

TEMPORAL BONE REQUIREMENTS

TRAINEES IN OTOLARYNGOLOGY HEAD & NECK SURGERY IN NEW ZEALAND

Trainees beginning training in 2004 should comply with the following schedule:-

- A minimum of 5 bones should be dissected in the first 18 months of training, 6 bones to be dissected by the end of 36 months of training. The goal of this component of training is to give trainees skill in handling the otologic drill and learning the anatomy of the temporal bone.
- 2 temporal bone courses need to be completed before sitting the Fellowship examination. Dissections completed on temporal bone courses count for the total number of bones dissected, each course counting for 1 bone.

Temporal bone dissection exercises follow:-

1. External auditory canal

- Remove the skin of the external auditory canal lateral to the non-hair bearing skin.
- Raise the skin of the external canal circumferentially down to the annulus.
- Using foil or Teflon to protect the skin, enlarge the external auditory canal to blue line the temporomandibular joint, and visualise the entire annulus in one microscope position.

2. Middle ear

- Create a tympanomeatal flap by making longitudinal incisions in the external auditory canal at 12 and 6 o'clock.
- Lift the annulus between the notch of Rivinus and the 6 o'clock position.
- Identify the chorda tympani nerve, the round window niche, the promontory, the tympanic plexus and the incudostapedial joint. Divide the incudostapedial joint.

2A Remove the stapes

- Measure the distance between the under surface of the incus to the oval window.
- Use a stapes prosthesis attached to the long process of incus, thus performing a stapedectomy.

OR

2B Remove the incus using a 90° hook.

- Perform an ossicular chain reconstruction via the tympanotomy (via the canal) using:
(a) shaped incus interposition
(b) prosthetic interposition (e.g. black spanner)
(c) PORP between the drum head and the stapes head.

Check the position of each prosthesis via the posterior tympanotomy (see 5)

3. Mastoidectomy

- Perform a cortical mastoidectomy.
- Show middle cranial fossa dural plate, sigmoid sinus, sinodural angle, mastoid tip air cells, digastric ridge, posterior fossa dural plate, horizontal semicircular canal, short process of incus, mastoid antrum, and thin the intact external auditory canal wall.

4. Further mastoid dissection

- Show the vertical course of the facial nerve
- Expose the chorda tympani nerve.
- Open the epitympanum preserving the canal wall intact, and display the head of malleus and the body of incus.
- Demonstrate the retro-facial air cell tract.
- Show the endolymphatic sac, posterior semicircular canal, superior semicircular canal, subarcuate cell tract, and superior petrosal vein.

5. Posterior tympanometry

- Remove the bone between the facial nerve and the chorda tympani to reveal the middle ear, keeping a small buttress of bone between the short process of the incus and the tympanotomy.
- Visualise the incus (or the stapedectomy prosthesis or the ossicular chain reconstructive prosthesis) through the posterior tympanotomy and check the position.
- Remove the buttress of bone between the short process of incus and the posterior tympanotomy trying to

preserve the incus in its normal position (if it is still in position).

- Extend the posterior tympanotomy inferiorly to divide the chorda tympani and expose the hypotympanum and round window niche.
- Remove the incus and attached stapes prosthesis if you have performed a stapedectomy.

6. Modified radical mastoidectomy.

- Remove the posterior canal wall ensuring complete removal of the anterior tympanic spine, removal of the malleus head, complete exposure of the tympanic and mastoid segments of the facial nerve, noting the relationship of the distal facial nerve and the digastric tip. Remove the mastoid tip.

7. The labyrinth

- Blue line each semicircular canal showing the relationship of the posterior canal to the endolymphatic sac, duct, retro-facial cells and facial nerve.
- Show the relationship of the horizontal semicircular canals of the facial nerve.

8. Labyrinthectomy

- Open and remove the horizontal, posterior and superior semicircular canals.
- Trace openings into the vestibule.
- Open the vestibule and expose maximally by skeletonising the second genu of the facial nerve and visualising beneath it.
- Identify the spherical and elliptical recesses.
- Using a 90° pick, palpate the opening of the oval window from beneath.

9. Exposure of the internal auditory canal

- Using the medial face of the vestibule as a landmark of the lateral end of the internal auditory canal, blue line the internal auditory canal.
- Without opening the internal auditory canal, blue line 180° of the canal from the junction of the posterior fossa (IAM) to the distal end.
- Show the relationship of the jugular bulb, internal auditory canal and cochlear aqueduct inferiorly.

10. Internal auditory canal contents

- Open the internal auditory canal by making a longitudinal incision on the inferior aspect of the internal auditory canal dura.
- Note the superior and vestibular nerves. Demonstrate the transverse crest. Gently push aside the vestibular nerves and identify the facial and cochlear nerve. Show the vertical crest (Bill's bar).

11. Middle cranial fossa dissection

- Reorientate the bone.
- Remove the dura of the middle cranial fossa.
- Identify the superior semicircular canal (or its remnant and blue line if possible).
- Identify the greater superficial petrosal nerve.
- Expose the internal auditory canal medial to the superior semicircular canal on the posterior aspect of the middle cranial fossa. Blue line the canal through 180°.
- Show the relationship of the internal auditory canal, geniculate ganglion, greater superficial petrosal nerve, superior semicircular canal ampulla and the cochlea.
- Remove the tegmen plate and visualise the tympanic segment of the facial nerve, the tensor tympani, tendon and muscle, and the mesotympanum from above.

12. Transcochlear dissection

- Elevate the facial nerve from its bony canal between the geniculate ganglion and the stylomastoid foramen. Hold the facial nerve anteriorly with a hook or foil.
- Dissect the bony canal of the facial nerve opening the posterior mesotympanum and noting the sinus tympani, the subiculum and ponticulus.
- Open the promontory revealing the basal coil of the cochlea.
- Dissect anteriorly to show the relationship of the intrapetrous carotid artery, eustachian tube and cochlea.
- Expose the jugular bulb and its continuity with the sigmoid sinus.

In New Zealand, trainees may choose to complete steps 1 to 12 on 6 bones **OR** steps 1 to 12 on 3 bones and steps 1 to 6 on a further 6 bones. This measure increases practice of basic procedures and reduces the number of more specialised procedures practiced.

Each procedure and Bone will need to be signed off by your Supervisor and recorded on the Temporal Bone Dissection Record (Trainee Manual, Appendix B, pages 26 and 27).

Copies of all your Temporal Bone Dissection Records must be kept in your Training Portfolio with copies sent to the SET training coordinator.