P075

AUDITORY IMPLANTS

# Sequential Cochlear Implantation in long term auditory deprivation in prelingual hearing loss

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## Abstract

It is well established that sequential bilateral implantation offers functional benefits in speech in noise and sound localization, although it can be challenging to get long-term unilateral users to adapt to the second implant. The aim of this study are evaluate the long term auditory deprivation in prelinguals hearing loss patients with cochelear implant. This is a retrospective and descriptive study, with two-years longitudinal follow-up. At the end of the 2-year follow-up, for IC2, we observed that group 1 showed greater development of the language category when compared to the other groups. In relation to language perception tests, group 1 also presented better results when compared to the other groups, with group 3 having worse results both for CVCV, as well as for sentences in silence and noise.

## Objectifs

To evaluate the long term auditory deprivation on speech perception in prelinguals hearing loss patients with sequential cochlear implant.

## Méthodes et Matériels

Prelingual hearing loss patients with sequential cochlear implants and non-simultaneous activation, who were followed up at Hospital for Rehabilitation of Craniofacial Anomalies, University of São Paulo, Brazil, from 1990 to 2021. All the patients had bilateral severe/profound hearing loss. The auditory deprivation in these prelingual patients was considered from the date of birth until the age of cochlear implant activation. The patients with auditory neuropathy, cochlear nerve hypoplasia, cochlear malformations, middle ear diseases such as cholesteatoma, and vestibular schawannoma were excluded of the study. The Speech perception was measured using an open-set list of dissyllable words (CVCV; C: consonante; V: vowel) in quiet and open-set lists with sentences in quiet and noise recorded.

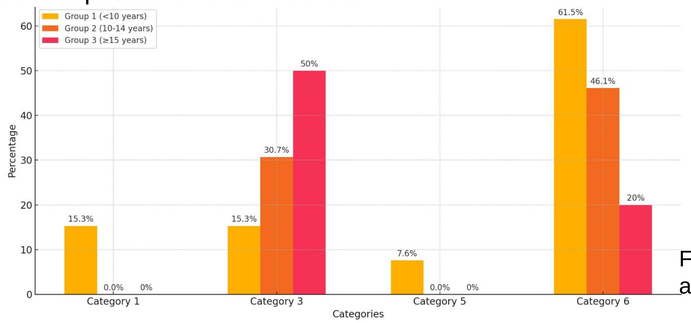


Figure 1. Hearing categories at 2 years follow-up.

## Résultats

36 patients were divided into 3 subgroups according to the auditory deprivation of the second cochlear implant: Group 1 (n=13) aged <10 years (x=5.9 years; ±1.8), Group 2 (n=13) aged 10 to 14 years (x= 11.3 years; ±1.18), and Group 3 (n=10) aged ≥15 years (x= 17.9 years; ± 2.9). At 2 years of follow-up, the hearing category for IC2, group 1, 15.3% category 1 (n=2), 15.3% in category 3 (n=2), 7.6% in category 5 (n=1) and 61.5% in category 6 (n=8). In group 2, 30.7% category 3 (n=4), 46.1% in category 4 (n=6) and 23% in category 6 (n=3). In group 3, 50% category 3 (n=5), 20% in category 4 (n=2) and 30% in category 6 (n=3). For all groups there was an improvement in speech perception tests, both for CVCV and sentences in silence and noise. The group with the shortest period of auditory deprivation showed better results at the end of the 2 years of follow-up (65.38% CVCV, 30.38% silence sentences and 16.61% noise), followed by group 2 (31.38% CVCV, 10.84% silence sentences and 5.53% noise) and finally group 3 (37% CVCV, 9.4% silence sentences and 4.4% noise).

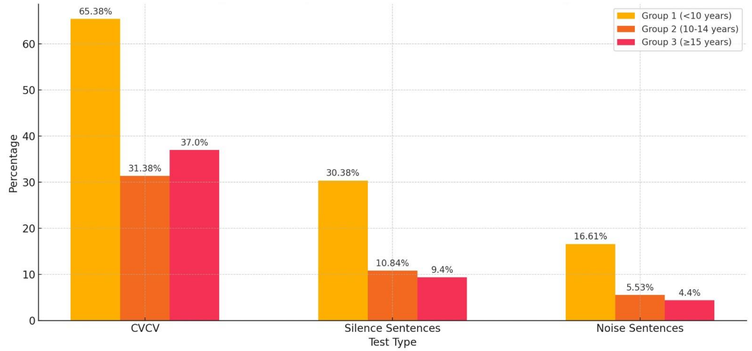


Figure 2. Speech perception tests at 2 years follow-up.

## Conclusion

The group of prelingual patients with auditory deprivation for more than 15 years showed worse results in speech perception tests and hearing categorization. These results obtained in our study are similar to those found in the literature.

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