Cochlear implantation in children born prematurely: Who does well?

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Introduction
• Advancement in neonatal medicine has led to greater survival of those born prematurely.
• Several factors associated with prematurity are known risk factors for hearing loss.
• Our objective was to analyse outcome of cochlear implantation (CI) in this heterogeneous group.

Methods
• Retrospective study of the records of children implanted in the last five years at the Richard Ramsden Centre for Auditory Implants, Manchester, UK.
• Prematurity was defined as birth before 34 weeks gestation.
• Primary outcomes were speech perception and language development and were scored using Modified Categories of Auditory Performance (M-CAP) and the Manchester Spoken Language Development Scale (MSLDS) respectively.
• Compliance was considered as a secondary outcome.
• Severity of cognitive impairment was assessed according to the grading system developed by Lise Henderson (Auditory Verbal Therapist) at our centre.

Results
Gestation and outcome
• The Spearman’s rank correlation co-efficient was 0.07 for gestation and M-CAP score, and -0.05 for gestation and MSLDS score.
• Therefore, gestation was not correlated with outcome scores in our study.

Change in M-CAP and MSLDS scores following CI
• All children’s scores improved following implantation.
• The change in scores following implantation are shown in Figure 1.

| No Patients | 28 |
| Mean age at CI | 39 months |
| Bilateral CI | 13 |
| Cognitive disorder | 16 |
| Physical disorder | 7 |
| Mean time from implant to outcome assessment | 44 months (range 12-59 months) |

| Mean pre-op M-CAP score | 1 (range 0-4) |
| Mean post-op M-Cap Score | 5 (range 2-6) |
| Mean pre-op MSLDS score | 3 (range 1-5) |
| Mean post-op MSLDS score | 6 (range 1-9) |

Impact of cognitive impairment
• Children with a cognitive disability had a mean post-implantation M-CAP score 2 points lower than those without a cognitive disability.
• This group also had a mean MSLDS score 3 points lower than the group without a cognitive disability.

Compliance
• 27/28 children used their implants.
• 19/28 children had good compliance.
• Of the children with sub-optimal compliance, 7/9 had an additional disability.
• 2/3 children included in the study who had a diagnosis of ASD had less than optimal compliance.

Conclusion
• CI was a successful intervention in the majority of cases.
• Cognitive impairment and subsequent ASD were negative prognostic indicators.
• Possibility of greater variance in outcome should be discussed with parents pre-operatively.