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Learning Objectives: A review of diseases hypothesised to be due to disorder of the Eustachian tube and a critical review of disease classification. Discussion of future research on tuboplasty, including disease categorisation and outcome measures.

This is for the round table on “Balloon Tuboplasty”

For any treatment it is important that we define and segregate the disease(s) being treated, and evaluate effectiveness in terms of benefit to patient symptoms. Eustachian tuboplasty is a relatively new treatment for disorders of the middle ear, but to date most of the published literature has failed to segregate disease being treated, nor report on relevant outcomes.

I present a synopsis of diseases hypothesised to be due to an underlying dysfunction of the Eustachian tube. I argue that in most of the published literature such diseases are conflated (for example disorders classified under disorders of the Eustachian tube include glue ear, tympanic membrane retraction, and symptoms of aural fullness) but should be segregated. I suggest a nosology with disorders classified under “mucosal otitis media”, “squamous middle ear disease”, and “Eustachian Tube Dysfunction”, with the latter classification based upon a recent consensus statement. There is an inter-relation between such disease categories. However there is little evidence that a disorder of the Eustachian tube is the primary or initiating pathology underlying all of these diseases.

Whether the Eustachian tube is or is not a pathological mechanism for these diseases may be debated, but is largely irrelevant to the evaluation of treatment. Outcomes need to be reported with segregation of disease categories (as much as possible), and using patient reported outcome measures. Such measures may include hearing disability, otorrhoea, otalgia, aural fullness, and disease-specific or general quality of life.

This is a critical consideration in future trials of Eustachian tuboplasty if we are to better understand and define the role of this novel treatment.

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Balloon Tuboplasty (R731)

ID: 731.3

Balloon Dilation of the Cartilaginous Eustachian Tube

Presenting Author: **Dennis Poe**

Dennis Poe

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Most of the pathology that is responsible for Eustachian tube dilatatory dysfunction has been observed within the cartilaginous portion and is most commonly due to inflammatory disease, which can be readily diagnosed with transnasal endoscopy. A careful assessment of the dynamics of the ET by endoscopy can be very effective in determining the etiology, location and severity of dilatatory dysfunction within the functional valve in the cartilaginous portion. Disorders of dilation may be observed and classified.

Inflammatory disease can be graded on a recently validated mucosal inflammation score instrument. The etiology of the inflammation can be investigated and treated, with the most common causes being infectious or reflux in younger children and over age 6, allergic disease, reflux, rhinosinusitis, adenoid hypertrophy and other commonly known causes of nasopharyngeal inflammation.

Treatment of the underlying medical conditions can result in improvement of ET function and resolution of middle ear disease. When the medical causes have been optimally treated, but ET dilatatory dysfunction persists, possibly due to irreversibly injured mucosa, biofilms or other pathology, tympanostomy tubes are usually recommended. When tubes fail to resolve the problem, treatment of the underlying pathology with surgery can be offered. Surgery is tailored to the sites of inflammatory or obstructive pathology and may involve turbinate reduction, sinus surgery, adenoidectomy, or balloon dilation of the ET. All of these procedures are designed to remove irreversibly injured tissue and provide a fresh start, assuming the underlying medical conditions are adequately controlled. Failure to control the medical problems can lead to recurrence of inflammatory disease.

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Balloon Tuboplasty (R731)

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Measuring Eustachian tube dysfunction

Presenting Author: **James Tysome**

James Tysome

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Learning Objectives: Understand the methods available to measure Eustachian tube dysfunction.

Background: Eustachian tube (ET) dysfunction is a common but poorly understood cause of patient symptoms and an important factor in the development of middle ear pathology. Despite this, there are no specific tests of ET function in widespread clinical use. A renewed interest in treatments for ET dysfunction has led to a demand for methods of measuring ET function non-invasively.

Objective: To identify currently available tests and imaging modalities to assess ET function and, where possible, report on their accuracy.

Methods: Narrative systematic review. Tests and imaging methods in included studies were required to measure a physiological function of the ET, or play a role in the diagnosis of poor ET function.

Results: While many tests of ET function have been developed, with some in routine clinical use, all have significant limitations. Published accuracy data are limited and of variable quality due to the range of comparative tests and the spectrum of otological disorders associated with ET dysfunction. CT and MRI are best suited to identifying features associated with obstructive or patulous ET dysfunction

Conclusions: Currently, no single test or imaging modality can be used to diagnose ET dysfunction, but there is some evidence that diagnostic accuracy can be improved by combining the results of different objective tests and patient-reported outcome measures. Further development of ET function tests is required to facilitate the accurate diagnosis of patients and allow outcome reporting for new interventions.

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Free Papers (F732)

ID: 732.1

Surgery of Cholesteatoma in Pediatric Age: Assessment of combined micro-endoscope approach

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Learning Objectives: Use of endoscopy in ear surgery is an interesting technique by offering the possibility to be less invasive.

Introduction: Cholesteatoma in pediatric age is aggressive and necessitates an extensive surgical approach to eradicate the pathology and a long time follow up. Introduction of otoendoscopy lately gave a cue to reconsider certain standardized techniques. The aim of this study is to survey how endoscopy is evolving in our daily practice and the preliminary results obtained.

Methods: Review of medical charts of patients underwent tympanoplasty between January 1995 and December 2014. Data collected included age, sex, features of cholesteatoma, type of tympanoplasty (TPL): trascanal (TC), canal wall up (CWU) or canal wall down (CWD), technique used: microscope and or endoscope, revision surgery for recidivism. Comparison was done on surgical techniques applied before and after the introduction of endoscopy in our department, 2010.

Results: Ninety-three children, 57 M and 36 F, average age 10 (range 3 to 16) were identified for the study. Seven patients had bilateral cholesteatoma. Tympanoplasties performed were 186 divided as follows: **63%** (63/100) **CWU**, 15 of which underwent a second look CWU and 25 underwent a second look CWD. **20%** (20/100) **CWD** where in 10, 2 and 1 cases underwent a second, third and fourth look, respectively. Finally, **17%** (17/100) underwent **TC** where 7 underwent a second look TC. Three out of the 7 underwent a third look and were converted in 2 cases to CWD and in 1 case to CWU. Before and after the introduction of endoscopy the corresponding 56 and 44 first look procedures were performed as follows: CWU 57% vs 45%, CWD 27% vs 16% and TC 16% vs 39%, respectively.

Conclusions: Otosurgery tends to be less invasive by avoiding mastoidectomy. Endoscopic cholesteatoma removal

should be limited to disease interesting only the tympanic cavity. A long time follow up is necessary in order to compare the real benefit of endoscopy.

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Free Papers (F732)

ID: 732.2

Practicality analysis of JOS staging system for congenital cholesteatoma: Japan Multicenter study (2009–2010)

Presenting Author: **Yuka Morita**

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Learning Objectives:

Introduction: Potsic classification has been widely used as the classification of congenital cholesteatoma. According to this classification, destruction of ossiculus is one of the important points. And the stage will be progressed if the ossicular chain is destructed even in the case of small cholesteatoma which is limited in tympanic cavity. The committee on Nomenclature of the Japan Otological Society (JOS) was appointed in 2004 to create a cholesteatoma staging system widely applicable in Japan and as simple as possible to use in a clinical practice. We introduce our staging system about congenital cholesteatoma.

Methods: A total of 599 ears that underwent surgery for fresh cholesteatoma between 2009 and 2010 at 6 institutions in Japan were recruited and cases with congenital cholesteatoma were selected. In order to know the progress site reliably, we selected strictly the cases which could be obtained surgical records in details. We evaluated the progression of cholesteatoma according to the 2015 JOS cholesteatoma staging and classification system as followed;

Stage I: limited in tympanic cavity (Ia;anterior part, Ib;posterior part, Ic; both of them)

Stage II: beyond tympanic cavity

Stage III: associated with intratemporal complications

Stage IV: associated with intracranial complications

Results: Seventy one ears of 599 ears were diagnosed for congenital cholesteatoma and 37 ears of 71 have been studied. Six ears were classified for Stage Ia, 11 ears for Ib, 1 ear for Ic, 17 ears for II and 2 ears for III. Concerning about the pathology of stapes in Stage I, the missing rate of stapes superstructure was 0%, 54.5% and 100% in Stage Ia, Ib and Ic, respectively.

Conclusions: Congenital cholesteatoma which was limited in tympanic cavity was different in stapes status by the part of existence of cholesteatoma. Especially in this study, Stage Ib was