

The Quality of Reporting Cochlear Implant Surgical Complications between 2013-2018: Analysis and Implications

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INTRODUCTION

Cochlear implantation (CI) is a widely used, well-defined, and safe surgical procedure allowing for auditory rehabilitation. In 2005, the European Consensus Statement on Cochlear Implant Failures and Explanations was established to help with uniform reporting of implant outcomes.

This study analyzed the quality of CI surgical outcomes reporting from 2014-2018. We hypothesized that there is significant variability in published outcomes.

METHODS & RESULTS

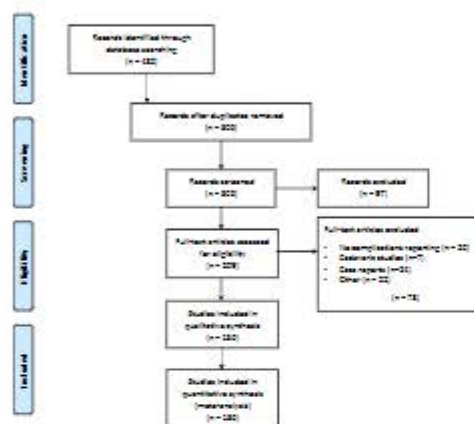


Figure 1: Preferred Reporting Items for Systematic Reviews and Meta-Analysis flow diagram of articles screened and selected for evaluation

A PubMed search utilizing key words associated with cochlear implantation and surgical complications was used to identify articles reporting surgical outcomes after CI from 2014-2018. Two authors independently analyzed data using a modified version of a previously validated 10-item complication reporting tool. 482 articles were identified; 136 met inclusion criteria. Outcomes were reported for 57,973 procedures in 55,280 patients. Length of follow-up was reported in 69% of articles (n=94); mean follow-up was 39.4 months. Of the ten reporting criteria, only the method of accruing data was defined by all. No article met more than eight reporting criteria; only 2.9%, 9.6%, and 18.4% met eight, seven, and six criteria, respectively. 69.1% of included articles met five or less inclusion criteria. Commonly underreported criteria included complication definitions, length of stay, and inclusion of other medical risk factors in data analysis.

Table 1: Criteria for Evaluating the Quality of Complication Reporting in Cochlear Implantation Literature

Criteria	Requirements
Method of accruing data defined	Prospective vs retrospective
Duration of Follow-up indicated	Article clarifies the time period of postoperative accrual of complications
Outpatient info included	Study indicates that complications first identified following discharge are included in the analysis
Definition of complications is provided	Article defines at least one complication with specific inclusion criteria
Hearing outcomes provided	Article mentions post implantation scores regardless of recent standardized reporting of hearing data
Morbidity rate and total complications indicated	The number of patients with any complications and the total number of complications are recorded
Procedure-specific complications included	Includes at least half of the following complications: Infection, implant extrusion, implant malfunction, facial nerve paralysis/stimulation, CSF leak, delayed onset vertigo
Severity grade utilized	Any grading system designed to clarify severity of complications is reported; FN data included with HB scale or other standardized patient-oriented outcome tools
Length of stay data reported	Median or average of stay indicated in the study
Risk factors included in analysis	Evidence of risk stratification and method used indicated in study

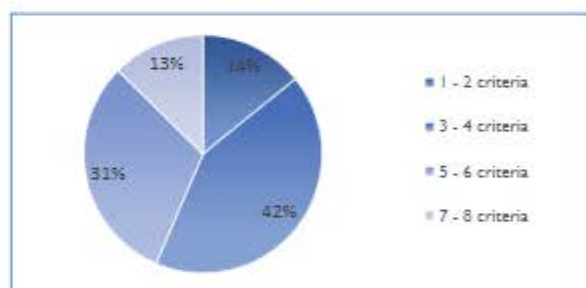


Figure 2: Completeness of Inclusion Criteria Identified in reporting of CI Outcomes from 2014 - 2018

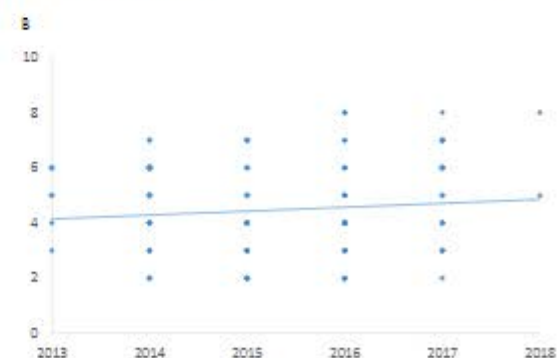
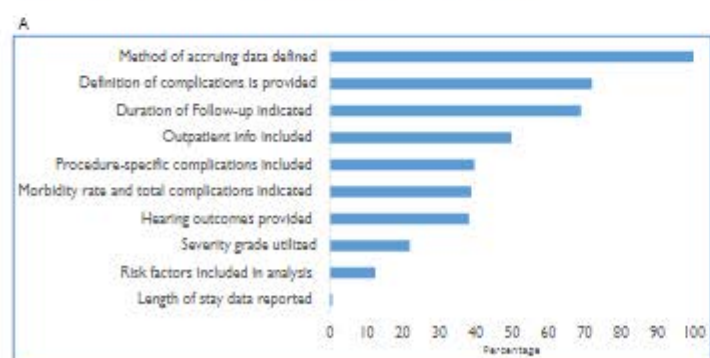


Figure 3: A) Criteria for Evaluating the Quality of Complication Reporting in Identified Articles with the only criterion met by all being the method of accruing data. B) Analysis of mean quality criteria met over time from July 2013 – July 2018. Figure demonstrates a mildly positive slope of 0.14, but this did not reach statistical significance ($p > 0.05$), as reflected by the mean criteria met over time.

CONCLUSION

This study shows that there are noteworthy inconsistencies in the reporting of CI outcomes and complications. Currently, standardized methodology for reporting of CI complications and outcomes does not exist in literature. This may result in underreporting of hearing outcomes and medical comorbidities of interest. Lack of a standardized reporting technique limits the analysis potential of pooled outcomes data.

