Cochlear implantation in children born prematurely: Who does well?

P Anderson¹, R U Verma¹, L Henderson L², IA Bruce IA¹,²

¹Paediatric ENT Department, Royal Manchester Children’s Hospital, Manchester University NHS Foundation Trust, Manchester
Academic Health Science Centre, Manchester, UK
²Richard Ramsden Centre for Auditory Implants, Central Manchester University Hospitals NHS Foundation Trust, Manchester Academic
Health Science Centre, Manchester, UK

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 mean pre- and post-implantation scores are shown in Table 2.
• The change in scores following implantation are shown Figure 1

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.

Children with a severe impairment had lower outcome scores than those with a moderate or mild impairment. (small sample size)

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.