



Ajou University
School of Medicine

DEPARTMENT
OF

OTOLARYNGOLOGY

1999 - 2000



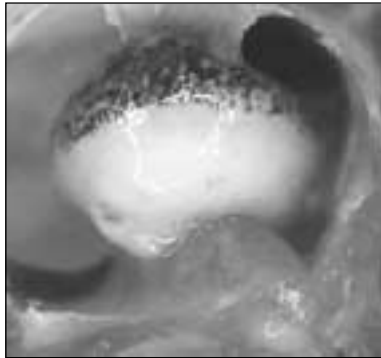


OTOLARYNGOLOGY

AJOU UNIVERSITY SCHOOL OF MEDICINE

SUWON, KOREA

[Korean Language\(Click here\)](#)



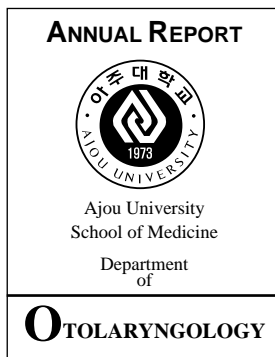
Experimentally Induced
Cholesteatoma in the EAC
of Mongolian Gerbil

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This Web-Site is maintained by : Kyung Shik Suh, M.D.(kssuh@madang.ajou.ac.kr)

First Departmental Homepage : April, 1997

Department of Otolaryngology,

Ajou University School of Medicine,

5 Wonchon-Dong, Paldal-Gu, Suwon, Korea / 442-749

TEL: 82-331-219-5268, FAX : 82-331-219-5264

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INTRODUCTION

The past six years have gone by very quickly since we joined together to build up the Department of Otolaryngology, but they have been a lot of hard work. We hosted a highly successful Ajou Otology Symposium in last September, which we have organized for the fifth consecutive year. Last year's meeting was the biggest and best ever because we invited 5 famous otologic researchers from the outside of Korea - Dr. David J. Lim from House Ear Institute, Dr. Robert Wenthold from NIH, Dr. Steven K. Juhn from Minnesota, Dr. Hideuki Kawauchi from Shimane, and Dr. Yuichi Kurono from Kagoshima.

The Department has continued to expand and develop in order to offer excellent opportunities in service to the community, medical investigation, and education. It continues to take steps to enhance the department's productivity.

The loyal assistance of our full-time faculty and resident doctors as well as nursing staffs and laboratory technicians is acknowledged with gratitude. We also appreciate the support from the School of Medicine and the University in helping us achieve our development.

Respectfully,

A handwritten signature in black ink, appearing to be 'Keehyun Park', written in a cursive style.

Keehyun Park, M.D., Ph.D.

Chairman

Department of Otolaryngology

PERSONNEL

Roster
Society Memberships, University and Hospital Committee
Travel
Presentation

RESEARCH

Publications
Abstracts
Grants Received

EDUCATION

Medical students
Residents
Others
Visiting Professors

PATIENT CARE

FACILITIES AND EQUIPMENT

PERSONNEL

ROSTER

FACULTY

Keehyun Park, M.D. Professor and Chairman

M.D. Yonsei University 1976.

Ph.D. Yonsei University 1982.

Otology, Neurotology

E-mail : parkkh@madang.ajou.ac.kr

Hong-Joon Park, M.D. Associate Professor

M.D. Yonsei University, 1983.

Ph.D. Yonsei University, 1992.

Otology, Audiology

E-mail : hjpark@madang.ajou.ac.kr

Young-Myoung Chun, M.D. Assistant Professor

M.D. Yonsei University, 1985.

M.S. Yonsei University, 1993.

Otology, Neurotology & Skull Base Surgery

E-mail : ychun@madang.ajou.ac.kr

Kyung Shik Suh, M.D. Assistant Professor

M.D. Yonsei University, 1986.

Ph.D. Yonsei University, 2000.

E-mail : kssuh@madang.ajou.ac.kr

Joong-Wha Koh, M.D. Assistant Professor

M.D. Yonsei Univ. Wonju College, 1988.

Head & Neck Oncology

E-mail : ent50@madang.ajou.ac.kr

Jin-Seok Lee, M.D. Instructor

M.D. Yonsei University, 1990.

M.S. Ajou University, 1999.

Otology, Rhinology

Sung Yoon Ahn, M.D. Instructor

M.D. Yonsei University, 1991.

Rhinology, Otolaryngic allergy

AFFILIATED FACULTY

Hee Yong Lee, M.D. Clinical Professor
M.D. Yonsei University, 1967.
Ph.D. Yonsei University, 1974.

Jeong Tai Kim, M.D. Clinical Professor
M.D. Catholic University, 1969.
Ph.D. Catholic University, 1997.

Joo-Ho Han, M.D. Clinical Professor
M.D. Chosun University, 1976.
Ph.D. Wonkwang University, 1996.

Soon Chul Huh, M.D. Clinical Professor
M.D. Hanyang University, 1980.
M.S. Hanyang University, 1987.

Hyung Bo Shim, M.D. Clinical Professor
M.D. Chonnam University, 1980.

Jeong Bae Kim, M.D. Clinical Assoc. Professor
M.D. Chung-Ang University, 1981.
Ph.D. Chung-Ang University, 1990.

Ho Sung Kim, M.D. Clinical Assoc. Professor
M.D. Seoul National University, 1982.
Ph.D. Hanyang University, 1989.

Ho Sung Lim, M.D. Clinical Assoc. Professor
M.D. Yonsei University, 1983.
M.S. Yonsei University, 1986.

Sun-Bok Song, M.D. Clinical Assistant Prof.
M.D. Inje University, 1986.

Sung Woo Park, M.D. Clinical Assistant Prof.
M.D. Korea University, 1986.
Ph.D. Korea University, 1996.

Ju-Hyun Eum, M.D. Clinical Assistant Prof.
M.D. Yonsei University, 1987.
M.S. Ajou University, 1996.

Dong-Im Chang, M.D. Clinical Assistant Prof.
M.D. Soonchunhyang University, 1987.

Bong Ki Hong, M.D. Clinical Assistant Prof.
M.D. Yonsei University, 1988.

Jee-Won Kang, M.D. Clinical Assistant Prof.
M.D. Yonsei University, 1989.
M.S. Yonsei University, 1996.

Seong-Mo Koo, M.D. Clinical Instructor
M.D. Yonsei University, 1990.
M.S. Ajou University, 1997.

Sang-Joon Shin, M.D. Clinical Instructor
M.D. Yonsei University, 1990.

RESIDENTS

FOURTH YEAR

Hui-Zun Kim, M.D.	M.D. Gyeongsang National University, 1993
Sang-Hoon Chun, M.D.	M.D. Ajou University, 1995
Seong Kyun Kim, M.D.	M.D. Yonsei University, 1995

THIRD YEAR

Yun Hoon Choung, M.D.,D.D.S.	D.D.S. Seoul National University, 1989
	M.D. Ajou University, 1996
Byung-Chul Kim, M.D.	M.D. Ajou University, 1996
Jeong-Hoon Oh, M.D.	M.D. Chonbuk National University, 1996

SECOND YEAR

Young Joon Yu, M.D.	M.D. Yonsei University, 1993
Jee-Churl Shin, M.D.	M.D. Yonsei University, Wonju College, 1994
Jung-Whan Song, M.D.	M.D. Ajou University, 1997

FIRST YEAR

Ho Seok Choi, M.D.	M.D. Yonsei University, 1994
Seung-Koo Park, M.D.	M.D. Ajou University, 1998
Jeong-Min Chun, M.D.	M.D. Soonchunhyang University, 1996

STAFF MEMBERS IN ADDITION TO FACULTY

NURSE

Young-Soon Park, R.N.

NURSE AID

Eun-Young Cho
Seon-Young Han
Kyeong-Ae Choi
Joo-Hee Han
Yang-Soon Kim

AUDIOLOGICAL LABORATORY

Jung-Hwa Lee, R.N.
Hyun Kyung Chang, C.P.

VESTIBULAR LABORATORY

Mi-Yoo Koh

VOCAL DYNAMIC & SPEECH LABORATORY

Seo-Ji Ahn
Han-Jin Chung

MOECULAR BIOLOGY LABORATORY

Mi-Hye Lim

SECRETARY

Sun-Wha Kim

SOCIETY MEMBERSHIPS, UNIVERSITY & HOSPITAL COMMITTEEKeehyun Park, M.D.

Korean Medical Association
Korean Otolaryngological Society, Public Relations Committee, Director
Korean Audiological Society, Trustee
The Society of Korean Logopedics & Phoniatics
International Association of Logopedics and Phoniatics
Korean Society of Medical Education
Korean Otology Study Group, Trustee & Director of Scientific Committee
Korean Skull Base Surgery Society
American Association for Research in Otolaryngology, International Committee, Member
Japan Otological Society
American Academy of Otolaryngology-Head and Neck Surgery
Aeromedical Association of Korea, Trustee
Review Board : Journal of Korean Otolaryngological Society
Medical Fee Review Committee of National Federation of Medical Insurance
Korean Health Technology Planning and Education Board (Medical Bioengineering Division)
Medical Staff Administration Committee of Medical School, Chair
New Faculty Selection Committee of Medical School, Chair
Tenure Faculty Selection Committee of Medical School
Administration Committee of Medical School, Chair
Administration Committee of Medical Center
Academic Planning and Coordination Committee of Medical School, Chair

Hong-Joon Park, M.D.

Korean Medical Association
Korean Otolaryngological Society
Korean Audiological Society
Korean Otology Study Group
Korean Skull Base Surgery Society
American Association for Research in Otolaryngology
Sir Charles Bell Society
Operation Room Committee of University Hospital
Continuing Medical Education Committee of University Hospital
Emergency Room Committee of University Hospital

Young-Myoung Chun, M.D.

Korean Medical Association
Korean Otolaryngological Society
Korean Audiological Society
The Society of Korean Logopedics & Phoniatics
The Korean Society for Head & Neck Oncology
Korean Otology Study Group
Korean Skull Base Surgery Society
Asian-Oceanian Skull Base Society
American Association for Research in Otolaryngology
Vivarium management committee
Education and training committee

Kyung Shik Suh, M.D.

Korean Medical Association
Korean Otolaryngological Society
Korean Rhinological Society
Korean Society of Allergology

Joong-Wha Koh, M.D.

Korean Medical Association
Korean Otolaryngological Society
Aeromedical Association of Korea
The Society of Korean Logopedics & Phoniatics
The Korean Society for Head & Neck Oncology
Cancer Center Committee of University Hospital

Jin-Seok Lee, M.D.

Korean Medical Association
Korean Otolaryngological Society

Sung Yoon Ahn, M.D.

Korean Medical Association
Korean Otolaryngological Society

TRAVELKeehyun Park, M.D.

- The 7th International Symposium on Recent Advances in Otitis Media (Ft. Lauderdale, Florida, U.S.A. : Jun 1-5, 1999)
- The 3rd International Conference on Acoustic Neuroma and Other CPA Tumors (Rome, Italy : Jun 12-17, 1999)
- The 22nd Annual Meeting of the Politzer Society : Otology 2000 (Zürich, Switzerland : Aug 15-19, 1999)
- Department of ENT, University of Zürich Visit (Zürich, Switzerland : Aug 20, 1999)

Hong-Joon Park, M.D.

- The 23th ARO meeting (St. Petersburg, U.S.A.: Feb 20-24, 2000)

Young-Myoung Chun, M.D.

- The 7th International Symposium on Recent Advances in Otitis Media (Ft. Lauderdale, Florida, U.S.A.: Jun 1-5, 1999)

Kyung Shik Suh, M.D.

- The 103rd Annual Meeting of AAO-HNS (New Orleans, U.S.A. : Sep 26-30, 1999)
- Johns-Hopkins University Hospital, Department of Allergy and Clinical Immunology Visit (Baltimore, U.S.A.: Sep 25, 1999)

Jin-Seok Lee, M.D.

- The 2nd International Symposium on ME Mechanics in Research & Otosurgery (Boston, U.S.A.: Oct 19-26, 1999)

Sung Yoon Ahn, M.D.

- The 2nd International Center for Otologic Training (Savannah, Georgia, U.S.A. : Apr 29-May 12, 1999)

PRESENTATION

Keehyun Park, M.D.

- The 5th Korean Combined Otolaryngological Congress(Kyungju : Apr 30-May 2, 1999)
 - "Signal transduction pathway of induced cholesteatoma in Mongolian gerbils"
 - "Study for epithelial differentiation in developing murine eustachian tube and middle ear"
 - "Clinical analysis of 21 cases of acoustic neuroma"
 - "Mastoid obliteration with glass ionomer cement"
 - "Significance of fast spin echo MRI in diagnosis of acoustic neuroma"
 - "Goldenhar syndrome associated with congenital facial palsy"
- The 7th International Symposium on Recent Advances in Otitis Media (Ft. Lauderdale, Florida, U.S.A.: Jun 1-5, 1999)
 - "Expression of PLC- γ 1 in experimental cholesteatoma"
- The 3rd International Conference on Acoustic Neuroma and Other CPA Tumors (Rome, Italy : Jun 12-17,1999)
 - "Decision analysis for early diagnosis of small acoustic neuroma"
- The 22nd Annual Meeting of the Politzer Society : Otology 2000 (Zürich, Switzerland : Aug 15-19, 1999)
 - "Management of attic cholesteatoma : personal experience"
- The 5th Ajou Otology Symposium(Suwon : Sep 3, 1999)
 - "Signal transduction pathway in experimental cholesteatoma"
- The 73rd Annual Congress of Korean Society of Otolaryngology(Seoul : Oct 28-31, 1999)
 - "Personal experience of attic cholesteatoma surgery : analysis of surgical result in atticoplasty"
 - "Expression of thrombomodulin in middle ear cholesteatoma"

Hong-Joon Park, M.D.

- The 5th Korean Combined Otolaryngological Congress(Kyoungju : Apr 30-May 2, 1999)
 - "Genetic analysis of Korean hearing loss-Connexin 26"
 - "Measurement of speech reception threshold with picture identification task in children"
- The 5th Ajou Otology Symposium(Suwon : Sep 3, 1999)
 - "Genetic aspects of hearing loss in Korea"
- The 73rd Annual Congress of Korean Society of Otolaryngology(Seoul : Oct 28-31, 1999)
 - "Clinical and molecular biological analysis of congenital hearing loss in Korea"
- The 23rd ARO meeting(St. Petersburg, U.S.A.: Feb 20-24, 2000)
 - "Connexin 26 mutations in Korean non-syndromic hearing loss"

Young-Myoung Chun, M.D.

- The 5th Korean Combined Otolaryngological Congress(Kyoungju: Apr 30-May 2,1999)
"The immortalization of normal adult human middle ear epithelial cells using the retrovirus containing E6/E7 genes of human papilloma virus type 16"
- The 7th International Symposium on Recent Advances in Otitis Media (Ft. Lauderdale, Florida, U.S.A.: Jun 1-5, 1999)
"Signal transduction mechanisms involved in bacteria-induced mucin overproduction"
"Secretory gene expressions in the immortalized rat middle ear and eustachian tube epithelial cells"
"Expressions of aquaporin family of water channel proteins in rat tubotympanum in vivo & in vitro"
"MEK 1/2-MAPK pathway is involved in IL-1 α induced down-regulation of surfactant protein-B (SP-B) transcription in immortalized human middle ear epithelial cell"
"Mucin gene expressions in the immortalized human middle ear epithelial cells"
"Inhibition of bacteria-induced mucin MUC2 and MUC5 transcription by glucocorticoids in epithelial cells"
- The 5th Ajou Otology Symposium(Suwon : Sep 3, 1999)
"The role of the antimicrobial peptides in tubotympanum"
- The 73rd Annual Congress of Korean Society of Otolaryngology (Seoul, Oct 28-31,1999)
"Molecular biologic approach on otitis media research"
"Surgical application for COM patient"
- The 6th Annual meeting of Korean Skull Base Society(Seoul, Nov 6, 1999)
"Adenoid cystic carcinoma in temporal bone"

Kyung Shik Suh, M.D.

- The 5th Korean Combined Otolaryngological Congress(Kyoungju: Apr 30-May 2,1999)
" Expression of PDGF, PDGFR, PLC- γ 1 and PI3-K in human nasal polyp"
"Anterior approach to the frontal sinus in ESS"
- The 103rd Annual Meeting of AAO-HNS(New Orleans, U.S.A. : Sep 26-30)
"Detection of DNA virus with PCR in human nasal polyp"
- The 17th Annual Meeting of Korean Rhinologic Society(Seoul, Oct 24, 1999)
"Results of bacterial culture through middle meatus in the pediatric acute rhinosinusitis"
- The 73rd Annual Congress of Korean Society of Otolaryngology (Seoul, Oct. 28-31, 1999)
"Anterior approach according to the 5 basal lamellae in ESS"
"Alternative medicine in chronic sinusitis patients"

Joong-Wha Koh, M.D.

- The 5th Korean Combined Otolaryngological Congress(Kyoungju : Apr 30-May 2, 1999)
 - "Postoperative calcium and thyroglobulin levels in total thyroidectomized patients"
 - "Clinical significance of preoperative studies in diagnosis of thyroid nodule"
 - "F-18-FDG imaging using dual-head coincidence positron emission tomography in patients with head and neck cancer"
 - "A case of ectopic thyroid with clinical review"
- The 73rd Annual Congress of Korean Society of Otolaryngology (Seoul : Oct 28-31, 1999)
 - "Diagnostic and surgical approaches in parapharyngeal space tumors"
 - "A case of renal cell carcinoma with multiple head and neck metastases"
- The 12th Annual Congress of Korean Society of Logopedics and Phoniatics (Seoul: Nov 13, 1999)
 - "Effect of frenulotomy in tongue-tie patients : focused on alveolar sounds"
- The 16th Annual Congress of Korean Society of Head & Neck Oncology (Seoul: Dec 4, 1999)
 - "Pathologic analysis of lymph nodes number according to various modification of neck dissection"

Jin-Seok Lee, M.D.

- The 5th Korean Combined Otolaryngological Congress(Kyoungju : Apr 30-May 2, 1999)
 - "Study for epithelial differentiation in developing murine eustachian tube and middle ear"

Sung Yoon Ahn, M.D.

- The 20th Annual Meeting of Korean Otologic Society Group (Pusan : Oct 23, 1999)
 - "The effect of caroverine in tinnitus treatment"

Departmental research activities are always a source of pride among the faculty. Research in the Department of Otolaryngology continues to grow with investigations, which include both basic and clinical, interdepartmental and interdisciplinary research.

For the time being, the major research area in our Department is in otology, especially middle ear cholesteatoma, genetic hearing loss & otitis media.

PUBLICATIONS

- Park K, Chun YM, Park HJ, Lee YD : Immunohistochemical study of cell proliferation using BrdU labelling on tympanic membrane, external auditory canal and induced cholesteatoma in Mongolian gerbils. *Acta Otolaryngol (Stockh)* 119(8): 874-9, 1999
- Park HJ, Park K : Expression of Fas/APO-1 and apoptosis of keratinocytes in human cholesteatoma. *Laryngoscope* 109(4): 613-6, 1999
- Park K, Chun YM, Lee DH, Hwang SC : Signal transduction pathway in human middle ear cholesteatoma. *Otolaryngol Head Neck Surg* 120(6): 899-904, 1999
- Park K, Park HJ, Kim BH : Clinical characteristics of middle ear cholesteatoma in children related to its pathogenesis. *Otitis Media Today* 525-9, 1999
- Pai MS, Park C, Suh JH, Koh JW : Fluorine-18 fluorodeoxyglucose imaging using dual head coincidence positron emission tomography without attenuation correction in patients with head and neck cancer. *Clin Nucl Med* 24(7): 495-500, 1999
- Kim JH, Kim SY, Suh JH, Park K : Ossicular disruption pattern after head trauma. *Ajou Med J* 4(1): 25-8, 1999
- Koh JW, Oh JH, Shin JC : Intramasseteric vascular anomaly misdiagnosed to parotid sialolithiasis : A case report. *Korean J Otolaryngol* 42(3): 380-5, 1999
- Koh JW, Chung YH, Kim MK, Lym H : Primary neuroblastoma arising in parapharyngeal space. *Korean J Otolaryngol* 42(4): 530-5, 1999
- Park HJ, Park K, Oh JH, Lee JS : TEOAE as a newborn hearing screening. *Korean J Otolaryngol* 42(5): 565-9, 1999
- Lee DH, Park K, Park HJ, Chun JM, Hwang SC : Signal transduction system of experimentally induced cholesteatoma in the mongolian gerbil. *Korean J Otolaryngol* 42(6): 679-85, 1999
- Choi EC, Kim YH, Koh JW, Kim DY : Surgical treatment of posterior hypopharyngeal wall cancer. *Korean J Otolaryngol* 42(6): 770-5, 1999
- Park K, Park HJ, Chung YH, Song JW : Distribution of lysozyme- and lactoferrin-secreting cells in eustachian tube of normal BALB/c mouse. *Korean J Otolaryngol* 42(7): 811-5, 1999
- Lee WS, Chi JH, Chun YM, Park K : Surgical management of the facial nerve schwannoma. *Korean J Otolaryngol* 42(7): 849-54, 1999

- Park K, Park HJ, Lee WS, Yu YJ : Expression of PCNA in experimental cholesteatoma by implanting autologous free skin graft in mongolian gerbil middle ear cavity. Korean J Otolaryngol 42(9): 1098-102, 1999
- Park K, Park HJ, Lee JS, Eum JH : Immunohistochemical study of thrombomodulin in experimental cholesteatoma. Korean J Otolaryngol 42(11): 1349-52, 1999
- Park HJ, Lee JH, Ahn SJ, Kim BC, Choi HS : Measurement of speech reception threshold by picture identification in young children. Korean J Otolaryngol 42(12): 1510-3, 1999
- Koh JW, Ahn SY, Kim HZ, Shin JC : Hypocalcemia followed by total thyroidectomy with central neck dissection. Korean J Otolaryngol 42(12): 1555-60, 1999
- Koh JW, Ahn SY, Song JH, Park SK : A case of ectopic thyroid with clinical review. Korean J Bronchoesophagol 5(1): 55-61, 1999
- Koh JW, Shin JC, Choi HS : A case of renal cell carcinoma with multiple head and neck metastases. Korean J Bronchoesophagol 5(2): 212-6, 1999
- Koh JW, Kim BC, Kim SK : Unknown primary metastatic spindle cell carcinoma : A case report. Korean J Head & Neck Oncology 15(2): 239-42, 1999

ABSTRACTS

1. International Meeting

- The 7th International Symposium on Recent Advances in Otitis Media
(Ft. Lauderdale, Florida, U.S.A.: Jun 1-5, 1999)

"Expression of PLC- γ 1 in experimental cholesteatoma"

Cholesteatomatous otitis media is characterized by the presence of a squamous epithelium invading the middle ear. Its pathogenesis including hyperproliferative nature is still unknown.

Several laboratory animals have been used to model cholesteatoma formation to provide new information on cellular proliferation. Phospholipase C (PLC)- γ 1 plays a central role in signal transduction and it is important in cellular growth, differentiation and proliferation.

The purpose of this study is to elucidate the distribution of PLC- γ 1 in normal meatal skin and cholesteatoma matrix of experimental animals. In this study, we induced canal ligation cholesteatoma using Mongolian gerbils and investigated the expression of PLC- γ 1 in this

model by using western blot analysis and immunohistochemistry. On immunohistochemistry, PLC- γ 1 was detected only in basal layer of the deep meatal skin, but was readily detectable in both the basal and suprabasal layers in cholesteatoma matrix. By western blot analysis, considerable higher levels of PLC- γ 1 protein were detectable in experimental cholesteatoma matrix.

In conclusion, overexpression of PLC- γ 1 in experimental cholesteatoma matrix suggests a possible derangement of enhanced growth signal transduction in keratinocytes. So this animal cholesteatoma model can be used for the future study of cellular proliferation of cholesteatoma.

"Signal transduction mechanisms involved in bacteria-induced mucin overproduction"

Bacteria-induced mucin overproduction has been known to play an important role in the pathogenesis of upper respiratory infectious diseases including otitis media and chronic bronchitis. In chronic otitis media with effusion, mucin has been shown clearly as an important factor in causing hearing loss. The molecular mechanisms underlying H. influenzae-induced mucin overproduction are unclear. Here we show that H. influenzae up-regulates mucin MUC2 and MUC5 transcription via activation of MAP kinase pathways. Activation of MUC2 and MUC5 transcription is mediated by nuclear factor NF- κ B. These studies bring new insights into signal transduction mechanisms underlying host-bacterial interactions and more specifically into molecular pathogenesis of H. influenzae-caused infectious diseases and may lead to new therapeutic intervention for inhibiting mucus overproduction in both otitis media and chronic bronchitis.

"Secretory gene expressions in the immortalized rat middle ear and eustachian tube epithelial cells"

Mucus is an integral part of the mucociliary system of the tubotympanum, in that it plays an important role in the protection of the middle ear from invading pathogenic organisms and in the pathogenesis of otitis media. Several mucin genes that are expressed in the upper airway have been cloned in recent years. In addition, large amounts of lysozyme and lactoferrin have been detected in the middle ear effusion. These secretory mucin and antimicrobial proteins have been known to be regulated depending upon their differentiation or pathologic conditions. Thus, it is important for the understanding of pathogenesis of otitis media to reveal these regulation mechanisms. Recently, we have established cell lines from the rat middle ear (SJ Jin et al, *Annals Otol, Rhinol and Laryngol*, in press) and eustachian tube epithelia (SJ Jin, unpublished). The goal of this study was to determine whether these cell lines could be used in the study related to regulation of these secretory proteins. To achieve this goal, we performed a reverse transcription-polymerase chain reaction (RT-PCR) using MUC1, MUC2, MUC5AC, lysozyme, and lactoferrin probes. All these genes were consistently expressed in both middle ear and eustachian tube epithelial cell lines, as well as in the primary cultured epithelial cells. These results suggest that

these cell lines will be a useful cell model to study the cell biology of the middle ear and tubal epithelial cells, as well as to study the molecular pathogenesis of otitis media, such as bacteria-host interaction and signaling transduction.

"Expressions of aquaporin family of water channel proteins in rat tubotympanum in vivo & in vitro"

Proper hydration of airway epithelium is necessary to maintain an adequate oxygen and CO₂ balance, and for the maintenance of appropriate defence mechanisms. The complex fluid movements occurring in the respiratory tract are thought to involve several different aquaporins (AQPs) acting in concert. AQPs are a family of intrinsic membrane proteins that function water selective channels in the plasma membranes of the cells of water transporting tissues. The pathophysiology of several airway diseases such as cystic fibrosis and asthma are also known to involve movements of water into or out of the respiratory tracts. In recent studies, the abnormalities of AQPs would lead to fluid accumulation, mediator release or changes in membrane potential. Here, we investigated the expression of AQPs in rat middle ear and eustachian tube mucosa, immortalized middle ear cell, and eustachia cell by using RT-PCR and immunolabelling to understand the normal distribution of AQPs, which are known 9 different family members. Using RT-PCR with 9 different AQP specific primers, transcripts of all aquaporin families except AQP 2 and AQP 6 were consistently expressed in both middle ear and eustachian tube epithelium. Moreover, these AQP mRNA were expressed in RMEC-1 and REEC-1, which are rat middle ear and eustachian tube epithelial cell lines, respectively. Interestingly, such a distribution of APQs showed similar patterns in tracheobronchial systems. Based on these findings, we suggest that AQPs may play important roles in normal physiology and pathophysiology of tubotympanum.

"MEK 1/2-MAPK pathway is involved in IL-1 α induced down-regulation of surfactant protein-B(SP-B) transcription in immortalized human middle ear epithelial cell"

Efficient middle ear ventilation and clearance of mucus is dependent on the tubal patency function. Although it has been demonstrated that surfactant like substance in the tybotympanum may act as a surface active agent to lower the amount of pressure required to open the eustachian tube, their role in the pathogenesis of otitis media is unknown. Recently, we have shown that surfactant protein B (SP-B), which is responsible for the surface tension-lowering properties of surfactant phospholipids, expressed consistently in the human middle ear epithelial cell line. The aim of this study is how SP-B is regulated by IL-1 α , which is one of the most common proinflammatory cytokine, and determine the signal pathway involved. Here we showed that IL-1 α inhibited SP-B transcription in the human middle ear cell line. These results suggest that the synthesis of surfactant-like substance might be down-regulated in the inflammatory condition such

as acute otitis media, and this down-regulation was inhibited by PD98059, a chemical inhibitor selectively blocking the activity of MAP kinase kinase (MEK). Taken together, these results strongly suggest that MEK 1/2-MAPK pathway is involved in IL-1 α -induced down-regulation of SP-B transcription in human middle ear epithelial cell line. We suggest that the down regulation of SP-B during the early stage of inflammatory process of otitis media aggravate normal tubal patency causing high negative pressure, and MEK blocking agent may be useful to improve tubal patency.

"Mucin gene expressions in the immortalized human middle ear epithelial cells"

The mucus of respiratory tract epithelium including middle ear cleft plays an important role in the normal biology and defense by the mucociliary system. On the other hand, the overproduction and accumulation of mucus is frequently associated with chronic otitis media with effusion (OME). An increased understanding of the nature of regulation of mucus secretion under controlled culture conditions will shed new light on the normal biology and abnormal regulation in pathologic conditions. Using normal human middle ear epithelial cell line, we investigated expression and regulation of mucin genes. We performed RT-PCR using MUC2, MUC5AC and MUC5B oligo-primers to identify their transcripts in the cell line as compared to those of the human middle ear epithelium results show that MUC2, MUC5AC, and MUC5B genes were consistently expressed, especially in the presence of a high concentration of retinoic acid (10^{-7} M). Therefore, we suggest that this human middle ear cell line established will provide useful tool for the study of normal biology of the middle ear epithelial cell and in the cell and molecular pathogenesis of the otitis media.

"Inhibition of bacteria-induced mucin MUC2 and MUC5 transcription by glucocorticoids in epithelial cells"

Bacteria-induced mucin overproduction has been known to play an important role in the pathogenesis of upper respiratory infectious diseases including otitis media and cystic fibrosis. In chronic otitis media with effusion, mucin has been shown clearly as an important factor in causing hearing loss. In cystic fibrosis, 95% of the morbidity and mortality arises from lung disease characterized by chronic lung infection and airway mucin overproduction and obstruction. Although we recently showed that bacteria upregulates mucin MUC2 transcription via activation of a Src-dependent Ras-MARK-pp90rsk-NF- κ B pathway, however, little is known about the efficient inhibitors of mucus overproduction and the relevant molecular mechanisms. Because glucocorticoids exert anti-inflammatory activities via inhibition of nuclear factor NF- κ B-dependent transcription, we investigated the possibility that glucocorticoids inhibit bacteria-induced mucin MUC2 transcription. Our results indicated that glucocorticoids inhibit bacteria-induced up-regulation of mucin MUC2 transcription via a I- κ B-dependent downregulation of NF- κ B activity.

These studies may lead to new therapeutic intervention for inhibiting mucus overproduction in both otitis media and cystic fibrosis patients.

- The 3rd International Conference on Acoustic Neuroma and Other CPA Tumors
(Rome, Italy : Jun 12-17,1999)

"Decision analysis for early diagnosis of small acoustic neuroma"

BACKGROUND : For the past 10 years with the development of imaging techniques such as MRI with gadolinium, small acoustic tumors can be detected before significant symptoms have developed. However, in earlier stage of acoustic tumor, due to the lack of its characteristic symptom, suspicion of acoustic neuroma is not easy and detection rate of traditional audiologic methods such as ABR, pure tone audiogram with speech discrimination score is relatively low contrary to expectation. So need for other method to make the correct diagnosis at an earlier stage raises its head.

AIM OF THE STUDY : We reviewed symptomatology, diagnostic approach and management of small acoustic neuromas to make a decision analysis tree of their diagnostic work-up.

MATERIALS AND METHODS : From June 1994 through May 1998, 25 patients with a small acoustic neuroma(less than 1.5cm) were managed at 2 University Hospitals. We analysed these 25 patients through age, sex, chief complaint, size of tumor, preoperative and postoperative audiologic studies, caloric test, treatment modalities and preoperative and postoperative imaging study.

RESULTS : Acoustic neuroma had variable symptoms and the most common initial symptom of our cases was tinnitus(48.8%). One third of cases had unusual initial presentation such as sudden deafness and detection by chance. About half of cases showed near normal hearing and the sensitivity of ABR was relatively lower than we thought. Two out of 5 in observation group showed a abrupt deterioration of hearing.

CONCLUSION : Because suspicion of acoustic neuroma in patient with unilateral hearing loss, tinnitus and dizziness is very important, we made the decision analysis tree in diagnosis of small acoustic neuroma which consisted of earlier intervention of MRI based on a cost-effective approach.

- The 22nd Annual Meeting of the Politzer Society : Otology 2000
(Zürich, Switzerland : Aug 15-19, 1999)

"Management of attic cholesteatoma : personal experience"

The goal of the surgery for cholesteatoma in the middle ear is to provide the patient with a dry,

safe ear and good hearing. An additional goal is not only to maintain a normal ear canal contour, that is, avoiding cavity problems, but also to minimize the need for long-term care of the operated ear. There are some attic cholesteatomas in which the middle ear is aerated and free of significant disease. So attic cholesteatoma surgery is thought to be reconstructive rather than destructive and it can be a prophylactic operation. In this study, I attempted to describe prerequisites for atticoplasty for attic cholesteatoma, which is one of the reconstructive surgical procedures for the middle ear. During the last 10 years, I managed surgically about 200 cases of attic cholesteatoma, among which there were 30 cases of atticoplasty, about 30 cases of mastoid obliteration, about 30 cases of intact canal wall mastoidectomy, and about 110 cases of open cavity mastoidectomy. I analysed 30 cases of atticoplasty with special reference to period of postoperative care and hearing results, as compared to cases with mastoid obliteration and open cavity mastoidectomy. I concluded that the prerequisites for atticoplasty during surgery for attic cholesteatoma were as follows; (1)no otorrhea at the time of operation; (2)intact posterior mesotympanum in the operation field; and (3)removal of incus and malleus head during the operation.

- The 103rd Annual Meeting of AAO-HNS(New Orleans, USA : Sep 26-30)

"Detection of DNA virus with PCR in human nasal polyp"

The virus has been considered as an etiological agent in the formation of nasal polyp. But controversy still exists. For example, study from Canada had shown that there was no detectable virus from human nasal polyp with DNA hybridization(EBV, HSV I, adenovirus). But study from Hong Kong had shown that EBV was detected in 69% of the nasal polyp patients with PCR and in situ hybridization.

To compare the difference of viral detection rate between atopic and non-atopic nasal polyps, we performed routine allergy screening test(nasal smear, TEC, TlgE, Dp and Df specific IgE, allergic skin test with 50 allergens). Nasal polyp tissues were obtained and processed for PCR in 20 patients(atopy: 10, non-atopy:10). PCR for viral DNA was performed with primers of EBV, HHV 6, CMV, adenovirus and HPV type 16,18 and 33.

EBV was detected in 3 patients(3/20, 15%) including 2 atopic patients(2/10) and 1 non-atopic patient(1/10). No other virus(HHV 6, CMV, adenovirus and HPV type 16,18 and 33)was detected with PCR.

In this study, HHV 6, CMV, adenovirus and HPV type 16,18 and 33 could not be considered as an etiological agent for nasal polyp formation. In Korea, total EBV detection rate(15%) in nasal polyp tissues was higher than Canada but relatively lower than in Hong Kong where EBV infection is prevalent. EBV was detected in both atopic and non-atopic nasal polyp tissues without significant difference. Virus such as EBV can be regarded as an etiological factor for nasal polyp formation in Korea.

Careful post-operative follow-up for recurrence of nasal polyps of the EBV positive patients is needed for further study.

- The 23th ARO meeting(St. Petersburg, U.S.A.: Feb 20-24, 2000)

"Connexin 26 mutations in Korean non-syndromic hearing loss"

Mutations in the *GJB2* are a major cause of autosomal recessive and sporadic types of congenital deafness. The 35delG is the most frequent type of mutation in Caucasian and European population. However, several other forms were reported, like 167delT among Ashkenazi Jews and R143W in Africans. The present study investigated the mutations of connexin 26 (Cx 26) found in non-syndromic hearing loss (NSHL) patients and newborns in Koreans.

The sequencing data for a total of 147 unrelated NSHL patients and 100 audiotically screened newborns were included in this prospective study.

Genomic DNA samples from all patients and newborns were sequenced in both directions for detection of Cx 26 mutations.

Thirteen different types of mutations were found in the patients and newborns. V27I and E114G are the popular types of polymorphic mutations in both groups. 235delC, deletion and frameshift, was detected in patients(15 in 294 alleles) and newborns(1 in 200 alleles). 35delG was rarely found in both group. In addition to above mutations, several types of mutations S85P, K41R, S72C, V84A, 176-191del and 299-300del were identified. The family study of the 235delC showed a typical autosomal recessive trait of NSHL in their audiotologic evaluation.

These results suggest that the different types of Cx26 mutations affect autosomal recessive NSHL depending on different ethnic backgrounds.

2. Domestic

- The 5th Korean Combined Otolaryngological Congress(Kyungju : Apr 30-May 2, 1999)

"Signal transduction pathway of induced cholesteatoma in Mongolian gerbils"

"Study for epithelial differentiation in developing murine eustachian tube and middle ear"

"Clinical analysis of 21 cases of acoustic neuroma"

"Mastoid obliteration with glass ionomer cement"

"Significance of fast spin echo MRI in diagnosis of acoustic neuroma"

"Goldenhar syndrome associated with congenital facial palsy"

"Genetic analysis of Korean hearing loss-Connexin 26"

"Measurement of speech reception threshold with picture identification task in children"

"The immortalization of normal adult human middle ear epithelial cells using the retrovirus containing E6/E7 genes of human papilloma virus type 16"

"Expression of PDGF, PDGFR, PLC- γ 1 and PI3-K in human nasal polyp"

"Anterior approach to the frontal sinus in ESS"

"Postoperative calcium and thyroglobulin levels in total thyroidectomized patients"

"Clinical significance of preoperative studies in diagnosis of thyroid nodule"

"F-18-FDG imaging using dual-head coincidence positron emission tomography in patients with head and neck cancer"

"Surgical techniques of hypopharyngeal posterior wall cancer"

"A case of ectopic thyroid with clinical review"

- The 5th Ajou Otolgy Symposium(Suwon : Sep 3, 1999)

"Signal transduction pathway in experimental cholesteatoma"

"The role of the antimicrobial peptides in tubotympanum"

"Genetic aspects of hearing loss in Korea"

- The 73rd Annual Congress of Korean Society of Otolaryngology(Seoul : Oct 28-31, 1999)

"Clinical and molecular biological analysis of congenital hearing loss in Korea"

"Alternative medicine in chronic sinusitis patients"

"Personal experience of attic cholesteatoma surgery : analysis of surgical result in atticoplasty"

"Expression of thrombomodulin in middle ear cholesteatoma"

"Diagnostic and surgical approaches in parapharyngeal space tumors"

"Anterior approach according to the 5 basal lamellae in ESS"

"A case of renal cell carcinoma with multiple head and neck metastases"

- THE 17th Annual Meeting of Korean Rhinologic Society(Seoul : Oct 24, 1999)

"Results of bacterial culture through middle meatus in the pediatric acute rhinosinusitis"

- The 12th Annual Congress of Korean Society of Logopedics and Phoniatics
(Seoul : Nov 13, 1999)

"Effect of frenulotomy in tongue-tie patients : focused on alveolar sounds"

- The 16th Annual Congress of Korean Society of Head & Neck Oncology(Seoul, Dec 4, 1999)

"Pathologic analysis of lymph nodes number according to various modification of neck dissection"

GRANTS RECEIVED

- Molecular genetic characterization of hereditary hearing loss in Korea, funded by KAIST
- Histopathologic characteristics in vocal fold benign lesions by expression of collagen type IV and fibronectin in basement membrane, funded by Research Grant from Ajou University School of Medicine

Education activities in the Department involve basic student education, post-M.D. residency education and faculty participation in continuing educational programs both local and national.

Medical student education according to the curriculum and manual, classroom lectures up to 5th year are given using the symptom-oriented-disease approach and special behavioral objects (one semester - 30 hours). After completion of lectures, during 1 weeks, we contact medical students(5th grade) with clerkship. Basic physical examination and other diagnostic and therapeutic procedures are reviewed through the training period.

The residency program includes clinical practicum, instructional and research experiences. Also, we invite some professors of the other universities to present useful and upmost lectures. The academic schedule for resident doctors is as follows:

Textbook Review : Provides an opportunity for first-year residents to read, review, and discuss selected chapters from a major textbook in Otolaryngology. Anatomy, Physiology and Pathology are stressed in the selection of material. Textbook review usually meets every weekly morning (7:30-8:30 AM) except Saturday.

Journal Club : Review current literature in Otology, Rhinology, Laryngology, Head & Neck Oncology, Neurotology and Skull base surgery. Journal Club usually meets every Monday evening 8:00-9:00 PM.

Case Conference : Opportunity to discuss interesting or/and problem cases with Radiologist, Pathologist and any other related department doctors. Case Conference usually meets every Monday evening 6:00-7:00 PM.

Case Preview : Gives the resident a thorough understanding of the disease and decision-making process for treatment by analyzing cases. Case Preview usually meets every Monday evening 5:00-6:00 PM.

Case Review : Provides postoperative analysis of the total cases performed during last week. Case Review usually meets every Monday evening 7:00-8:00 PM.

Topic Review : Allows the residents to prepare interesting and important topics by themselves to improve their presentation ability, and to help them to care for patients. Topic Review usually meets every Thursday evening 5:00-6:00 PM.

Special Lecture : Faculty members of the Department have the chance to give lecture on their specialty to the residents. Sometimes doctors or professors from another university or institute are invited to give special lecture. This usually meets the first Saturday morning 7:30-8:30 AM of the month.

Head and Neck Tumor Conference : Provides an opportunity to review, discuss, and decide treatment plan of H&N cancer patients with Oncologist, Radiotherapist, Radiologist, Plastic surgeon, Dentist and General surgeon. This usually meets third Tuesday evening 5:30-6:30 PM.

ENT practitioner meeting : Provides local practitioner with opportunity to obtain advises from colleagues on difficult cases, share clinical pearls and the state-of-the-art in ENT fields. This usually meet the 3rd Saturday morning 7:30-8:30 AM of the months.

Introduction Course : Gives the new resident a thorough background in the anatomy, physiology and pathology of Otolaryngology and provides them a thorough understanding of the method of diagnosis, laboratory test, and methods of treatment of ENT diseases. This course usually meets the last week of February.

Dissection Course : Temporal bone dissection for the 3rd year resident.

Neck dissection for the 3rd and the 4th year resident.

Nose & paranasal sinus dissection for the 2nd year resident.

Thoroughly familiarize the participant with the intricate three dimensional anatomy of the human nose, neck and temporal bone, give them an opportunity to develop the skills necessary for live surgery via a hands-on-approach with close guidance and instruction in the temporal bone laboratory and department of Anatomy. The participant should gain a working knowledge of the application of the techniques for actual patient application. These courses usually are held once a year. Temporal bone dissection course usually meets May or June of the year. Paranasal sinus and neck dissection courses depend on condition of the department of Anatomy.

Temporal Bone Histopathology Course : The residents are required to understand the intricate three dimensional anatomy of the human temporal bone including the basic histological anatomy of the middle ear and inner ear as described in standard textbooks. The objective of this course is to thoroughly familiarize the resident with the detailed anatomy of the temporal bone before the surgical dissection. An effort will be made to correlate the various anatomical findings with diagnostic and surgical problems that arise in the Otolaryngological area.

Ajou Otological Symposium : Fifth symposium was held in Sep 3, 1999. The title of the symposium was "Update in Otologic Research". This symposium consisted of 11 topics of lecture. Topics were as follows : 1)Sensorineural hearing loss associated with the 1555 mitochondrial mutation in Koreans 2)Secretions & mucin gene expression in OME 3)Signal transduction pathway in experimental cholesteatoma 4)Genetic aspects of hearing loss in Korea 5)BMP-4 expression in developing chicken inner ear 6)The role of the antimicrobial peptides in tubotympanum 7)Factors involved in the regulation in the inner ear fluid homeostasis 8)Apoptosis during inner ear development in human and mouse embryos 9)Mucosal immunology in upper respiratory tract-application for otitis media 10)Research at the NIDCD intramural program 11)Recent advances and future direction of otologic research

Medical Students Education

Keehyun Park, M.D.

- Introduction of Otolaryngology : lecture for junior students(Jan 13, 2000)

Hong-Joon Park, M.D.

- Hearing impairment : lecture for junior students(Jan 13, 2000)
- Audiology : lecture for junior students(Jan 20, 2000)

Kyung Shik Suh, M.D.

- Rhinology – anatomy, physiology : lecture for junior students(Mar 4, 1999)
- Rhinology – allergic rhinitis and sinusitis : lecture for junior students(Mar 10, 1999)
- Rhinology – general : lecture for junior students(Feb 24, 2000)

Joong-Wha Koh, M.D.

- Head and neck cancer problem solving case discussion : lecture for junior students (Mar 4, 1999)
- Surgical anatomy of head and neck : lecture for 3rd year students(May 7, 1999)

Jin-Seok Lee, M.D.

- Oral cavity & Pharynx problem, Salivary gland disease, Broncho-Esophagology : lecture for junior students(Feb 10, 2000)

Residents Education

Hong-Joon Park, M.D.

- Genetic hearing loss(Apr 10, 1999)

Young-Myoung Chun, M.D.

- Tympanoplasty(Oct 11, 1999)

Kyung Shik Suh, M.D.

- Introduction of otolaryngology for the junior residents(Mar 2-6, 1999)
- General principles of sinonasal tract operation by Ryo Takahashi, Review(Part I)(Jun 29, 1999)
- General principles of sinonasal tract operation by Ryo Takahashi, Review(Part II)(July 21, 1999)
- Surgery of nasal septum(Jan 15, 2000)

Joong-Wha Koh, M.D.

- Pitfall of neck dissection(May 29, 1999)
- Neck dissection course modulator(May 30, 1999)
- Conservation surgery for laryngeal cancer(Feb 26, 2000)

Sung Yoon Ahn, M.D.

- Overview of sleep apnea syndrome(Dec 4, 1999)

Thesis for Ph.D.

- Dong-Hoon Lee, M.D.;
Signal transduction system of experimentally induced chloesteatoma in the Mongolian gerbil
- Ho-Ki Lee, M.D.;;
Secretory differentiation of serially passaged normal human middle ear epithelial cells

Thesis for Master's Degree

- Seong Kyun Kim, M.D.;;
The effect of chronic otitis media to bone conduction threshold
- Byung-Chul Kim, M.D.;;
Bacterial detection in middle ear fluid and adenoid tissue in otitis media with effusion by PCR
- Jeong-Hoon Oh, M.D.;;
TEOAE as a newborn hearing screening

OthersKeehyun Park, M.D.

- Facial palsy management : lecture for residents in Department of Rehabilitation Medicine (Ajou University Hospital, Suwon : Feb 24, 1999)
- Goldenhar syndrome associated with facial palsy : case presentation at nine medical schools joint conference(Yonsei University Hospital, Seoul : Mar 4, 1999)
- Conductive hearing loss with normal tympanic membrane : lecture for ENT practitioner in Pusan area(Pusan National University Hospital, Pusan : Mar 5, 1999)

- Perspective of middle ear surgery : lecture for ENT practitioner in Suwon area(Ajou University Hospital, Suwon : Mar 20, 1999)
- Diagnosis and management of facial nerve palsy : lecture for general practitioner at the 29th Combined Congress of Korean Medical Association(Seoul : Apr 25, 1999)
- Moderator at Otological Session of the Korean Combined Otolaryngological Congress (Kyoungju: Apr 30, 1999)
- Decision analysis and diagnostic approach of otological symptoms : lecture at Korea Industrial Health Research Institute(Inchon : May 6, 1999)
- Guideline for antibiotic treatment in ENT disease : lecture at Jeil pharmaceutical company (Seoul : May 21, 1999)
- Moderator at Biochemistry Session of the 7th International Symposium on Recent Advances in Otitis Media(Ft. Lauderdale, U.S.A.: Jun 3, 1999)
- Moderator at Young Researcher's Forum of the 73rd Congress of Korean Otolaryngological Society (Seoul : Oct 30, 1999)
- Translabyrinthine approach and temporal bone anatomy : lecture at the 1st workshop of Korean Skull Base Surgery Society(Seoul National University Hospital, Seoul : Nov 7, 1999)

Hong-Joon Park, M.D.

- Early diagnosis of congenital deafness : lecture for ENT practitioner in Suwon area (Ajou University Hospital, Suwon : Jun 19, 1999)
- Newborn hearing loss : lecture for ENT practitioner in Shinchon area (Yonsei University Hospital, Seoul : Mar 11, 1999)
- Approach of newborn hearing loss : lecture for ENT Faculty at Inha University (Inha University Hospital, Inchon : Mar 18, 1999)
- Neonatal screening test : lecture for ENT practitioner in Yongdong area (Yongdong Severance Hospital, Seoul : Apr 8, 1999)

Young-Myoung Chun, M.D.

- Treatment of Dizzy patient : Neurology Grand Round(Suwon : Jul 1, 1999)
- Recent advances in research on otitis media : lecture for ENT practitioner in Suwon area (Ajou University Hospital, Suwon : Jul 10, 1999)
- Recent advances in treatment on otitis media : lecture for ENT practitioner in Shinchon area(Yonsei University Hospital, Seoul : Sep 9, 1999)
- Recent advances in treatment on otitis media : lecture for ENT practitioner in Yongdong area(Yongdong Severance Hospital, Seoul : Sep 16, 1999)
- Case studies of the Korean Skull Base Society(St. Vincent hospital, Suwon : Oct 2, 1999) "Fibrosarcoma in infratemporal fossa"
- Recent advances in otitis media : O-Kong symposium(Seoul : Dec 5, 1999)

Kyung Shik Suh, M.D.

- Internet and ENT doctor : lecture for ENT practitioner at Yongdong area (Yongdong Severance Hospital, Seoul : Apr 22, 1999)
- Sino-orbital aspergillosis : case presentation at nine medical schools joint meeting (Seoul : Jun 3, 1999)
- Emergencies in airway : lecture for interns in Ajou University Hospital(Suwon : Jun 5, 1999)
- Techniques which can be easily performed in ESS : lecture for ENT practitioner in Suwon area (Ajou University Hospital, Suwon : Sep 18, 1999)
- Treatment of allergic rhinitis : lecture for local community at Ajou university hospital (Suwon : Nov 3, 1999)
- COX1/COX2 in nasal polyps : lecture at allergy/clinical immunology meeting of Ajou University Hospital(Suwon : Nov 15, 1999)

Joong-Wha Koh, M.D.

- Disease of oral cavity, pharynx, salivary glands and deep neck infection : lecture for students at Kwan-Dong University College of Medicine(Kangnung : Mar 18, 1999)
- Cisapride effect on the laryngopharyngeal reflux disease - multicenter study : lecture at Korea Jansen Symposium(Cheju : Mar 27, 1999)
- A case of BOT cancer treated with concurrent chemo-radiotherapy followed by salvage neck dissection : case presentation at nine medical schools joint conference(Seoul : Sep 9, 1999)
- Articulation disorder, effect of frenulotomy in tongue-tie patients : lecture for ENT practitioner in Suwon area(Ajou University Hospital, Suwon : Oct 16, 1999)
- Anatomy of oral cavity and pharynx, Disease of salivary gland, Deep neck infection : lecture for students at Yonsei Wonju College of Medicine(Wonju : Nov 19, 1999)

Sung Yoon Ahn, M.D.

- Intern's job in ENT department : lecture for Intern in Ajou university hospital (Suwon: Feb 19, 1999)
- Review of refer system for 3 years : lecture for ENT practitioner in Suwon area (Ajou University Hospital, Suwon : Nov 20, 1999)

Visiting Professors

- In Yong Park, M.D.
Professor, Department of Otorhinolaryngology , Yonsei University College of Medicine
"History of sinus surgery " (Apr 17, 1999)
- Min-Sik Kim, M.D.
Associate Professor, Department of Otolaryngology-HNS, School of Medicine, Catholic University
"Update of Laryngeal Cancer " (May 15, 1999)

- David J. Lim, M.D.
Executive Vice President, House Ear Institute, U.S.A.
"Recent advances and future direction of otologic research" (Sep 3, 1999)

- Steven K. Juhn, M.D.
Professor, Department of Otolaryngology , University of Minnesota, U.S.A.
"Factors involved in the regulation in the inner ear fluid homeostasis" (Sep 3, 1999)

- Hideyuki Kawauchi, M.D.
Professor, Department of Otolaryngology, Shimane University, Japan
"Apoptosis during inner ear development in human and mouse embryos" (Sep 3, 1999)

- Yuichi Kurono, M.D.
Professor, Department of Otolaryngology, Kagoshima University, Japan
"Mucosal immunology in upper respiratory tract - Application for otitis media" (Sep 3, 1999)

- Robert J. Wenthold, M.D.
Intramural Director, NIDCD/NIH, U.S.A.
"Research at the NIDCD intramural program" (Sep 3, 1999)

- Hee-Nam Kim, M.D.
Professor, Department of Otorhinolaryngology , Yonsei University College of Medicine
"Sensorineural hearing loss associated with the 1555 mitochondrial mutation in Koreans "
(Sep 3, 1999)

- Myung-Hyun Chung, M.D.
Professor, Department of Otorhinolaryngology, Yonsei University College of Medicine
"Secretions & mucin gene expression in OME" (Sep 3, 1999)

- Seung-ha Oh, M.D.
Assistant Professor, Department of Otorhinolaryngology, Seoul National University
College of Medicine
"BMP-4 expression in developing chicken inner ear" (Sep 3, 1999)

- Seong Ho Joo, M.D.
Associate Professor, Department of Otolaryngology, San Paulo University, Brazil
"Laser midline glossectomy for treatment of OSAS" (Oct 27, 1999)

PATIENT CARE

Outpatient visits	Total	55,304
include	New	13,592
	Old	47,172
Inpatients		2,234
Emergency Room Visit		830
Operative cases (procedures)	Total	2,320 (3,729)
include	Ear	748 (1,093)
	Nose	580 (1,425)
	Head & Neck	992 (1,211)
Audiology	Total	14,258
include	Pure tone audiogram	5,122
	Impedance audiogram	4,188
	Tinnitogram	424
	Brain stem auditory evoked potential	555
	Speech audiogram	1,631
	Otoacoustic emission	2,267
	E-tube function test	65
	T.D. & SISI	3/3
Hearing Aids		119
Vestibular Function Test		699
Vocal Dynamic Lab. Examination		335
Speech Therapy		1,631
Allergy clinic		430

All totals are for the period Mar 1, 1999 through Feb 29, 2000.

Operative Procedure

EAR	Total	1,093
include	Atticotomy	38
	Dental roll apply	2
	EAC foreign body removal	1
	Explo-tympanotomy	8
	Facial nerve ene to end anastomosis	1
	Facial-Hypoglossal anastomosis	1
	Facial nerve decompression	1
	Fistulectomy	23
	Intact canal wall mastoidectomy	42
	Mastoid obliteration	10
	Meatoplasty	2
	Modified radical mastoidectomy	1
	Myringoplasty	39
	Myringotomy	9
	Open cavity mastoidectomy	59
	Ossiculoplasty	52
	Patch graft	3
	Radical mastoidectomy	2
	Revision mastoidectomy	7
	Revision tympanoplasty	2
	Simple mastoidectomy	10
	Skin tag excision	1
	Stapediomyringopexy	22
	Translabyrinthine approach	4
	Tympanoplasty	294
	V-tube insertion	458
	Wound debridement	1

NOSE	Total	1,425
include	Antral douche	2
	Bleeder ligation	1
	Caldwell-Luc op.	5
	Closed nasal bone reduction	11
	Conchotomy	352
	Dura repair	2
	Endoscopic biopsy	4
	Endoscopic DCR	4
	Endoscopic adenoidectomy	2
	Endoscopic conchotomy	2
	Endoscopic spur removal	1
	Intranasal ethmoidectomy	127
	Fenestration op.	1
	Frontal sinusotomy	21
	Frontal trepanation	1
	Frontoethmoidectomy	14
	Inferior meatal antrostomy	6
	Laser conchotomy	4
	Mass excision	4
	Middle meatal antrostomy	109
	Nasal tip surgery	4
	Orbital decompression	1
	Polypectomy	97
	Radical op. of maxillary & ethmoid sinus	156
	Radical op. of pansinus	216
	Reduction of orbital wall fracture	3
	Septoplasty	208
	Septorhinoplasty	47
	Sphenoidotomy	6
	Transsphenoid approach	5
	Turbinoplasty	9

Head & Neck	Total	1,211
include	Adenoidectomy	68
	Aseptic dressing	3
	Bleeder ligation	4
	Bronchoscopy	3
	Diagnostic	3
	Foreign body removal	6
	Bouginage	4
	Granulation tissue removal	12
	Endoscopic adenoidectomy	12
	Esophagoscopy	1
	Diagnostic	1
	Foreign body removal	37
	Bouginage	2
	Excision	4
	Congenital neck mass	4
	Oral cavity mass	6
	Excisional biopsy of neck mass	7
	Frenotomy	44
	Hematoma evacuation	2
	Incision & drainage for deep neck infection	8
	Laryngomicrosurgery	138
	Laryngotracheoplasty with augmentation	1
	Lithotomy	3
	Laser excision of oral cavity tumor	4
	Major reconstruction	
	Regional flap	
	Pectoralis major myocutaneous	1
	Gastric pull-up	1
	Free flap	
	Forearm	4
	Lateral thigh	4
	Fibula	1
	Mass excision	32
	Marsupialization of ranula	2
	Medial maxillectomy via lateral rhinotomy	1
	Neck dissection	
	Radical	5
	Modified radical	13
	Lateral	4
	Posterolateral	2
	Supraomohyoid	3
	Central	6
	Neurorrhaphy of vagus nerve	1

Open reduction of laryngeal fracture	1
Parotidectomy Superficial	5
Total	2
Primary closure of stab wound	1
Sistrunk operation	6
Submandibular gland excision	6
Thoracic duct ligation	1
Thyroidectomy	
Lobectomy	10
Subtotal	3
Total	6
Thyroplasty type I	2
Tonsillectomy	213
Tonsillectomy & Adenoidectomy	314
Total laryngectomy	5
Total laryngectomy with partial pharyngectomy	1
Total laryngopharyngoesophagectomy	1
Tracheal segmental resection	
with cricotracheal anastomosis	1
Tracheal stoma revision	12
Tracheoesophageal fenestration & Provox insertion	6
Tracheostomoplasty	9
Tracheotomy	96
Triple endoscopic biopsy	1
T-tube insertion	5
T-tube removal	2
Uvulopalatopharyngoplasty	24
Wide excision	
Buccal mucosa cancer	1
Gingival cancer	
with marginal mandibulectomy	1
Retromolar trigone cancer	1
Mouth floor cancer	2
Mouth floor cancer	
with segmental mandibulectomy	1
Tonsillar cancer	1
Tonsillar cancer with mandibulotomy	2

1. OUTPATIENT CLINIC

1) ENT unit and chair	
Reliance (Models 425/ 525)	7
Reliance (Models 7000LFC/HFC)	7
2) Audiological Laboratory	
Audio Booth	
Single room (Delta 143-A)	1
Double room (RS 253-B)	1
Pure Tone Audiometry	2
Virtual model 322	
Macintosh LC/475	
Style writer II	
Madsen Orbiter 922 version 2	
Otoacoustic Emission	1
ILO 92	
Samsung sync master 3G	
Intercom (Samsung 486 Green Computer)	
Hewlett Packard deskjet 505	
Auditory Brain Stem Response Audiometry	1
Navigator (Bio-Logic)	
Biologic Samtron Monitor	
Hewlett Packard paintjet	
Impedance Audiometry	2
Virtual model 310	
Macintosh LC/475	
Style writer II	
Madsen 20 DIAC 901	
Siemens Hearing Analyzer, Real Ear Measurement	1
Hyunju monitor	
Hyunju computer	
HiPRO	
Hewlett packard deskjet blok	
3) Vestibular Function Laboratory	
Computerized ENG system (Micromedical technologies INC.)	1
Digital light Bar (Model 15003)	
Samsung sync master 3G	
Intercom (Samsung 486 Green Computer)	
Hewlett Packard Laserjet 4	
Rotation Chair System (Micromedical technologies INC.)	1
Rotatory chair (System 2000)	
Drum	

Controller (Model 300)	
Samsung sync master 3G	
Intercom (Samsung 486 Green Computer)	
Brookler-Grams Closed loop Caloric irrigator	1
4) Vocal Dynamic Laboratory	1
Bruel & Kjaer Rhino-Larynx Stroboscope 4914	
CCD camera (Toshiba)	
Camera controller (Toshiba)	
VCR (Panasonic SVHS. AG-1970)	
Color monitor (Sony Trinitron)	
Color printer (Sony CVP-M3)	
5) Low Power Laser (Felas Medical Laser HN12)	1
6) Emergency kit	1
7) Autoclave	1
8) Operating microscope	2
Carl Zeiss OMPI 111	
Carl Zeiss OMPI 99	
9) Visual Education System	1
CCD camera (Toshiba)	
Camera control Unit (Hitachi)	
Sony digital video adapter (XV-D300)	
Telecam (Storz NTSC)	
VCR (Panasonic SVHS, AG-7350)	
Color monitor (Sony Trinitron)	
Color printer (Sony Mavigraph)	
10) Camera system	1
Nikon 801	
11) Plastic Model	3
Skull	1
Larynx	1
Ear	1

2. OPERATION ROOM

Tonsillectomy set	4
T et A set	3
ENT prep	3
Tympanoplasty set	3
V-tube set	2
Head rest set	1
Transtemporal supra-labyrinthine approach set	1

Microsurgery set	1
Nasal basic set	4
Nasal dressing set	4
Submucous resection set.	3
Intranasal antrostomy set.	2
Caldwell set	2
Antral douche set	2
Tracheostomy set	1
Excision set	1
Laryngectomy set	1
Endoscope set	2
Operating microscope (Zeiss)	2
OMPI-CS-I S4	
OMPI-MDM	
Drill system surgical (Xomed-Treace).....	9
APS	2
MPS-2000	3
New-MPS	4
Otoscope(Karl-Storz).....	1
Endoscopes	
Esophagoscope set	1
Bronchoscope set.....	2
Adult set	
Child set	
Laser Bronchoscope set	1
Laryngoscope set	2
Surgical head light system	2
Karl-Storz	
Nerve monitoring system (NIM2).....	1
LASER system	2
Carbon Dioxide	
Contact YAG	
Visual education system	1
CCD camera & VCR system	
Color monitor (Anam)	

3. OA System

Computer system & Printer	
32 bit IBM PC (486)	2
32 bit IBM PC (586)	2
Hewlett Packard Scanjet 3C	1

Laser printer IIG	1
Macintosh LC/475	2
Power Macintosh 7500/100	1
Printer (Epson stylus 800)	1
QMS 1660E Printer system	1
Projector (Kodak).....	2
5600 KK	
4600 KK	
Overhead projector (3M).....	1
Laser indicator.....	5
Copy machine	
(Korea Xerox XK-392).....	1
(Sindo Ricoh NT-4040).....	2
Video system.....	1

4. Laboratory

Light Microscope (Olympus).....	3
Microscope WILD M651 (Leica).....	1
Microprobe(Fischer Biotech).....	1
Temporal bone dissection set	1

5. Video library

Application of the contact laser in otorhinolaryngology and head & neck surgery	
Allergy in house dust mite	
Canal reconstruction procedure (Penrose production)	
Diffuse exostosis & osteoma of the external auditory canal	
Facial nerve surgery (Jack L. Pulec)	
Facial nerve & chronic ear surgery (James L. Sheehy)	
Interactive trip in otology (R. Vincent)	
IONOS Middle ear prosthesis operation	
Keratosis obturans (James L. Sheehy)	
KTP/ 532 Laser system in otorhinolaryngology	
Laser engineering Inc.	
Laser assisted uvulopalatoplasty	
Meniere's disease (Schuknecht)	
Microsurgery of the skull base (U. Fisch)	
Nasal allergy	
Nerve integrity monitor (Xomed-Treace)	
Nystagmus & caloric test analysis flexibility (Micromedical technologies)	
Provox (J.M. Hilger, J.M. Balm)	
Reconstruction of the ossicular chain (G. Geyer)	

Sinus surgery

Stapes fixation (U. Fisch)

Stapedectomy (Schuknecht)

Sinojet (ATOS)

Swift Laser system for office ENT procedures (LAUP, tonsils, turbinates)

Surgical anatomy of the temporal bone(Mario Sanna)

1. Surgical anatomy of the temporal bone (part I)
2. Surgical anatomy of the temporal bone (part II)
3. Topographic anatomy of the temporal bone
4. Surgical anatomy of the lateral skull base, The infratemporal fossa approach A
5. The infratemporal fossa approach B & C
6. The enlarged translabyrinthine approach
7. Middle fossa approach, etc.
8. The system of the modified transcochlear approach (part I)
9. The system of the modified transcochlear approach (part II)
10. The system of the modified transcochlear approach (part III)

Surgical technique of the temporal bone & skull base (Silverstein, Rosenberg)

1. Instrument set-up, etc.
2. Laser stapedotomy
3. Tympanoplasty
4. Revision mastoid-tympanoplasty
5. Combined retrolabyrinthine/retrosigmoid vestibular neurectomy
6. Singular neurectomy, Acoustic neuroma

Temporal bone dissector (N.H. Blevins)

The 5th international symposium on recent advances in otitis media (T. Kumazawa)