the growth pattern was undetermined. In group 2, 42% were PMC, 28.4% PEC, 18.5% both, and 11.1% of the patients had an undetermined growth pattern. There was no difference in the diagnosis of the principal ear between the two groups ($p = 0.40$). In the analysis of the CLE, in group 1, 35.7% of ears had *pars tensa* (PT) tympanic membrane (TM) retraction, 28.6% *pars flaccida* (PF) TM retraction, and 35.7% had both abnormalities. PT and PF retractions were present in 50% of children from group 2, and PT retraction only in 9.5% of this group. The differences between the two groups were statistically significant ($p = 0.03$). The CLEs of patients with AEC were normal.

Conclusion: The majority of AEC was found in children younger than 12 years of age and all displayed a normal CLE, suggesting a probable congenital origin. PMC was the most prevalent in both the study groups. The most prevalent CLE abnormalities in children over 12 years of age were PT and PF TM retraction together, suggesting that the PT retractions could evolve and block epitympanum aeration resulting in a PF retraction.

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Acquired middle ear cholesteatoma in children

Presenting Author: **Leticia Rosito**

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Learning Objectives: To describe in children: 1. prevalence of cholesteatoma growth patterns; 2. hearing impairment; 3. contralateral ear alterations.

Introduction: Acquired middle ear cholesteatoma in children is a rare event. Over the years, many studies have elaborated the differences between cholesteatoma in children and adults. The clinical findings and the cholesteatoma growth patterns are known to be distinctive in children.

Methods: In a cross-sectional study, videotoscopy data of 155 pediatric patients were analyzed for cholesteatoma growth patterns. They were subjected to an audiological evaluation. We also analyzed the contralateral ear (CLE), classifying it as normal, TM perforation, outside-in TM perforation (in instances with signs of previous TM retraction), moderate and severe TM retraction, and cholesteatoma.

Results: Cholesteatoma growth patterns were posterior epitympanic in 23.2% patients, posterior mesotympanic in 40.6% and both in 17.4% of the patients. Anterior epitympanic growth pattern was observed in 4.5%. In 14.2% the growth pattern was undetermined. The observed pure tone average for bone conduction was 8.8 dB (SD 13.4), for air conduction was 39.7 dB (SD 21.79) and for air-bone gap was 32 dB (SD 15.61). There was no difference between the cholesteatoma growth patterns and the pure tone average for bone conduction ($p = 0.6$), for air conduction ($p = 0.42$) and for air-bone gap ($p = 0.32$).

A normal CLE was observed in 34.8% of the patients. Moderate or severe TM retractions were observed in 45.2%, TM perforation in 7.1%, and cholesteatoma in 12.9%. Of all the TM perforations, *outside- in* pattern was observed in 63.6%.

Conclusion: Posterior mesotympanic cholesteatoma was the most prevalent in the study population. Most patients had a conductive hearing loss irrespective of the cholesteatoma growth pattern. The most prevalent CLE abnormalities were moderate or severe TM retraction and cholesteatoma.

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The prevalence and implications of marginal tympanic membrane perforations in cholesteatoma pathogenesis

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Learning Objectives: (1) To evaluate the prevalence of marginal perforations in patients with chronic otitis media. (2) To evaluate the marginal perforations searching for signs of previous TM retraction and (3) To study the alterations in the contralateral ear.

Introduction: The pathogenesis of acquired cholesteatoma is still not completely understood. Currently, theories involving previous tympanic membrane (TM) retractions are the most accepted. Migration of the squamous epithelium across a marginal perforation of the TM has also been implicated in the development of cholesteatoma. Marginal perforations are rare events and prospective studies are also very difficult to perform since cholesteatoma is a rare disease and takes many years to develop. The study of marginal perforations and the contralateral ear (CLE) can help us to determine their implications in cholesteatoma pathogenesis.

Methods: Videotoscopy data of 1781 patients diagnosed with chronic otitis media (COM) between August 2000 and December 2015 were analyzed to determine the prevalence of marginal perforations. Signs of previous TM retraction associated to the marginal perforations were evaluated for the following: 1. medialization of the manubrium of the malleus, 2. remnant tympanum adhered to the ossicular chain, 3. remnant tympanum adhered to the promontory, and 4. ossicular chain erosion. Videotoscopy data of the CLE were also analyzed.

Results: Of the 1781 patients evaluated, 45 (2.52%) demonstrated marginal TM perforation. One thousand five hundred eighty-three patients (88.9%) showed two or more signs of

previous TM retraction, while only 78 patients (4.4%) had no evidence of previous retraction. Moderate or severe TM retractions were observed in the CLE of 871 (48.9%) patients, perforationretraction in 8.9%, cholesteatoma in 13.3%, and TM perforation in 6.7% of patients. The CLE in 395 patients (22.2%) was found to be normal.

Conclusion: A low prevalence of marginal TM perforation (2.52%) was observed. The vast majority of ears with marginal perforation bore evidence of previous TM retraction. In addition, TM retraction or cholesteatoma occurred in 71.1% of the CLEs.

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Isolated Facial Nerve Anomaly Presenting as Conductive Hearing Loss

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Learning Objectives: Patient's history should always be listened carefully. The otologic surgeon should always be prepared for the unexpected. We should always listen carefully to the patient's history. The otologic surgeon should always be prepared for the unexpected.

Introduction: Anatomical anomalies of the facial nerve range from common minor bony dehiscence of the tympanic segment to much rarer abnormalities in the course of the nerve. Normally their only relevance is that they may pose an increased risk of injury during tympanomastoid surgery.

Method: We report the case of a 60 year old female who presented to the general ENT clinic with right-sided conductive hearing loss. Eventually a grommet was inserted under LA. The hearing did not improve. She was referred to the senior author for tympanotomy. On the day of surgery the patient was asked again about the history of her symptoms and she admitted that she could not be sure if the hearing in her right ear had ever been normal. A permeatal tympanotomy was performed under GA. The ossicular chain was found to be intact and mobile. However, the appearance of the promontory was noted to be unusual. The facial nerve was seen to be dehiscent and passing **both above and below** the stapes(intraoperative photograph). This was confirmed by the use of the nerve stimulator. The operation was abandoned and the patient was subsequently informed of the findings.

Result: Post-operative recovery was uncomplicated. Post-operative audiometry showed no change in hearing. Preoperative imaging had not been requested as the diagnosis had not been suspected. However, review of the patient's records showed that the patient has had a previous CT scan of the sinuses. On close review of these images, an anomalous course of the facial nerve could be seen(CT images).

Conclusion: A facial nerve bifurcating and encircling the stapes is extremely rare and would never have been suspected as the cause of conductive hearing loss. Very few reports of such an anomaly appear in the literature.

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Tinnitus due to pulmonary disease

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Learning Objectives: Present a case of atypical presentation of middle ear tuberculosis.

Introduction: A 47 yo woman, with no medical history, presents to A&E with a tinnitus and blocked left ear for 2 weeks.

On physical examination there is inflammation and whitish exudate on the back wall of the pharynx. Left ear has opaque eardrum with hyperemic annulus.

Nasal endoscopy shows inflammated adenoids with abundant exudate and PTA conductive hearing loss in the left ear. Tympanometry is type B curve in the left ear.

Evolution: The patient is given deflazacort, cefuroxime and nasal irrigation but 2 weeks later she reports no improvement.

CT scan is ordered to rule out neoplasm. It shows hyperplasia in the left side of nasopharynx that doesn't capture contrast. Left middle ear cleft is opacificated with no signs of osteolysis. The neck scan reveals irregular consolidation in the right upper lobe so a torax CT is performed. It shows scarring, tree-in-bud pattern in right lung, all suggestive of tuberculosis.

PPD test is positive and so are acid-fast staining and culture of the sputum. The patient is diagnosed with pulmonary tuberculosis and 4-drug regimen is initiated (ethambutol, isoniazid, pyrazinamide, rifampin). A month later (so she is no longer contagious) the patient has an adenoidal biopsy and left myringotomy. There is no effusion in the middle ear. The microbiology (swabs) confirms adenoidal and middle ear tuberculosis.

The patient's otic symptoms resolves but 6 months later she reports tinnitus and blocked left ear. Otoscopy is normal but PTA shows small conductive hearing loss. Wait and see attitude is proposed and the patient agrees. 5 moths later the patient is free from pulmonary tuberculosis but her left ear remains blocked. Myringotomy reveals very thick transparent fluid and a grommet is inserted. The microbiology is negative for tuberculosis. The patient's symptoms get better.

If the problem recurs once the grommet falls out should we think about scarring of the Eustachian tube? Would a balloon dilatation of the tube be feasible?

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A Case Report of Keratosis obturans - often misdiagnosed

Presenting Author: **Chinnala Sai Chaitanya**