

## OTOLOGY AND NEURO-OTOLOGY

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### TOPICS COVERED IN THIS MODULE

- Basic sciences associated with otology and neuro-otology
- Clinical skills in otology, particularly in surgery of the temporal bone
- Knowledge of neuro-otology and skull base surgery

### RATIONALE

Otology is a core segment of otolaryngology head and neck surgery. The topic covers the surgical pathologies of the temporal bone, skull base and surrounding area. Audiological and vestibular rehabilitation is included.

Neuro-otology and skull base surgery is a sub-specialty component of otology. Knowledge of diseases of the anterior, middle and posterior skull base are embraced. A working knowledge of the principles of diagnosis and treatment is required.

### KEY COMPETENCIES

The Graduating Trainee will be able to:

- Assess patients with otologic and neuro-otologic disorders.
- Arrange and interpret the diagnostic tests required to investigate such disorders.
- Carry out common otologic surgical procedures.
- Manage the complications of otologic disease and the surgery thereof.
- Recognise their own limitations especially with respect to neuro-otology.

### CONTENT AND OBJECTIVES

There are three components of this curriculum

1. Basic sciences
2. Clinical knowledge, skills and judgement
3. Surgical skills

#### 1. Basic sciences

##### *Ear and cranial base*

Explain in detail:

- Anatomy - External ear, middle ear, mastoid and Eustachian tube, inner ear, skull base, temporal bone
- Embryology
- Radiological anatomy

*Facial nerve*

Explain in detail:

- Anatomy
- Physiology of the facial nerve function
- Degeneration and regeneration
- Facial nerve function testing

**2. Clinical knowledge, skills and judgement**

*External ear and pinna*

Define, diagnose and manage all types of external ear disease including:

- Otitis externa
- Trauma
- Exostoses and other disorders of the bone
- Systemic manifestations of disease in the external canal
- Benign & malignant neoplasms
- Congenital and acquired disorders of the external ear and pinna

*Tympanic membrane, middle ear, eustachian tube and mastoid*

Define, diagnose and manage all types of middle ear disease including:

- Otitis media – acute, serous, secretory, chronic
- Mastoiditis, petrositis and petrous apex disease
- Complications of otitis media
- Trauma of the middle ear and petrous temporal bone
- Otosclerosis
- Conductive hearing loss
- Systemic disorders manifesting in the middle ear, eustachian tube and mastoid
- Benign & malignant neoplasms
- Congenital and acquired disorders of the Eustacian tube and middle ear cleft

*Inner ear*

Define, diagnose and manage all types of inner ear disease including:

- Presbycusis
- Noise induced hearing loss
- Labyrinthitis
- Tinnitus and hyperacusis
- Congenital, familial and syndromal hearing loss
- Sudden onset sensorineural hearing loss
- Evaluation of the dizzy patient and management
- Meniere's disease
- Ototoxicity

- Vestibular rehabilitation
- Auto-immune inner ear disease, including otologic manifestations of systemic disease
- Traumatic disorders including acoustic and barometric
- Osseous disorders of the temporal bone

#### *Facial nerve*

Define, diagnose and manage all types of facial nerve disease including:

- Bell's palsy
- Herpes zoster
- Traumatic facial nerve palsy
- Infective causes of facial nerve palsy
- Neoplastic causes of facial nerve palsy
- Miscellaneous and familial facial nerve disorders
- Systemic diseases manifesting as facial nerve palsy

#### *Cerebellopontine angle*

Define, diagnose and have a working knowledge of all cerebellopontine angle disease including:

- Acoustic neuroma
- Meningioma
- Arachnoid cysts
- Miscellaneous disease of the cerebellopontine angle
- Surgery of the posterior cranial fossa

#### *Skull base disease*

Define, diagnose and have a working knowledge of all skull base disease including:

- Jugular bulb neoplasms
- Infratemporal fossa neoplasms
- Temporal bone neoplasms
- Clival neoplasms

Discuss in detail the surgical approaches to the lateral skull base and infratemporal fossa.

### **3. Surgical skills**

The graduating advanced surgical trainee should safely and effectively perform the following surgical procedures:

#### *External canal and Pinna*

- Exostosis resection
- Canalplasty
- Meatoplasty

*Pinna*

- Partial or total resection

*Tympanic membrane, middle ear, mastoid and eustachian tube*

- Tympanoplasty
- Tympanotomy
- Ossicular chain reconstruction
- Cortical mastoidectomy
- Open and closed procedures for Chronic Suppurative Otitis Media
- Stapedectomy
- Myringotomy and insertion of tympanostomy tube

*Inner ear*

- Labyrinthectomy including transtympanic ablation

*Facial nerve*

- Decompression of the facial nerve in the mastoid segment

The graduating advanced surgical trainee should demonstrate a working knowledge of:

*Neuro-otology and Skull base surgery*

- Translabyrinthine surgery to the internal auditory meatus and petrous apex
- Middle cranial fossa approach to the internal auditory meatus
- Retrosigmoid approach to the internal auditory meatus
- Lateral skull base surgery
- Anterior cranial skull base approach
- Surgery of the infratemporal fossa
- Endolymphatic Sac Surgery
- Congenital ear surgery
- Cochlea implantation
- Surgery of labyrinthine fistula
- Implantable and semi-implantable hearing aids
- Obliterative and reconstructive procedures of the mastoid

**RESOURCES**

*Basic sciences*

- Temporal bone dissection
- Audiological clinics

*Clinical knowledge, skills and judgement*

- Hospital attachments

*Surgical skills*

- Hospital attachments
- Temporal bone dissection courses

**SUGGESTED READING**

- Otolaryngology Head and Neck Surgery, Cummings, Frederickson et al
- Mastoid Surgery, Tympanoplasty and Stapedectomy. Ugo Fisch
- Pathology of the Ear. Harold Schuknecht
- Paediatric Otolaryngology. Bluestone and Paradise
- Monograph on Secretory Otitis Media. Jacob Sade
- Anatomy of the Temporal Bone. Anson & Donaldson
- Otolaryngology Head and Neck Surgery. Scott Brown 7th Edition
- Anatomy of the Temporal Bone with Surgical Implications. Schuknecht, Gulya

**JOURNALS**

Relevant current Journals

**ASSESSMENT**

*Basic sciences and clinical knowledge, skills and judgement*

These areas will be assessed at the Fellowship Examination including written examination, vivas in anatomy, surgical pathology and operative surgery. Clinical acumen and clinical judgement will be tested in short and medium case scenarios.

*Surgical Skills*

- 60 Temporal Bone procedures by June 30 of SET 3 as per Temporal Bone Dissection Curriculum
- Supervised surgical procedures undertaken at hospital attachments, documented in the AST logbook, and certified by the surgical supervisor.