



Ajou University  
School of Medicine

DEPARTMENT  
OF


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**O**TOLARYNGOLOGY

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**2001 - 2002**  
ANNUAL REPORT



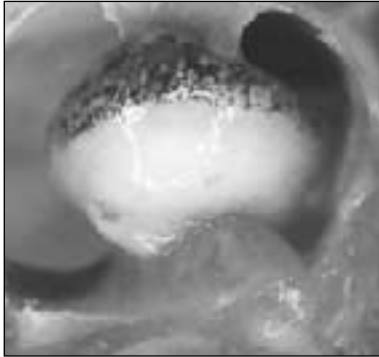


# OTOLARYNGOLOGY

## AJOU UNIVERSITY SCHOOL OF MEDICINE

### SUWON, KOREA

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



Experimentally Induced  
Cholesteatoma in the EAC  
of Mongolian Gerbil

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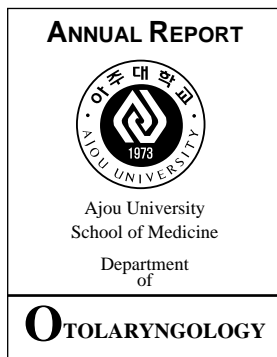
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Last Update : May 2, 2002

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First Departmental Homepage : April, 1997

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## INTRODUCTION

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The social atmosphere about medical field has become very unflexible. This year we had the hard time because three members of the faculty and four staff members in the laboratories and outpatient clinic resigned their jobs in the Department. The Department has never encountered such a situation in the past 8 years. The problem is that we can not go back to the past, but have to go forward. We are sure that it has been very difficult time for us, as if everything went wrong. It is time that we empty our mind and put the past behind us, and restart everything with new vision with renewed conviction and dedication. Fortunately, new faculties and new staff members in addition to faculty have been recruited to enhance the Department's productivity. It is important to establish new relationship of trust and mutual support with our new faculties and new staff members.

At this time, the Department has to adapt itself to suddenly changed circumstances to continue to expand and develop in order to offer excellent opportunities in service to the community, medical research, and education.

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

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## ROSTER

### Faculty

Keehyun Park, M.D. Professor and Chairman

M.D. Yonsei University, 1976.

Ph.D. Yonsei University, 1982.

Otology, Neurotology

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Ph.D. Yonsei University, 2000.

Rhinology

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Joong-Wha Koh, M.D. Assistant Professor

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Head & Neck Oncology

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M.D. Yonsei University, 1989.

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Rhinology

Yun Hoon Choung, D.D.S., M.D. Instructor

D.D.S. Seoul National University, 1989.

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Ph.D. Ajou University, 2001.

Otology, Head & Neck Oncology

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**Affiliated faculty**

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

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M.D. Chonnam University, 1973.  
Ph.D. Chonnam University, 1985.

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

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

Jung Ha Suh, M.D. Clinical Professor  
M.D. Chung-Ang University, 1982.  
Ph.D. Chung-Ang University, 1992.

Keun Soo Hyun, M.D. Clinical Associate Prof.  
M.D. Chung-Ang University, 1984.  
Ph.D. Chung-Ang University, 2000.

Dong-Im Chang, M.D. Clinical Associate Prof.  
M.D. Soonchunyang University, 1987.

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

Deuk Moon Ma, M.D. Clinical Assistant Prof.  
M.D. Chosun University, 1989.

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M.D. Yonsei University, 1989.  
M.S. Yonsei University, 1996.

Man Soo Kim, M.D. Clinical Assistant Prof.  
M.D. Korea University, 1990.

Jin-Seok Lee, M.D. Clinical Assistant Prof.  
M.D. Yonsei University, 1990.  
Ph.D. Ajou University, 2001.

Jang Ho Cho, M.D. Clinical Assistant Prof.  
M.D. Hallym University, 1991.

Dong-Hoon Lee, M.D. Clinical Assistant Prof.  
M.D. Chung-Ang University, 1991.  
Ph.D. Ajou University, 1999.

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.

Ho Sung Kim, M.D. Clinical Professor  
M.D. Seoul National University, 1982.  
Ph.D. Hanyang University, 1986.

Ho Sung Lim, M.D. Clinical Associate Prof.  
M.D. Yonsei University, 1983.  
M.S. Yonsei University, 1986.

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

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

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

Jung Sun Yeun, M.D. Clinical Assistant Prof.  
M.D. Yonsei University, 1989.

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

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

Byung-il Park, M.D. Clinical Assistant Prof.  
M.D. Pusan University, 1991.

Sung-Yeun Ahn, M.D. Clinical Assistant Prof.  
M.D. Yonsei University, 1991.

Hee Sub Chung, M.D. Clinical Instructor  
M.D. Inje University, 1993.

**Residents**

## FOURTH YEAR

Young Joon Yu, M.D.

Jee-Churl Shin, M.D.

Jung-Whan Song, M.D.

M.D. Yonsei University, 1993

M.D. Yonsei Univ. Wonju College, 1994

M.D. Ajou University, 1997

## THIRD YEAR

Ho Seok Choi, M.D.

Jeong-Min Chun, M.D.

M.D. Yonsei University, 1994

M.D. Soonchunhyang University, 1996

## SECOND YEAR

Joon Ho Lee, M.D.

Sang Jun Ryu, M.D.

Young Ju Kim, M.D.

M.D. Yonsei Univ. Wonju College, 1996

M.D. Ajou University, 1999

M.D. Chunbuk National University, 1999

## FIRST YEAR

Jinseok Lee, M.D.

Seung Ju Lee, M.D.

Min Jung Cho, M.D.

M.D. Ajou University, 2000

M.D. Yonsei Univ. Wonju College, 2000

M.D. Ajou University, 2000

**Research Fellow**

Alexander Raynov, M.D.

M.D. Sophia University, Bulgaria 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

Kyeo-Wueh Chung

## AUDIOLOGICAL LABORATORY

Jung-Hwa Lee, R.N.

Hyoung Ah Mun

## VESTIBULAR LABORATORY

Mi-Yoo Koh

## VOCAL DYNAMIC &amp; SPEECH LABORATORY

Han-Jin Chung

## MOLECULAR BIOLOGY LABORATORY

Young-Sun Kim

## SECRETARY

Soo-Jin Na

**SOCIETY MEMBERSHIPS, UNIVERSITY & HOSPITAL COMMITTEE**Keehyun Park, M.D.

Korean Medical Association  
Korean Otolaryngological Society  
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  
Korean Skull Base Surgery Society, Trustee  
American Association for Research in Otolaryngology, International Committee, Member  
Japan Otological Society  
American Academy of Otolaryngology-Head and Neck Surgery  
Collegium Oto-Rhino-Laryngologicum Amicitiae Sacrum  
Aeromedical Association of Korea, Trustee  
Review Board : Journal of Korean Otolaryngological Society  
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  
Korean Medical School Dean Association

Young-Myoung Chun, M.D.

Korean Medical Association  
Korean Otolaryngological Society  
Korean Audiological Society  
The Society of Korean Logopedics & Phoniatics  
Korean Otology Study Group  
Korean Skull Base Surgery Society  
Asian-Oceanian Skull Base Society  
American Association for Research in Otolaryngology

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 Univeristy Hospital

Sung-Kyun Moon, M.D.

Korean Medical Association  
Korean Otolaryngological Society  
Korean Audiological Society  
Korean Otology Study Group  
Association for Research in Otolaryngology  
Korean Society of Medical Biochemistry & Molecular Biology  
Drug Committee of University Hospital

Seong Kyun Kim, M.D.

Korean Medical Association  
Korean Otolaryngological Society  
Korean Rhinological Society

Yun Hoon Choung, D.D.S., M.D.

Korean Medical Association  
Korean Dental Association  
Korean Otolaryngological Society  
The Korean Otology Study Group  
Korean Society of Medical Biochemistry and Molecular Biology  
Korean Tissue Engineering Society

**TRAVEL**Keehyun Park, M.D.

- The 8th Symposium of Cochlear Implant in Children  
(Los Angeles, U.S.A. : Feb 28-Mar 6, 2001)
- The 4th Extraordinary International Symposium on Recent Advances in Otitis Media  
(Sendai, Japan : Apr 16-21, 2001)
- The Ohio State University Hospital Visit  
(Columbus, Ohio, U.S.A. : Jul 13, 2001)
- The 7th Bulgarian National Congress of Otorhinolaryngology  
(Plovdiv, Bulgaria : Oct 18-20, 2001)
- Cochlear Implant Training Workshop  
(Melbourne, Australia : Oct 27-Nov 2, 2001)

Young-Myoung Chun, M.D.

- The 4th Extraordinary International Symposium on Recent Advances in Otitis Media  
(Sendai, Japan : Apr 16-21, 2001)
- Cochlear Implant Training Course  
(Los Angeles, U.S.A. : Jul 16-17, 2001)
- The AAO-HNS 2001 Annual Meeting & Oto Expo  
(Denver, U.S.A. : Sep 9-12, 2001)

Kyung Shik Suh, M.D.

- Visiting fellow, Lab of Neuroscience, The Johns-Hopkins University School of Medicine  
(Baltimore, U.S.A. : Aug 1, 2000-Feb 28, 2002)

Sung-Kyun Moon, M.D.

- Cochlear Implant Training Workshop  
(Los Angeles, U.S.A. : Jul 23-28, 2001)
- Cochlear Implant Training Workshop  
(Melbourne, Australia : Oct 29-Nov 1, 2001)
- The 25th Association for Research in Otolaryngology  
(St. Petersburg Beach, U.S.A. : Jan 27-31, 2002)

Seong Kyun Kim, M.D.

- 18th ERS Congress & 20th ISIAN  
(Russia : Jun 4-9, 2001)

Yun Hoon Choung, D.D.S., M.D.

- The 7th International Center for Otologic Training in Memorial Health University Medical Center (Savannah, Georgia, U.S.A. : Apr 22-May 4, 2001)

## PRESENTATION

### Keehyun Park, M.D.

- The 4th Extraordinary International Symposium on Recent Advances in Otitis media (Sendai, Japan : Apr 16-21, 2001)
  - “Role of downstream signal transduction molecules in experimental cholesteatomas”
  - “Surgery for cholesteatoma in children with special reference to congenital origin (Symposium)”
- The 7th Korean Combined Otolaryngological Congress (Busan : Apr 27-28, 2001)
  - “Congenital ossicular anomaly with intact tympanic membrane”
  - “Expression of phosphatidylinositol 3-kinase in experimental cholesteatoma using Mongolian gerbils”
  - “Metastatic olfactory neuroblastoma in the neck”
  - “Surgical application and technique of ossiculoplasty (Symposium)”
- The 7th Ajou Otology Symposium (Suwon : Jun 2, 2001)
  - “Decision analysis for early diagnosis of acoustic neuroma”
  - “How to manage small acoustic neuroma (Round table)”
- The 75th Annual Congress of Korean Society of Otolaryngology (Seoul : Oct 12-14, 2001)
  - “Treatment results of ossiculoplasty”
  - “Clinical characteristics of cholesteatoma in children”
  - “Diagnostic approach of unilateral conductive hearing loss with normal tympanic membrane (Instruction course)”
- The 7th Bulgarian National Congress of Otorhinolaryngology (Plovdiv, Bulgaria : Oct 18-20, 2001)
  - “Isolated congenital ossicular anomaly”
- The 23rd Annual Meeting of Korean Otology Study Group (Seoul : Nov 3, 2001)
  - “Management of early cholesteatoma(Symposium)”

### Young-Myoung Chun, M.D.

- The 4th Extraordinary International Symposium on Recent Advances in Otitis media (Sendai, Japan : Apr 16-21, 2001)
  - “Human  $\beta$ -defensin genes expression in normal & affected middle ear epithelium”
- The 7th Ajou Otology Symposium (Suwon : Jun 2, 2001)
  - “Interdisciplinary surgical approach”

Joong-Wha Koh, M.D.

- The 8th Joint Meeting of 5 Departments of Otolaryngology  
(Seoul : Jun 15-16, 2001)  
“Analysis of lymph node according to various modification of neck dissection”
- The 75th Annual Congress of Korean Society of Otolaryngology  
(Seoul : Oct 12-14, 2001)  
“Suppressive thyroid hormone therapy in benign solitary thyroid nodule”

Sung-Kyun Moon, M.D.

- The 7th Korean Combined Otolaryngologic Congress  
(Busan : Apr 27-28, 2001)  
“The expression of  $\beta$ -defensins in the human middle ear epithelial cells”
- The 75th Congress of Korean Society of Otolaryngology  
(Seoul : Oct 12-14, 2001)  
“Signal pathway involved in IL-1 $\alpha$ -induced up-regulation of human  $\beta$ -defensin 2 in the middle ear epithelial cells”  
“Effect of digital hearing aids in the patients with high tone loss”
- The 23rd Korean Otology Study Group  
(Seoul : Nov 3, 2001)  
“Characterization of rat spiral ligament fibrocyte immortalized with Adeno-12/SV-40 hybrid virus”
- The 25th Association for Research in Otolaryngology  
(St. Petersburg Beach, U.S.A. : Jan 27-31, 2002)  
“Activation of a Src-dependent Raf-MEK1/2-ERK signaling pathway is required for IL-1 $\alpha$ -induced up-regulation of human  $\beta$ -defensin 2 in human middle ear epithelial cells”

Seong Kyun Kim, M.D.

- The 75th Annual Congress of Korean Society of Otolaryngology  
(Seoul : Oct 12-14, 2001)  
“Clinical characteristics & treatment results of 6 patients with fungal sinusitis”

Yun Hoon Choung, D.D.S., M.D.

- The 75th Annual Congress of Korean Society of Otolaryngology  
(Seoul: Oct 12-14, 2001)  
“Treatment of auricular hematoma using dental impression material”

## RESEARCH

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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, Park HJ, Chun YM : Immunohistochemical study on proliferative activity of experimental cholesteatoma. *Eur Arch Otorhinolaryngol* 258:101-105,2001
- Park K, Chun YM, Lee DH : Expression of phospholipase C-gamma1 in experimental cholesteatoma using Mongolian gerbils. *Acta Otolaryngol* 121:477-480, 2001
- Park K, Choung YH, Kim BC : Two cases of Goldenhar' s syndrome associated with narrowing of internal auditory canal. *Korean J Otolaryngol* 44:427-430, 2001
- Choi JY, Kim SC, Yoon SC, Yoon SC, Park K, Lee WS : Clinical study of traumatic ossicular disruption without tympanic membrane perforation. *Korean J Otolaryngol* 44:696-699, 2001
- Park K, Chun YM, Lee DH : Signal transduction pathway in experimental cholesteatoma using Mongolian gerbils. In : *Cholesteatoma and ear surgery. 6th International Conference.* Magnan J et al.(eds). Marseille, Label Publications, pp.75-80,2001
- Park K, Chun YM, Choung YH : Role of downstream signal transduction molecules in experimental cholesteatomas. In : *Recent advances in otitis media. 4th Extraordinary Symposium.* Takasaka T et al.(eds). Bologna, Monduzzi Editore, pp.445-451, 2001
- Park K, Song JW, Lee J, Cho MJ : Two cases of misdiagnosed congenital stapedia fixation. *Korean J Otolaryngol* 44:1332-1336, 2001
- Park K : Surgery for cholesteatoma in children with special reference to congenital origin. In : *Recent advances in otitis media. 4th Extraordinary Symposium.* Takasaka T et al.(eds). Bologna, Monduzzi Editore, pp.97-103, 2001
- Chun YM, Lee J, Park HJ, Park K : Cholesteatoma : reversible or irreversible? In : *Cholesteatoma and ear surgery. 6th International Conference.* Magnan J et al.(eds). Marseille, Label Publications, pp.89-91,2001
- Chun YM, Park HJ, Park K : Functional middle ear surgery for management of retraction pockets and cholesteatoma : short-term report. In : *Cholesteatoma and ear surgery. 6th International Conference.* Magnan J et al.(eds). Marseille, Label Publications, pp.303-306, 2001

- Mun HA, Lee JH, Chun YM, Kim JS : The latency of distortion product otoacoustic emission in term-born neonates. Korean J Audiol 5(2) : 129-134, 2001
- Koh JW, Yang HD, Chun JM, Lee JH : A case of localized amyloidosis of tonsil. Korean J Otolaryngol 44(2) : 215-217, 2001
- Koh JW, Soh EY, Yang HD, Chun JM, Kim YJ, Lee SJ : The effect on voice by strap muscle cutting in thyroidectomy. Korean J Endocrine Surgery 1(2) : 237-243, 2001
- Choung YH, Ryu SJ, Lee JH, Park HJ : Functional study of gap junction in GJB2 mutations associated with hereditary hearing loss. Korean J Otolaryngol 44 : 239-245, 2001
- Choung YH, Park K, Moon SK, Choi HS, Kim YJ, Lee SJ : Clinical characteristics of cholesteatoma in children. J Clinical Otolaryngol 12 : 208-213, 2001

## ABSTRACTS

### 1. International Meeting

- The 4th Extraordinary Symposium on Recent Advances in Otitis Media (Sendai, Japan : Apr 16-21, 2001)

#### **“Role of downstream signal transduction molecules in experimental cholesteatoma”**

The proliferation and differentiation of cells in specialized tissues and expression of their properties are under control of a large number of regulatory process and complex interactions called signal transduction. Signal transduction pathway may be initiated by external signals such as growth factors, which bind to receptors and activate Src homology 2(SH2)-domain containing signal transduction molecules such as phospholipase C- $\gamma$ 1(PLC- $\gamma$ 1) and phosphatidylinositol 3 kinase(PI3K), which in turn stimulates a downstream switch to initiate transcriptional activation of genes in the nuclei of cells.

The purpose of this study is to elucidate the distribution of epidermal growth factor receptor(EGFR) and platelet-derived growth receptors- $\alpha$  and- $\beta$  (PDGFR- $\alpha$  and- $\beta$ ) including PLC- $\gamma$ 1 and PI3K in deep meatal skin, retroauricular skin and cholesteatoma matrix of experimental animals, and to clarify the role of growth factor receptors and downstream signal transduction molecules in experimental cholesteatomas. In this study, we induced canal ligation cholesteatomas using Mongolian gerbils and investigated the expression of EGFR, PDGFR- $\alpha$  and- $\beta$ , PLC- $\gamma$  1 and PI3K in this model by using western blot analysis and immunohistochemistry. Higher levels of EGFR, PI3K and PLC- $\gamma$  1 were detectable in experimental cholesteatomas. Detectable levels of either PDGFR- $\alpha$  or PDGFR- $\beta$  were not expressed by experimental cholesteatoma specimens.

In this result, the increased expression of PLC- $\gamma$ 1 and PI3K by experimental cholesteatomas supports the conjecture that defective regulation of PLC- $\gamma$ 1 and PI3K functions may play roles in both signal transduction pathway and the invasive potential of this pathology. PLC- $\gamma$ 1 and PI3K may colocalize in signal transduction system of experimental cholesteatomas.

#### **“Surgery for cholesteatoma in children with special reference to congenital origin”**

The concept of childhood cholesteatoma with features that are different from those of adult cholesteatoma is open to controversy. It can be seen that cholesteatoma is

not as frequent in children as in older people. However, the cause of middle ear cholesteatoma has its origins in processes that occur in early infancy. Cholesteatoma occurring in childhood is usually said to be more aggressive than that seen in adults because cholesteatoma in children is more often associated with larger mastoid air cells, more frequent recurrence, and shorter disease history.

I believe that some cholesteatoma in children might be of congenital origin, and that eustachian tube dysfunction and infection followed by eardrum perforation are secondary. Infection can activate the dormant congenital cholesteatoma, which may in time perforate the tympanic membrane and exteriorize; the condition may then be diagnosed as acquired cholesteatoma.

There is a need for a broader approach during the surgery in differentiating the pathogenesis of cholesteatoma in children from that of adults.

I retrospectively reviewed child patients surgically treated for cholesteatoma which origin was congenital or possibly congenital.

I present here how to treat and operate on congenital cholesteatoma with my concept.

#### **“Human $\beta$ -defensin genes expression in normal and inflamed middle ear epithelium”**

We believe that several secretory products such as lysozyme, lactoferrin, and other unknowns might play an important role in protection against pathogen and maintenance of the immunity in tubotympanum. Human  $\beta$ -defensin (hBDs) is antimicrobial peptides that may play a role in mucosal defense. To define the role of defensin in middle ear cleft, I analysed the expression and regulation of two human  $\beta$ -defensin genes (hBD-1, hBD-2) in human middle ear epithelial tissue and human middle ear epithelial cell line (HEI-HMEEC cell line) by using RT-PCR. The normal human middle ear epithelium expressed hBD-1 mRNA but a little hBD-2 mRNA. While hBD-2 mRNA was markedly up-regulated in inflamed middle ear epithelium, the expression of hBD-1 mRNA was slightly elevated in four cases of ten inflamed middle ear mucosa, the others of which were similar with those of control mucosa. On the other hand, the pro-inflammatory cytokines such as TNF- $\alpha$  and IL- $\beta$  stimulated the expression of hBD-2 mRNA, but not hBD-1 mRNA in HEI-HMEEC cell line.

The present study might be a first report to identify human  $\beta$ -defensin genes expression at mucosal surface in human middle ear tissue. Moreover these genes may play an important role in maintenance of middle ear innate immunity. These data suggest that in middle ear hBD-2 expression is induced by inflammation, whereas hBD-1 may serve as a defense in the absence of inflammation. Furthermore, these results provide insights into defining mechanisms of dysfunction of tubotympanum and allow better idea of its treatment and prevention of otitis media.

- The 7th Bulgarian National Congress of Otorhinolaryngology with International Participation  
(Plovdiv, Bulgaria : Oct 18-20, 2001)

### **“Isolated congenital ossicular anomalies”**

A nonprogressive and conductive hearing loss in the range of 40 to 60 dB with normal tympanic membrane which has no history of trauma or infection is highly suggestive of a congenital ossicular malformation. Stapes anomaly is the most common among the ossicular anomalies, and they are clinically important because hearing loss can be corrected by appropriate procedure. In this study, I attempted to describe pattern of ossicular anomalies encountered in patients who have a normal eardrum. I also analysed the surgical result with special reference to the pattern of ossicular anomaly. I expected 55 cases of congenital ossicular anomalies which were confirmed through the exploratory tympanotomy for the last 15 years. The preoperative and postoperative audiologic findings, operative findings and CT findings were analysed. In this results, there were 5 types of ossicular anomalies with 13 anomalous patterns among which stapes footplate fixation was the most common anomaly. In conclusion, there was a great diversity of patterns of ossicular anomalies. Stapes anomaly was the most frequently detected in the ossicular anomalies. Stapes footplate fixation was the most common type which was usually bilateral. Anomalies associated with incus and malleus were usually unilateral. The surgical result of congenital ossicular anomaly was generally good.

- The 8th Joint Meeting of 5 Departments of Otolaryngology  
(Seoul, Korea : Jun 15-16, 2001)

### **“Analysis of lymph nodes number according to various modifications of neck dissection”**

**Background and Objectives:** The type of neck dissection performed for head and neck cancers depends on the experience of the surgeon and the status of the neck metastasis. The purpose of this study was to quantify the extent of lymphadenectomy achieved according to the various modifications of neck dissection based on microscopic pathologic analysis and to analyze the difference of number of lymph nodes between the types of neck dissection.

**Materials and Methods:** Charts and pathologic findings in patients who underwent neck dissection from June 1994 to April 2001 were reviewed. Patients who received selective neck dissection or preoperative radiotherapy to the neck were excluded. The samples were 65 necks and were divided into four groups based on Medina's classification: Radical neck dissection (group 1), Type I modified radical neck dissection (group 2), Type II modified radical neck dissection (group 3), Type III

modified neck dissection (group 4). The number of lymph nodes counted by pathologic microscopic examination for each region of specimens was recorded. Inter-group difference was analyzed by one-way between-group analysis of variance (ANOVA).

Results: The mean number of dissected lymph nodes per specimen was 43.6 in group 1, 38.8 in group 2 and 3, and 30.3 in group 4. Group 4 was significantly different from group 1 ( $p < 0.05$ ). Especially, the number of dissected lymph nodes from level II, III, and IV of group 4 was significantly different from that of group 1 ( $p < 0.05$ ). There was no significant difference between other groups.

Conclusions: The number of dissected lymph nodes decreases as the number of preserved non-lymphatic tissue structures increases. Levels II, III, and IV are less completely operated region in functional neck dissection.

- The 25th Association for Research in Otolaryngology  
(St. Petersburg Beach, Florida : Jan 27-31, 2002)

“Activation of a Src-dependent Raf-MEK1/2-ERK signaling pathway is required for IL-1 $\alpha$ -induced up-regulation of human beta defensin 2 in human middle ear epithelial cells”

Otitis media is the most common cause of hearing impairment and the most frequent bacterial infectious disease in children. The molecular pathogenesis of otitis media, however, is not well understood. It is believed that the innate immunity plays a critical role in protecting the tubotympanum from being infected because the middle ear cavity is normally sterile despite of a paucity of immune cells. Among known antibacterial molecules, defensins have been shown to greatly contribute to innate immunity.  $\beta$ -defensins, unlike  $\alpha$ -defensins, are produced by epithelial cells and serve as the first line of defense mechanism in urinary and respiratory tracts and skin. It is still unclear whether or not  $\beta$ -defensins are expressed in human middle ear mucosa. The molecular mechanisms underlying the cytokine-induced up-regulation of human defensin 2(hBD-2) have yet to be defined. Here we show that hBD-2 is expressed at higher level in the diseased human middle ear mucosa and that IL-1 $\alpha$  up-regulates hBD-2 transcription via activation of a Src-dependent Raf-MEK1/2-ERK signaling pathway. These studies may open up novel therapeutic targets for the treatment of patients with otitis media.

## 2. Domestic Meeting

- The 7th Korean Combined Otolaryngological Congress  
(Busan : Apr 27-28, 2001)

“Ossiculoplasty : Surgical Application and Technique”

“The study of reversibility in expression of genetic factor related pathophysiology of cholesteatoma”

“Expression of  $\beta$ -defensin in human middle ear mucosa cell”

“Congenital ossicular anomaly with normal ear drum”

“Expression of surfactant protein in middle ear and eustachian tube mucosa”

“Expression patten of phosphatidylinositol 3-kinase(PI3-K) in experimetally induced middle ear cholesteatoma”

“Toxicity of concurrent cisplatin and radiotherapy after neoadjuvant chemotherapy in nasopharynx cancer”

“Effect of glutamate antagonist in tinnitus treatment”

“Influence of incised strap muscle on voice after thyroid surgery”

“Acquired cholesteatoma combined congenital cholesteatoma”

“One case of recurrent olfactory neuroblastoma 15 years after treatment”

“One case of primary Sjögren syndrome”

- The 7th Ajou Otology Symposium  
(Suwon, Jun 2, 2001)

“Decision analysis for early diagnosis”

“Interdisciplinary surgical approach”

“How to manage small acoustic neuroma?”

- The 75th Congress of Korean Society of Otolaryngology and Joint Meeting  
with Korean-American Otolaryngology Society  
(Seoul, Oct 12-14, 2001)

“Activation of a Src-dependent Raf-MEK1/2-ERK signaling pathway is required for IL-1 $\alpha$ -induced up-regulation of  $\beta$ -defensin 2 in human middle ear epithelial cells”

“Immunologic aspect of pathophysiology of otitis media”

“Treatment result of ossiculoplasty”

“Suppressive thyroid hormone therapy in benign solitary thyroid nodule”

“New treatment method of auricular hematoma using dental impression material”

“Diagnostic approach of unilateral hearing loss with normal ear drum”

“Rehabilitation results of digital hearing aid in sensory neural high tone loss patients”

“Clinical Characteristics & treatment results of 6 patients with fungal sinusitis”

- The 23rd Annual Meeting of Korean Otology Study Group  
(Seoul, Nov 3, 2001)

“Characterization of rat spiral ligament fibrocyte immortalized with Adeno-12/SV-40 hybrid virus”

“Management of early cholesteatoma”

## GRANTS RECEIVED

- Effect of recombinant antimicrobial peptides on pathogens of otitis media, funded by Ajou University School of Medicine
- Functional analysis and gene therapeutic application of fluorescent protein-tagged connexin 26, funded by Department of Medical Sciences, the Graduate School, Ajou University

## EDUCATION

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Education activities in the Department involve basic student education, post-M.D. residency education, patient 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 week, 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 Otology Symposium : 7th symposium was held in Jun 2, 2001. The title of the symposium was "The management of acoustic neuroma." This symposium consisted of 5 presentations (① Decision analysis for early diagnosis ②Functional preservation surgery ③Radiosurgery? ④Wait, radiate or operate? ⑤Interdisciplinary surgical approach), Special lecture (The molecular genetics of vestibular schwannoma) and Round table (How to manage small acoustic neuroma?).

Ajou Hearing Rehabilitation Meeting : Our Department provides regular programs and meetings several times in a year, and gives informations about hearing rehabilitation to the patients and their families. The 1st Ajou Hearing Rehabilitation Meeting was held in May 22, 2001. The title of the meeting was "Not Alone, Any More." This meeting consisted of 3 topics(①Presentation of successful cases by hearing rehabilitation, ②Today & future of hearing rehabilitation, ③ Introduction of Ajou Hearing Center & explanation of management plan.) The 2nd Ajou Hearing Rehabilitation Meeting was held in Jul 14, 2001. The title of the meeting was "About Artificial Cochlear." This meeting consisted of 2 topics(①What is the artificial cochlea?, ②Meeting of parents & teachers for hearing rehabilitation.)

## MEDICAL STUDENTS EDUCATION

### Keehyun Park, M.D.

- Introduction : lecture for junior students (Mar 9, 2001)
- Structure & Function of Hearing Organ : lecture for junior students (Mar 9, 2001)

### Young-Myoung Chun, M.D.

- Hearing Impairment, Otorrhea, Otagia : lecture for junior students (Mar 16, 2001)
- Vertigo, Tinnitus, Otologic Emergency : lecture for junior students (Mar 23, 2001)

### Sung-Kyun Moon, M.D.

- Audiology, Rehabilitation of Hearing : lecture for junior students (Mar 30, 2001)

### Joong-Wha Koh, M.D.

- Structure & Function of Larynx
- Trauma of Larynx
- Hoarseness, Paralysis of Larynx : lecture for junior students (May 4, 2001)
- Deep Neck Infection
- Neck Mass
- Pediatric Otolaryngology
- Dx & Tx Of Head & Neck Tumor : lecture for junior students (May 11, 2001)
- Management of Head & Neck tumor I,II,III
- Case Dissection : lecture for junior students (May 18, 2001)

### Yun Hoon Choung, D.D.S., M.D.

- Oral Cavity & Pharynx Problem
- Salivary Gland Disease
- Broncho-Esophagology : lecture for junior students (Apr 6, 2001)

### Seong Kyun Kim, M.D.

- Nose & PNS : Anatomy & Physiology : lecture for junior students (Apr 13, 2001)
- Nose & PNS Disease : lecture for junior students (Apr 20, 2001)

## RESIDENTS EDUCATION

### Keehyun Park, M.D.

- Temporal bone anatomy and histopathology (Jun 23, 2001)

### Young-Myoung Chun, M.D.

- The management of adhesive otitis media (Nov 24, 2001)

Sung-Kyun Moon, M.D.

- Hearing aid workshop (Apr 10, 2001)
- Innate immunity (Jul 30, 2001)

Seong-Kyun Kim, M.D.

- Septorhinoplasty (Sep 22, 2001)

Yun-Hoon Choung, D.D.S., M.D.

- Airway management (Oct 27, 2001)

**Thesis for Ph.D.**Yun Hoon Choung, D.D.S., M.D.

- Functional study of gap junction in GJB2 mutations associated with hereditary hearing loss.

**Thesis for Marster's Degree**Jung-Whan Song, M.D.

- Molecular genetic analysis of connexin 26 in Korean congenital hearing loss

Jeong-Min Chun, M.D.

- Expression of phosphatidylinositol 3-kinase in experimentally induced cholesteatoma using Mongolian gerbils

Ho Seok Choi, M.D.

- The expression of  $\beta$ -defensins in human middle ear cholesteatoma

**OTHERS**Keehyun Park, M.D.

- Olfactory neuroblastoma : case presentation at nine medical school joint conference (Yonsei University Medical Center, Seoul : Mar 8, 2001)
- Unilateral hearing loss with normal tympanic membrane : lecture for ENT practitioner in Sungnam area (Jeseng Hospital, Sungnam : Mar 13, 2001)
- Inner ear anomaly with recurrent meningitis : lecture for ENT practitioner in Suwon area (Ajou University Hospital, Suwon : Mar 17, 2001)
- Moderator at cholesteatoma session of the 4th Extraordinary International Symposium on Recent Advances in Otitis Media (Sendai, Japan : Apr 19,2001)
- Moderator at Basic Inner Ear Session of the Korean Combined Otolaryngological Congress (Busan : Apr 27,2001)

- Child cholesteatoma : case presentation at nine medical schools joint conference (Catholic Medical center, Seoul : Jun 7, 2001)
- Temporal bone anatomy and histopathology : lecture for ENT residents in Yonsei University (Seoul : Jun 29, 2001)
- Conductive hearing loss with normal tympanic membrane : lecture for ENT practitioner in Suwon area (Ajou University Hospital , Suwon : Sep 15, 2001)
- Management of ENT Emergency : lecture for a home care nurse training program in Kyungki area (Suwon : Oct 4, 2001)
- Moderator at middle ear cholesteatoma session of the Congress of Korean Society of Otolaryngology (Seoul : Oct 12, 2001)
- Conductive hearing loss with normal tympanic membrane : lecture for ENT practitioner in Yongdong (Yongdong Severance Hospital : Nov 15, 2001)

#### Young-Myoung Chun, M.D.

- The overview of ENT surgery : lecture for Health Insurance Review Agency (Suwon : Sep 20, 2001)
- Tympanomastoid Surgery : lecture for ENT residents in Yonsei University (Seoul : Jul 6, 2001)
- Skull Base Surgery : lecture for ENT residents in Kyunghee University (Seoul : Sep 7, 2001)

#### Joong-Wha Koh, M.D.

- Diagnostic approach for parapharyngeal turn : lecture for ENT practitioner in Suwon area (Suwon : Apr 21, 2001)

#### Sung-Kyun Moon, M.D.

- Traumatic cholesteatoma : case presentation at nine medical schools joint conference (Catholic Medical Center, Seoul : Jun 7, 2001)
- Innate Immunity : cell biology meeting (Department of Otorhinolaryngology Yonsei University College of Medicine, Seoul : Aug 11, 2001)
- Hearing aid evaluation and fitting : audiologist education program (Hyun-Dai Hospital, Seoul : Aug 16, 2001)
- Electroacoustic characteristics of hearing aid : Yonsei clinical workshop for hearing aid (Lotte Hotel, Seoul : Sep 2, 2001)
- Hearing aid circuitry : audiology workshop (Hyun-Dai Hospital, Seoul : Sep 16, 2001)

#### Seong Kyun Kim, M.D.

- The drug management in pregnant women : lecture for ENT practitioner in Suwon area (Suwon : May 19, 2001)

#### Yun Hoon Choung, D.D.S., M.D.

- Antibiotic Management in ENT field : lecture for ENT practitioner in Suwon area (Suwon : May 19, 2001)
- Airway management : lecture for intern in Ajou University Hospital (Suwon : May 26, 2001)

**VISITING PROFESSORS**

- Yong-Jin Park, M.D.  
Assistant Professor, Department of Otolaryngology, Suwon St. Vincent Hospital, Catholic Univ.  
College of Medicine  
“The pathophysiology of allergic rhinitis” (Jun 16, 2001)
- Dong-Hak Jung, M.D.  
Assistant Professor, Department of Otolaryngology, Inha University College of Medicine  
“Rhinoplasty in ENT fields” (Jun 21, 2001)
- Jae-Hoon Park, M.D.  
Director, Seoul Hana ENT Clinic  
“Application of coblator in ENT fields” (Nov 17, 2001)
- Hideyuki Kawauchi, M.D.  
Professor and Chairman, Department of Otolaryngology, Shimane Medical University,  
Japan  
“Double tumor marker system for diagnostic and prognostic value”  
“Stem cell transplantation”  
“Reconstruction with free-flap technique” (Nov 23, 2001)
- Sae-Hun Kim, M.D.  
Assistant Professor. Department of Otolaryngology, Yonsei University College of Medicine  
“Gene therapy in head and neck cancer” (May 16, 2001)
- Seung-Ha Oh, M.D.  
Assistant Professor. Department of Otolaryngology, Seoul National University College of  
Medicine  
“Overview of current otology research” (Oct 24, 2001)
- Young-Ho Kim, M.D.  
Associate Professor. Department of Otolaryngology, Yonsei University College of Medicine  
“Research in laryngeal neurophysiology” (Sep 12, 2001)

## **PATIENT CARE**

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<b>Outpatient Visits</b>	<b>Total</b>	<b>46,195</b>
include	New	12,592
	Old	33,603
<b>Inpatients</b>		<b>2,071</b>
<b>Emergency Room Visits</b>		<b>980</b>
<b>Operative Cases (procedures)</b>	<b>Total</b>	<b>2,704 (2175)</b>
include	Ear	927(705)
	Nose	660(460)
	Head & Neck	1,117(1010)
<b>Audiology</b>	<b>Total</b>	<b>14,430</b>
include	Pure tone audiogram	818
	Impedance audiogram	3643
	Tinnitogram	275
	Brain stem auditory evoked potential	580
	Speech audiogram	2,681
	Otoacoustic emission	1,126
	E-tube function test	33
<b>Hearing Aids</b>		<b>123</b>
<b>Vestibular Function Test</b>		<b>678</b>
<b>Vocal Dynamic Lab. Examination</b>		<b>179</b>
<b>Speech Therapy</b>		<b>1,070</b>
<b>Allergy clinic</b>		<b>402</b>

All totals are for the period Mar 1, 2001 through Feb 28, 2002.

**Operative Procedure**

<b>EAR</b>	<b>Total</b>	<b>908</b>
include	Atticoplasty	22
	Canaloplasty	20
	EAC mass excision	4
	E-tube obliteration	1
	Excisional biopsy	4
	Explo-tympanotomy	16
	Facial nerve decompression	2
	Fistulectomy	32
	Incision & drainage	1
	Intact canal wall mastoidectomy	43
	Mastoid obliteration	2
	Meatoplasty	10
	Modified radical mastoidectomy	1
	Myringoplasty	33
	Myringotomy	12
	Open cavity mastoidectomy	58
	Ossiculoplasty	106
	Patch graft	4
	Posterior sinusectomy	6
	Preauricular skin tag excision	1
	Radical mastoidectomy	3
	Revision mastoidectomy	4
	Revision tympanoplasty	5
	Simple mastoidectomy	28
	Sebaceous cyst excision	2
	Stapediomyringopexy	16
	Stapedotomy	2
	Temporal bone resection	1
	Total enucleation of facial schwannoma	3
	Translabyrinthine approach	3
	Tympanization	45
	Tympanoplasty	235
	V-tube insertion	199

<b>NOSE</b>	<b>Total</b>	<b>660</b>
include	Caldwell-Luc op.	6
	Closed nasal bone reduction	9
	Conchotomy	127
	Endoscopic biopsy	2
	Endoscopic adenoidectomy	5
	Excisional biopsy	6
	Fenestration op.	1
	Foreign body removal	4
	Frontal sinusotomy	3
	Intranasal ethmoidectomy	5
	Polypectomy	26
	Radical op. of maxillary & ethmoid sinus	150
	Radical op. of pansinus	77
	Septoplasty	25
	Septorhinoplasty	13
	Sphenoidotomy	5
	Submucosal resection	195
	Synechiolysis	1

Head & Neck	Total	1117
include	Adenoidectomy	37
	Aseptic dressing	13
	Bleeder ligation	4
	Bronchoscopy	5
	Diagnostic	5
	Foreign body removal	7
	Granulation tissue removal	4
	Esophagoscopy	11
	Diagnostic	2
	Foreign body removal	11
	Bouginage	19
	Excision	11
	Congenital neck mass	19
	Oral cavity mass	11
	Excisional biopsy of neck mass	41
	Frenotomy	2
	Frontolateral laryngectomy	1
	Hematoma evacuation	1
	Hemiglossectomy	7
	Incision & drainage for deep neck infection	10
	LAUP	150
	Laryngomicrosurgery	1
	Laser cordectomy	8
	Lithotomy	1
	Major reconstuction	1
	Regional flap	1
	Pectoralis major myocutaneous	1
	Free flap	12
	Forearm	5
	Mass excision	3
	Marsupialization of ranula	4
	Neck dissection	1
	Radical	3
	Modified radical	4
	Lateral	3
	Supraomohyoid	2
	Central	8
	Parotidectomy	1
	Superficial	8
	Total	1
	Pharyngeal wall augmentation	1

Pharyngocutaneous fistula repair	1	
Primary closure	6	
Radical Maxillectomy	1	
Sistrunk operation	3	
Stomoplasty	1	
Submandibular gland excision	8	
T-E fistular repair	1	
Thoracic duct ligation	1	
Thyroidectomy		
	Lobectomy	4
	Subtotal	5
	Total	2
Tonsillectomy	227	
Tonsillectomy & Adenoidectomy	325	
Total laryngectomy	3	
Tracheal stoma revision	9	
Tracheoesophageal fenestration & Provox insertion	3	
Tracheotomy	86	
Triple endoscopic biopsy	4	
T-tube insertion	3	
T-tube removal	5	
Type 2 thyroplasty	1	
Uvulopalatopharyngoplasty	20	
Wide excision		
	Buccal cancer	1
	Gingival cancer	1
	Mouth floor cancer	3
	Palatal cancer	1
	Tongue cancer	3
Wound debridement	1	

# FACILITIES & EQUIPMENT

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## 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	
Madson 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-Stroz) .....	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)

