



**AMRITA**  
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# Program MS ENT

(Revised with effect from 2014-2015 onwards)

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## **Goal**

The Master's course in Otorhinolaryngology is a three year integrated course after satisfactory completion of which the candidate shall be able to practice Otorhinolaryngology competently and safely in the community that he/she serves.

## **Objectives of the course**

1. A candidate is expected to have a detailed knowledge of all common and rare ear, nose, throat, and head and neck diseases. This includes various investigations; both invasive and non-invasive, recent developments in radiology like CT scan, MRI, CT guided FNAC and other relevant investigations, including all the routine investigations in arriving at a diagnosis. Operative surgery knowledge in detail of all the conditions and various complications of ward patients should be known.
2. Clinical training includes management of the various emergencies in ENT, out patient management of routine cases and day-to-day management of ward patients.
3. Various Endoscopic procedures, their indications and complications are to be known.
4. A knowledge of skull base surgery and combined craniofacial resection and the basics of all neuro – surgical interventions related to ENT.
5. They should be at par with the knowledge of recent advances in the field of ENT and Head & Neck surgery.
6. Basic knowledge of Plastic surgery in relation to ENT, which includes the different skin graft and the various flaps.
7. It is essential to know how to collect data to publish an article and it is ideal to have at least one publication during their 3 years of training.
8. Active participation in under- graduate training both theory and practicals, is essential.
9. They are expected to know the principles of speech therapy, audiological testing and management of hearing impairment.
10. Training in allied specialities like Oromaxillofacial Surgery, Neurosurgery, Plastic Surgery, Thoracic Surgery, anaesthesiology and General Surgery is desirable. The total training in allied specialities should not exceed 3 months in the whole course.

## **Program Outcomes**

PO1 Offer to the community, the current quality of 'standard of care' in ENT diagnosis as well as therapeutics, medical or surgical, for common as well as referred conditions.

PO2 Utilize the knowledge and skills acquired in allied specialties such as Pathology, Microbiology, neuromedicine, Ophthalmology.

PO3 Undertake ear, nose and throat disease diagnostic responsibilities and participate in the management processes

PO4 Keeping abreast of all recent developments and emerging trends in the field of ENT

PO5 Evaluate own professional activities, educational needs and select appropriate learning resources periodically.

- PO6 Utilize the knowledge and skills acquired from various subspecialties like Voice clinic, Snoring clinic, Dysphagia clinic and Sialology clinic.
- PO7 Be aware of the indications for referral.
- PO8 Contribute as an individual/ or in a group or institution towards the fulfillment of national objectives concerning the prevention of deafness.
- PO9 Effectively communicate with patients or relatives so as to educate them sufficiently and give them the full benefit of informed consent to treatment and ensure compliance.
- PO10 Effectively communicate with colleagues.

### **Program Specific Outcomes**

- PSO1 Ability to manage common ENT emergencies at primary level.
- PSO2 Perform daily Out patient services including patient screening and disease determination.
- PSO3 Perform OPD investigative tests like tuning fork test, diagnostic nasal endoscopy and indirect laryngoscopy.
- PSO4 Ability to perform basic OPD procedures such as foreign body removal, wax removal, ear lobe repair, suturing etc.
- PSO5 Ability to perform surgical procedures (independently/or as assistant) such as tonsillectomy, tympanoplasty, mastoidectomy, endoscopic sinus surgery etc.
- PSO6 Participate in community out reach activities like camps, school screening and public education.
- PSO7 Prescribe medications for various ailments and follow up patients to understand outcomes.
- PSO8 Present academic papers in State/National conference.
- PSO9 To do thesis work in the field of ENT under guidance of senior faculty.
- PSO10 Teach junior post graduates & undergraduates
- PSO11 To participate in department research activities and clinical audit.

### **Tentative schedule for training**

#### **Course Contents.**

#### **Essential Theoretical Knowledge.**

#### **BASIC SCIENCES**

#### **Anatomy:**

Embryogenesis of ear, nose and throat including palate larynx, Esophagus, trachea, lungs, tongue, salivary gland, Head, Neck & Skull base etc. Parapharyngeal spaces in the neck including connective tissue barriers of larynx. Applied anatomy of the skull bones, accessory sinus, external, middle and inner ears, nose, PNS, nasopharynx, meninges, brain, pharynx, larynx, trachea and bronchi, lungs, pleurae, esophagus, and the mediastinum. Anatomy of all cranial nerves with their functions.

#### **Physiology:**

Mechanism of perception of smell and taste, mechanism of breathing and voice production, deglutition and salivation. Functions of the nose and Para sinuses, Mechanism of cough and sneezing. Physics of sound, theories of hearing, mechanism of perception of sound, speech Production, Physiology of equilibrium. Physiology of brain in connection with hearing, speech smell and phonation. Audiologic tests like Audiometry, impedance, evoked potentials, Oto Accoustic Emissions, Speech audiometry Physiology of larynx, tracheobronchial tree & oesophagus. Histology of mucous membranes, internal ear and other associated organs and structures, nose Para

Nasal Sinuses, Nasopharynx, Tracheo Bronchial tree, Lymphoepithelial system.  
Mechanism of immune system/immunology and genetics.

### **Clinical**

- Clinical methodology as applied to Otorhinolaryngology and Head & Neck disease in adult & children and the accessory sinuses, diagnosis and surgical treatment of diseases of nose, throat and ear in adult and children. Prevention and treatment, infectious diseases of Otolaryngology and Head & Neck region. Circulatory and nervous disturbances of the nose, throat and ear and their effects on other organs of body. Deformities, injuries, sinus infections, polyps and the tumors of the nose, and paranasal sinuses. Examination of ear, deafness and allied diseases & complications of diseases of the ear. Injuries, tumors, circulatory & neuro-otological disturbances of the ear. Diagnosis & treatment of tinnitus and vertigo. Diagnosis and rehabilitation of the Hearing handicapped including, dispensing of hearing aid other vibrotactile aids.
- Surgical pathology of Otolaryngology and Head & Neck region.
- Basic knowledge of anesthesia as related to ENT.
- Examination of diseases in children (Pediatrics ORL) in connection with throat and larynx. Neurological & vascular disturbances. Congenital & neonatal stridor.
- Pathology of various diseases of larynx and throat, tracheo-bronchial tree and their causative organisms.
- Indications & various techniques of direct laryngoscopy, nasal endoscopy, bronchoscopy and oesophagoscopy (Including microlaryngoscopic procedures)
- Reading or radiograms, scans, audiograms, nystagmograms and tympanograms in connection with ENT diseases/disorders.
- The recent developments in the diagnosis, pathogenesis and treatments of the ENT diseases.
- The knowledge of frontiers of the oto-laryngology and lateral skull base surgery.
- Rhinoplasties, endoscopic sinus surgery, and anterior cranial fossa surgery.
- Knowledge of LASERS and fibre optics.
- Phonosurgery
- Etiology and Managements of sleep apnoea/snoring.
- Hypophysectomies and optic nerve decompressions.

- Immunotherapy and modalities of the gene therapy.
- Newer technique for Radiotherapy including, use of gamma knife for treatment of intracranial tumours and other malignancy & Chemotherapy of Head & Neck cancer.
- General surgery, Head & Neck oncology, and Medicine as applicable to the ENT disorders/diseases. Surgery of congenital deformities of nose, ear (Pinna) & Trachea/oesophagus etc.
- Radiology, Imaging, computed tomography and magnetic resonance imaging, (MRI) and interventional radiology and angiography as related to E.N.T.
- General pathologic aspects as wound healing, Pathology and Pathogenesis of ENT diseases, Pharmacology, molecular biology, genetics, cytology, hematology, and immunology as applicable to otolaryngology.
- General principles of faciomaxillary traumatology and also neck injury, plastic surgery as applicable to Otolaryngology.
- Basic computers, computer averaging of the biological signals and its applications in Otolaryngology & Otolaryngologic equipments.

#### AUDIOLOGIC AND SPEECH DISODERS-MANAGEMENT STRATEGIES.

- Sound wave and their characteristics, Sound measurement
- **AUDIOLOGICAL TESTS:** Brief description about audiometers and its accessories, **Pure Tone Audiometry**; Principle, Procedure and interpretation of audiograms using audiometric symbols, Masking; Principle and procedure, Audiometric configurations for different pathologies, Speech Audiometry, Special test to differentially diagnose RCP and CP
- **AUDIOLOGICAL TEST FOR PAEDIATRIC POPULATION:** BOA, VRA
- **IMPEDANCE AUDIOMETRY AND REFLEXOMETRY:** Principle, procedure and classification of tympanograms, tympanograms in various pathologies  
  
OTO ACOUSTIC EMISSIONS: Principle, Types and its interpretation
- **BRAINSTEM EVOKED RESPONSE AUDIOMETRY:** Differential diagnosis of pathologies using BERA
- **EVALUATION OF A DEAF CHILD:** A test Battery Approach
- **AUDIOLOGICAL REHABILITATION:** Hearing Aids- Of deaf child and elderly population, Cochlear implants, Bone anchored hearing aids

- AN OVERVIEW OF THERAPUTIC INTERVENTION FOR SPEECH AND LANGUAGE DISODERS.

### **ESSENTIAL DIAGNOSTIC SKILLS**

- 1) Proper history taking, clinical examination pertaining to ENT.
- 2) Diagnostic nasal endoscopy.
- 3) Flexible nasopharyngoscopy.
- 4) Otomicroscopy.
- 5) Indirect laryngoscopy.
- 6) Direct laryngoscopy.
- 7) Audiological evaluation incl. PTA, Impedance audiometry, BERA, caloric test.
- 8) Radiological interpretation – Xray, CT, MRI.

### **ESSENTIALSURGICAL SKILLS**

#### **Clinical Procedures, which the candidate must know**

<b>PROCEDURE NAME</b>	<b>NO: PROCEDURE</b>		
	<b>AS OBSERVER</b>	<b>AS FIRST ASSISTANT</b>	<b>INDEPENDENTLY UNDER SUPERVISION</b>
TRACHEOSTOMY	5	5	5
ADENOIDECTOMY	10	10	10
TONSILLECTOMY	10	10	10
INCISION DRAINAGE QUINCY/ OTHER ABCESES	2	2	10
BIOPSY FROM NECK MASS AND OTHER LYMPH NODE	2	2	10
DIRECT LARYNGOSCOPY	1	1	10
SUB MANDIBULAR DUCT STONE REMOVAL	1	NIL	NIL
TOTAL LARYNGECTOMY	2	NIL	NIL
RADICAL NECK DISSECTION	1	NIL	NIL
NASOPHARYNGEAL ANGIOFIBROMA	1	NIL	NIL
LIGATION EXTERNAL CAROTID ARTERY	2	1	NIL
MICOLARYNGEAL SURGERY	3	3	3
PARAPHARYNGEAL SPACE SURGERY	2	1	NIL
THYROID SURGERY	2	1	NIL
PREAURICULAR SINUS EXCISION	2	2	2
CORTICAL MASTOIDECTOMY/MODIFIED RADICAL MASTOIDECTOMY	5	5	5

MYRINGOTOMY	5	NIL	5
AURAL POLYPECTOMY	2	2	5
BRANCHIAL SINUSES/ THYROGLOSSAL CYST	2	2	2
FACIAL NERVE DECOMPRESSION	1	NIL	NIL
STAPEDECTOMY	5	NIL	NIL
MYRINGOPLASTY / TYMPANOPLASTY	5	5	5
NASAL POLYPECTOMY	5	5	5
SMR/ SEPTOPLASTY	5	5	10
EXTERNAL FRONTOETHMOIDECTOMY	1	NIL	NIL
FUNCTIONAL ENDOSCOPIC SINUS SURGERY	5	5	5
MAXILLECTOMY	1	NIL	NIL
RHINOPLASTY	10	10	NIL
LOBULOPLASTY	5	5	10
FRACTURE NASAL BONE	5	5	5
PAROTIDECTOMY	5	1	NIL

## Thesis

### Essential Research Skills.

#### *Research methodology/Reporting on research*

- Learns the basics in research methodology, and makes the thesis
- Problem oriented record keeping including use of computer
- Use of Medical literature search including through Internet use in the Library.
- Attends bio-statistics classes by arrangement.

### Research Report

- Writing including preparation of Protocol for Research/Thesis.
- Writing an abstract/short paper/presentation style (Slide-making audiovisual aids).
- Preparation of a report on a research project, Thesis.

### Rule for submission of thesis / Dissertation by candidates

1. The protocol of thesis / Dissertation should be submitted to the University through the head of the department within three (3) months of joining in Medical college.
2. If thesis is rejected or needs to be modified for acceptance, the thesis will be returned to the candidate with suggestion of assessors in writing for modification. The result of such candidate will be kept pending till the thesis is modified or rewritten, accordingly as the case may be and accepted by the examiner.



3. If any unethical practice is detected in work the of thesis, the same is liable to be rejected. Such candidates are also liable to be rejected. Such candidates are also liable to face disciplinary action as may be decided by the university.
4. The thesis is to be submitted 6 months before the commencement of the final examination.

## **Guidelines for writing of Thesis / Dissertation.**

### **Title**

Should be brief, clear and focus on the relevance of the topic

### **Introduction**

Should state the purpose of study; mention lacunae in current knowledge and enunciating the Hypothesis.

### **Review of Literature**

Should be relevant, complete and current to date.

### **Material and Methods**

Should include the type of study (prospective, retrospective, controlled double blind) details of material and experimental design procedure used for data collection and statistical methods employed; statement of limitations ethical issues involved.

### **Observations**

Should be organized in readily identifiable sections. Having correct analysis of data be presented in appropriate charts, tables, graphs and diagrams etc. Thesis should high be statistically interpreted.

### **Discussion**

Observations of the study should be discussed and compared with other research studies. The discussion should highlight original findings and should also include suggestions for future.

### **Summary and conclusion**

### **Bibliography**

Should be correctly arranged in Vancouver pattern.

### **Appendix**

All tools used for data collection such as questionnaire, interview schedules, observation checklists etc should be put in the annexure.

## **Methods of Training**

### **Year wise structured training schedule**

#### **First year:**

#### **1. Theoretical knowledge**

- a. Basic sciences should be addressed

- b. It is useful to have an internal examination of the basic sciences at the end of first year
- c. Clinical Otorhinology.

## **2. Clinical examination and diagnosis**

- a. The basics of history taking, order and correct method of examination and recording have to be learnt during this time.
- b. Clinical and surgical decision making is encouraged under supervision

## **3. Skills**

- a. All basic procedures as far as possible to be done under guidance and the Student should be fairly conversant with most of the diagnostic modalities.

### **Second year:**

#### **1. Theoretical knowledge**

- a. Here stress will be laid on clinical laryngology and head and neck surgery.

#### **2. Clinical examination and diagnosis**

- a. The student is encouraged to take diagnostic investigational and therapeutic decisions on his / own. He / she should be able to manage most of the common problems that arise without guidance. However, the degree of freedom allowed in decision making is left to the confidence of the teacher in the student's abilities. It is to be encouraged. May require guidance for more complex cases.

#### **3. Diagnostics**

- a. The student should be conversant and at ease with most if not all of the diagnostic Procedures. Some procedures are optional skills if facility is available in the Department

#### **4. Surgical Skills**

- a. At the end of second year, the student should be capable for operating, without assistance, but under supervision, all varieties of basic surgeries.
- b. In addition, the master's candidate should ideally have assisted in other complex surgeries.

#### **5. Conference and workshops**

- a. The candidate should have attended one or two regional workshop and one national conference if possible. Presentation of a free paper at these venues is to be encouraged.

### **Third year:**

#### **1. Theoretical knowledge**

- a. Should be thorough with basic clinical otorhinolaryngology with extensive and intensive reading.

#### **2. Clinical examination and diagnosis**

- a. Should be conversant with all aspects of clinical examination and decision-making. Investigation and management freedom should be

given at this for the usual situations. However, complex cases could be with consultant and degree of freedom of decision-making is left to consultant's discretion.

### **3. Skills**

- a. Routine skills are honed during this period.
- b. Basic ENT surgeries should be done independently without supervisors or assistance
- c. Can assist other complex procedures. The choice of doing the surgery with assistance and supervision should be left to the discretion of the consultant.

### **4. Conference and workshops**

- a. The candidate by this time should have attended at least one national conference. He/ she should be given time off to attend regional workshop and conferences particularly those dealing with the state of art.

### **Rotation and Posting in other departments**

For an MS student, optional rotation posting to allied departments would include

Plastic surgery  
Neurosurgery  
Head and Neck surgery  
CVTS

However, posting to these allied specialities would depend upon the head of Department's discretion. The total duration of posting should not exceed months.

### **Teaching and Learning Activities**

The following learning methods may be used for the teaching:

1. Journal clubs: 1 hr duration. Paper presentation/discussion-once per Week
2. Seminars: One seminar every week of one-hour duration.
3. Lecture/discussions: Lectures on newer topics by Faculty, in place of seminar/as per need.
4. Case presentation in the ward and the afternoon Special clinics (such as vertigo / otology and Tumors clinics)-Candidates will present a clinical case for discussion before a faculty and discussion made pertaining to its management and decision to be recorded in case files.
5. Surgicopathological Conference: Special emphasis is made on the surgical pathology and the radiological aspect of the case in the pathology dept.
6. Combined Round/Grand Round: These exercises are to be done for the hospital once/wk. or twice/month involving presentation of unusual or difficult patients. Presentations of cases in clinical combined Round and a clinical series/research data on clinical materials for benefit of all clinicians/Pathologists/other related disciplines once in week or fortnightly in Grand round.

7. Community camps: For rural exposure and also for experience in preventive aspect in Rural situation/hospital and school. Patient care camps are to be arranged during 2-3 years, involving Candidates/junior faculty.

## Courses

### **Paper - I Basic Medical Sciences Pertaining to ENT and Principles of General Surgery (Course MSEN1)**

CO1: Knowledge of the anatomy of Ear, Nose and Throat.

CO2: Knowledge of the physiology of Ear, Nose and Throat.

CO3: Knowledge about the Microbiology and Pharmacology relevant to ENT.

CO4: Knowledge of general surgical principles relevant to ENT.

#### **BASIC SCIENCES**

##### **Anatomy:**

Embryogenesis of ear, nose and throat including palate larynx, Esophagus, trachea, lungs, tongue, salivary gland, Head, Neck & Skull base etc. Parapharyngeal spaces in the neck including connective tissue barriers of larynx. **Applied anatomy of the skull bones, accessory sinus, external, middle and inner ears, nose, PNS, nasopharynx, meninges, brain, pharynx, larynx, trachea and bronchi, lungs, pleurae, esophagus, and the mediastinum. Anatomy of all cranial nerves with their functions.**

##### **Physiology:**

Mechanism of perception of smell and taste, mechanism of breathing and voice production, deglutition and salivation. Functions of the nose and Para sinuses, **Mechanism of cough and sneezing. Physics of sound, theories of hearing, mechanism of perception of sound, speech Production, Physiology of equilibrium.** Physiology of brain in connection with hearing, speech smell and phonation. Audiologic tests like Audiometry, impedance, evoked potentials, Oto Acoustic Emissions, Speech audiometry Physiology of larynx, tracheobronchial tree & oesophagus. Histology of mucous membranes, internal ear and other associated organs and structures, nose Para Nasal Sinuses, Nasopharynx, Tracheo Bronchial tree, Lymphoepithelial system. Mechanism of immune system/immunology and genetics.

##### **Clinical**

- Clinical methodology as applied to Otorhinolaryngology and Head & Neck disease in adult & children and the accessory sinuses, diagnosis and surgical treatment of diseases of nose, throat and ear in adult and children. Prevention and treatment, infectious diseases of Otolaryngology and Head & Neck region. Circulatory and nervous disturbances of the nose, throat and ear and their effects on other organs of body. Deformities, injuries, sinus infections, polyps and the tumors of the nose, and paranasal sinuses. Examination of ear, deafness and allied diseases & complications of diseases of the ear. Injuries, tumors, circulatory & neuro-otological disturbances of the ear. Diagnosis & treatment of tinnitus and vertigo. Diagnosis and rehabilitation of the Hearing handicapped including, dispensing of hearing aid other vibrotactile aids.
  
- **Surgical pathology of Otolaryngology and Head & Neck region.**

- Basic knowledge of anesthesia as related to ENT.
- Examination of diseases in children (Pediatrics ORL) in connection with throat and larynx. Neurological & vascular disturbances. Congenital & neonatal stridor.
- Pathology of various diseases of larynx and throat, tracheo-bronchial tree and their causative organisms.
- **Indications & various techniques of direct laryngoscopy, nasal endoscopy, bronchoscopy and oesophagoscopy** (Including microlaryngoscopic procedures)
- Reading or radiograms, scans, audiograms, nystagmograms and tympanograms in connection with ENT diseases/disorders.
- General surgery, Head & Neck oncology, and Medicine as applicable to the ENT disorders/diseases. Surgery of congenital deformities of nose, ear (Pinna) & Trachea/oesophagus etc.
- Radiology, Imaging, computed tomography and magnetic resonance imaging, (MRI) and interventional radiology and angiography as related to E.N.T.
- General pathologic aspects as wound healing, Pathology and Pathogenesis of ENT diseases, Pharmacology, molecular biology, genetics, cytology, hematology, and immunology as applicable to otolaryngology.
- General principles of faciomaxillary traumatology and also neck injury, plastic surgery as applicable to Otolaryngology.
- Basic computers, computer averaging of the biological signals and its applications in Otolaryngology & Otolaryngologic equipments.

**Paper - II Diseases of EAR, Audiology & Speech Therapy (Course MSEN2)**

CO1: Detailed knowledge of common diseases affecting the ear.

CO2: Knowledge and skill in use of otoscope and tuning fork tests.

CO3: Ability to diagnose and manage (including surgical management) common ear conditions.

CO4: Knowledge of instruments used for audiometry.

CO5: Competency in performing basic audiometric test.

CO6: Competency in managing cases of foreign body.

AUDIOLOGIC AND SPEECH DISODERS-MANAGEMENT STRATEGIES.

- Sound wave and their characteristics, Sound measurement

- **AUDIOLOGICAL TESTS: Brief description about audiometers and its accessories, Pure Tone Audiometry;** Principle, Procedure and interpretation of audiograms using audiometric symbols, Masking; Principle and procedure, Audiometric configurations for different pathologies, Speech Audiometry, Special test to differentially diagnose RCP and CP
- PTA in pediatric age group
- **AUDIOLOGICAL TEST FOR PAEDIATRIC POPULATION: BOA, VRA**
- **IMPEDANCE AUDIOMETRY AND REFLEXOMETRY:** Principle, procedure and classification of tympanograms, tympanograms in various pathologies
  - OTO ACOUSTIC EMISSIONS: Principle, Types and its interpretation
- **BRAINSTEM EVOKED RESPONSE AUDIOMETRY:** Differential diagnosis of pathologies using BERA
- Cortical Evoked Response Audiometry (CERA)
- **EVALUATION OF A DEAF CHILD:** A test Battery Approach
- **AUDIOLOGICAL REHABILITATION:** Hearing Aids- Of deaf child and elderly population, Cochlear implants, Bone anchored hearing aids
- Trans sphenoidal approach in neurosurgery
- **AN OVERVIEW OF THERAPUTIC INTERVENTION FOR SPEECH AND LANGUAGE DISORDERS.**

**Paper - III Diseases of Throat and Head and Neck (Course MSEN3)**

CO1: Detailed knowledge of common diseases affecting the throat, head and neck.

CO2: Competency in the medical and surgical management of tonsillitis.

CO3: Ability to diagnose and manage (including surgical management) common throat, head & neck conditions.

CO4: Knowledge of the evaluation of hoarseness

CO5: Competency in managing cases of foreign body.

- 1) **Proper history taking, clinical examination pertaining to ENT.**
- 2) **Diagnostic nasal endoscopy.**
- 3) **Flexible nasopharyngoscopy.**
- 4) Otomicroscopy.
- 5) Indirect laryngoscopy.
- 6) Direct laryngoscopy
- 7) Audiological evaluation incl. PTA, Impedance audiometry, BERA, caloric test.
- 8) **Radiological interpretation – Xray, CT, MRI.**

## **Paper - IV Recent Advances in Otorhinolaryngology, Medicine and Surgery as Applied to ENT and Diseases of Nose (Course MSEN4)**

CO1: Knowledge of diagnosis and management of all nasal conditions.

CO2: Competency in managing cases of foreign body.

CO3: Updated knowledge of technologies and instrumentations used in ENT.

CO4: Knowledge about the recent published research papers in ENT.

The recent developments in the diagnosis, pathogenesis and treatments of the ENT diseases.

- The knowledge of frontiers of the oto-laryngology and lateral skull base surgery.
- Recent advances in the treatment of acute onset deafness
- Rhinoplasties, endoscopic sinus surgery, and anterior cranial fossa surgery.
- Liaising with Oral and Maxillofacial surgery colleagues in required cases
- **Knowledge of LASERS and fibre optics.**
- Knowledge of recent advances in MicroLaryngeal Surgeries
- Phonosurgery
- Hypophysectomies and optic nerve decompressions.
- **Immunotherapy and modalities of the gene therapy.**
- **Newer technique for Radiotherapy including, use of gamma knife for treatment of intracranial tumours and other malignancy & Chemotherapy of Head & Neck cancer.**

### **Soft Skills (Elective Course)**

CO1: Competency to conduct a clinical research.

CO2: Acquisition of pedagogical skills for students (MBBS, BSc Audiology)

CO3: Ability to work as a member of a healthcare team.

CO4: Communication skills with patients, caregivers and colleagues including non medical staff.

CO5: Attitude to be a lifelong learner.

## **Scheme of examination**

### **Theory**

Theory examination constitute 4 papers, each paper is of 100 marks.

Paper 1 Basic Sciences

Paper II Otology and Audiology

Paper III Laryngology, Voice, Speech and swallowing and Head and Neck

#### Division of Questions

Each question to be of a total of 10 marks, of structured nature. Subdivision and respective marks to be indicated clearly. 20 marks based on clinical scenarios. This can be a single question/scenario or two separate scenarios. Accordingly the total number of questions would be 9 or 10. The prepared question papers are intended as a model for the examiners. Individual variations within the guidelines set above can be made.

### **Practical examination**

Only long case of importance to be given for history taking, approach to the patient, clinical examination, diagnosis and management.

Three short cases: One from each system not covered by the long cases. Here importance is given for the clinical examination, findings, diagnosis and management of each case. Total marks 200.

### **Viva Voce:**

X- rays, CT scan, MRI

Surgical instruments

Surgical specimens

Microscopic slides covering microbiology and pathology

Osteology

Audiology and Speech pathology

Operative surgery

Marks are to be distributed according to the content of the particular portion.

Total marks 100.

### **Log Book**

The day today work, attendance, participation in seminar, case discussion, joined clubs, surgeries performed, assisted, observed,

Attendance of clinical workshop, CME programmes, conferences, medical camps, CPC's, and other academic programmes are to be entered. The log book should be

submitted to Assistant professors of the concerned unit and got signed every month.

The unit chief should sign the logbook once the posting in that unit is over.

### **Thesis- Dissertation**

It is essential to know how to collect data, compile it, and publish it. Hence thesis – dissertation in a relevant topic pertaining to otorhinolaryngology and head and neck surgery to be submitted to the University at least 3 months before the theory examination. The University may send it for evaluation well in advance of final examination.

#### MAXIMUM MARKS FOR UNIVERSITY EXAMINATION

THEORY	PRACTICAL	VIVA VOCE
400	200	100



**DISTRIBUTION OF MARKS FOR THE UNIVERSITY EXAMI**

THEORY-400	PRACTICAL-200		VIVA VOCE-100						LOG BOOK & THE SIS
	LONG CASES	SHORT CASES Or OSCE	RADIOLOGY	INSTRUMENTS	SPECIMENS	SLIDES (MICRO+PATHOLOGY)	AUDIOLOGY & SPEECH PATHOLGY	OPERATIVE SURGERY	
4 X 100=400	100	35+35+30	15	15	15	10	15	15	15

10

A candidate securing separate minimum of 50% in theory and practical are eligible to pass the examination. Those securing 70% and above are eligible to pass with distinction.

## **Model Question Paper**

### **Paper I**

#### BASIC SCIENCES

100 Marks / 3 hours

1 clinical scenario question of 20 marks

8 questions of 10 marks each, all of a structured nature.

Please answer according to the assigned marks for each sub-question.

Please draw suitable diagrams wherever necessary.

1. 34/F presented with history of vertigo. Clinical features were suggestive of benign paroxysmal positional vertigo (BPPV).  
Describe the anatomical and physiological basis of the positional tests for the different types of BPPV. (4)  
Outline the pathway of the vestibule-ocular reflex (VOR). (2)  
Describe the central connections of the vestibular nuclei(5)  
Detail the specific eye movements cause dby stimulation of each SCC. (6)  
List the three visually controlled oculomotor systems apart from VOR .(3)
2. Explain, with diagrams, the anatomical basis of the Fisch Type A approach for the excision of glomus jugulare tumour. (10)
3. Describe the structure and functions of the hair cells of the cochlea .(6+4)
4. List the functions of the nose. (3)  
Discuss the 'Nasal cycle' in detail. (4)  
Principles of Rhinomanometry. (3)
5. Classify muscles of larynx. (2)

- Describe, in detail, attachments of all the intrinsic muscles of the larynx. (4)  
 Explain the concept of 'Body – Cover' of the vocal folds.(4)
6. Describe the anatomy of nerves encountered during a total parotidectomy. (8)  
 Add a note on the Otic ganglion. (2)
  7. Local anesthesia (LA):  
 Attributes and Qualities of the ideal LA agent? (4)  
 Actions and Dosages of Lignocaine. (2)  
 Technique of laryngeal LA for an office procedure on the vocal cords. (2)  
 Diagram to show points of LA infiltration for a Myringoplasty. (2)
  8. Classify Flaps used for reconstruction. (2)  
 Discuss the use of different types of free flaps in ENT. (6)  
 Add a note on the pectoralis major myo – cutaneous flap. (2)
  9. Describe the classification of chemotherapeutic agents with 1 example each. (8)  
 List the four chemotherapy strategies in head and neck cancer. (2)

## **Paper II**

### OTOLOGY and AUDIOLOGY

100 marks / 3 hours

1 Clinical scenario question of 20 marks

8 questions of 10 marks each; all of a structured nature.

Please answer according to the assigned marks for each sub – questions.

1. A 45/ M presents in Casualty following a road traffic accident, with h/o blow to his right frontal region. ENT opinion sought for bleeding noticed from the right ear.

What are the relevant clinical features to check from an otologic aspect? (4)

After initial head injury management, patient is transferred under ENT for further care for his symptoms of watery discharge from the right ear and facial asymmetry.

Give a detailed, step-wise protocol of management (4)

Right –sided LMN facial palsy persists on the 10<sup>th</sup> day.

What is the ideal electric- physiological test at this stage? (1)

Which are the different electrical tests in cases of facial nerve palsy? (2)

Describe the House- Brackmann classification used in these cases. (3)

What are the indications for facial nerve decompression in such a case? (1)

Detail the principles of facial nerve repair, intra-operatively. (3)

Name two methods of facial re-animation, in case of unresolved facial palsy. (2)

2. Define Otosclerosis and name the four common areas of its occurrence. (1+4)  
Describe the genetic pattern of its inheritance. (2)  
What is the mechanism of Carhart's notch? (2)  
What are the contraindications for surgery in Otosclerosis (3)
3. Tinnitus: List the classification and pathology of its causes. (4)  
What are its new theories of mechanisms? (4)  
Pharmacotherapy of tinnitus : Name four groups of drugs used. (2)
4. Congenital ear anomalies:  
Define Protruding ear (1)  
Discuss two commonly used corrective procedures for the protruding ear. (4)  
Principles of surgery of Anotia (4)
5. Vestibular Schwannoma (VS): Describe the clinico - pathological stages. (3)  
What are its effects on the inner ear? (2)  
Describe the possible eye findings in a case of progressive VS. (3)  
Discuss the advantages and disadvantages of the Trans-labyrinthine approach. (2)
6. Meniere's disease (MD):  
Mention four (cochlear) pathologic features. (2)  
What are its theories causation? (2)  
Modalities of intra -tympanic Gentamicin injection in MD. (2)  
Principles and types of surgeries for MD. (4)
7. Vestibular rehabilitation:  
What is meant by Static and dynamic symptoms in vestibular dysfunction? (2)  
What are the mechanisms of vestibular compensation? (6)  
Describe the Pharmacologic actions of Betahistine? (2)
8. Hearing aids (HA):  
Classify and name types Has. (2)  
Define 'Gain' and 'Peak clipping in Has. (2)  
Principles of selection and prescription of Has. (3)  
Detail the problems faced by the HA - user .(3)
9. Describe the hearing tests for Malingering. 94)  
Principles of SISI and TDT. (4)  
Name four behavioural tests to detect central auditory deafness. (2)

### **Paper III**

#### LARYNGOLOGY, VOICE, SPEECH and SWALLOWING, HEAD and NECK

100 marks / 3 hours

1 Clinical scenario question of 20 marks  
8 questions of 10 marks each; all of a structured nature.

Please answer according to the assigned marks for each sub – questions.

1. 47/F with gradually progressive neck swelling, diagnosed on USG as arising in the thyroid gland. FNAC reported as suspicious of malignancy.

WHO revised histological classification of malignant thyroid tumours? (2)

What are further relevant investigations prior to surgery? (2)

Total thyroidectomy was done for this lady.

Surgical anatomic classification of recurrent and superior laryngeal nerves?  
(2)

Post – operative pt. reports hoarseness. ILS shows right vocal cord immobile in lateral position.

Detail the voice assessment methods (4)

What are the principles of management in this case? (2)

9 months post –op- no improvement in voice and findings – decision for surgery.

What are the surgical options? (1)

Classify Isshiki's Thyroplasty with one indication for each. (4)

Indications for arytenoids adduction / rotation procedure?(2)

2. In a case of intractable aspiration, what are the relevant investigations? (2)  
Describe the surgical options with their indications. (8)

3. Obstructive sleep apnoea (OSA):  
How is the severity graded? (2)  
Describe the diagnostic modalities with their underlying principles. (6)  
What are the indications for surgery in this condition? (2)

4. laryngeal trauma:  
Discuss the biomechanics of different types of laryngeal injury. (4)  
Schaefer classifications. (2)  
Add a note on laryngeal stents. (4)

5. Branchial cysts:  
Briefly describe their theories of origin. (4)  
What are the clinical features?(2)  
Management? (4)

6. Sjogren's disease:  
List the salivary glands –related criteria in the revised international classification.(4)  
List four exclusion criteria. (2)  
What are the oral and salivary manifestations? (2)  
Name four therapeutic agents. (2)

7. Give the TNM classification of metastatic neck nodes. (2)  
 What is the investigation protocol for met. nodes with unknown primary. (2)  
 What are the management options in a pt. with met. neck nodes?(4)  
 Mention the principles of positron emission tomography (PET). (2)
8. Describe the radiological appearance of four common jaw cysts. (4)  
 Discuss Odontogenic tumours of the mandible. (6)
9. Give the 4 point gradation of chronic laryngitis. (2)  
 Discuss the clinical features and management of laryngo-pharyngeal reflux (LPR). (6)  
 What are the possible findings in laryngeal tuberculosis. (2)

## **PAPER IV**

### **RHINOLOGY and RECENT ADVANCES**

100 marks / 3 hours

1 Clinical scenario question of 20 marks

8 questions of 10 marks each; all of a structured nature.

Please answer according to the assigned marks for each sub – questions.

1. 50/M presents with h/o progressive nasal block, with past h/o polypectomy many years prior. On enquiry, he has a history of allergy. He is presently diabetic, controlled with OHAs.  
 Anterior rhinoscopic examination shows polyps in both nostrils. Diagnostic nasal endoscopy is done.  
 Describe the Lund Mackay scoring system of the endoscopic findings. (2)  
 What are the newer concepts in the pathogenesis of allergic ethmoid polyps? (4)  
 List the medical management protocol for this patient. (2)  
 What are the prognostic indicators of successful outcome of surgery? (2)
2. 11/F presents with the symptom of bilateral proptosis, of recent onset but gradually progressive. On enquiry, she is non diabetic.  
 What is the most likely diagnosis? (1)  
 Other clinical features to check in this patient? (2)  
 CT PNS was done for her. Possible findings on CT? (2)  
 What are the indications for surgical intervention in this case? (2)  
 Discuss the possible surgical modalities? (3)
3. Discuss the types of endonasal frontal sinus drainage procedures . (6)  
 Indications and procedure of Balloon Sinusoplasty. (4)
4. Epsitaxis:  
 Describe the arterial supply of the nose. (4)

- Briefly describe the surgical modalities of management. (4)  
 Add a note on hereditary haemorrhagic telangiectasia (HHT). (2)
5. Rhinoplasty:  
 List the types of external nasal deformities (2)  
 What are the causes of a saddle – nose? (3)  
 Classify and list the graft materials used. (2)  
 Indications and advantages of an external approach. (3)
  6. Pituitary tumour, being planned for trans-nasal approach:  
 What are the relevant pre – operative investigations? (2)  
 Discuss the advantages and disadvantages of the various approaches. (6)  
 Add a note on navigation – guided surgery, in such cases. (2)
  7. Carcinoma Nasopharynx:  
 Genetic factors in its aetiology. (2)  
 Diagnostic tools in biopsy – negative cases. (2)  
 Principles of radiotherapy in these cases. (2)  
 List the anterior surgical approaches to the nasopharynx. (2)  
 Role of photo- dynamic therapy (PDT). (2)
  8. Explain the concepts of ‘Allergic march’ and ‘Unified airway’. (4)  
 Sub-lingual immunotherapy (SLIT) for allergy. (2)  
 Discuss the surgical modalities in a case of severe allergic rhinitis. (4)
  9. Sialendoscopy:  
 Discuss the advantages and disadvantages (4)  
 List the types of scopes(2)  
 Briefly describe the basic steps of procedure (2)  
 Four possible complications (2)
  10. Name four syndromic craniosynostoses. (2)  
 Management principles in these cases. (4)  
 List two surgical options. (2)  
 Add a note on Distraction Osteogenesis. (2)

## **Recommended Books**

### **Must read**

1. Scott Brown’s Diseases of Ear Nose and Throat
2. Shambaugh Surgery of Ear
3. Rob and Smith Operative Surgery
4. Otolaryngology & Head Neck Surgery – Cummings
5. Montgomery’s Surgery of the upper respiratory tract (Vol- 1&2)
6. Suen Myers Head and Neck Surgery
7. Stammberger’s Functional Endoscopic Sinus surgery

### **List of books**

#### **Must refer**

1. Stell and Maran Head and Neck Surgery
2. Mawson’s Disease of the ear
3. Gray’s Anatomy

4. Mirko Tos Middle ear surgery (Vol- 1,2& 3)

**List of Journals**

**Indian**

1. Indian Journal of Otolaryngology and Head Neck Surgery
2. Asian Journal of Ear Nose and Throat
3. Indian Journal of Otology

**Foreign**

1. Journal of Laryngology and Otology
2. Otolaryngologic clinics of North America
3. Int. J. of Paediatric Otolaryngology
4. Laryngoscope
5. Otolaryngology Head Neck Surgery
6. Annals of otology, rhinology & laryngology

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