P011

AUDITORY IMPLANTS

# Changes in Revision Cochlear Implantation and Device Failure Profile

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## Abstract

This study investigated trends in revision cochlear implantation (RCI) and device failure across 1,430 cochlear implants (CI) performed between 2001 and 2023. Device failure was the leading cause of RCI (54.8%), with a 10-year cumulative survival rate of 93.4%. New complications, such as flap retention issues and electrode misinsertion, were more common in newer models. Manufacturer differences in device survival were observed, with Cochlear showing the highest survival rates and MED-EL exhibiting higher revision and failure rates.

## Objectives

- To investigate trends in revision cochlear implantation (RCI) and device failure.
- To explore clinical implications of evolving CI technologies.

## Materials & Methods

- **Design**: Retrospective chart review.
- **Setting:** Tertiary medical institution.
- **Participants:** 1,430 patients undergoing CIs between October 2001 and January 2023.
- **Data Collection:** Demographic and clinical data, causes of hearing loss, types of devices, reasons for revision.
- **Analysis**: Kaplan-Meier survival analysis for cumulative and device survival rates. Cox proportional hazards model for manufacturer-specific risks.

## Results

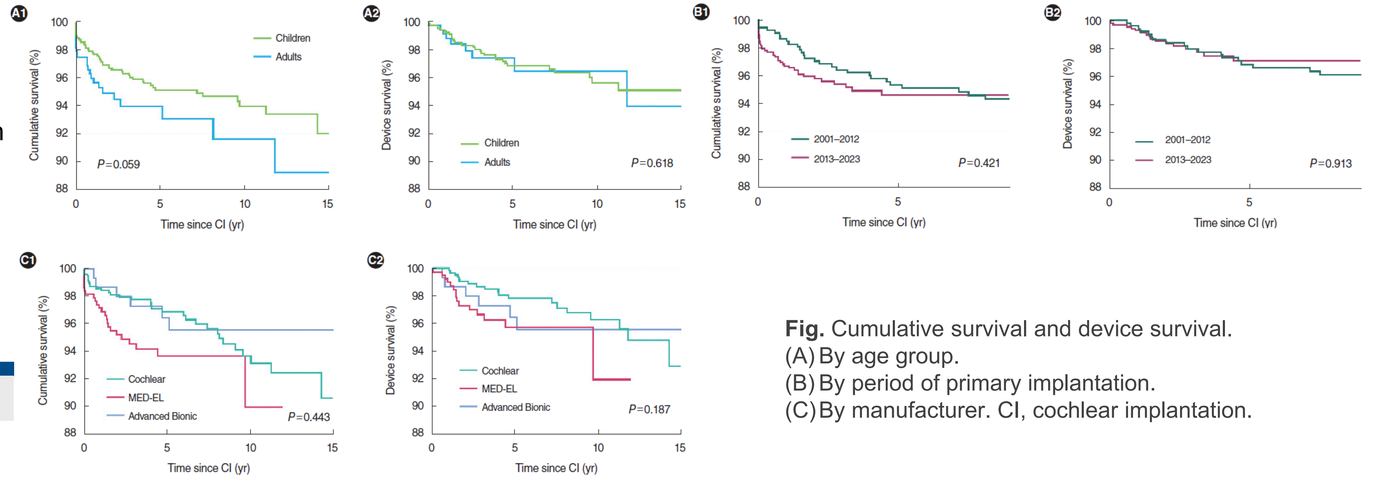


**Fig.** Cumulative survival and device survival.
(A) By age group.
(B) By period of primary implantation.
(C) By manufacturer. CI, cochlear implantation.

- **RCI Rate:** 5.1% (73 of 1,430 CIs).
- **Primary Cause of RCI:** Device failure (54.8%).
- **Other Causes:** Flap retention problems (12.3%), migration (12.3%), electrode misinsertion (9.6%).
- **Cumulative Survival**: 10-year rate of 93.4%, device survival of 95.8%.
- **Differences by Manufacturer:** Cochlear had the highest device survival rates, while MED-EL exhibited increased revision and device failure rates, particularly in newer models.

## Conclusion

While CI remains a durable solution for hearing loss, device failure continues to be a key challenge, particularly with newer models. Flap-related and electrode issues are emerging as significant complications, underscoring the need for continuous surveillance and adaptive clinical practices.

## References

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