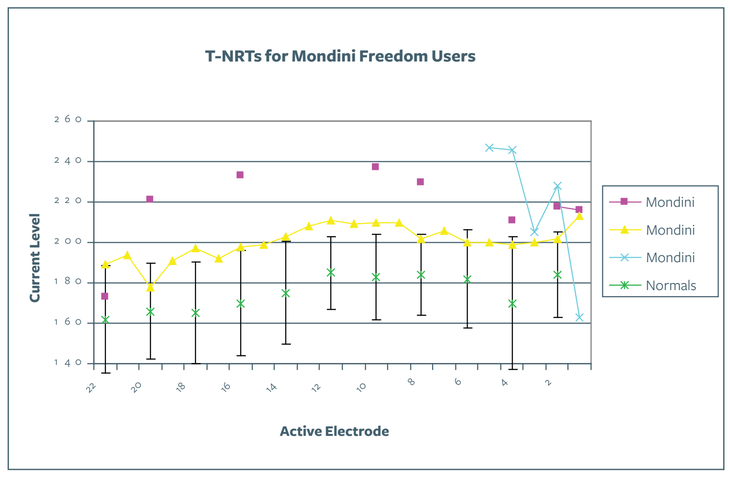
All Nucleus 22 and 24 patients have high T and C levels



Patient with a kinked array not included in this analysis due to different stimulation parameters.



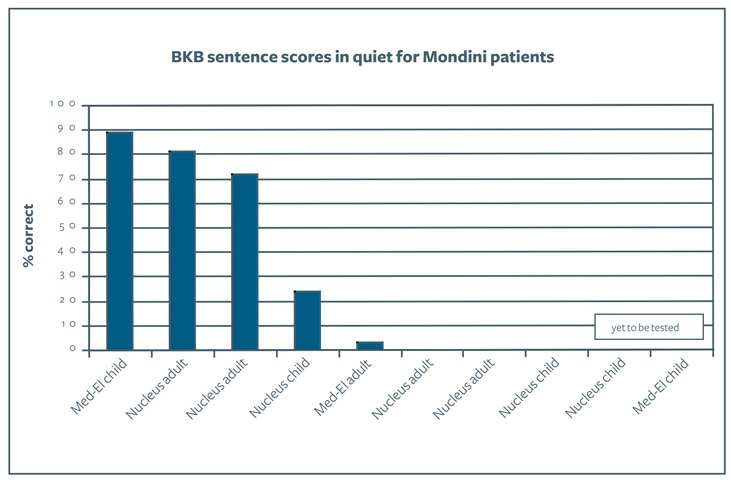
1 Freedom user and 1 N24 user had low impedances intra-operatively; Freedom results shown here



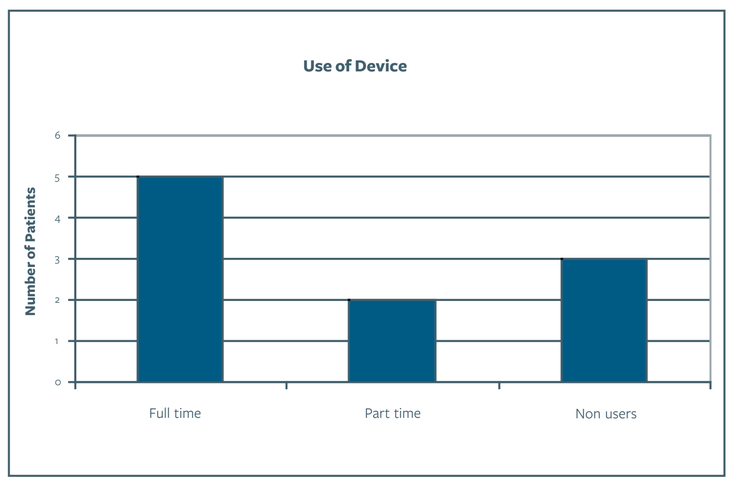
2 Freedom users had high NRT intra-operatively

Error bars = 1 S.D.

Outcomes



Freedom users not included due to recent implantation



- Outcomes vary between very successful to very poor for adults and children
- Only 3 out of 10 implanted for more than 1 year have become good users
- Remainder are below average or poor performers
- Three patients have become non-users
- Long term deafness is a confounding variable in some cases
- Auditory nerve may be suspect in some cases

Can we predict outcomes for Mondini patients?

Not precisely, but these indicators may be helpful:

Indicators of likely good outcome

- Normal speech production pre-operatively
- Less severe abnormality on CT scan
- Progressive hearing loss

Indicators of likely poor outcome

- Severe abnormality on CT scan
- Long term deafness
- Poor speech production – especially if distorted above and beyond what is 'normal' for deaf speech

[1] Reference

J. Laryngol Otol Suppl 2000; 25:1-14
Graham, J M Phelps, P D Michaels, L
Congenital malformations of the ear and cechlear implantation in children: review and temporal bone report of common cavity.

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