Our Clinical Experience with the Nucleus CI532™ Electrode Array

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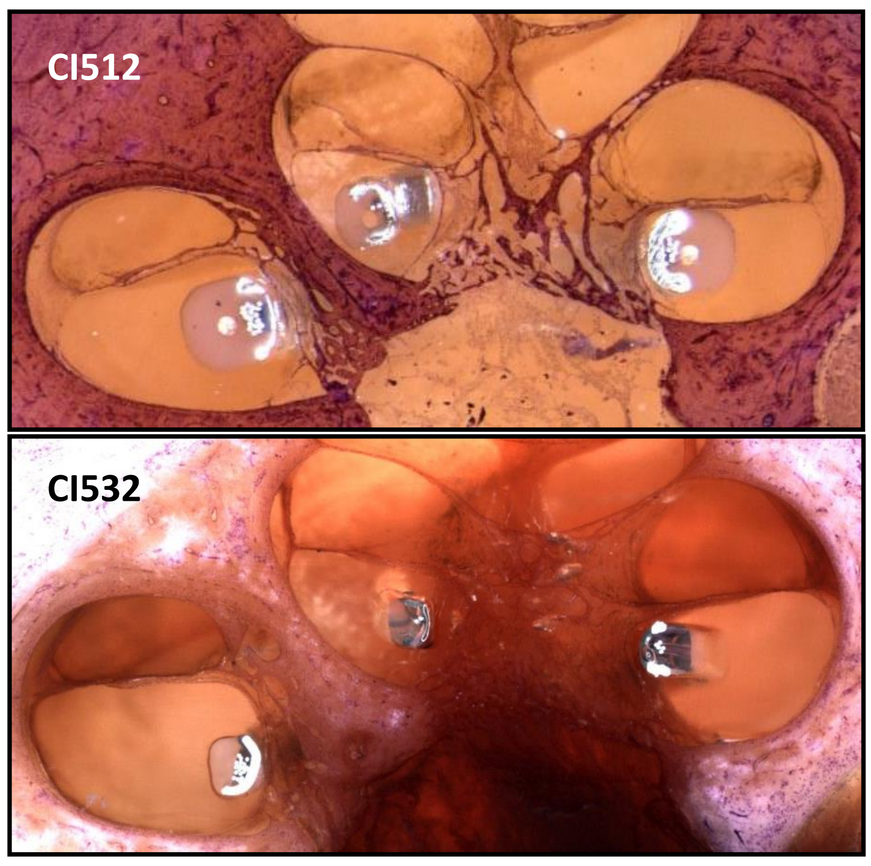
The Nucleus CI532 electrode array was used in a clinical practice in a paediatric population.

Main features of the electrode:

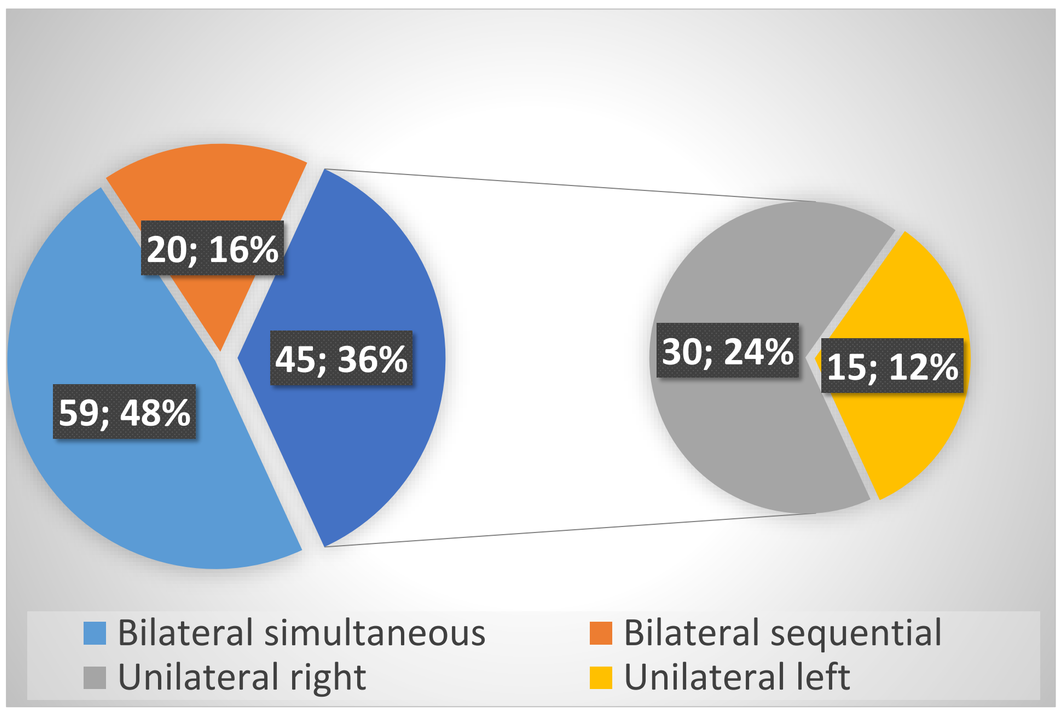
1. 60% less volume compared to CI512 (Contour Advance)
2. Protection of fine cochlear structures during insertion due to the atraumatic design
3. Consistent perimodiolar position and close to spirale ganglion cells –
   - To optimise hearing outcome
   - To decrease energy consumption



On the right pictures a cross cut of the cochlea showing comparison between CI512 Contour Advance electrode (top) and CI532 Slim Modiolar electrode (bottom).
Pictures courtesy of Cochlear Corp™

Our group

Period: 3 years 9 months (6/2014 – 3/2018)
Children: 124
Gender: males 69, females 55
Age: 9 months – 16 years, average 18 months, median 24 months



Graph on the right shows a distribution of bilateral simultaneous, sequential, unilateral left / right in the whole group.
Table below shows average age of all children groups in a surgery, in case of a unilateral surgery an average age in the first and the second surgery respectively and an intersurgical interval

Type of surgery	Number of children	Average age / surgery (months)	Average age / 1st surgery (months)	Average age /2nd surgery (months)	Intersurgical interval (mo)
Bilateral simultaneous	59	14,5	N/A	N/A	0
Bilateral sequential	20	N/A	28	47	19
Unilateral	45	54	N/A	N/A	N/A

Pie chart showing device distribution according to the manufacturer

Pie chart showing various types of used Nucleus™ electrodes

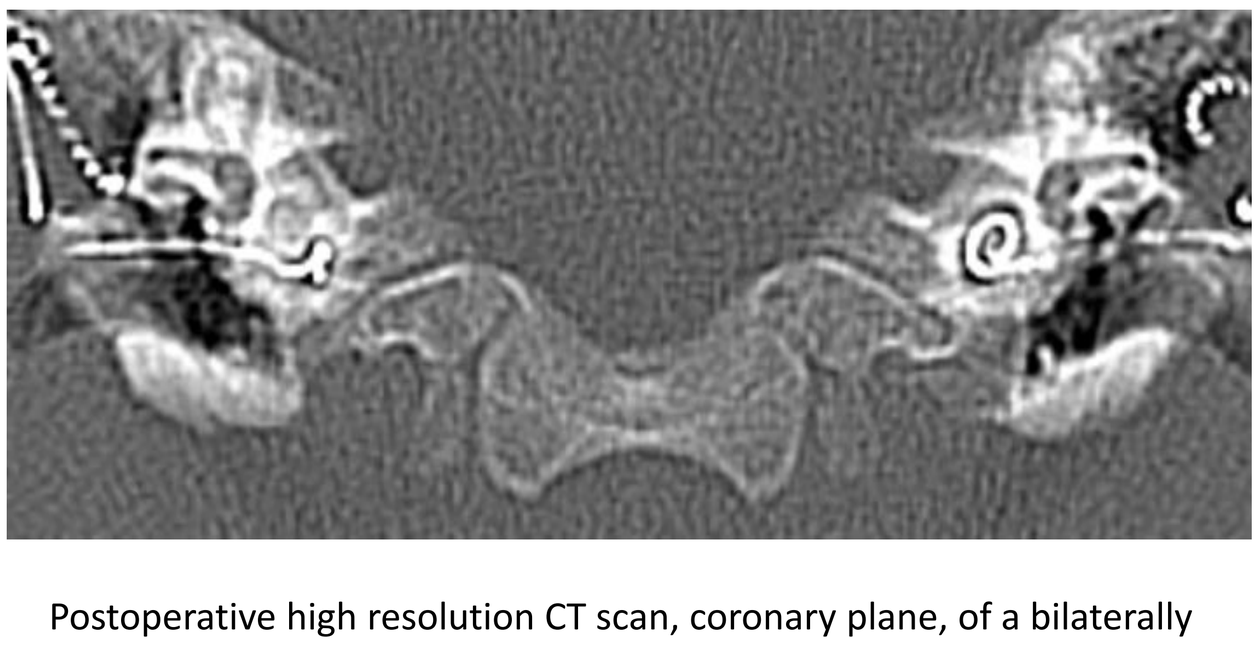
Complications

Due to a small diameter and flexibility of the array, the electrode has a tendency to curl inside the cochlea if a surgical technique is not correct. In our group, it occurred in two cases with the CI532 (1,5%) and in one case in a revision surgery with the CI512. Possible reasons for the tip foldover are summarized:

- Incorrect wing position during insertion
- Moving and non stable wing during insertion
- Under- or overinsertion of the polymer sheath in the basal turn
- Intracochlear changes (adhesions, obliteration)

How to detect a tip foldover intraoperatively?

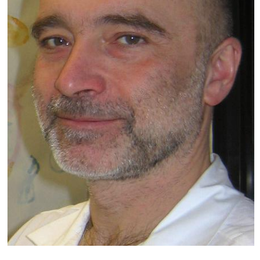
- by electrophysiology (spread of excitation test SOAE, electric field imaging EFI)
- by imaging (cone-beam CT)



Postoperative high resolution CT scan, coronary plane, of a bilaterally implanted child. The electrode array in the left ear is in a good position, while a tip foldover is present in the right cochlea.

Conclusion:

The CI532 slim electrode array represents an electrode of choice in children with congenital deafness and physiological cochleas due to its perimodiolar position and atraumatic insertion



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