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Novel concept of attaching endoscope holder to microscope (Justtach) for two handed endoscopic tympanoplasty

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Learning Objectives:

The well established techniques in tympanoplasty are routinely performed with operating microscopes for many decades now. Endoscopic ear surgeries provide minimally invasive approach to the middle ear and evolving new science in the field of otology. The disadvantage of endoscopic ear surgeries is that it is one-handed surgical technique as the non-dominant left hand of the surgeon is utilized for holding and manipulating the endoscope. This necessitated the need for development of the endoscope holder which would allow both hands of surgeon to be free for surgical manipulation and also allow alternate use of microscope during tympanoplasty. To report the preliminary utility of our designed and developed endoscope holder attachment gripping to microscope for two handed technique of endoscopic tympanoplasty. Prospective Non Randomized Clinical Study. Our endoscope holder attachment for microscope was designed and developed to aid in endoscopic ear surgery and to overcome the disadvantage of single handed endoscopic surgery. It was tested for endoscopic Tympanoplasty. The design of the endoscope holder attachment is described in detail along with its manipulation and manoeuvreing. A total of 78 endoholder assisted type 1 endoscopic cartilage tympanoplasties were operated to evaluate its feasibility for the two handed technique and to evaluate the results of endoscopic type 1 cartilage tympanoplasty. In early follow up period ranging from 6 to 20 months, the graft uptake was seen in 76 ears with one residual perforation and 1 recurrent perforations giving a success rate of 97.435 %. Our endocsope holder attachment for gripping microscope is a good option for two handed technique in endoscopic type 1 cartilage tympanoplasty. The study reports the successful application and use of our endoscope holder attachment for gripping microscope in two handed technique of endoscopic type 1 cartilage tympanoplasty and comparable results with microscopic techniques.

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Endoscopic cartilage tympanoplasty: A two-handed technique using dr khan's endoscope holder "EndoHold"

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Learning Objectives:

Objectives/Hypothesis: Endoscopic ear surgery provides a minimally invasive approach to the middle ear. The disadvantage of endoscopic ear surgery is that it is a single-handed surgical technique. The nondominant hand of the surgeon is utilized for holding and manipulating the endoscope. This necessitated the need for the development of an endoscope holder that would allow both hands to be free for surgical manipulation. The aim of this article is to report our preliminary experience using our newly designed and developed endoscope holder, which allowed us to perform cartilage tympanoplasty utilizing both hands for surgery.

Study Design: Retrospective nonrandomized clinical study.

Methods: The endoscope holder was designed and developed to aid in endoscopic ear surgery and to overcome the disadvantage of single-handed endoscopic surgery. The design of the endoscope holder is described in detail, along with instructions on how it can be used. A total of 179 endoscope holder-assisted cartilage tympanoplasties were performed to evaluate the feasibility of a two-handed technique and to evaluate the results of surgery.

Results: In an early follow-up period ranging from 6 to 20 months, the graft take was seen in 174 ears, with one residual perforation and four recurrent perforations, giving a success rate of 97%. The endoscope holder eliminates the disadvantages of single-handed surgery and is a good option for those who wish to perform endoscopic ear surgery using both hands.

Conclusion: The study reports the successful application and use of the endoscope holder in a two-handed technique of endoscopic tympanoplasty.

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Tympanoplasty in children younger than 10 years

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Learning objectives: to evaluate success rate of tympanoplasty in children younger than 10 years and to analyze indications for tympanoplasty in this age group

Introduction: Too often, and especially in children, tympanic membrane perforations are left open due to concerns regarding a possible non-optimal outcome related to frequent upper respiratory tract infections, persistent otitis media and ongoing middle ear underaeration syndrome. The aim of the study is to evaluate success rate of tympanoplasty in children younger than 10 years and to analyze indications for tympanoplasty in this age group.

Method: The study includes a group of 30 children who underwent tympanoplasty or tympanoplasty with canaloplasty between 2011 and 2013. All were younger than 10 years at the time of surgery.

Results: In 20 of the children the ear was dry prior to their referral for 6–12 months, in 10 there was a very large or enlarging perforation, and or high tendency to develop otorrhea with organism typical to chronic otitis media and not to acute otitis media and or bone conduction loss. 10 of the perforations were anterior perforations with overhanging anterior canal wall. In a follow up of 6 months -3 years after surgery, in 27 of the children the tympanic membrane was intact; in 3 children a tiny residual perforation was left. None of the children experienced an event of otitis media after surgery.

Conclusion: The success rate of tympanoplasty in children is relatively high, provided cases are properly selected and technic is carefully chosen (addition of canaloplasty whenever needed). The 10–15% of partial success or even failure (need for revision surgery) does not justify postponing tympanoplasty in all young children, exposing them to the consequences of a long standing tympanic membrane perforation.

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Does the quality of the material in the ventilation tube can affect the extrusion rate?

Presenting Author: **Dongwon Kim**

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Learning Objectives:

Objective: The aim of this study is to assess relationship between the material of ventilation tubes(VTs) and VTs extrusion time, among various factors affecting the extrusion rate of ventilation tubes.

Study Design: A prospective, clinical trial.

Method: This clinical trial was conducted in 39 patients, 78 ears with VTs insertion. The 1.02 sized VT was placed in one ear, the 1.14 sized VT was placed in contralateral ear. The patients was evaluated about VTs extrusion history following every month. The extrusion time of VTs in the ears was compared with the contralateral ears. Date included ventilation tube type, discharge characters(scanty, serous, mucoid, glue), multiple intubation(first, multiple), comorbidities, passive smoking, early occlusion, otorrhea or inflammation findings, and age. To minimize additional complicating factors, patients undergoing concurrent tonsillitis, adenoid hypertrophy, siniusitis, and allergic rhinitis were excluded from this study.

Result: There were 41 patients in this study, with a median age of 3.5 years. The mean extrusion time of 1.02 sized ventilation type was 7.94 months, whereas 1.14 sized ventilation type was 6.33 months. In the 1.02 sized VTs, average extrusion time was significantly longer ($p = 0.02$). When the mean extrusion rate associated with age, discharge character, multiple intubation, comorbidities, and otorrhea was compared with ventilation tubes respectively, there were no significant differences. In addition, it seemed early occlusion and passive smoking affected slightly extrusion time, but no statistical significance.

Conclusion: There was a small but statistically singnificant increase in the extrusion rate of VTs in patients with the 1.02 sized ventilation tube type. Compared with the 1.02 sized VT and the 1.14 sized VT, the quality of material in ventilation tube was significantly related to the VTs extrusion time. Thus, It would need to consider why the nature of the material affected extrusion rate.

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Identification of novel potential biomarkers and signaling pathways related to otitis media induced by diesel exhaust particle in in vivo system via transcriptomic analysis

Presenting Author: **Moo Kyun Park**

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Learning Objectives: The aim of the present study was to discover potential molecular biomarkers and pathways triggered by DEP exposure in rodent model. Here, we conducted transcriptomic analysis to identify novel potential biomarkers in middle ears of DEP-exposed mice.

Introduction: Association between air pollutants and inflammatory diseases such as Otitis Media (OM) has been shown in recent studies. Diesel exhaust particle (DEP), one of major components among diverse air pollutants, is characterized by a carbonic mixture composed of polycyclic aromatic hydrocarbons (PAHs), nitro-PAHs, small amounts of sulfate, nitrate, metals, and other trace elements. The exposure to DEP as a risk factor for inflammatory diseases has been reported in several recent investigations. In line with these, our previous study identified potential biomarkers in *in vitro* system through gene expression microarray and pathway analysis. Although investigations in *in vitro* system have been conducted to elucidate plausible biomarkers and molecular mechanisms related with DEP, it is necessary to carry out *in vivo* study to identify exact biological relevance regarding incidence of OM caused by DEP exposure.

Methods: We conducted transcriptomic analysis to identify novel potential biomarkers in middle ears of DEP-exposed mice.

Results: A total of 697 genes were differentially expressed in the DEP-exposed mice; 424 genes and 273 genes were up- and down-regulated, respectively. In addition, signaling pathways among differentially expressed genes mediated by DEP exposure were predicted from different two point