



## Regional Cohort Study in People

J Yang\*

Associate Professor, Department of Otolaryngology, Head and Neck Surgery, Wayne State University, St. Antoine Detroit, USA

\*Corresponding author: J. Yang, Associate Professor, Department of Otolaryngology, Head and Neck Surgery, Wayne State University, 5E-UHC, 4201 St. Antoine Detroit, MI 48201, USA; E-mail: jyang@hu.edu.in

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### Description

Otitis Media is a common disease in the practice of otolaryngology and one of the famous "three inflammations and one deafness". Otitis media has been with humans from the very beginning. Treatment for otitis media started in the west in 1774 and much later in China. Surgical treatment for otitis media was initially to save life and produce dry ears (*i.e.* to eradicate disease), to control infection and to prevent complications [1]. As our understanding of middle ear physiology and pathology increased, as well as advent of antibiotics and the surgical microscope, surgical treatment of otitis media has moved from merely saving life into a time of true microscopic ear surgery and of preserving or restoring auditory function, and from an invasive to a minimal invasive time. At this time, it continues move into a new stage of auditory implantation [2,3].

Since its opening in 1959, the PLA general hospital Department of otolaryngology head and neck surgery has always focused on the prevention and treatment of deafness. Its treatment of otitis media has maintained a leading position in China.

### Active Basic and Clinical Research Regarding Surgical Treatment of Otitis Media to Promote its Development

Research leads patient care. Basic and clinical research on middle ear anatomy, histopathology and middle ear auditory physiology has been a key to improvement of treatment outcomes in otitis media. Prevention and treatment of deafness has been the focus of this department. Even at its very early times, with only 13 beds, the department built a laboratory for research on prevention and treatment of deafness. Over the next 50 years, the department made great achievements in studying the middle ear anatomy, physiology and histopathology [4,5] which served as the foundation for development of microscopic ear surgery and neurotology.

Since the opening of the laboratory, multiple animal and cadaver studies have facilitated development of surgical techniques. We were the first to study tissue reaction to retained gelfoam and erythromycin in the middle ear cavity in tympanoplasty procedures, which provided scientific support for broad practice of packing the middle ear space

with erythromycin gelfoam. We also studied histological changes in feline incus allograft and designed stapes prosthesis for hearing reconstruction. Close relations among the advances of clinical audiology and medical imaging and progress in surgical treatment of otitis media

Improvement of pre-operative evaluation and diagnosis in otitis media has greatly helped understanding of patient condition and prediction of treatment results. Improvement of clinical audiology has also facilitated progress of diagnosis of otitis media. From its early days, the department has set up a clinical audiology center, with ever increasing number of tests including pure tone audiometry, acoustic immittance, otoacoustic emissions, multi-frequency steady-state responses, bone conduction auditory brainstem responses, speech audiometry, high repetition rate ABRs and vestibular evoked myogenic potentials.

In the old days, X-ray images were used for diagnosis of otitis media, including Schuller's and Mayers' projection images, X-Rog photograph and multi-orbit tomography. Head CT was introduced in 1975. Available imaging technologies today include high-resolution temporal bone CT, head MRI, PET-CT (and three-dimensional reconstruction). Temporal bone CT provides information on disease location, size, mastoid pneumatization, ossicular chain position and involvement, thickness of squamous bone, location of the sigmoid sinus, malformation of the cochlea, enlarged vestibular aqueduct, promontory thickness, size of the internal auditory canal, status of the Eustachian tube, and the course of the facial nerve. It facilitates early diagnosis of otitis media and latent pathologies, allowing early intervention. Intraoperative CT and MRI provide means to identify anatomical landmarks when facing inner ear and facial nerve malformation and is a very useful tool in microscopic ear surgery to minimize complications.

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