DISCLOSURE

- Research grant ACCLARENT/J&J
- Support by Karl Storz (Silver Books)

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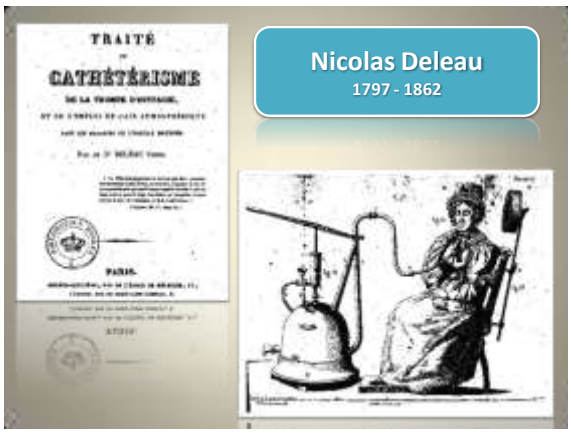
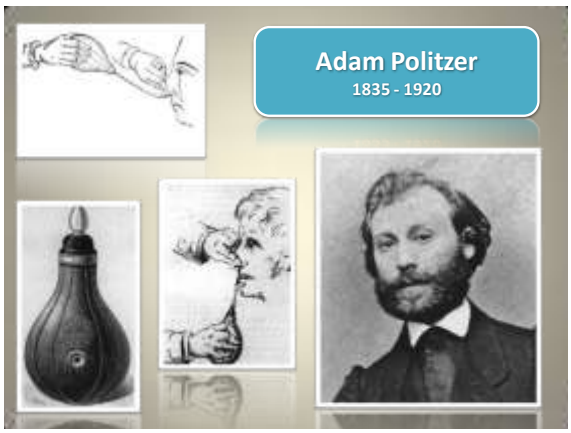
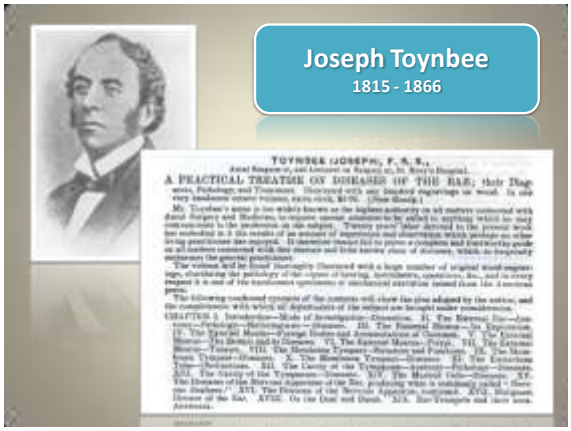
Antonio Maria Valsalva
(1666 – 1723)

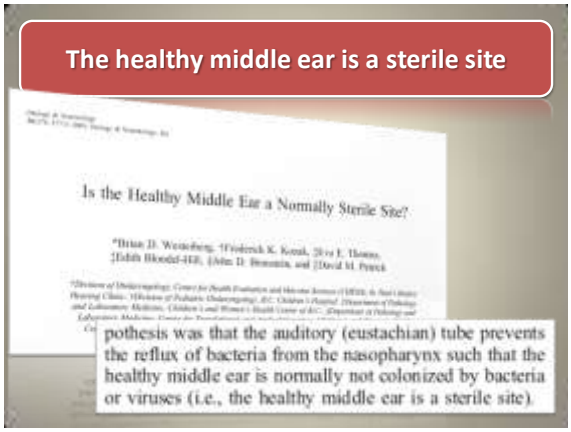

ANT. MAR. VALSALVA
AURE HUMANA
TRACTATUS,

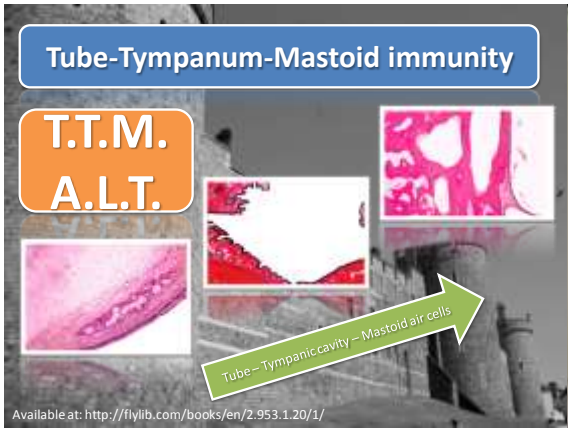

TRAITÉ
CATHÉTÉRISME
PARIS.
Nicolas Deleau
1797 - 1862

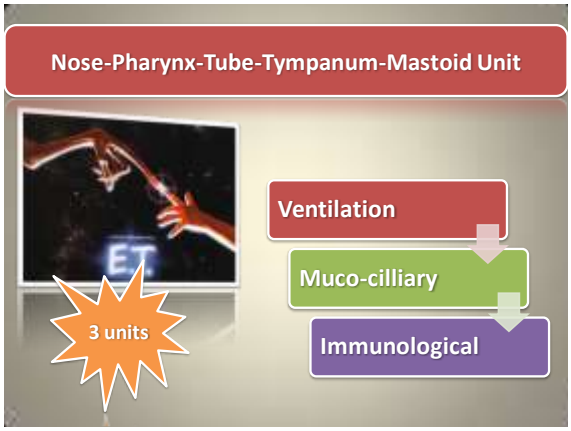

Adam Politzer
1835 - 1920

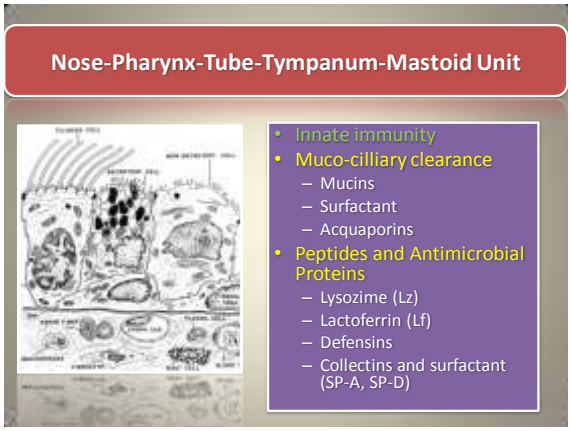

Joseph Toynbee
1815 - 1866
A PRACTICAL TREATISE ON DISEASES OF THE EAR;


Observations
ON THE
ACTION AND USES OF THE EUSTACHIAN
TUBE, AND THE TREATMENT OF
ITS DISEASES.
BY
JOSEPH TOYNBEE, F.R.S., F.R.C.S.,

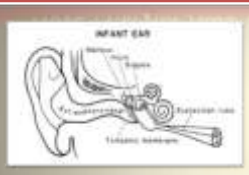

The healthy middle ear is a sterile site
Is the Healthy Middle Ear a Normally Sterile Site?
pothesis was that the auditory (eustachian) tube prevents the reflux of bacteria from the nasopharynx such that the healthy middle ear is normally not colonized by bacteria or viruses (i.e., the healthy middle ear is a sterile site).


Tube-Tympanum-Mastoid immunity
T.T.M.
A.L.T.
Tube – Tympanic cavity – Mastoid air cells
Available at: http://flylib.com/books/en/2.953.1.20/1/


Nose-Pharynx-Tube-Tympanum-Mastoid Unit
ET
3 units
Ventilation
Muco-cilliary
Immunological

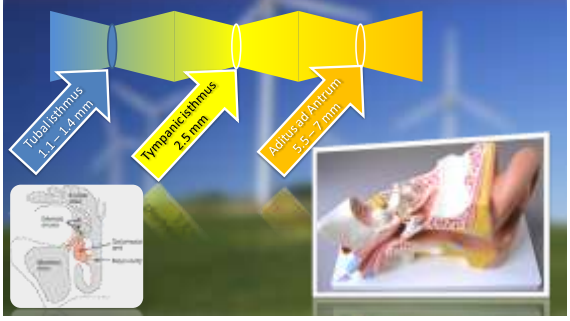

Nose-Pharynx-Tube-Tympanum-Mastoid Unit
Innate immunity
Muco-cilliary clearance
Mucins
Surfactant
Acquaporins
Peptides and Antimicrobial Proteins
Lysozime (Lz)
Lactoferrin (Lf)
Defensins
Collectins and surfactant (SP-A, SP-D)

Differences of the Nose-Pharynx-Tube-Tympanum-Mastoid Unit

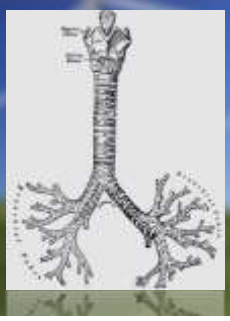


Ventilation

Ventilation



Ventilation



Embriological pathway

Ventilation

Embriological pathway

Hammar JA

Studien über die Entwicklung des Vorderdarms und einiger angrenzenden Organe. 1. Abt: allegemeine Morphologie der Schlundspalten beim Menschen. Entwicklung des Mittelohrraumes und des äusseren Gehötganges.
Arch Mikrosk Anat 1902; 59:471-628

The Embriology

Between the third and seventh foetal month the gelatinous tissue of the middle ear cleft is gradually absorbed. At the same time the primitive tympanic cavity develops by a growth, into the cleft, of an endothelial lined fluid pouch extending from the eustachian tube. Four primary sacs or pouches then bud out. They are saccus anticus, saccus medius, saccus superior and saccus posticus (Hammar, 1902). Where these pouches contact each other mucosal folds are formed. Between the mucosal layers of the folds are remnants of the mesoderm, including blood vessels supplying the "viscera" of the tympanic cavity

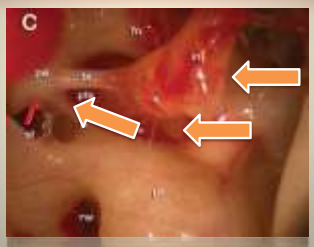
Proctor B

The development of the middle ear spaces and their surgical significance. The Journal of Laryngology and Otology 1964

In this sense we can define the intra-tympanic ventilation routes as the result of the path travelled by four pockets of the middle ear embryological cavitation process

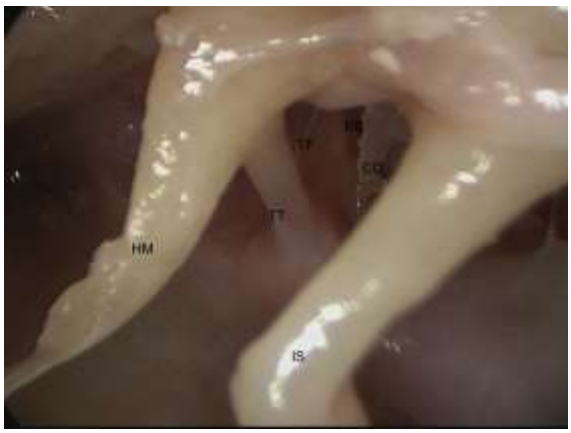
Saccus Posticus – Sinus Tympani

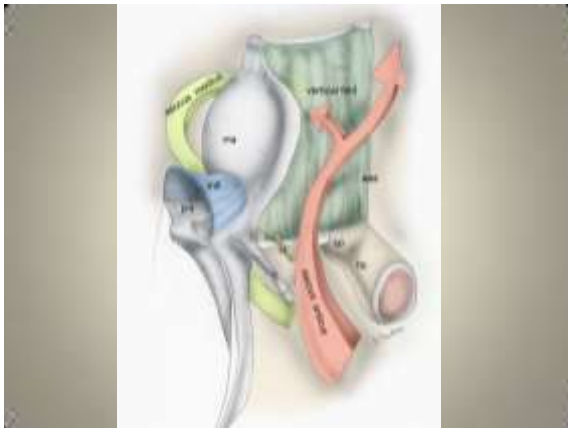
Saccus Superior



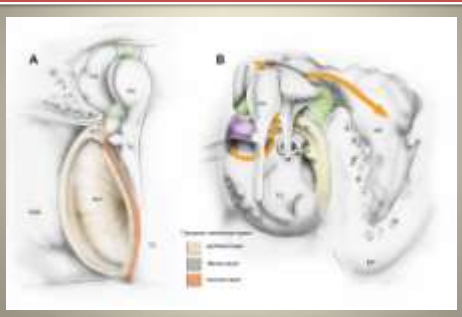
Saccus Anticus

Saccus Medius

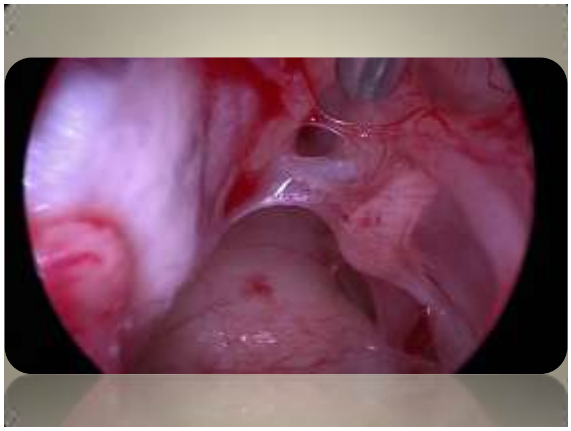




Ventilation Routes Middle Ear



Marchione D, et al. The Contribution of Selective Dysventilation to Attical Middle Ear Pathology. Medical Hypoteses; 2011: in press



Clinical Results of Atticoantrotomy with Attic Reconstruction or Attic Obliteration for Patients with an Attic Cholesteatoma

occur more frequently. However, the most important factor determining postoperative retraction is ventilation in the middle ear

Other factor responsible for the attic retraction seems to be an aeration of Prussak's space. Natural aeration pathways, such as lower and upper floor units (19), could be blocked by the obliterated cartilage and the tissue fluid interfering the reestablishment of the aeration route (20). According to this observation, retraction may occur easily in the postoperative attic area, especially in the obliterated cases, even though the Eustachian tube function is normal.

Gas flow into and within the middle ear

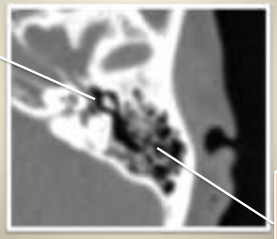
Role of the mastoid in middle ear pressure regulation.

The mastoid as a functional rate-limiter of middle ear pressure change.

Middle ear pressure regulation--complementary active actions of the mastoid and the Eustachian tube.

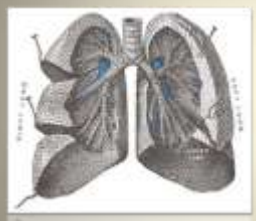
MACS
Mucosal respiration – Gas diffusion

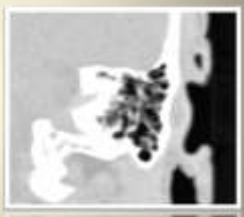
The tympanum is a single, large air cell that contains the ME ossicles.

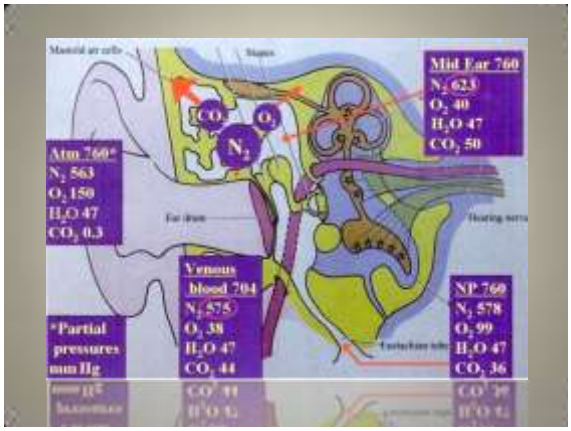


The MACs are multiple partitioned cellular airspaces that increases ME volume

LUNGS x MACS

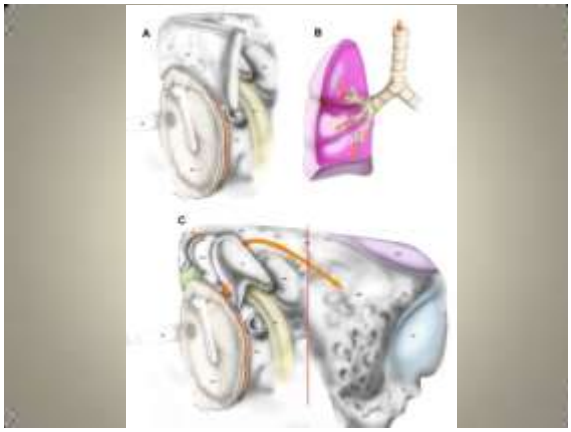


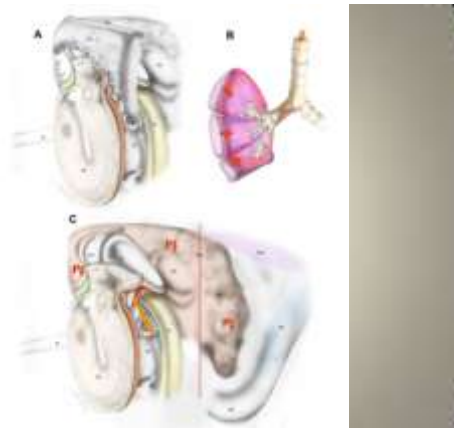




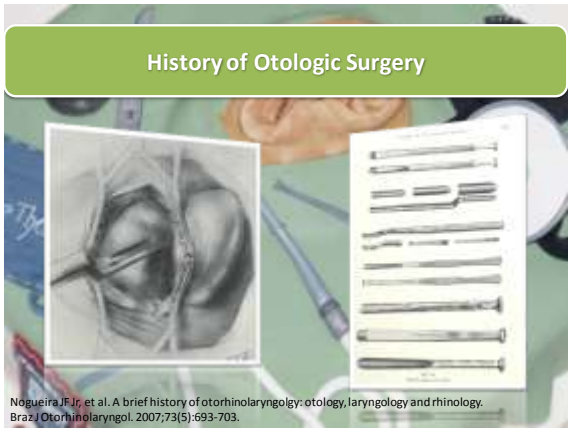
Role of the mastoid in middle ear pressure regulation

Small mastoid volumes tend to cause greater changes in pressure





History of Otologic Surgery



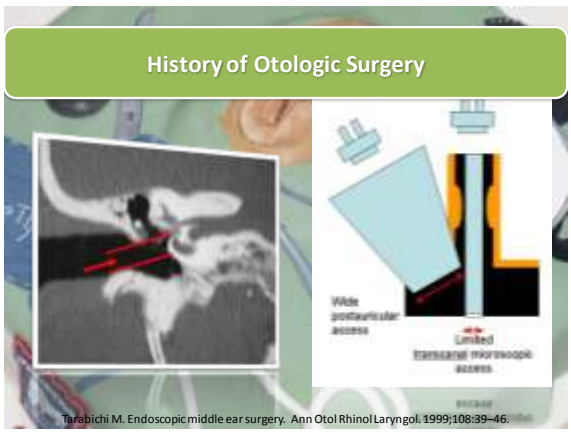
Nogueira JF Jr, et al. A brief history of otorhinolaryngolgy: otology, laryngology and rhinology. Braz J Otorhinolaryngol. 2007;73(5):693-703.

History of Otologic Surgery

- 1921 – Microscope in otology
  - Carl Olof Nylen (Sweden)
- 1950 - Drills

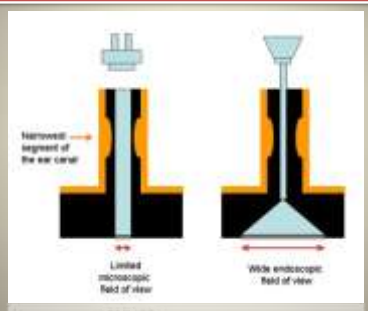
Nogueira JF Jr, et al. A brief history of otorhinolaryngolgy: otology, laryngology and rhinology. Braz J Otorhinolaryngol. 2007;73(5):693-703.

History of Otologic Surgery

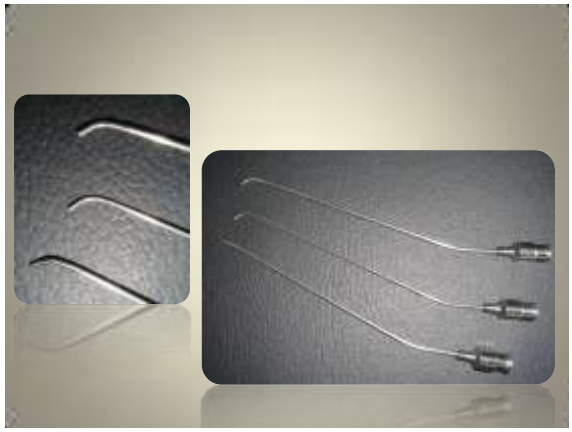


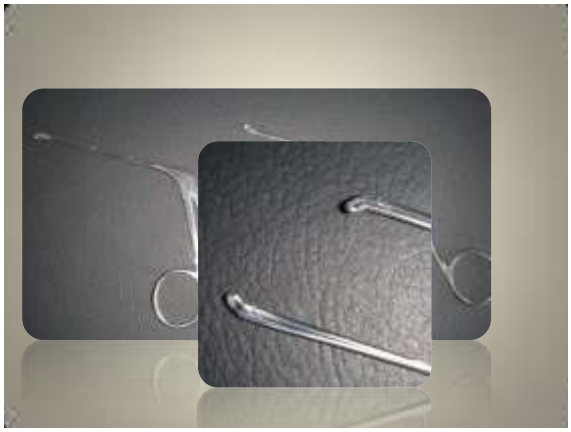
Tarabichi M. Endoscopic middle ear surgery. Ann Otol Rhinol Laryngol. 1999;108:39–46.

Endoscopic Otologic Surgery



Tarabichi M. Endoscopic middle ear surgery. Ann Otol Rhinol Laryngol. 1999;108:39–46.



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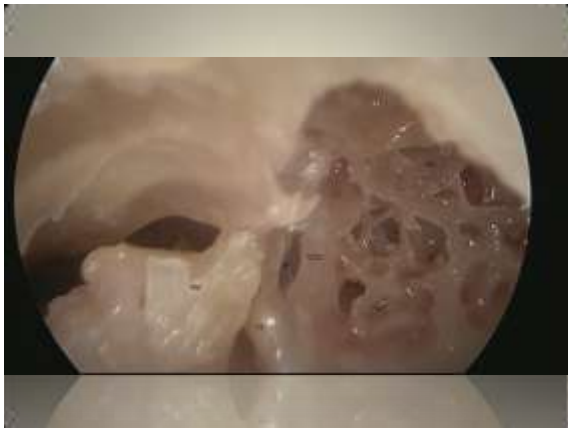
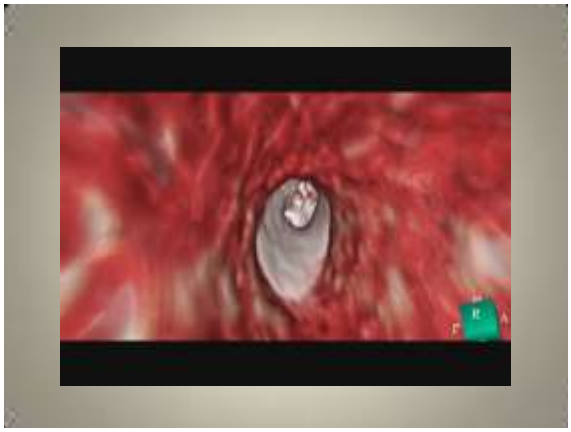



Sinus
CENTRO




Myringoplasty
Sinus
CENTRO


Sinus
CENTRO


Sinus
CENTRO


Sinus
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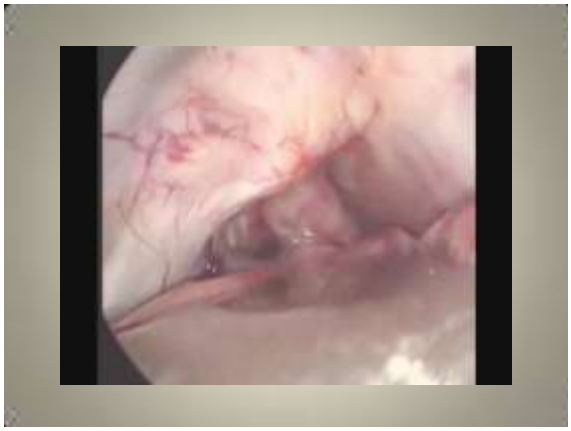
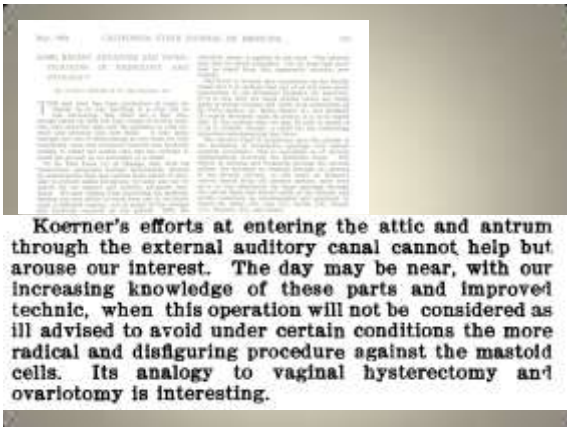
CENTRO



Tympanic membrane changes following paediatric cochlear implantation.

[The temporalsusa history of middle ear operation].



Koerner's efforts at entering the attic and antrum through the external auditory canal cannot help but arouse our interest. The day may be near, with our increasing knowledge of these parts and improved technic, when this operation will not be considered as ill advised to avoid under certain conditions the more radical and disfiguring procedure against the mastoid cells. Its analogy to vaginal hysterectomy and ovariotomy is interesting.

"In clear contrast to the impact of the introduction of endoscope in most surgical disciplines, the practice of ear surgery has changed little and it continues to be the domain for the microscope. Depending on the task at hand, there are many distinctions that would make the endoscope a better instrument than the microscope and vice-versa.
We all need to master working with both instruments to better understand and treat pathologies of the ear.
The objective of the IWGEES is to neutralize these longstanding biases toward the microscope and to get all of us to use the best instrument in the best way possible to help our patients."

Muaaz Tarabichi – American Hospital of Dubai