Sentac Abstract

250 words

Title: 120 characters

No names or hospital name

Transcanal endoscopic ear surgery (TEES) has undergone a surge of enthusiasm over the last 5-10 years due to the minimally invasive benefits and clear access to the tympanic membrane and recesses of the tympanic cavity. Studies have shown the time to complete TEES tympanoplasty is reduced compared to microscopic. However, due to the one-handed surgical technique required for TEES, the surgery is challenging and there is a steep learning curve for surgeons to adopt TEES. Existing instrumentation has not been designed for the one-handed surgical technique; this project aims to design instruments that would facilitate TEES. The first step was to send out a needs analysis survey to otologists to determine what difficulties experienced during TEES require better instrumentation. Alongside with this study, a time flow study recorded the duration of surgical steps during TEES to identify the inefficiencies during surgery and which tool functionalities would facilitate these steps. Reaching structures visualized by the endoscope was identified as a surgical difficulty that needs new instrumentation the most. Here, we present a tool that can reach into the antrum and mastoid through an atticoantrostomy. The tool is shown reaching into these areas in a 3D printed temporal bone model. Patient CT scans with anatomy that were the limits of what TEES can do were converted into 3D models and used to determine the optimal curvature of tools required to reach target points.

Notes:

* Time flow study has data for tympanoplasty which doesn’t back up the need for a tool that can curve and reach
* The needs survey (with 19 responses) rates a tool that can reach structures visualized by the endoscope is most required so that would be a rational to making and presenting a tool that can bend

References:

Studies have shown the time to complete TEES tympanoplasty is reduced compared to microscopic (Kuo & Wu, 2017).