



## TITLE:

### Effectiveness of Steroids Therapy in Preserving Residual Hearing After Cochlear Implantation: A Systematic Review and Meta Analysis

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#### ABSTRACT (upto 300 words)

**Background:** Among the available treatments for moderate to profound hearing loss, cochlear implantation (CI) is widely accepted as an effective treatment option. This systematic review aimed to assess the efficacy of steroid therapy in preserving residual hearing in patients undergoing cochlear implantation based on measured auditory outcomes after surgery.

**Methods:** This study followed Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guideline. We searched Medline, Embase, and Cochrane Central Register of Controlled Trials for randomized controlled trials (RCTs) that compared the effectiveness of steroid administration pre cochlear implantation to the standard surgery. We sought to evaluate the effectiveness of this intervention on hearing preservation rate and pure tone audiometry outcomes. The standardized mean difference (SMD) and odds ratio (OR) were used to represent the outcomes.

**Results:** Total of 9 RCTs with a total of 317 participants were eligible. Patients who were administered intravenous steroid or combined oral and intravenous steroid before cochlear implantation had statistically significant better auditory outcomes compared to cochlear implantation alone on follow up visits at 1, 6 and 12 months (SMD: -0.67, 95% CI, -0.92 to -0.41,  $P < 0.00001$ ,  $I^2 = 42\%$ ) and (SMD: -1.17, 95% CI, -1.46 to -0.89,  $P < 0.00001$ ,  $I^2 = 0\%$ ) respectively. Moreover, when comparing both interventions, administering combined oral and intravenous steroid before cochlear implantation showed significantly better pure tone audiometry outcomes over intravenous steroid (SMD: 1.60, 95% CI, 1.21 to 2.11,  $P = 0.001$ ,  $I^2 = 5\%$ ). Regarding hearing preservation rate, there was no significant difference between patients receiving either intravenous or combined oral and intravenous steroid therapy and the control group.



**Conclusion:** Administering steroid therapy in oral or IV before cochlear implantation surgery showed better outcomes in pure tone audiometry over multiple time points.

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**Mode of Presentation:** Oral.

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### **BIOGRAPHY (upto 200 words)**

Dhay Saleh Alrashid is a dedicated and ambitious senior medical student at King Saud bin Abdulaziz University For Health Sciences with a keen interest in research. Recognizing the importance of research in enhancing patient care and outcomes, Dhay actively engages in research activities, seeking to bridge the gap between scientific discoveries and clinical practice.