Otology/Neurotology

C132. Active Transcutaneous Bone Conduction Hearing Implants in Patients with Hearing Thresholds Exceeding Manufacturer Recommendations

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Educational Objective: At the conclusion of this presentation, the participants should understand that patients with bone conduction thresholds that exceed manufacturer recommendations may still benefit from an active transcutaneous bone conduction implant.

Objectives: Bone conduction implantation (BCI) is often used for patients with complex otologic issues. This study describes the outcomes of a cohort of patients with bone conduction thresholds (BCTs) that exceeded manufacturers' recommendations who underwent BCI with active transcutaneous devices. Study Design: Retrospective cohort analysis. Methods: A retrospective chart review was performed for patients who underwent BCI with placement of an active transcutaneous implant (Med-El BoneBridge or Cochlear Osia) by a single surgeon at a tertiary academic center from 9/1/19 - 6/24/22. Patients with at least one preoperative BCT that exceeded manufacturer recommendations (less than or equal to 45 dB for BoneBridge and less than or equal to 55 dB for Osia) were included in the study. Results: 7 patients met inclusion criteria, 1 was lost to followup. Preoperative bone pure tone averages were 38 dB on the implanted side and 27 dB on the non-implanted side. Patients had various pathologies leading to their hearing situations, and all were counseled about options for hearing rehabilitation and elected to undergo BCI with the understanding that their BCTs exceeded manufacturer recommendations. Postoperatively, 5 patients reported improved hearing while using the device and 1 patient had improvement in sentence scores but subjective benefit was not documented. One patient reported hearing abnormal mechanical sounds with device use which resolved after implant replacement. Conclusions: Active transcutaneous BCI may provide benefit for patients with BCTs outside manufacturer recommendations.

C133. Statistical Shape Model of the Eustachian Tube for Understanding and Managing Eustachian Tube Dysfunction

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Educational Objective: At the conclusion of this presentation, the participants should be able to 1) highlight the current limited understanding of the variations present with the eustachian tube; and 2) demonstrate the utility of statistical shape models in quantifying variations present within the eustachian tube to explain interpatient differences based on age, sex, and pathology.

Objectives: Statistical shape models (SSMs) are a method for mathematically defin-

ing three dimensional objects and their variation. SSMs have become increasingly useful in defining radiographic anatomy over the past decade. There is currently a lack of knowledge pertaining to the interpatient anatomical variation within the eustachian tube (ET). We aimed to develop an automated pipeline to develop the first radiographic SSMs of the ET. Study Design: Retrospective cohort study. Methods: A total of sixty ETs automatically segmented via a deep learning platform from computed tomography scans of adult patients were included. Each segmentation was separated into the nasopharyngeal (i.e., soft tissue), middle (i.e., cartilaginous), and ear (i.e., bony) ends. The first three principal components (PC) of each SSM were analyzed to describe shape variation. Results: Analysis of the nasopharyngeal end showed notable variation in size and orientation with respect to its articulation point with the middle ET portion. For the nasal end, the main variation occurred along its 1st PC corresponding to its long length axis with an average distance of 6.06-10.40mm. Analysis of the bony ET end showed most of its variability along its length and width. However, the bony ET demonstrated the least variation in shape (0.12-0.34mm). Conclusions: This study presents the first radiographic SSMs of the ET and shows that most of the ET variation occurs in the nasopharyngeal end. Due to pipeline's automated nature, it can be translated into large data analysis by providing insight into the ET anatomy and used to investigate shape differences amongst patients with and without nasopharyngeal pathology.

C134. HearWHO application in Geriatric Primary Care Setting: A Pilot Study
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Educational Objective: At the conclusion of this presentation, the participants should be able to 1) describe the burden of hearing loss in the older population includes the psychosocial burden of hearing loss, increased healthcare costs, and decreased productivity; 2) discuss the great interest among elderly in hearing exams; and 3) a hearing application may be used to decrease the barriers to identification of hearing impairment and decrease the burden of untreated hearing loss.

Objectives: Hearing loss affects 20% of the population and is even more prevalent in patients over 65 years old (33%). The burden of hearing loss in the older population includes the psychosocial burden of hearing loss, increased healthcare costs, and decreased productivity. Early detection can help mitigate these effects but there are significant barriers to access. The World Health Organization developed a hearWHO application in 2019, a mobile, number based screening exam, but this application has not been validated in primary outpatient clinics. The app includes digits in noise testing and uses an antiphasic digit stimuli. The aim of this pilot study was to examine the accuracy and feasibility of using the hearWHO app in an elderly population and validate its use in a community clinic. Study Design: This is a cross-sectional study study at a community outpatient geriatric clinic. Methods: 32 patients participated in this ongoing study. All new patients establishing care at a community outpatient geriatric clinic were given the option to take a hearing test as part of their visit. The patient took the test while waiting for their doctor. Results: