

Cochlear Dead Regions: Practical Implications for Speech Perception and Amplification

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Abstract

Cochlear dead regions have been reported to affect high frequency amplification. A hearing-impaired person with a dead region may receive little or no benefit from amplification beyond a certain boundary into the dead region. Excessive amplification into the dead region has even been reported to degrade speech recognition in some hearing-impaired individuals. However, some hearing-impaired individuals with high frequency dead regions receive benefit from amplification when that amplification is no higher in frequency than about 70% of the edge frequency (Fe) of the dead region. Another strategy for fitting hearing aids to individuals with high frequency dead regions is the use of frequency lowering. The purpose of this study was to evaluate the effectiveness of amplification for people with high frequency dead regions by providing amplification no higher than 70% of Fe and using a frequency lowering technique known as linear frequency transposition. Subjects with high frequency dead regions were fitted with hearing aids that allowed access to two programs; one of which followed the 70% Fe criterion for benefit and the second of which provided frequency lowering by linear frequency transposition. Real ear measures with artificial speech and live speech mapping were obtained for each subject and each hearing aid condition. Subjects were asked to choose a preferred response, i.e., 70% Fe or linear frequency transposition. Results will be discussed relative to objective measures and subjective preference.