ELSEVIER

Multiple Choice Questions in Ear, Nose and Throat

Self Assessment and Self Evaluation Manual

Second Edition

PL Dhingra
Shruti Dhingra

Multiple Choice Questions in Ear, Nose and Throat, 2/e
PL Dhingra and Shruti Dhingra

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Reed Elsevier India Private Limited

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First Edition 2005
Second Edition 2008
Reprinted 2009

ISBN: 978-81-312-1442-8

Published by Elsevier, a division of Reed Elsevier India Private Limited, Sri Pratap Udyog, 274, Captain Gaur Marg, Sriniwaspuri, New Delhi-110065, India.

Commissioning Editor: Sonali Dasgupta
Managing Editor (Development): Shabina Nasim
Production Executive: Ambrish Choudhary

Laser typeset by Chitra Computers, Delhi

Printed and bound at Rakmo Press, Delhi.

Contents

MULTIPLE CHOICE QUESTIONS IN

Ear, Nose and Throat

Second Edition

The purpose of this book is to guide students in answering MCQs which are a part of examination in various universities, postgraduate entrance tests and other competitive examinations.

Salient Features

- Provides a thorough understanding through illustrations and explanations of problem areas on various topics
- Features over 500 questions covering the entire subject
- Useful in quick revision of the full course
- Includes various patterns of questions such as one best response, multiple true-false type, matching type and assertion-reason type
- An equally useful manual for theory, practical and viva-voce examinations of MBBS as well as postgraduate entrance tests

New to the Second Edition

- Includes recent questions and solutions of AIIMS, PGME and other entrance tests
- Format of the book has been slightly changed to make it student friendly for self-assessment
- Index has been added for quick reference

A must for...

- UG medical students
- Students preparing for postgraduate examinations

PL Dhingra, formerly Director, Professor and Head, Department of Otolaryngology and Head and Neck Surgery, Maulana Azad Medical College, New Delhi, has been examiner to various universities in the country and presently working as Emeritus Consultant, Indraprastha Apollo Hospital, New Delhi.

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(i) One best response type (Out of 4 or 5 alternatives).
(ii) Multiple true-false type.
(iii) Matching type (4 or 5 choices).
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(vi) Pictorial type.

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usually asked or have been asked in one form or another in most competitive examinations. All key topics have been covered. Authentic answers to the questions are provided; these are supplemented by detailed explanations which also cover other alternatives, thus elevating student's confidence to answer many more MCQs on the subject. The manual helps not only in self-assessment but also in revision and comprehension of the subject.

Knowing fully well that a student sitting for PG entrance test has to be grilled through 21 medical specialties and keeping in view the scarcity of time during the internship in which he has to not only prepare for the test but also cope with the ordeal of being fully occupied with OPD/ward duties, emergencies and consultant's rounds, the book is presented as a handy short vandemecum easy to carry in his apron's pocket so that he can browse on some questions during the stolen moments. It is intended that the book be finished and subject revised during the internship period of posting in ENT, as should be the other subjects during their respective periods of posting. The question of what weightage should ENT (Otolaryngology and Head and Neck Surgery) receive when only 2–7 questions are set in the examination is left entirely to the student; but he should not overlook the fact that only a single mark or a fraction of it makes all the difference in the selection of the candidate or in getting the choice of subject or placement in an institution.

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Contents

Chapter 1

Ear

1. Tympanic membrane develops from:

(a) Ectoderm
(b) Mesoderm
(c) Endoderm
(d) All the three germinal layers
(e) Only (a) and (c)

2. Number of centres from which bony labyrinth ossifies are:

(a) 6
(b) 8
(c) 10
(d) 14

3. Nerve supply of tympanic membrane is derived from:

(a) Auriculotemporal nerve
(b) Auricular branch of vagus
(c) Occipital nerve
(d) Great auricular nerve
(e) Glossopharyngeal nerve

4. Stapes footplate covers:

(a) Round window
(b) Oval window
(c) Sinus tympani
(d) Pyramid

5. Area of stapes footplate is:

(a) 1.5 sq mm
(b) 2.2 sq mm
(c) 3.0 sq mm
(d) 3.2 sq mm

6. The pinna attains 90–95% of adult size by:

(a) Birth
(b) 5–6 years
(c) 9–10 years
(d) 11–12 years

7. Sensory nerve supply of the middle ear comes from:

(a) Vagus nerve
(b) Caroticotympanic nerves
(c) Glossopharyngeal nerves
(d) Chorda tympani

8. Citelli's angle is:

(a) Solid angle
(b) Cerebellopontine angle
(c) Sinodural angle
(d) Genu of facial nerve

9. In a normal ear, which of the following is/are true statements?

(a) Total length of external ear canal is 36 mm

(b) Pinna has to be pulled upwards and backwards to see the tympanic membrane
(c) External ear canal does not contain ceruminous glands or hair follicles in the deep bony part
(d) Dehiscences may be seen in outer cartilaginous canal

10. Which of the following statements is true?

(a) Korner's septum in the mastoid separates squamous cells from the deeper petrosal cells
(b) Facial recess lies medial to the sinus tympani
(c) Trautmann's triangle forms an important surgical landmark to locate endolymphatic sac
(d) Arcuate eminence is landmark for lateral semicircular canal

11. Which of the following is not true about the appearance of tympanic membrane?

(a) A red tympanic membrane may be normal in a crying child
(b) A retracted tympanic membrane shows prominent lateral process of malleus and foreshortened handle of malleus
(c) A bulging tympanic membrane loses all landmarks
(d) Creation of positive or negative pressure with Siegel's speculum or pneumatic otoscope has no effect on movement of normal tympanic membrane

12. During superficial parotidectomy, the most reliable landmark to identify main trunk of facial nerve is:

(a) Mastoid tip
(b) Styloid process

(c) Tympanomastoid suture
(d) Cartilage of external auditory canal

13. Endolymph is formed in:

(a) Utricle
(b) Endolymphatic sac
(c) Scala media
(d) Scala tympani

14. Communication between middle ear and eustachian tube is obliterated surgically in:

(a) Cortical mastoidectomy
(b) Modified radical mastoidectomy
(c) Radical mastoidectomy
(d) Bondy's mastoidectomy

15. Stapes superstructure develops from:

(a) Meckel's cartilage
(b) Reichert's cartilage
(c) Both (a) and (b)
(d) Both (a) and (b) plus bony otic capsule

16. Interpretation of BERA (brain-stem evoked response audiometry) is affected by:

(a) Age of the child
(b) Sex of the child
(c) Sedation
(d) Sleep

17. Inner ear malformation in fetus can occur when mother during pregnancy is exposed to:

(a) Radiation
(b) German measles
(c) Cytomegalovirus

(d) Thalidomide
(e) All of the above

18. Cause of sensorineural hearing loss due to furosemide toxicity is:

(a) Damage to outer cells of cochlea
(b) Damage to inner cells of cochlea
(c) Stria vascularis
(d) Cochlear nerve

19. All are true about Jacobson's nerve except:

(a) It is a branch of superior ganglion of vagus
(b) Supplies middle ear and mastoid air cells
(c) Supplies secretomotor fibres to parotid
(d) Section of this nerve relieves gustatory sweating

20. In a sitting position with head tilted 60° backward, which of the following canals is stimulated during caloric testing:

(a) Superior
(b) Posterior
(c) Lateral
(d) Both lateral and superior

21. Dorello's canal transmits which of the following nerves?

(a) Ophthalmic division of CN V
(b) Abducens (CN VI)
(c) Facial nerve (CN VII)
(d) Statoacoustic nerve (CN VIII)

22. Costen's syndrome is characterised by all except:

(a) Otalgia
(b) Vertigo

(c) Tinnitus
(d) Recurrent dislocation of temporomandibular joint

23. Operation of choice for coalescent mastoiditis is:

(a) Cortical mastoidectomy
(b) Modified radical mastoidectomy
(c) Radical mastoidectomy
(d) Fenestration operation

24. The cough response caused while cleaning the ear canal is mediated by stimulation of:

(a) The V cranial nerve
(b) Innervation of external ear canal by C_1 and C_2
(c) The X cranial nerve
(d) Branches of the VII cranial nerve

25. A 38-year-old gentleman reports of decreased hearing in the right ear for the last 2 years. On testing with a 512-Hz tuning fork, the Rinne's test (without masking) is negative on the right ear and positive on the left ear. With the Weber's test the tone is perceived louder in the left ear. The patient most likely has:

(a) Right conductive hearing loss
(b) Right sensorineural hearing loss
(c) Left sensorineural hearing loss
(d) Left conductive hearing loss

26. Which of the following is not a typical feature of Meniere's disease? *(AIIMS, May 2006)*

(a) Sensorineural deafness
(b) Pulsatile tinnitus
(c) Vertigo
(d) Fluctuating deafness

27. Which of the following is not a typical feature of malignant otitis externa? (*AIIMS, May 2006*)

(a) Caused by *Pseudomonas aeruginosa*
(b) Patients are usually old
(c) Mitotic figures are high
(d) Patient is immune compromised

28. Treatment of choice for glue ear is:

(*AIIMS, November 2006 and May 2007*)

(a) Conservative
(b) Myringotomy with cold knife
(c) Myringotomy with ventilation tube insertion
(d) Myringotomy with diode laser

29. Which of the following is true regarding facial nerve palsy associated with temporal bone fracture?

(*AIPGME, 2007*)

(a) Common with longitudinal fracture
(b) Common with transverse fracture
(c) Always associated with CSF otorrhoea
(d) Facial nerve injury is always complete

30. The posterosuperior retraction pocket, if allowed to progress, will lead to: (*AIPGME, 2006*)

(a) Sensorineural hearing loss
(b) Secondary cholesteatoma
(c) Tympanosclerosis
(d) Tertiary cholesteatoma

31. A 30-year-old male is having attic cholesteatoma of left ear with lateral sinus thrombophlebitis. Which of the following will be the operation of choice?

(*AIPGME, 2006*)

(a) An intact canal wall mastoidectomy
(b) Simple mastoidectomy with tympanoplasty

(c) Canal wall down mastoidectomy
(d) Mastoidectomy with cavity obliteration

32. Which is the investigation of choice in assessing hearing loss in neonates? *(AIPGME, 2006)*

(a) Impedance audiometry
(b) Brain-stem evoked response audiometry
(c) Free field audiometry
(d) Behavioural audiometry

33. Which of the following conditions causes the maximum hearing loss? *(AIPGME, 2006)*

(a) Ossicular disruption with intact tympanic membrane
(b) Disruption of malleus and incus as well tympanic membrane
(c) Partial fixation of the stapes footplate
(d) Otitis media with effusion

34. Use of Siegel's speculum during examination of the ear provides all except: *(AIPGME, 2005)*

(a) Magnification
(b) Assessment of movement of the tympanic membrane
(c) Removal of foreign body from the ear
(d) As applicator for the powdered antibiotic to ear

35. All are true for Gradenigo's syndrome except: *(AIPGME, 2005)*

(a) It is associated with conductive hearing loss
(b) It is caused by an abscess in the petrous apex
(c) It leads to involvement of the cranial nerves V and VI
(d) It is characterised by retro-orbital pain

36. In right middle ear pathology, Weber's test will be:

(AIPGME, 2004)

(a) Normal
(b) Centralised
(c) Lateralised to right side
(d) Lateralised to left side

37. A 25-year-old woman suffering from bilateral hearing loss for 6 years which became profound with pregnancy. On tympanogram, which of the following curve is obtained?

(AIIMS, November 2006 and May 2007)

(a) A_D
(b) A_S
(c) B
(d) A

38. Unit of intensity while testing for threshold of hearing in an audiogram is:

(a) dB SL
(b) dB HL
(c) dB A
(d) dB SPL
(e) dB nHL

39. Otoacoustic emissions are produced by:

(AIIMS, May 2005)

(a) Inner hair cells
(b) Outer hair cells
(c) Basilar membrane
(d) Auditory nerve

40. Speech frequencies include:

(a) 125 250 500 Hz

(b) 250 500 1000 Hz
(c) 500 1000 2000 Hz
(d) 1000 2000 3000 Hz

41. Which one of the following statements is incorrect?

(a) Vowels are low frequency sounds
(b) Consonants are high frequency sounds
(c) Vertigo associated with sudden deafness improves prognosis for recovery of hearing
(d) Unilateral hearing loss is detected early

42. Decreased bone conduction in an audiogram indicates:

(a) Tympanic membrane perforation
(b) Ossicular dislocation
(c) Ossicular fixation
(d) Damage to cochlea

43. Which of the following statements is incorrect?

(a) Recruitment is a feature of cochlear deafness
(b) A sound of 20 dB is 100-fold increase in sound energy
(c) Tone decay test is positive in acoustic neuroma
(d) One functioning window either oval or sound is sufficient for normal hearing

44. Which of the following statements is incorrect?

(a) Phonetically balanced (PB) words are used to measure discrimination score
(b) Spondee words are used to measure speech reception threshold (SRT)
(c) Cochlear duct is filled with perilymph
(d) Scala tympani is filled with perilymph

45. Vestibular function is tested by:

(a) Galvanic stimulation
(b) Acoustic reflex
(c) Fistula test
(d) Impedance audiometry
(e) Cold caloric test

46. Caloric test determines function of:

(a) Superior semicircular canal
(b) Lateral semicircular canal
(c) Posterior semicircular canal
(d) Utricle

47. All are true about Cogan's syndrome except:

(a) Episodic vertigo
(b) Interstitial keratitis
(c) Positive serology for syphilis
(d) Hearing loss

48. All of the following conditions will produce nystagmus to left except:

(a) Irrigation of left ear with cold water
(b) Purulent labyrinthitis on the right side
(c) Irrigation of right ear with cold water
(d) Irrigation of left ear with warm water

49. All of the following conditions will produce nystagmus to right except:

(a) Labyrinthectomy on the left
(b) Vestibular neuronitis on the right
(c) Serous labyrinthitis on the right
(d) Purulent labyrinthitis on left

50. Which of the semicircular canals are paired synergistically?

(a) Right horizontal with left horizontal
(b) Right posterior with left posterior
(c) Right posterior with left superior
(d) Left posterior with right horizontal

51. On Dix-Hallpike testing, nystagmus of central origin:

(a) Can be easily fatigued on repeated testing
(b) Has a fixed direction
(c) Appears immediately as soon as head is in critical position without a latent period
(d) Lasts for a few seconds

52. In episodic positional vertigo which of the following tests is used?

(a) Caloric test
(b) Dix-Hallpike manoeuvre
(c) Rotation test
(d) Electronystagmography

53. Phelps sign is seen in:

(a) Glomus jugulare
(b) Vestibular schwannoma
(c) Meniere's disease
(d) Neurofibromatosis

54. A patient presents with bleeding from the ear, pain tinnitus and progressive deafness. On examination, there is a red swelling behind the intact tympanic membrane which blanches on pressure with pneumatic speculum. Management includes all except:

(a) Radiotherapy
(b) Surgery

(c) Interferons
(d) Pre-operative embolisation

55. Brown's sign is seen in: *(AIPGME, 2007)*

(a) Glomus tumour
(b) Meniere's disease
(c) Acoustic neuroma
(d) Otosclerosis

56. All of the following drugs are used to treat otomycosis except:

(a) 2% Salicylic acid
(b) 5% Soda bicarb
(c) 1% Gentian violet
(d) Clotrimazole

57. Treatment of dry traumatic rupture of tympanic membrane is:

(a) Antibiotic ear drops
(b) Myringoplasty
(c) Protection of ear against water
(d) Ear pack soaked with antibiotic

58. All are true about ear wax except:

(a) pH is acidic in normal healthy canals
(b) Needs to be removed periodically
(c) Contains a bactericidal enzyme
(d) Is a combination of secretions of sebaceous and apocrine glands

59. Perforation commonly associated with cholesteatoma is:

(a) Attic
(b) Kidney-shaped central perforation

(c) Perforation of pars tensa posterior to handle of malleus
(d) Perforation anterior to handle of malleus

60. Extracranial complications of CSOM:

(a) Epidural abscess
(b) Facial nerve palsy
(c) Hearing loss
(d) Labyrinthitis
(e) Sigmoid sinus thrombosis

61. Which of the following is/are true about cholesteatoma?

(a) It is a benign tumour
(b) Metastasises to lymph node
(c) Contains cholesterol
(d) Erodes bone
(e) Malignant potential

62. Treatment of choice in postauricular abscess as a complication of otitis media is:

(a) Incision and drainage (*I* and *D*)
(b) *I* and *D* plus antibiotics
(c) Aspiration and antibiotics
(d) *I* and *D* antibiotics and mastoidectomy

63. A 5-year-old boy has been diagnosed to have posterosuperior retraction pocket with cholesteatoma. All would constitute part of management except:

(*AIPGME, 2003*)

(a) Audiometry
(b) Mastoid exploration
(c) Tympanoplasty
(d) Myringoplasty

64. Picket-fence graph of temperature is seen in:

(a) Otitic hydrocephalous
(b) Lateral sinus thrombosis
(c) Extradural abscess
(d) Meningitis

65. Gradenigo's syndrome is characterised by:

(a) Retro-orbital pain
(b) Profuse ear discharge
(c) CN VII palsy
(d) Diplopia

66. A 10-year-old boy presents with torticollis, a tender swelling behind the angle of mandible and fever. He had history of ear discharge for the past 6 years. Examination of the ear showed purulent discharge and granulations in the ear canal. Most probable diagnosis is:

(a) Acute lymphadenitis secondary to otitis externa
(b) Masked mastoiditis
(c) Bezold abscess
(d) Parotitis

67. MRI is the investigation of choice in all of the following complications of CSOM except:

(a) Extradural abscess
(b) Bezold abscess
(c) Coalescent mastoiditis
(d) Cerebral abscess

68. All are true in Mondini's malformation of the inner ear except:

(a) Middle ear is atretic

(b) Cochlea is normal in size but lacks bony partitions between the coils
(c) Vestibular aqueduct is dilated
(d) Vestibule is dilated

69. A 10-year-old child presents with a preauricular sinus. There is no discharge or inflammation. Similar sinus was also observed in his mother who got treated at the age of 30 years. What will be your line of management?

(a) Education and observation of the patient
(b) Order a sinogram after injection of a radiopaque dye
(c) Order a CT in axial plane
(d) Order an MRI to exclude a cyst

70. Malignant necrotising otitis externa:

(a) Is seen in diabetics
(b) Spreads to skull base
(c) Involves facial nerve at stylomastoid foramen
(d) Is often caused by *Staphylococcus aureus*
(e) More often effects elderly persons

71. Unilateral pain in the ear in the absence of ear disease can be due to:

(a) Allergic rhinitis
(b) Peritonsillar abscess
(c) Cancer of the pyriform fossa
(d) Temporomandibular joint dysfunction
(e) Ulcer oral tongue

72. A young boy of 18 years gets recurrent busts of otitis externa after swimming. Which of the following methods should be recommended?

(a) Not to swim
(b) Use 2% acetic acid after swimming
(c) Use ear drops containing an antibiotic and steroid
(d) Use an antifungal ear drops after swimming

73. Which of the following conditions predispose to otitis media with effusion?

(a) Cleft palate
(b) Down's syndrome
(c) Carcinoma nasopharynx
(d) Adenoidal hypertrophy
(e) All of the above

74. A 7-year-old child developed acute otitis media. He was treated with antibiotics for 10 days. His pain and fever subsided completely but still had conductive hearing loss. Your next line of treatment is:

(a) Give another course of a different antibiotic
(b) Do a myringotomy and culture the middle ear fluid
(c) Do a myringotomy and insert a grommet
(d) Wait and watch for 3 months for fluid to drain spontaneously

75. Long-standing case of otitis media with effusion can develop all of the following complications except:

(a) Retraction pockets
(b) Cholesteatoma
(c) Ossicular fixation
(d) Cholesterol granuloma
(e) Middle ear atelectasis

76. A 5-year-old male child had acute otitis being treated with ear drops, oral antibiotics and analgesics. Two

weeks after he presented with a swelling over the mastoid, pain in the ear with pulsatile ear discharge and fever. Now treatment of this child would include:

(a) I/V antibiotics
(b) Cortical mastoidectomy
(c) Modified radical mastoidectomy
(d) Analgesics
(e) Antihistamines

77. A pregnant woman in third trimester complains of hearing her own sounds. Examination of the ear shows movements of tympanic membrane synchronous with respiration and especially exaggerated when nostril on the contralateral side is occluded. Your diagnosis is:

(a) Eustachian tube obstruction
(b) Patulous eustachian tube
(c) Otitis media with effusion
(d) Otosclerosis

78. Regarding glomus tumour of middle ear which of the following statements is not correct?

(a) More common in men
(b) Grows very slowly
(c) Diagnostic biopsy is contraindicated
(d) Multicentric origin

79. Which of the following signs is not associated with glomus tumour?

(a) Rising sun appearance
(b) Aquino's sign
(c) Brown's sign
(d) Griesinger's sign

80. Treatment of choice for a glomus tumour restricted to promontory of middle ear is:

(a) Surgical removal
(b) Embolisation
(c) Radiation therapy
(d) Wait and watch

81. Which of the following is not the site of paraganglioma?

(a) Carotid bifurcation
(b) Jugular foramen
(c) Promontory of middle ear
(d) Geniculate ganglion

82. Aim of mastoid surgery in CSOM which should receive first priority is:

(a) Making the ear dry
(b) Improvement in hearing
(c) Preservation of hearing
(d) Rendering the ear safe

83. A 30-year-old woman with family history of hearing loss from her mother's side developed hearing problem during pregnancy. Hearing loss is bilateral, slowly progressive, with bilateral tinnitus that bothers her at night. Pure tone audiometry shows conductive hearing loss with an apparent bone conduction hearing loss at 2000 Hz. What is the most likely diagnosis?

(AIIMS, May 2006)

(a) Otosclerosis
(b) Acoustic neuroma
(c) Otitis media with effusion
(d) Sigmoid sinus thrombosis

84. The prevalence of clinical otosclerosis is highest in:

(a) Japanese
(b) Caucasians

(c) Americans
(d) Africans

85. Otosclerosis is:

(a) Autosomal dominant
(b) Autosomal recessive
(c) X-linked disease
(d) Mitochondrial disorder

86. Most common site for initiation of stapedial otosclerosis is:

(a) Fissula ante-fenestram
(b) Fossula post-fenestram
(c) Footplate of stapes
(d) Margins of stapes

87. In the pathogenesis of otosclerosis, the disease process starts in:

(a) Periosteal layer of otic capsule
(b) Endosteal layer of otic capsule
(c) Bone of otic capsule which develops from cartilage
(d) Mucoperiosteum of the promontory

88. Which of the following statements is not true about stapedial otosclerosis?

(a) Slowly progressive conductive hearing loss with normal tympanic membrane
(b) Rinne's test is negative
(c) Tympanogram is A_D type
(d) Eustachian tube is patent

89. Schwartze's sign is:

(a) Swelling over the mastoid

(b) Reddish hue seen in the hypotympanum behind an intact tympanic membrane
(c) Improved hearing in noisy surroundings
(d) Reddish hue seen over the promontory

90. In an otosclerotic patient Rinne's test was negative with a tuning fork of 512 Hz but positive for 1024 Hz. His minimum predicted AB gap on audiometry would be:

(a) 20 dB
(b) 30 dB
(c) 45 dB
(d) 60 dB

91. The triad constituting syndrome of *Van der Hoeve* includes all except:

(a) Osteogenesis imperfecta
(b) Conductive hearing loss
(c) Blue sclera
(d) Preauricular sinuses

92. Carhart's notch in audiogram is deepest at the frequency of: *(AIPGME, 2003)*

(a) 0.5 kHz
(b) 2.0 kHz
(c) 4.0 kHz
(d) 8.0 kHz

93. All of the following statements are true about Carhart's notch except:

(a) It is a sensorineural hearing loss
(b) Maximum loss is centred at 2 kHz
(c) Seen only in stapes fixation
(d) Cannot by reversed

94. Treatment of choice for otosclerosis in a young person employed in office is:

(a) Hearing aid
(b) Stapedectomy
(c) Stapes mobilisation only
(d) Fenestration operation

95. Condition in which loud sounds produce giddiness is called:

(a) Paracusis Willisi
(b) Hennebert's sign
(c) Tullio phenomenon
(d) Otolithic crisis of Tumarkin

96. A 31-year-old female patient complains of bilateral impairment of hearing for the past 5 years. On examination, tympanic membrane (TM) is normal and audiogram shows a bilateral conductive loss. Impedance audiometry shows A_s type of curve and absent acoustic reflex. All constitute part of treatment except: *(AIPGME, 2003)*

(a) Hearing aid
(b) Stapedectomy
(c) Sodium fluoride
(d) Gentamicin therapy

97. Most common cause for bilateral conductive deafness in a child is:

(a) Otosclerosis
(b) Otitis media with effusion (OME)
(c) Acute otitis media
(d) Congenital cholesteatoma

98. A 55-year-old female presents with tinnitus, dizziness and history of progressive deafness. Differential diagnosis includes all except:

(a) Acoustic neuroma
(b) Endolymphatic hydrops
(c) Meningioma
(d) Histiocytosis X

99. A child aged 3 years presented with severe sensorineural deafness, he was prescribed hearing aids but showed no improvement. What is the next line of management?

(a) Fenestration surgery
(b) Stapes mobilisation
(c) Cochlear implant
(d) Conservative

100. In acoustic neuroma, cranial nerve to be involved earliest is: *(AIPGME, 2007)*

(a) V
(b) VII
(c) X
(d) IX

101. Meniere's disease is characterised by: *(AIPGME, 2004)*

(a) Conductive hearing loss and tinnitus
(b) Vertigo, ear discharge, tinnitus and headache
(c) Vertigo, tinnitus, hearing loss and headache
(d) Vertigo, tinnitus and hearing loss

102. Audiogram in early Meniere's disease shows:

(a) Notch at 2 kHz in bone conduction
(b) Notch at 4 kHz in air conduction
(c) A flat curve
(d) A rising curve

103. All are features of Meniere's disease except:

(a) Hearing loss that fluctuates
(b) Giddiness is provoked in certain head positions
(c) Sense of pressure or fullness in the ear
(d) Roaring tinnitus

104. The most common cause of peripheral episodic vertigo is:

(a) Meniere's disease
(b) Acoustic neuroma
(c) Benign paroxysmal positional vertigo
(d) Vascular occlusion of labyrinthine artery

105. A patient of Meniere's disease has failed all medical treatment but still retains a serviceable hearing. All of the following treatments can be considered except:

(a) Endolymphatic sac decompression
(b) Intratympanic gentamicin
(c) Vestibular nerve section
(d) Labyrinthectomy

106. All are true about benign paroxysmal positional vertigo except:

(a) More often occurs after 40 years
(b) Males are affected more than females
(c) Follows an attack of vestibular neuronitis
(d) Head trauma or ear surgery predisposes to BPPV

107. Haemorrhage into the inner ear can occur in which of the following condition(s)?

(a) Diabetes
(b) Polycythaemia
(c) Leukaemia
(d) Iron-deficiency anaemia

108. With the tuning fork of 512 Hz, Weber test is lateralised to the right ear. It denotes:

(a) Conductive hearing loss on the right and normal left ear
(b) Normal right ear but sensorineural hearing loss on the left
(c) Conductive hearing loss on the left with normal right ear
(d) Both (a) and (b)

109. Acoustic neuroma can present with:

(a) High frequency hearing loss
(b) Low frequency hearing loss
(c) Flat hearing loss
(d) Sudden hearing loss
(e) All of the above

110. Which of the following statements is incorrect about acoustic neuroma?

(a) Vertigo is severe and often precedes hearing loss
(b) Difficulty in understanding speech is out of proportion to hearing loss
(c) Facial palsy is a late feature
(d) Unilateral tinnitus and sensorineural hearing loss is the earliest symptom

111. High frequency sensorineural hearing loss after head injury is most often caused by:

(a) Injury to auditory nerve
(b) Fracture of bony cochlea
(c) Concussion of labyrinth
(d) Brain haemorrhage

112. All are features of Waardenburg's syndrome (WS) except:

(a) Heterochromia iridis
(b) Dystopia canthorum
(c) Conductive hearing loss
(d) Associated with Hirschsprung's disease
(e) Hypopigmented areas of skin

113. Sudden sensorineural hearing loss due to haemorrhage into cochlea is seen in all except:

(a) Hypertension
(b) Leukaemia
(c) Sickle cell disease
(d) Thalassaemia

114. A cochlear implant has the following components except:

(a) Microphone
(b) Speech processor
(c) Electrode array
(d) Amplifier

115. A hearing aid consists of the following components except:

(a) Microphone
(b) Amplifier
(c) Receiver
(d) Speech processor

116. All of the following drugs are mainly toxic to the vestibular system except:

(a) Streptomycin
(b) Gentamicin

(c) Kanamycin
(d) Minocycline

117. Ototoxic effects are reversible in case of the following drugs if drug administration is stopped except:

(a) Quinine
(b) Salicylates
(c) Furosemide
(d) Gentamicin

118. All of the following drugs are ototoxic except:

(a) Chloroquine
(b) Cotrimoxazole
(c) Cisplatin
(d) Furosemide

119. The principal site where aminoglycoside antibiotics cause damage to produce hearing loss is:

(a) Outer hair cells of basal turn of cochlea
(b) Outer hair cells of apical turn of cochlea
(c) Inner hair cells of basal turn
(d) Inner hair cells of apical turn

120. Adenoidectomy is indicated in all of the following conditions except:

(a) Otitis media with effusion
(b) Nasal obstruction due to adenoidal hyperplasia
(c) Recurrent otitis media in children
(d) Allergic rhinitis in children

121. A cochlear implant can be used in all of the following conditions causing bilateral severe to profound loss:

(a) Meningitis

(b) Otosclerosis
(c) Ototoxic drugs
(d) Section of CN VIII
(e) Mumps

122. Which of the following conditions will give maximum conductive hearing loss?

(a) Complete obstruction of ear canal
(b) Disruption of ossicular chain with intact tympanic membrane (TM)
(c) Disruption of ossicular chain with perforation of tympanic membrane
(d) Perforation of tympanic membrane with intact ossicular chain

123. In which syndrome is sensorineural hearing loss associated with abnormality of thyroxin synthesis?

(a) Alport
(b) Pendred
(c) Klippel-Feil
(d) Usher

124. Complications of mumps include all except:

(a) Unilateral sensorineural hearing loss
(b) Thyroiditis
(c) Pancreatitis
(d) Orchitis
(e) Palatal paralysis

125. Facial paralysis during pregnancy is associated with:

(a) Hydramnios
(b) First trimester
(c) Preeclampsia
(d) Anaemia of pregnancy

126. Following landmarks are useful in locating the facial nerve except:

(a) Nerve passes above the oval window
(b) Nerve courses above the horizontal canal
(c) Nerve exits anterior to digastric ridge
(d) Nerve lies above the posterior belly of digastric

127. In complete bilateral palsy of recurrent laryngeal nerves, there is:

(a) Complete loss of speech with stridor and dyspnoea
(b) Complete loss of speech but no difficulty in breathing
(c) Preservation of speech with severe stridor and dyspnoea
(d) Preservation of speech and no difficulty in breathing

128. Melkersson-Rosenthal syndrome includes all except:

(a) Facial paralysis
(b) Fissured tongue
(c) Circumoral oedema
(d) Sarcoidosis

129. Smallest segment of facial nerve is:

(a) Intracanalicular
(b) Labyrinthine
(c) Tympanic
(d) Mastoid
(e) Parotid segment before its division

130. Muscle not supplied by trigeminal nerve is:

(a) Mylohyoid
(b) Anterior belly of digastric

(c) Tensor tympani
(d) Tensor veli palatini
(e) Levator veli palatini

131. Which one of the following statements truly represents Bell's paralysis?

(AIIMS, May 2005; AIPGME, 2004)

(a) Hemiparesis and contralateral facial nerve paralysis
(b) Combined paralysis of the facial, trigeminal and abducens nerves
(c) Idiopathic ipsilateral paralysis of the facial nerve
(d) Facial nerve paralysis with a dry eye

132. Hyperacusis in Bell's palsy is due to the paralysis of the following muscle: *(AIIMS, May 2006)*

(a) Tensor tympani
(b) Levator veli palatini
(c) Tensor veli palatini
(d) Stapedius

133. All of the following muscles are innervated by facial nerve except:

(a) Occipitofrontalis
(b) Anterior belly of digastric
(c) Risorius
(d) Procerus

134. Which of the following landmarks for location of facial nerve is incorrect?

(a) Tympanic segment of nerve lies above the oval window
(b) Nerve lies below the horizontal semicircular canal

(c) Nerve lies lateral to short process of incus
(d) Nerve always lies behind the tympanomastoid suture

135. All of the following muscles are grouped together as "muscles of mastication" except:

(a) Buccinator
(b) Masseter
(c) Temporalis
(d) Pterygoids

136. In Ramsay Hunt syndrome, herpes zoster involves which of the following ganglia?

(a) Scarpa's
(b) Spiral
(c) Geniculate
(d) Stellate

137. Hypaesthesia of posterior meatal wall is seen in:

(a) Vestibular schwannoma
(b) Glomus tympanicum
(c) Carcinoma of middle ear
(d) Lateral sinus thrombosis

138. All of the following muscles are derived from second branchial arch except:

(a) Posterior belly of digastric
(b) Anterior belly of digastric
(c) Stapedius
(d) Orbicularis oculi
(e) Buccinator

139. In Ramsay Hunt syndrome, vesicular eruptions are seen in all of the following areas except:

(a) Concha
(b) Posteromedial surface of pinna
(c) Soft palate
(d) Tragus and surrounding skin

140. Which of the following statements represents Bell's palsy?

(a) Hemiparesis and contralateral facial nerve paralysis
(b) Combined paralysis of facial, trigeminal and abducent nerves
(c) Idiopathic ipsilateral paralysis of facial nerve
(d) Facial nerve paralysis with a dry eye

141. In a patient of facial paralysis with injury distal to geniculate ganglion, which of the following statements is incorrect (see Fig. 1.1)?

(a) Loss of lacrimation
(b) Loss of stapedial reflex
(c) Loss of taste
(d) Presence of phonophobia

142. An elderly man had long-standing ear discharge and now presented with facial palsy, pain in the ear which is worse at night and a friable polyp in the ear with tendency to bleed. The likely diagnosis is:

(a) CSOM with polyp
(b) Malignant otitis externa
(c) Carcinoma of middle ear
(d) Glomus tumour

143. Which of the following statements is not true about transverse fractures of temporal bone?

(a) They result from frontal or occipital blow to head

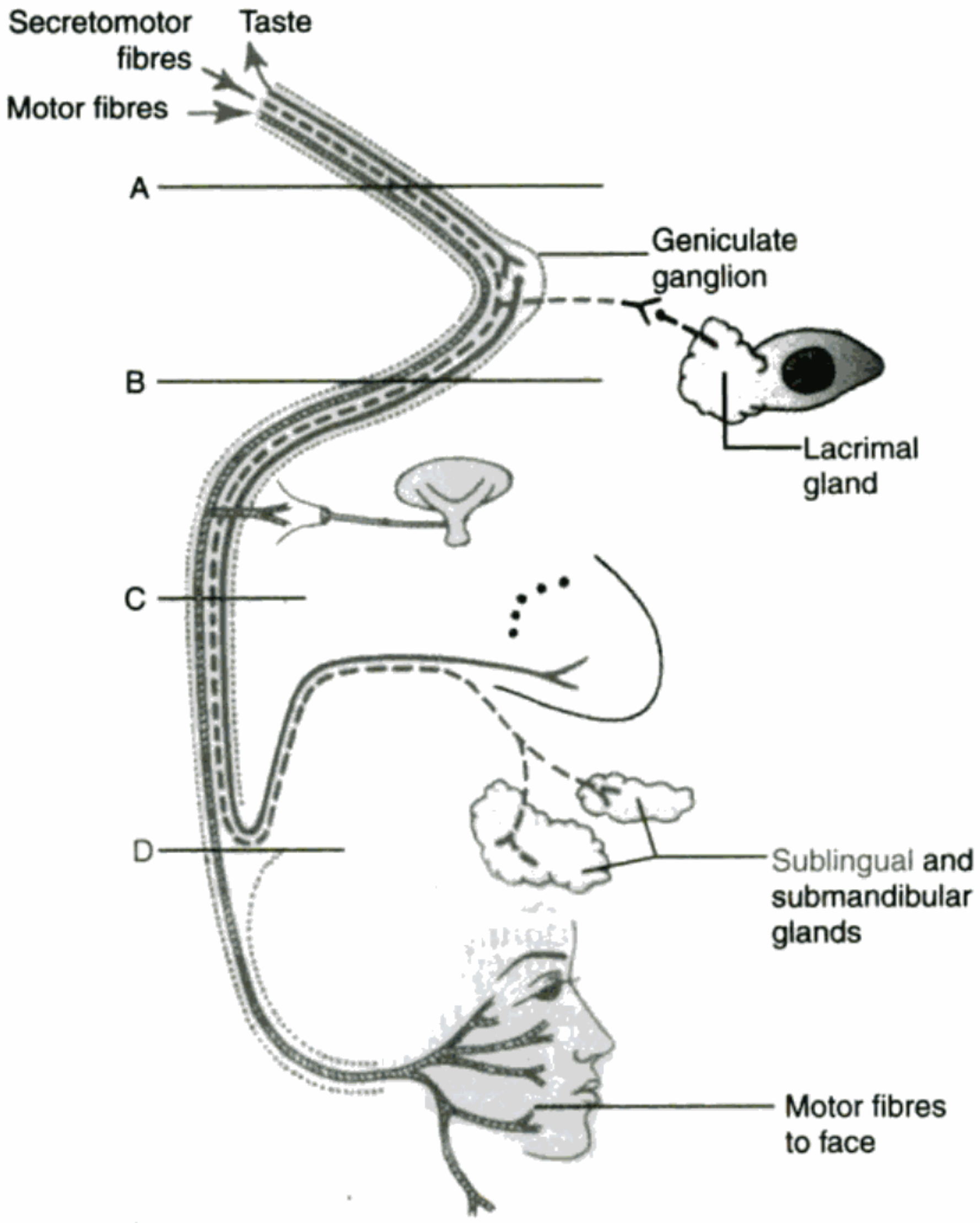

Fig. 1.1. **A**. Supragenículate lesion: Loss of lacrimation, stapedial reflex and taste. **B**. Suprastapedial lesion: Lacrimation preserved, but loss of stapedial reflex and taste. **C**. Infrastapedial lesion: Lacrimation and stapedial reflex preserved but loss of taste. **D**. Infrachordal lesion: Lacrimation, stapedial reflex and taste preserved, only facial paralysis.

(b) Less often associated with facial paralysis
(c) More likely to cause injury to labyrinth
(d) Less common than longitudinal fractures

144. All are true about longitudinal fracture of temporal bone except:

(a) Longitudinal fractures occur less commonly than transverse fractures
(b) Less chances of facial palsy
(c) Occurs due to a blow from the side
(d) Causes conductive hearing loss

145. Recurrent facial paralysis is seen in all except:

(a) Acoustic neuroma
(b) Diabetes
(c) Sarcoidosis
(d) Cholesteatoma

146. Iatrogenic traumatic facial nerve palsy is most commonly caused during:

(a) Myringoplasty
(b) Stapedectomy
(c) Mastoidectomy
(d) Ossiculoplasty

147. Which of the following would be the most appropriate treatment for rehabilitation of a patient with bilateral profound sensorineural loss following surgery for bilateral acoustic schwannoma?

(a) Bilateral high powered digital hearing aid
(b) Bilateral cochlear implants
(c) Unilateral cochlear implant
(d) Brain-stem implant

148. Landmark used for identification of geniculate ganglion of facial nerve is:

(a) Oval window
(b) Processus cochleariformis
(c) Pyramid
(d) Digastric ridge

Answer Key

1. (d)
2. (d)
3. (a), (b) and (e)
4. (b)
5. (d)
6. (b)
7. (c)
8. (c)
9. (b), (c) and (d)
10. (a)
11. (d)
12. (c)
13. (c)
14. (c)
15. (b)
16. (a)
17. (e)
18. (c)
19. (a)
20. (c)
21. (b)
22. (d)
23. (a)
24. (c)
25. (b)
26. (b)
27. (c)
28. (c)
29. (b)
30. (b)
31. (c)
32. (b)
33. (a)
34. (c)
35. (a) and (b)
36. (c)
37. (b)
38. (a)
39. (b)
40. (c)
41. (c)
42. (d)
43. (d)
44. (c)
45. (a), (c) and (e)
46. (b)
47. (c)
48. (a)
49. (b)
50. (a) and (c)
51. (c)
52. (b)
53. (a)
54. (c)
55. (a)
56. (b)
57. (c)
58. (b)
59. (a)
60. (b), (c) and (d)
61. (d)
62. (d)
63. (d)
64. (b)
65. (a), (b) and (d)
66. (c)
67. (c)
68. (a)
69. (a)
70. (a), (b), (c) and (e)
71. (b), (c), (d) and (e)
72. (b)
73. (e)
74. (d)
75. (c)
76. (a), (b) and (d)
77. (b)
78. (a)
79. (d)

80. (a)
81. (d)
82. (d)
83. (a)
84. (b)
85. (a)
86. (a)
87. (c)
88. (c)
89. (d)
90. (b)
91. (d)
92. (b)
93. (d)
94. (b)
95. (c)
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116. (c)
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118. (b)
119. (a)
120. (d)
121. (d)
122. (b)
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124. (e)
125. (c)
126. (b)
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128. (d)
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139. (d)
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141. (a)
142. (c)
143. (b)
144. (a)
145. (d)
146. (c)
147. (d)
148. (b)

Explanations to Answers

1. Answer (d)

Tympanic membrane develops from all the three germinal layers.

Outer epithelial layer develops from epithelium lining the first branchial cleft.

Inner mucosal layer develops from the lining of tubotympanic recess which is a derivative of first pharyngeal pouch and partly of the second pouch.

Intermediate fibrous layer is derived from mesoderm.

2. Answer (d)

Bony labyrinth, also called the otic capsule, develops from cartilage which later ossifies to form bone. There are 14 centres of ossification. Ossification starts at 16th week when first centre appears near the cochlea. The last centre appears at 20th week at the posterolateral part of the posterior semicircular canal.

3. Answer (a), (b) and (e)

Lateral surface of tympanic membrane is supplied by auriculotemporal nerve in its anterior half and auricular branch of vagus in the posterior half. The medial surface in its entirety is supplied by CN IX through its tympanic branch.

4. Answer (b)

Round window is covered by secondary tympanic membrane. Stapedius muscle arises within the hollow body of pyramid and stapedial tendon comes out of its tip to get attached to neck of stapes.

Sinus tympani is an open deep depression in the medial wall of middle ear. It lies medial to vertical part of facial nerve and the pyramid. Above it is bounded by ponticulus—a bony bar connecting pyramid to promontory—and below by the subiculum.

5. Answer (d)

6. Answer (b)

Though pinna has attained the adult configuration (shape) by birth, it continues to grow in size after birth and attains 90–95% of the adult

size by the age 5–6 years. This is the age when plastic surgical correction of pinna can be done.

7. Answer (c)

Glossopharyngeal nerve (CN IX) gives a branch called Jacobson's nerve (tympanic branch of glossopharyngeal) which along with caroticotympanic nerves forms tympanic plexus on the promontory of middle ear. Glossopharyngeal nerve is sensory while caroticotympanic nerves carry sympathetic fibres. Tympanic plexus supplies innervation to the medial surface of tympanic membrane, tympanic cavity, mastoid air cells and bony eustachian tube.

8. Answer (c) (see Fig. 1.2)

Sinodural angle is also called the Citelli's angle. It is formed at the site where dura of middle cranial fossa meets the dura of sigmoid sinus. It forms an important landmark in mastoid surgery.

McEwen's triangle is bounded by temporal line, posterosuperior segment of the external auditory canal and a line drawn as a tangent to the external canal. It is an important landmark to open the mastoid antrum—an initial step for mastoidectomy.

Solid angle is the place where three semicircular canals meet.

9. Answer (b), (c) and (d) are true statements

Total length of external auditory canal from concha to tympanic membrane is 24 mm (compare eustachian tube which is 36 mm). Its outer one-third is cartilaginous while inner two-third are bony. Hair follicles, sebaceous and ceruminous glands are confined only to its outer one-third. Boil, a staphylococcal infection of the hair follicle, therefore occurs only in the outer part of the canal.

Floor of the cartilage forming outer cartilaginous canal may show dehiscences called *fissures of Santorini*, which permit infections of the parotid or from the mastoid to present in the canal and vice versa.

10. Answer (a)

Korner's septum is a bony plate, sometimes present in the mastoid, dividing superficial squamous cells from the deeper petrosal cells. Antrum lies deep to it. Antrum cannot be located unless this septum is removed during mastoid exploration.

Facial recess lies lateral to sinus tympani. Middle ear can be entered through the facial recess in combined-approach tympanoplasty or surgery for cochlear implant.

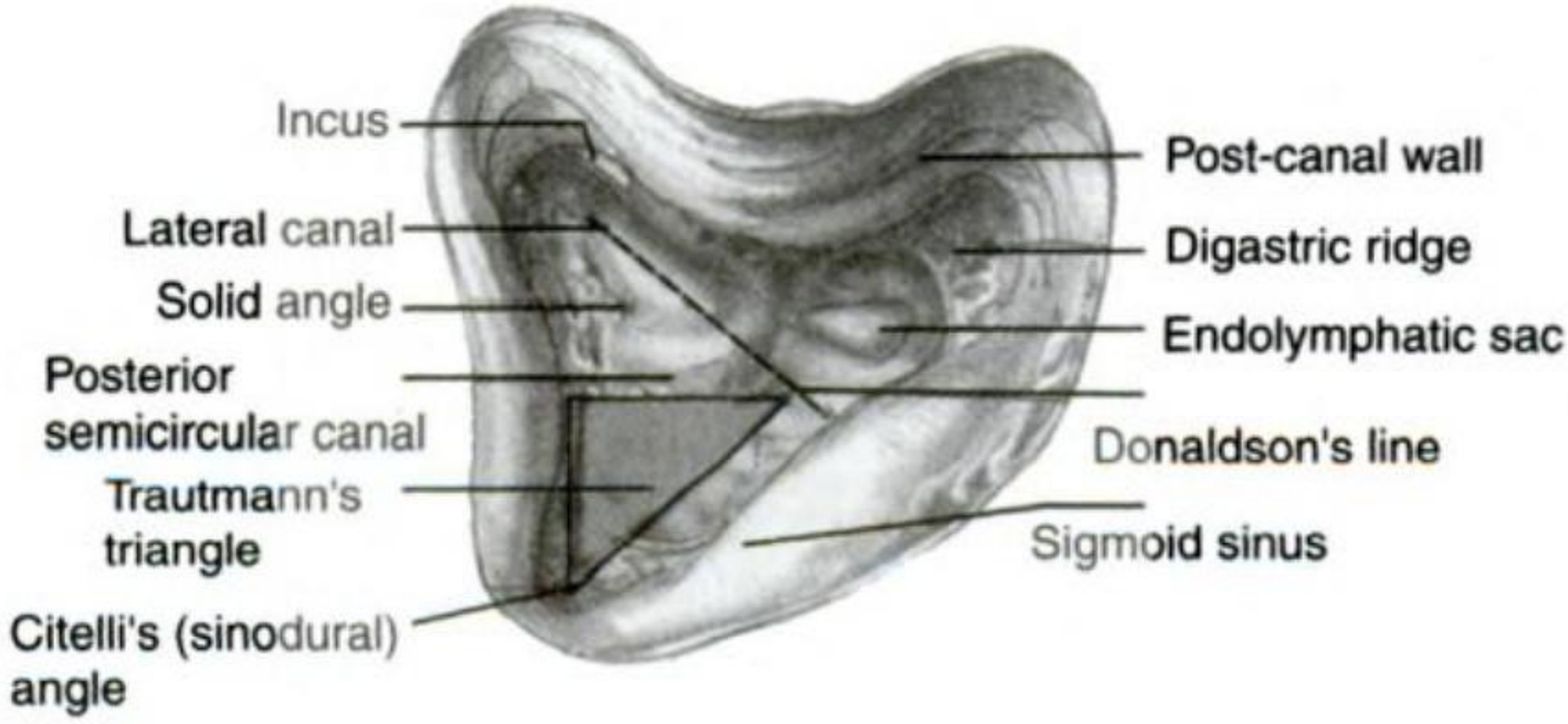

Fig. 1.2. Landmarks seen after mastoidectomy.

Trautmann's triangle is a plate of bone between solid angle, sinodural angle and sigmoid sinus (Fig. 1.2). It is a landmark for entry into the posterior cranial fossa.

Arcuate eminence is seen in superior surface of petrous bone. Underneath this eminence lies the superior semicircular canal.

11. Answer (d)

Normal tympanic membrane shows mobility on siegalisation. These movements are lost or restricted in middle ear effusion or when tympanic membrane is thick or markedly retracted.

The tympanic membrane becomes congested as a result of crying, sneezing or blowing of nose. It is common to see a congested tympanic membrane in a crying child.

In a bulging tympanic membrane lateral process of malleus and its handle may be obscured.

12. Answer (c)

The nerve trunk lies 6–8 mm deep to tympanomastoid suture. It is the most reliable landmark (see Fig. 1.3).

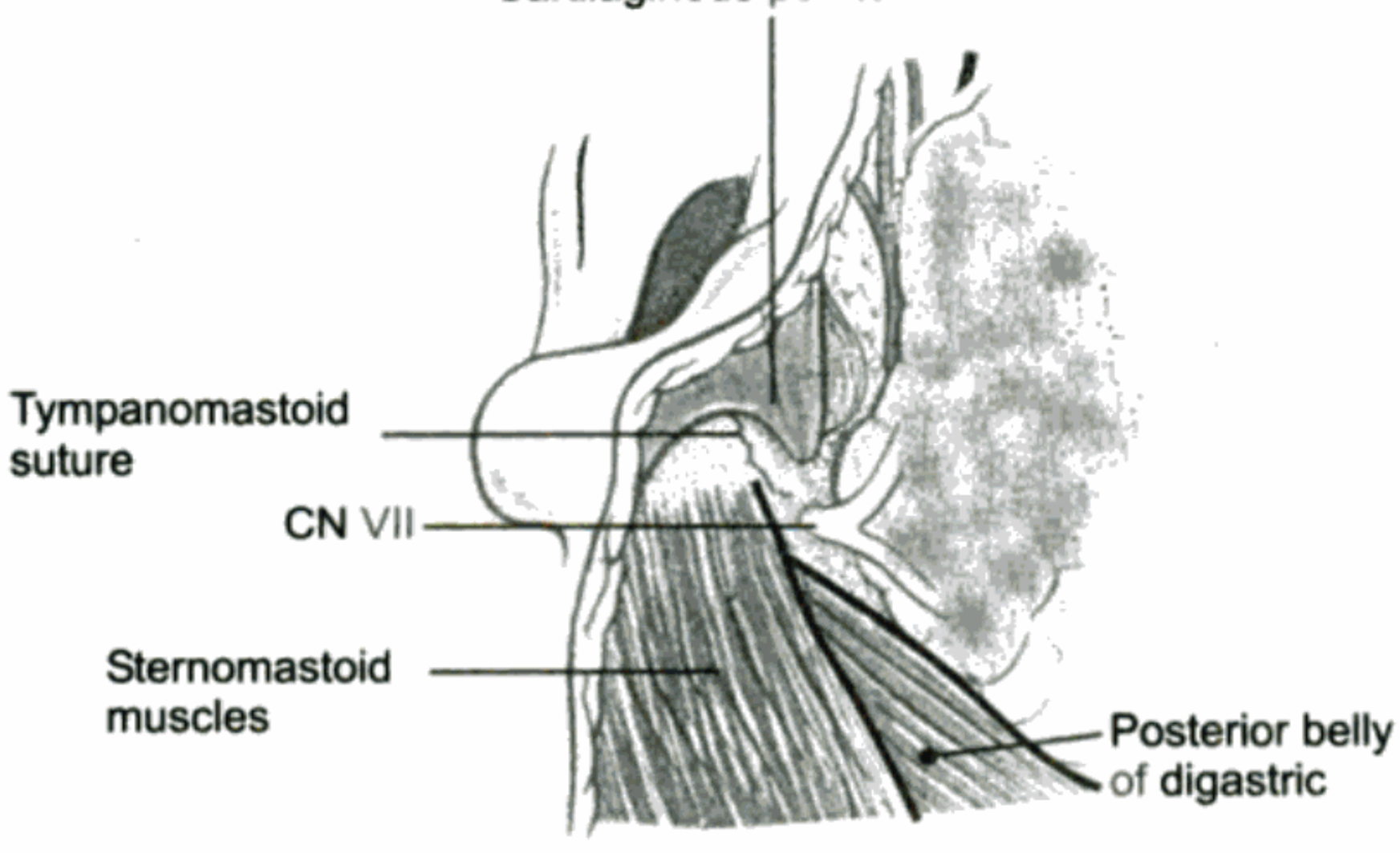

Fig. 1.3. Facial nerve lies 6–8 mm from tympanomastoid suture.

13. Answer (c)

Endolymph is secreted by stria vascularis which forms the outer wall of scala media (also called the cochlear duct). It is absorbed through endolymphatic sac.

14. Answer (c)

In radical mastoidectomy, middle ear is exteriorised into external ear canal and the eustachian tube is blocked by packing it with muscle or cartilage to prevent nasopharyngeal infections reaching the middle ear.

15. Answer (b)

Stapes superstructure, i.e. its head, neck and both crura develop from Reichert's cartilage (second arch).

Stapes footplate has a dual origin both from otic capsule and second arch.

16. Answer (a)

Due to changes in maturation of central nervous system, findings of BERA change during infancy. Therefore, only age specific latency and intensity findings are used to interpret results. However, it is not

affected by sleep, sedation or attention of the child. In fact sedation is used to elicit responses in infants and children.

17. Answer (e)

Radiation, rubella (German measles), thalidomide administration or infection with cytomegalovirus during pregnancy have a teratogenic effect on the development of inner ear particularly in the first trimester.

18. Answer (c)

Studies in experimental animals and human temporal bones have shown oedema of stria vascularis and reduced blood supply to lateral wall of cochlea. This action on stria vascularis results in reduction in endocochlear potentials and thus cause rise in threshold of compound action potential. Furosemide causes both temporary and permanent hearing loss.

19. Answer (a)

Jacobson's nerve is the other name for tympanic branch of glossopharyngeal nerve (CN IX). It supplies sensory innervation to mucosa of the middle ear and mastoid and also carries preganglionic parasympathetic secretomotor fibres to the parotid gland via the lesser petrosal nerve and otic ganglion. Section of these fibres interrupts secretomotor nerve supply to the parotid and thus helps in the relief of gustatory sweating (Frey's syndrome).

20. Answer (c)

Normally in a sitting position, lateral canal is tilted 30° backwards. By extending the head 60° backward, canal assumes a vertical position which is ideal for caloric test.

21. Answer (b)

Dorello's canal transmits CN VI. It lies between petrous apex laterally and petroclinoid ligament superomedially. It is involved in petrositis—the Gradenigo's sign.

22. Answer (d)

Costen's syndrome is due to temporomandibular (TM) joint abnormality with defective bite. It causes pain in the ear and the surrounding frontal, parietal and occipital regions, along with vertigo and tinnitus. It is treated by analgesics, local heat and slow exercises of TM joint. Defective bite can be corrected by an orthodontist.

23. Answer (a)

Coalescent mastoiditis is treated by cortical mastoidectomy, also known as Schwartz operation. In this operation all mastoid air cells are exenterated leaving posterior canal wall intact.

24. Answer (c)

CN X (vagus) nerve supplies both the ear and respiratory tract and lungs. Manipulation of ear canal such as removal of wax from the canal provokes cough.

25. Answer (b)

Negative Rinne on the right means bone conduction better than air conduction, meaning thereby conductive deafness. But this test has been done without masking the left ear which is normal in this case. Response to bone conduction could be from the left ear. Thus right ear suffers from sensorineural deafness. Rinne's test in this case is "false negative".

26. Answer (b)

Character of tinnitus in Meniere's disease is roaring cr hissing type.

Pulsatile tinnitus (non-continuous tinnitus) is due to vascular or non-vascular causes. Common aetiologies include:

(i) Raised intracranial pressure including benign intracranial hypertension
(ii) Glomus tumours
(iii) Hypertension
(iv) Venous hum
(v) High jugular bulb
(vi) Atherosclerotic carotid artery disease
(vii) Arteriovenous fistula or malformation
(viii) Thyrotoxicosis, pregnancy due to increased cardiac output
(ix) Persistent stapedial artery (rare)
(x) Palatal myoclonus or myoclonus of tensor tympani or stapedius muscle (non-vascular).

27. Answer (c)

Malignant otitis externa is not a neoplastic disease. The term malignant is used because of the severity of disease which can cause several complications including multiple cranial nerve palsies. Malignant otitis

externa is an infective process caused mostly by *P. aeruginosa*. It affects elderly diabetics or those with immunocompromised status.

28. Answer (c)

Treatment of glue ear where thick secretions accumulate in middle ear would be drainage through a myringotomy and long-term aeration of middle ear through a grommet. Options (b) and (d) are only myringotomy which will soon close leading to recurrence of disease.

29. Answer (b)

Facial nerve palsy occurs in 50% of transverse and less than 20% of longitudinal fractures. Palsy is not always due to transection of nerve. It can occur with the formation of intraneural haematoma or a spicule of bone embedded in the nerve. CSF otorrhoea does not occur in all cases of fractures.

30. Answer (b)

The option (b) should have been primary cholesteatoma and not secondary.

Secondary cholesteatoma occurs due to migration of squamous epithelium through a preexisting perforation such as posterosuperior marginal or total perforation (as occurs after acute necrotising otitis media). There is no term like tertiary cholesteatoma as given in option (d).

31. Answer (c)

Aim of surgery in middle ear infections is to make the ear safe. Since attic cholesteatoma in this case is complicated by lateral sinus thrombosis, modified radical mastoidectomy (canal wall down procedure) will be justified. In this case, the disease will be exteriorised so that the cavity could be subsequently examined and cleaned if cholesteatoma was left behind or recurs.

Intact canal wall mastoidectomy and simple mastoidectomy are "canal wall up" procedures. Obliteration of mastoid cavity even after removal of cholesteatoma runs the risk of burying cholesteatoma and subsequent complications.

32. Answer (b)

Impedance audiometry is not used in children before 4 months of age because of the characteristics of ear canal. Ear canal is collapsible and a true tympanogram is difficult to get.

Similarly behavioural audiometry and free field audiometry are not possible in a neonate. They cannot test the level of hearing. Results of behavioural audiometry will vary due to subjective observation.

The only reliable method is brain-stem evoked response audiometry (BERA). In this air conducted clicks are presented through headphones and response picked up from surface electrodes applied to scalp. They are also not affected by sleep and sedation. Latency and morphology of BERA waves changes rapidly with age in infancy and therefore only age specific norms of latency and amplitude are used to interpret results.

33. Answer (a)

Note that ossicular disruption with intact tympanic membrane (TM) causes more hearing loss than ossicular disruption with perforated tympanic membrane.

Hearing loss caused by different lesions of conducting apparatus is as follows:

(i) Complete obstruction of ear canal: 30 dB
(ii) Ossicular disruption with intact TM: 54 dB
(iii) Ossicular disruption with TM perforation: 38 dB
(iv) Perforation of TM: Varies from 10 to 40 dB depending on size and site of perforation
(v) Otitis media with effusion (fluctuating hearing loss): 20–40 dB
(vi) Complete closure of oval window: 60 dB

34. Answer (c)

A Siegel's speculum has a magnifying glass and pump attached to it. The pump helps to increase or decrease air pressure in the ear canal while lens gives magnification. If a powder like antibiotic or antiseptic (iodine plus boric acid) is placed in the speculum, it can be blown in the ear for treatment of otitis media or otitis externa. A Siegel's speculum is used in the following conditions:

(i) To magnify tympanic membrane to see small perforations.
(ii) To see mobility of tympanic membrane.

(iii) To perform fistula test.

(iv) To insufflate powder into the ear canal and middle ear.

35. Answer (a) and (b)

Gradenigo's syndrome classically consists of a triad of (i) deep-seated or retro-orbital pain, (ii) diplopia due to CN VI involvement,and (iii) otorrhoea due to middle ear or mastoid infection. It is seen in petrositis where infection from the middle ear and mastoid spreads to the petrous apex with formation of extradural abscess. It may be associated with several other symptoms such as earache, facial paralysis, acoustic or vestibular symptoms, or hearing loss, but they are not included in the syndrome.

36. Answer (c)

In Weber's test, tuning fork is placed on the forehead or vertex in the midline. Sound is conducted equally to both ears through bone vibration. In a normal person, the sound is centralised as it is heard equally in both ears.

In conductive deafness, sound is localised to the affected ear (in this case right ear) because cochlear function is normal. The cochlear function is normal in healthy ear also but the ambient noise of air-conducted sound produces a masking effect on the normal side. Masking effect of air-conducted sound on the diseased ear (right ear in this case) is missing.

37. Answer (b)

Bilateral hearing loss getting worse in pregnancy is due to otosclerosis. Tympanogram in this case would be A_s type. It is a normal tympanogram with reduced compliance due to stapes fixation.

38. Answer (a)

Pure tone and speech audiograms are measured in dB HL (hearing level). In normal hearing adult person hearing threshold is 0 dB HL.

dB SL (sensation level) is the intensity of sound that will produce same sensation of hearing as in a normal person. Thus in a hearing impaired individual who already has a hearing loss of 20 dB, a sound of 50 dB will produce a sensation of 30 dB only.

dB SPL (sound pressure level) is the physical measure of sound intensity.

Environmental sounds (noise pollution levels) are measured in dB A.

dB nHL is used in auditory brain-stem response to click stimulus.

39. Answer (b)

Otoacoustic emissions (OAEs) are produced by the outer hair cells. Motility of outer hair cells, spontaneous or in response to sounds, is transmitted by the basilar membrane, ossicular chain to tympanic membrane, and can be picked up and measured by a sensitive microphone placed in the outer ear canal.

Spontaneous OAEs are present in 70% of normal individuals. Evoked OAEs are produced in response of pure tones or clicks. Absence of OAEs indicates damage to outer hair cells as in ototoxicity.

40. Answer (c)

500, 1000 and 2000 Hz are the speech frequencies. Average of threshold levels at these frequencies is called pure tone average (PTA). PTA should agree with ± 7 dB of speech reception threshold (SRT). If SRT is unusually better relative to PTA, it indicates non-organic hearing loss or malingering. PTA is also used to measure percentage of hearing impairment in one or both ears and in measurement of the hearing handicap.

41. Answer (c)

Human speech lies in the frequency range of 250–3000 Hz. Vowels are low frequency sounds (250–1000 Hz), while consonants are high frequency sounds (1500–3000 Hz) and help in discrimination. With loss of higher frequencies, consonants are not heard and thus speech becomes less intelligible with low discrimination score.

If sudden deafness is associated with history of vertigo, spontaneous recovery of hearing to normal is less likely to occur.

Unilateral deafness is missed very often and is discovered by the patient only when normal ear is affected by impacted wax, head cold or otitis media.

42. Answer (d)

Bone conduction is a measure of cochlear function. This is tested either by Schwabach test or absolute bone conduction test or audiometrically by placing the vibrator on the mastoid bone. Decreased bone conduction or loss of it indicates hypoactive or non-functioning cochlea. All other conditions listed in (a), (b) and (c) cause conductive hearing loss with cochlear function remaining normal.

43. Answer (d)

For normal hearing two functioning windows are required, one for entry of sound waves and the other to act as a relief window. If one window is blocked or non-functioning it will cause conductive deafness, e.g. closure of oval window in otosclerosis or congenital fixation of stapes footplate.

Recruitment is a feature of sensorineural hearing loss in lesions of cochlea either of hair cells or stria vascularis, e.g. Meniere's disease, ototoxic medication (gentamicin, tobramycin, furosemide, ethacrynic acid, salicylates, quinine), viruses (mumps, measles), trauma (noise-induced, operative) and degenerative (presbycusis).

Tone decay is a feature of retrocochlear deafness such as acoustic neuroma, cerebellopontine angle tumours and meningitis.

Intensity of sound is expressed as decibels. A sound in dB represents 10 multiplied by the ratio of two sound energies expressed as a log to base 10

$$\text{Sound in dB} = 10 \times \log_{10}\left(\frac{\text{Intensity of sound 1}}{\text{Intensity of sound 2}}\right)$$

Sound of 20 dB means 20/10 = 2 to $\log_{10}$, i.e. 10^2. Therefore, 20 dB = 100 times increase in sound energy and 30 dB is 1000 times increase in sound energy.

44. Answer (c)

The whole of membranous labyrinth, i.e. utricle, saccule, semicircular ducts and the cochlear duct (also called membranous cochlea) and endolymphatic sac and duct are filled with endolymph.

Perilymph surrounds the membranous labyrinth. It fills vestibule, scala tympani, scala vestibuli and semicircular canals.

PB words are single-syllable words like pin, sin, hot, etc. They are used to check discrimination score.

Spondee words are two-syllable words like baseball, playground, etc. They are used to find speech reception threshold. It is the intensity in dB at which 50% of spondee words are heard is the speech reception threshold.

45. Answer (a), (c) and (e)

Acoustic reflex is a part of impedance audiometry. When a loud sound 70–100 dB above the threshold of hearing of a person is delivered,

stapedial muscles contract on both ipsilateral and contralateral sides. The reflex arc is cochlea–CN VIII (cochlear nerve) → brain stem → CN VII → stapedial contraction. In this, there is no involvement of vestibular system.

46. Answer (b)

Caloric test determines the function of lateral semicircular canal. In Fitzgerald-Hallpike test patient lies supine with head tilted 30° forward. In this position, horizontal canal assumes a vertical position and the effect of gravity maximises convection currents.

Alternatively if caloric test is done in sitting position, head is tilted 60° backward to make horizontal canal vertical. This position is assumed in modified Kobrak test.

Remember that in anatomical upright position, plane of horizontal canal is 30° downwards. Tilting it 60° backwards makes it vertical.

47. Answer (c)

Cogan's syndrome resembles secondary Meniere's disease due to syphilis but the serology for syphilis is negative. It consists of episodic vertigo, interstitial keratitis and hearing loss.

48. Answer (a)

Irrigation of left ear with cold water will cause nystagmus to the right.

Here the student should remember the acronym COWS, i.e. **C**old water causes nystagmus to **O**pposite side and **W**arm water to the **S**ame side. Thus irrigation of right ear with cold water and irrigation of left ear with warm water will cause nystagmus to left. Similarly purulent labyrinthitis on right side causes nystagmus to left as purulent labyrinthitis makes labyrinth dead (or hypoactive as in cold water irrigation).

49. Answer (b)

Any condition causing acute vestibular failure (labyrinthectomy or VIII N lesion) will cause nystagmus to opposite side. Thus labyrinthectomy on left and purulent labyrinthitis on left cause nystagmus to the right. Vestibular neuritis on right will cause nystagmus to left. Serous labyrinthitis is an irritative lesion. It stimulates the labyrinth like warm water and nystagmus is to the same side.

50. Answer (a) and (c)

Semicircular canals of one side are synergistically paired with those of the other side.

Both right and left horizontal canals lie in the same plane but posterior canal of one side lies in the same plane as superior (anterior) canal of opposite side.

51. Answer (c)

Positional nystagmus elicited by Hallpike manoeuvre can be of central or peripheral origin.

Nystagmus of central origin has the following characteristics.

(i) Appears immediately as soon as the head is put in critical position without any latent period.

(ii) Changes direction. Nystagmus of peripheral origin occurs in a fixed direction, i.e. towards the undermost ear.

(iii) Lasts as long as the head position is maintained. Nystagmus of peripheral origin lasts only for a few seconds and is always less than one minute.

(iv) Is not fatigable. Nystagmus can be elicited every time the test is repeated.

52. Answer (b)

In a patient complaining of vertigo related to position of head, Dix-Hallpike manoeuvre is performed. The patient is laid supine with head hanging and turned to right or left to see if vertigo and/or nystagmus can be provoked. It also helps to differentiate a peripheral from central cause of vertigo.

Caloric test, both monothermic or bithermic, is used to test function of horizontal canals. Reduced or absent function indicates canal paresis with caloric test response from each ear can be tested separately.

Rotation tests stimulate both labyrinths simultaneously.

Electronystagmography is the method to detect and record nystagmus which is spontaneous or induced by caloric, positional optokinetic or rotational stimulus.

53. Answer (a)

Phelps sign syndrome is the destruction of bone between the carotid canal and jugular foramen in glomus jugulare tumours.

54. Answer (c)

With the symptoms provided, diagnosis is glomus tumour behind the intact tympanic membrane. It has presented with a reddish mass with profuse bleeding depending on the extent of disease and age of the patient. All other options are true.

55. Answer (a)

Brown's sign, also called pulsation sign, is seen in glomus tumour. When pressure is raised in the ear canal with a Siegel's speculum, tumour first pulsates vigorously and then blanches; reverse occurs when pressure is released.

56. Answer (b)

5% soda bicarb is used to soften the hard wax. All others (a), (c) and (d) have antifungal properties.

57. Answer (c)

About 80% of small traumatic perforations heal spontaneously. No active treatment in the form of ear drops, ear pack or systemic antibiotics are required except precautions against entry of water into the ear canal. Large perforations with ossicular problems require tympanoplasty. Large perforations with in-turned margins will require eversion of the margins and splintage of perforation under microscope.

58. Answer (b)

Ear wax or cerumen is a combination of secretions of both sebaceous and apocrine glands (modified sweat glands) and epithelial cells. It is rich in lysozyme which is bactericidal. Normal pH of wax is acidic which prevents infection. Ear canal has a self-cleansing mechanism and does not require periodic cleaning. Cleaning of ear canal is required when self-cleansing mechanism is disturbed due to narrow canal, exuberant growth of hair or the tumour.

59. Answer (a)

Attic and marginal (where annulus of tympanic membrane is also destroyed) perforations are commonly associated with cholesteatoma. Cholesteatoma is rare in central perforation. Central perforations are situated in pars tensa and may lie anterior, posterior or inferior to the handle of malleus.

60. Answer (b), (c) and (d)

When infective process breaks through the confines of temporal bone into the cranial cavity, it causes intracranial complication. Thus epidural (extradural) abscess and sigmoid sinus thrombosis are intracranial. Complications like CN VII palsy, labyrinthitis and hearing loss (conductive or sensorineural) are classified as cranial or intratemporal complication.

61. Answer (d)

Cholesteatoma is presence of squamous epithelium in the middle ear. It sheds layers of keratin to form a ball. It has propensity to destroy underlying bone by proteolytic enzymes—protease, hyaluronidase and acid phosphatase. These enzymes are liberated by osteoclasts and mononuclear cells which absorb bone. Cholesteatoma is neither a benign nor a malignant neoplasm. It also does not have any potential to turn malignant. Cholesterol crystals are in abundance in cholesterol granuloma not in cholesteatoma.

62. Answer (d)

Postaural abscess usually follows coalescent mastoiditis as after acute otitis media or in cases of mastoiditis with cholesteatoma; a mastoidectomy is therefore important in its treatment.

63. Answer (d)

Audiometry is required to know the level of hearing and proper counselling of the patient. Hearing may deteriorate after surgery when cholesteatoma is removed. Cholesteatoma in such case may be bridging the gap between ossicles thus providing sound conduction—*cholesteatoma hearer.*

Mastoid will be explored to see if cholesteatoma is extending posteriorly into antrum and mastoid. Tympanoplasty is required to eradicate disease from the middle ear and also to reconstruct ossicular chain and repair posterosuperior defect of tympanic membrane.

64. Answer (b)

Diurnal spikes of fever of 104° or 105° F are typical of lateral sinus thrombosis. Due to use of antibiotics, this picture is not seen in all patients of sinus thrombosis these days. There is fever in meningitis and extradural abscess but it does not show diurnal spikes.

65. Answer (a), (b) and (d)

Gradenigo's syndrome is extension of infection from middle ear and mastoid to the petrous apex via cell tracts which connect mastoid air cells to the apical air cells. Petrous apex is pneumatised only in 30% of cases. Since CN V and VI lie close to petrous apex there is retro-orbital pain and paralysis of lateral rectus palsy leading to diplopia.

66. Answer (c)

Purulent ear discharge, granulations in the ear canal, tender swelling between the angle of mandible and mastoid indicates Bezold abscess. Torticollis is due to spasm of sternocleidomastoid muscle. In Bezold abscess, pus bursts through the medial side of the tip of mastoid. There is no ear discharge or granulations in masked mastoiditis.

In parotitis there is associated swelling over the parotid area.

67. Answer (c)

MRI gives little information in bone disease and is not useful in coalescent mastoiditis' in which CT scan would be the investigation of choice. It shows bone destruction and coalescence of mastoid air cells. In Bezold abscess, size, extent and location of abscess in soft tissues can be appreciated.

Similarly, extradural abscess and cerebral abscess are better appreciated in MRI.

68. Answer (a)

In Mondini's malformation only inner ear is deformed. The bony partitions between the various coils of cochlea are hypoplastic giving the cochlea an empty look. Vestibular aqueduct is dilated and so is the vestibule. Middle ear is normal but oval and round windows may show abnormalities.

69. Answer (a)

No treatment other than observation is advised. Further the patient should be educated that such sinus may get infected or form a cyst. Surgery is advised if sinus is symptomatic.

70. Answer (a), (b), (c) and (e)

Malignant necrotising otitis externa is often seen in elderly diabetics or immunocompromised individuals. It is often due to pseudomonas

infection when it breaks through osteocartilaginous junction of floor of external auditory canal to involve facial nerve at stylomastoid foramen. It spreads along base of skull and further medial spread involves jugular fossa with paralysis of IX, X, XI and XII cranial nerves.

71. Answer (b), (c), (d) and (e)

Pain in the ear is referred from CN IX (peritonsillar abscess), CN X (cancer of the pyriform fossa) and CN V (ulcer tongue and temporo-mandibular joint).

72. Answer (b)

Use of 2% acetic acid or dilute alcohol is the most-effective method to prevent otitis externa after swimming. Antibiotic, antifungal or steroid containing drugs are not recommended for prophylaxis.

73. Answer (e)

Otitis media with effusion (OME) occurs due to defective eustachian tube function. All of the listed conditions affect function of the tube and cause OME. In a unilateral OME in an adult, always exclude carcinoma nasopharynx.

74. Answer (d)

Since antibiotic treatment has been effective to relieve pain and fever, the child is left with a sterile fluid in the middle ear. If this fluid does not drain spontaneously in another 12 weeks treat the case as one of otitis media with effusion.

75. Answer (c)

In long-standing middle ear effusion, fibrous layer of tympanic membrane undergoes dissolution and as a result becomes thin and atrophic and easily amenable to form retraction pockets or cholesteatoma. Stasis of secretion also causes cholesterol granuloma in the mastoid. Ossicular necrosis rather than fixation is commonly seen. Long process of incus and stapes superstructure undergo necrosis.

76. Answer (a), (b) and (d)

Mastoid swelling, fever and pulsatile ear discharge that the child has developed point to acute mastoiditis. Treatment would include I/V antibiotics, analgesics and cortical mastoidectomy. Modified radical

mastoidectomy is indicated in cholesteatoma. Antihistamines have no role.

77. Answer (b)

Patulous eustachian tube is an abnormally patent tube seen in the third trimester of pregnancy or in rapid weight loss. Symptoms complained by her are due to autophony. Conductive hearing loss due to otosclerosis, otitis media with effusion and retracted tympanic membrane also conduct body sounds to the ear but her tympanic membrane findings of movement with respiration are typically seen in patulous eustachian tube.

78. Answer (a)

Glomus tumour is five times more common in women. It is a very slow-growing tumour. Sometimes glomus tumour does not occur alone but is associated with chemoreceptor tumours, seen in carotid body and on opposite side of the body signifying its multicentric origin. These tumours are extremely vascular and bleed profusely; diagnostic biopsy is therefore contraindicated. Diagnosis is made by high resolution gadolinium enhanced CT.

79. Answer (d)

Griesinger's sign is oedema over the mastoid due to thrombosis of mastoid emissary vein. It is seen in lateral sinus thrombosis.

Other three are features of glomus tumour when it arises from dome of jugular bulb (glomus jugulare). It produces red flush in the lower part of tympanic membrane resembling a "rising sun".

Brown's sign is elicited with pneumatic otoscope when pressure is raised in the ear canal, tumour pulsates vigorously and when pressure is further raised pulsations stop altogether and tumour blanches. Reverse occurs on decreasing the pressure. It is also called "*pulsation sign*".

Aquino's sign is blanching of tumour on compression of ipsilateral carotid.

80. Answer (a)

For a small tumour confined to promontory, surgical excision is the treatment of choice.

Embolisation reduces vascularity of the tumour and decreases its size. It is used either pre-operatively before surgery or is the sole treatment in inoperable patients who have received radiation.

Radiation therapy reduces the vascularity of tumour and arrests its growth. It is used in elderly patients or inoperable large tumours, residual tumours or tumours that have recurred after surgery.

81. Answer (d)

Paraganglioma (glomus tumour) arises from the paraganglionic tissue normally present in the adventitia of dome of jugular bulb, glomus body on the promontory of middle ear, at the carotid bifurcation and glomus body along the vagus nerve at the base of skull. They have been called *glomus tympanicum*, *glomus jugulare*, *carotid body tumour* and *glomus intravagale*, respectively. Most common tumours of facial nerve are neuroma and haemangioma.

82. Answer (d)

CSOM is notorious for intracranial complications. The first priority in mastoid surgery is given to free drainage of pus to render the ear safe. Second priority is given to preserve or reconstruct hearing mechanism.

83. Answer (a)

Otosclerosis mostly involves females, has a positive family history and causes slow progressive bilateral hearing loss. Audiogram is characterised by Carhart's notch—a dip in bone conduction at 2000 Hz.

See also explanation of Q. 92.

84. Answer (b)

Caucasians have highest prevalence. Japanese and Chinese have low incidence. Lowest incidence occurs in African Negroes.

85. Answer (a)

Otosclerosis is autosomal dominant disease.

86. Answer (a)

Most common site for otosclerosis to start is fissula ante-fenestram—an area lying in front of oval window. Other sites listed in the question are also affected but their involvement is less frequent.

87. Answer (c)

Otic capsule (also called bony labyrinth) has three layers: outer periosteal, inner endosteal and the middle bony. The bony layer which

develops from cartilage and for some unknown reason bone of the otic capsule is absorbed and replaced by spongy vascular bone which later becomes sclerotic due to deposition of calcium.

88. Answer (c)

Tympanometry in stapedial otosclerosis shows A_S curve. A_D curve is seen in ossicular discontinuity. Slowly progressive conductive hearing loss in an adult with normal tympanic membrane in appearance and mobility, and normal function of eustachian tube, is typical of otosclerosis.

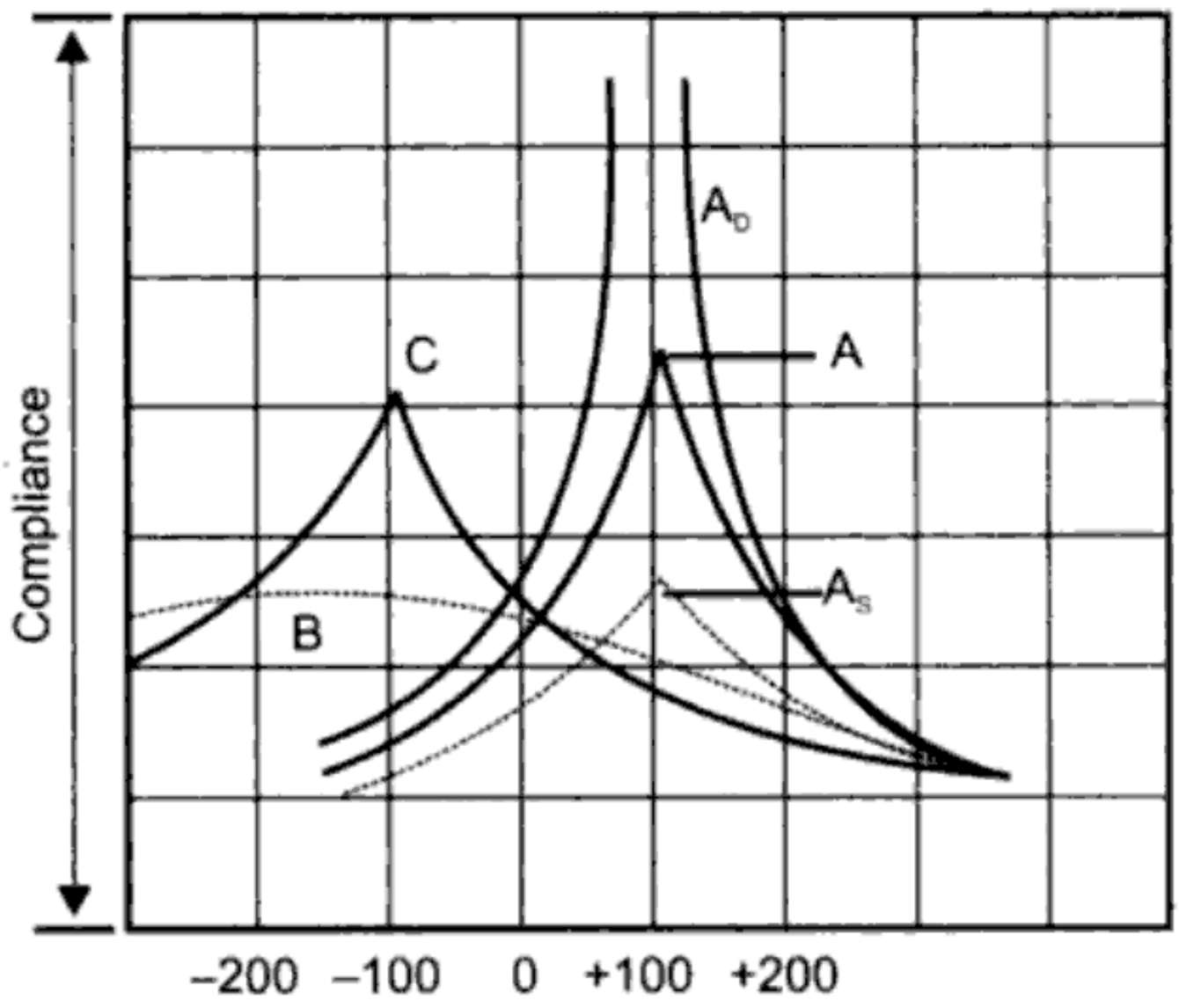

Fig. 1.4. Types of tympanograms.

A	Normal
A_S	Reduced compliance at ambient pressure (otosclerosis)
A_D	Increased compliance at ambient pressure (ossicular discontinuity)
B	Flat or dome shaped (fluid in middle ear)
C	Maximum compliance at pressures more than –100 mm H_2O (negative pressure in middle ear)

89. Answer (d)

Schwartze's sign is reddish hue seen over the promontory. It is due to increased vascularity of bone and is seen in early or active

otospongiosis. Reddish hue seen through intact tympanic membrane in its lower part is due to glomus jugulare tumour and is sometimes also referred to as "rising-sun appearance". Better hearing ability in noisy surroundings is a feature of otospongiosis and is called paracusis Willisiana or paracusis of Willisi.

90. Answer (b)

A negative Rinne's test for 256, 512 and 1024 Hz will show a minimum AB gap of 15, 30 and 45 dB, respectively.

91. Answer (d)

Though (a), (b) and (c), are features of Van der Hoeve syndrome, preauricular sinuses are not associated with this syndrome.

92. Answer (b)

Carhart's notch is loss of bone conduction in audiogram. It is a feature of otosclerosis. Loss is

5 dB in 500 Hz
10 dB in 1000 Hz
15 dB in 2000 Hz
5 dB in 4000 Hz

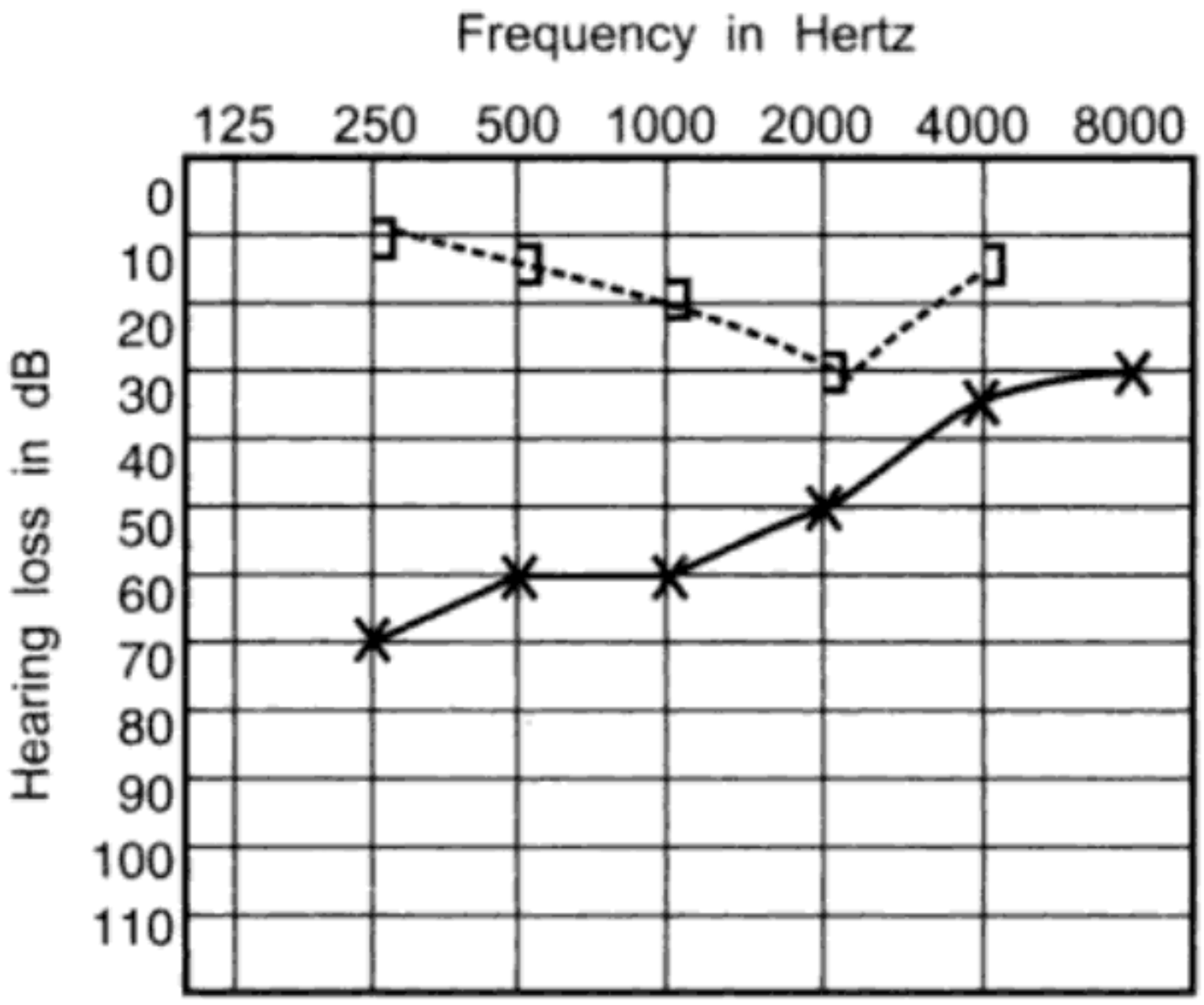

Fig. 1.5. Carhart's notch. Note dip at 2 kHz in bone conduction.

93. Answer (d)

Carhart's notch is a sensorineural hearing loss centred maximally at 2 kHz in bone conduction curve of the audiogram. It is only an apparent loss due to stapes fixation and can be reversed by stapedectomy.

94. Answer (b)

Stapedectomy or *stapedotomy* with a prosthetic connection between incus and oval window is the treatment of choice. Hearing aid can also be useful if patient refuses surgery. Stapes mobilisation will also restore hearing but the benefit is short-lived due to refixation. Fenestration operation in which a fenestra is made in the horizontal canal and covered with a tympanomeatal flap has been abandoned as this leaves a mastoid cavity which requires lifelong aftercare and also a hearing loss of 25 dB.

After stapedectomy there is potential risk of giddiness, therefore it is not advised to high construction workers and divers. It is also contraindicated in professions in which patient has to strain or frequent pressure changes occur in the middle ear, e.g. professional athletes or frequent air travellers. In them there are chances of developing perilymph fistula with consequent vertigo and sensorineural hearing loss. Since the person in question is an office-goer, it does not form a contraindication to stapedectomy.

95. Answer (c)

Tullio phenomenon is loud sounds or noise producing giddiness. It is seen in congenital syphilis, Meniere's disease and when three functioning windows are present in the ear, i.e. round window, oval window and a third artificially created window such as fenestration of the lateral canal (an old operation for otosclerosis) or a fistula on semicircular canal.

In Meniere's disease a distended saccule lies against stapes footplate and in congenital syphilis adhesions form between membranous labyrinth and the footplate. Thus movement of stapes due to loud sounds stimulates labyrinth in both these conditions.

Paracusis Willisi is seen in otosclerotics. They hear better in noisy than in quiet surroundings.

Hennebert's sign. It is a positive fistula test without the presence of a fistula. It is seen in congenital syphilis or Meniere's disease (25% cases).

Otolithic crisis of Tumarkin or drop attacks are seen in early or late Meniere's disease. Patient feels as if pushed to the ground without any vertigo or loss of consciousness. It is presumed they are due to distortion of otolithic membrane of utricle or saccule when endolymphatic pressure rises.

96. Answer (d)

In the above question, patient is a female with bilateral conductive hearing loss with normal tympanic membrane. Also the A_s curve indicates that compliance of tympanic membrane is restricted indicating ossicular fixation. Absence of stapedial reflex indicates that contraction of stapedius muscle is not producing any change in compliance of TM again indicating stapedial fixation. The diagnosis points to otosclerosis.

Treatment of otosclerosis includes (a), (b) and (c). Gentamicin is never used. Gentamicin perfusion of the middle ear is used in Meniere's disease to selectively destroy vestibular end organs and to stop giddy attacks.

97. Answer (b)

All of the above conditions cause conductive deafness. Otosclerosis usually starts between 20 and 30 years. It is rare before 10 years. Acute otitis media is usually unilateral and presents with severe pain in the ear. Congenital cholesteatoma is rare condition and extremely rare to be bilateral. OME is the most common cause affecting children.

98. Answer (d)

Acoustic neuroma and endolymphic hydrops (Meniere's syndrome) present with tinnitus, dizziness and progressive hearing loss. This also holds true for meningiomas which involve cerebellopontine (CP) angle. Nearly 10% of tumours of CP angle are meningiomas.

Histiocytosis X, presently called Langerhans cell histiocytosis, is a rare disease which may involve temporal bone (as eosinophilic granuloma) or multiorgan disorder involving skull, long bones, ribs, vertebrae, pelvis, maxilla and mandible, and other non-osseous organs. Langerhans cells are involved in cell-mediated immunity, cause osteolytic lesions in bones and recruit eosinophils. Eosinophilic granuloma is a milder form of Langerhans cell histiocytosis which can involve temporal bone.

99. Answer (c)

The patient suffers from sensorineural deafness, so fenestration and stapes mobilisation cannot be done. Such patients require hearing aid or cochlear implant. Since hearing aid has not shown any benefit, cochlear implant will be indicated to provide hearing and develop speech and language. There is no conservative treatment.

100. Answer (a)

As the acoustic neuroma enlarges in cerebellopontine angle first it causes pressure on the fibres of CN V affecting corneal reflex. Motor fibres of CN V are quite resistant. Similarly motor fibres of CN VII are also resistant, though sensory fibres may be affected and cause diminished sensation in posterosuperior wall of external auditory canal (Hitzelberger sign). CN IX and CN X are affected in late stages.

101. Answer (d)

Meniere's disease is due to raised endolymphatic pressure and clinically presents with vertigo, tinnitus, sensorineural hearing loss and sense of aural fullness. Vertigo can be accompanied by nausea and vomiting. Choice (a) is excluded due to conductive loss, (b) due to headache and ear discharge, and (c) due to headache. Presence of headache with vertigo and tinnitus may be a feature of neurological disorder.

102. Answer (d)

In early cases of Meniere's disease low frequencies are affected more and the audiogram shows a rising curve. In long-standing cases, audiogram becomes flat and then falling type.

Notch at 2 kHz in bone conduction is typically seen in Carhart's notch seen in otosclerosis (5 dB at 500 Hz, 10 dB at 1000 Hz, 15 dB at 2000 and 5 dB at 4000 Hz).

Notch at 4 kHz both in air and bone conduction is seen in noise-induced hearing loss. As the duration of noise exposure increases, notch at 4 kHz deepens and widens to involve other frequencies.

103. Answer (b)

Giddiness occurring in certain head positions such as bending forward to pick up an article or reaching for an article in the overhead shelf or turning one's position in the bed is a feature of benign paroxysmal positional vertigo (BPPV). The condition is due to free-floating particles

(otoconia) in the endolymph of vestibular labyrinth. Due to change in head position, they settle on the cupula of posterior semicircular canal causing its deflection and giddiness.

Meniere's disease is characterised by episodic vertigo, sense of fullness in the ear, fluctuating hearing loss and low-pitched roaring tinnitus.

104. Answer (c)

BPPV is the most common cause of vertigo and constitutes 20% of all vertigo cases. This is followed by Meniere's disease and vestibular neuronitis. Acoustic neuroma, being a slowly progressive disorder, mostly presents with dizziness due to concomitant compensatory processes. Episodic vertigo is seen in only 20% of cases of acoustic neuroma. Vascular occlusion of labyrinthine artery is seen in the elderly with arteriosclerosis and those with hypercoagulation disease and causes irreversible hearing loss and episodic vertigo.

105. Answer (d)

Since the hearing of the patient is serviceable as present those procedures should be considered which retain the useful hearing such as in (a), (b) and (c). Labyrinthectomy will totally destroy the hearing and is not suitable in this patient.

106. Answer (b)

BPPV presents mostly in the fifth decade. It can follow an attack of vestibular neuronitis or head trauma or ear surgery. There is no gender bias.

107. Answer (c)

Haemorrhage into the cochlea causing sudden hearing loss has not been observed in diabetes, polycythaemia and anaemia.

108. Answer (d)

Weber is always lateralised to the ear with better bone conduction. Choices (a) and (b) are correct.

109. Answer (e)

Unilateral hearing loss of sensorineural type is commonly seen in acoustic neuroma. It may be high frequency, low frequency or flat type audiogram. About 20% have sudden hearing loss. Some patients show improvement in hearing even without treatment. Thus acoustic neuroma

presents a variety of hearing loss patterns. About 5% present even with normal hearing.

110. Answer (a)

Acoustic neuroma is a slow-growing tumour. There is concomitant vestibular adaptation and therefore severe vertigo does not occur.

In all retrocochlear losses as in acoustic neuroma, loss of speech discrimination is out of proportion compared to hearing loss seen in pure tone audiogram.

Motor fibres of the facial nerve are quite resistant to pressure, therefore facial palsy is seen in late stages of disease.

111. Answer (c)

During head injury concussive force is transmitted to the cochlea either through temporal bone or stapes footplate affecting sensory epithelium of the cochlea causing high frequency hearing loss.

112. Answer (c)

Waardenburg's syndrome is an autosomal dominant disease. It is divided into WS type-I where there is dystopia canthorum and WS type-II with no such feature.

Hearing loss is sensorineural and may vary from nil to profound.

Hirschsprung's disease may be associated with both WS-I and WS-II.

Pigmentary disorder in the form of white hair lock and vitiligo (hypopigmented areas of skin) may be seen but not in all cases.

Dystopia canthorum is lateral displacement of medial canthi; interpupillary distance being normal. It should be differentiated from hypertelorism in which orbits are laterally displaced.

In heterochromia iridis, two eyes are of different colour (say one brown and the other blue) or two different colours in one eye.

113. Answer (a)

Haemorrhage into cochlea does occur spontaneously and has been seen in leukaemia, sickle cell disease and thalassaemia. It has not been seen in hypertension.

114. Answer (d)

Cochlear implant essentially has two components—an external and internal. External component is worn on the body and consists of a

microphone, a speech processor and a coil (or transmitter). Internal component is implanted in the body. It consists of a single or multiple electrodes arranged in an array and a coil or receiver.

Microphone—It picks up acoustic signal and converts it to electrical signals.

Speech processor—The electrical signal is processed according to a predetermined strategy.

Transmitter—It transmits the electrical signal from speech processor across the skin to internal receiver coil by electro-magnetic induction or radio-frequency transmission.

Electrode array—Electrical signal thus received passes through electrode array and stimulates fibres of cochlear nerve or spiral ganglion cells.

115. Answer (d)

A hearing aid essentially consists of three components (a), (b) and (c). Microphone receives the acoustic signal and converts it to an electrical signal. An amplifier amplifies the amplitude of electrical signal. A receiver receives the electrical signal and converts it back to acoustic signal. Speech processor is a component of cochlear implants.

116. Answer (c) (see Table 1.1)

Table 1.1. Vestibulotoxic and cochleotoxic drugs

Mainly cochleotoxic drugs	*Mainly vestibulotoxic drugs*
Dihydrostreptomycin	
Kanamycin	
Neomycin	Streptomycin
Tobramycin	Gentamicin
Amikacin	
Furosemide	
Ethacrynic acid	
Bumetanide	Minocycline
Cisplatin	
Nitrogen mustard	
Salicylates	
Quinine	

Kanamycin is cochleotoxic and most likely to cause unilateral hearing loss. Vestibular system is usually spared.

Streptomycin and gentamicin affect vestibular end organs, causing severe damage to sensory epithelium of cristae of all the semicircular canals.

Minocycline causes reversible vestibular symptoms like gait disturbance, nausea and vomiting but no nystagmus.

117. Answer (d)

Sensorineural hearing loss due to quinine, salicylates and furosemide is reversible if drug is stopped early.

118. Answer (b) (see Table 1.1)

119. Answer (a)

In general, outer hair cells are more vulnerable to ototoxicity than the inner hair cells. In aminoglycoside ototoxicity, outer hair cells of basal turn are affected first and then the damage spreads to apical turn. Once most of the outer hair cells are damaged, damage to inner hair cells proceeds in reverse order from apex to base.

120. Answer (d)

Adenoidectomy has no role in allergic rhinitis. Chronic otitis media with effusion, adenoid hyperplasia causing nasal obstruction, chronic sinusitis in children or recurrent otitis media in children improve with adenoid removal.

121. Answer (d)

Cochlear implant electrode(s) stimulate fibres of CN VIII or ganglion cells. It assumes CN VIII is normal to carry impulses. If CN VIII has been cut as in removal of acoustic neuroma cochlear implant is ineffective, instead a brain-stem implant is used to stimulate cochlear nuclei.

122. Answer (b)

Ossicular disruption with intact TM gives hearing loss, on an average, of about 54 dB. While ossicular disruption with perforation of tympanic membrane gives hearing loss of only 38 dB. This is because intact drum further impedes transmission of sound waves.

Complete obstruction of ear canal causes an average conductive loss of 30 dB.

123. Answer (b)

In Pendred syndrome child is born deaf. Thyroid enlargement appears in adolescence and becomes nodular in adulthood.

Alport's syndrome: Progressive glomerulonephritis.

Klippel-Feil syndrome: Congenital spinal deformities.

Usher syndrome: Retinitis pigmentosa.

124. Answer (e)

Mumps is the most common viral infection causing unilateral sensorineural hearing loss. Mumps can cause all complications listed from (a) to (d).

125. Answer (c)

Facial paralysis in pregnancy is seen more often in the third trimester. It is also common in patients with preeclampsia probably due to fluid and hormonal disturbance. It has nothing to do with fetal abnormalities. It can be treated with steroids. Steroids in third trimester pose little danger to fetal abnormalities.

126. Answer (b)

The facial nerve courses below the horizontal canal (see Figs 1.6 and 1.7).

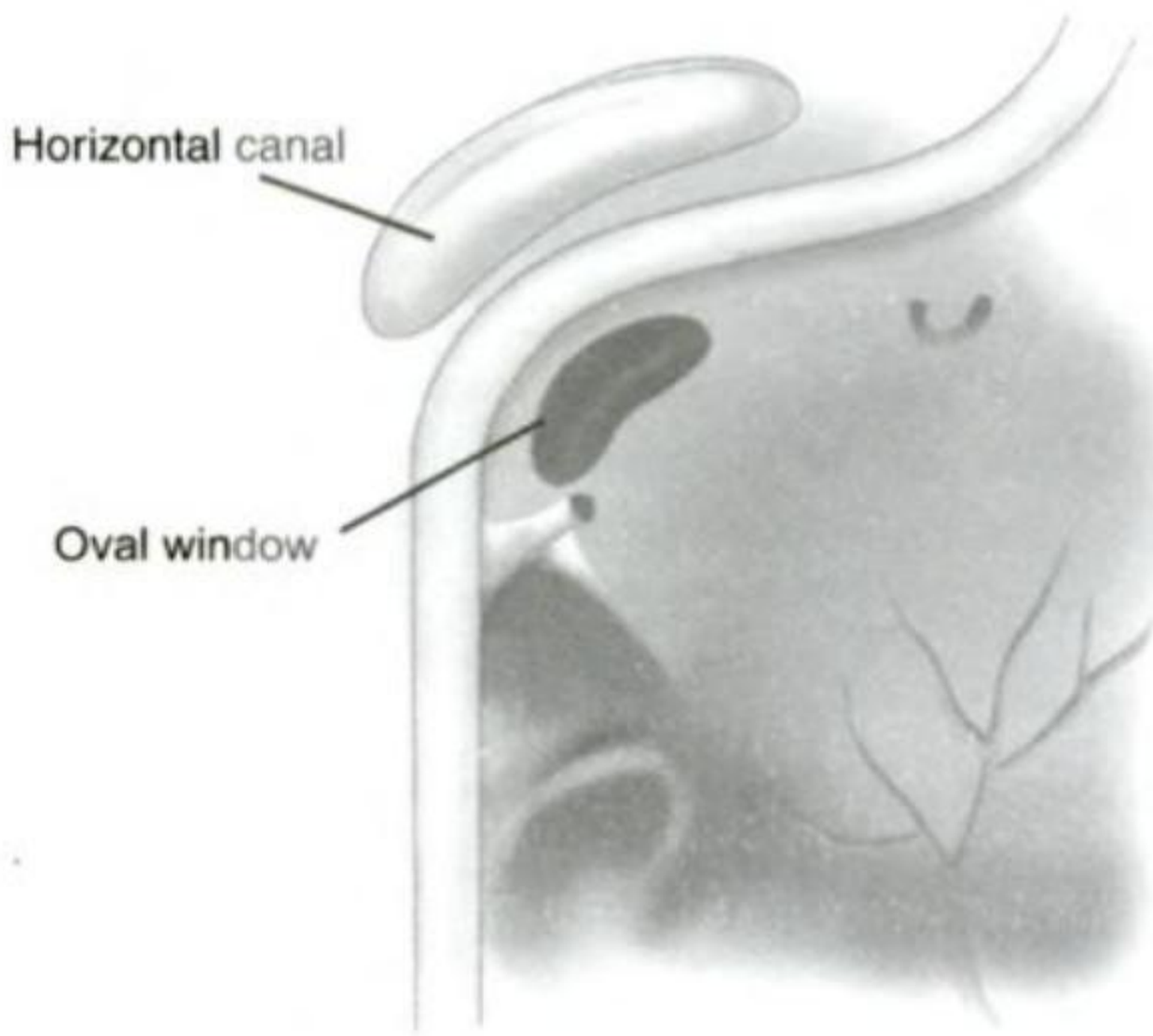

Fig. 1.6. Relationship of facial nerve to oval window and horizontal canal.

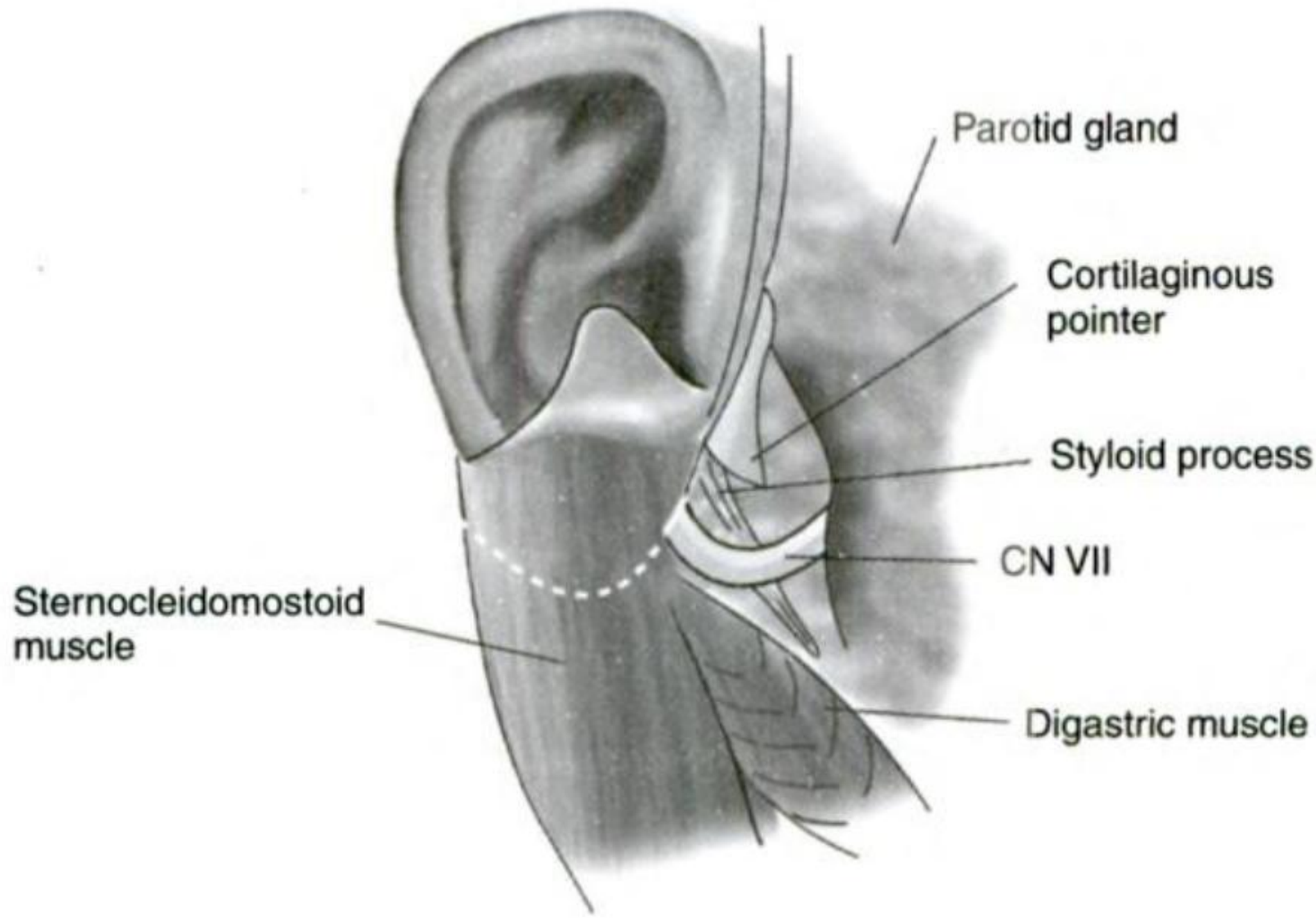

Fig: 1.7. Relationship of facial nerve to posterior belly of digastric and styloid process.

127. Answer (b)

Complete bilateral palsy of recurrent laryngeal nerves implies paralysis of all the adductor muscles of larynx (except cricothyroids) and the abductor muscles. This will not compromise the airway but will affect speech as the cords cannot be fully adducted for phonation.

If it were incomplete paralysis, abductors would be paralysed first (being phylogenically newer), completely adducting the cords. This leads to airway obstruction, but speech is good.

128. Answer (d)

Melkersson-Rosenthal syndrome is a condition of unknown aetiology. Facial paralysis is associated with circumoral oedema.

129. Answer (b)

Length of nerve in millimetres in various segments is given below (values given in brackets represent averages):

Intracranial	15–17	(16)
Intracanalicular	8–10	(8)
Labyrinthine	4.0	(4)
Tympanic	11.0	(8)
Mastoid	13.0	(12)
Parotid	15–20	(16)

Remember multiples of '4' as an *aide-mémoire*.

Labyrinthine segment is the shortest and the ratio of fallopian canal to the nerve is also the smallest. Narrowest part is at meatal foramen at the fundus of the internal auditory canal. Thus the nerve is most vulnerable to paralysis at this site in conditions which cause nerve oedema. Diameter of nerve at root entry zone is 1.6 mm and at meatal foramen 0.62 mm.

130. Answer (e)

Levator veli palatini is a muscle of soft palate and is supplied by cranial part of accessory through pharyngeal plexus. The trigeminal nerve supplies all the muscles of mastication such as temporalis masseter, lateral and medial pterygoid. CN V also supplies mylohyoid, anterior belly of digastric, tensor tympani and tensor veli palatini through its special visceral efferent fibres.

131. Answer (c)

Facial paralysis is idiopathic paralysis of CN VII. Diagnosis is made by exclusion of other causes of facial paralysis. Option (d) could have also been the answer but facial paralysis of any aetiology can give a dry eye because of failure to close the eye and evaporation of tear film from the cornea. Dry eye can also result from lesions of nerve proximal to geniculate ganglion. Some cases of facial paralysis may present with epiphora due to ectropion caused by paralysis of orbicularis oculi.

132. Answer (d)

Bell's palsy will cause paralysis of stapedius muscle and hyperacusis. Normally, stapedius muscle dampens the loud sounds entering the cochlea by immobilising the stapes.

Other muscles given in options (a), (b) and (c) do not have nerve supply from CN VII. Also note nerve supply of other muscles.

(i) Tensor tympani: CN V3

(ii) Tensor veli palatini: CN V3

(iii) Levator veli palatini: Cranial part of accessory through pharyngeal plexus.

133. Answer (b)

Anterior belly of digastric is supplied by mandibular division of trigeminal nerve. All mimetic muscles of face including procerus, risorius and occipitofrontalis are supplied by CN VII.

134. Answer (c)

At the level of aditus nerve always lies medial to short process of incus. As long as short process of incus is not disturbed and surgery is done lateral to it, nerve remains protected. Other landmarks (a), (b) and (d) are correct and are very important during middle ear and mastoid surgery.

135. Answer (a)

Masseter, temporalis, medial and lateral pterygoid muscles are all grouped as muscles of mastication. They are all supplied by trigeminal nerve.

Buccinator muscle is a second arch muscle supplied by the facial nerve.

136. Answer (c)

Geniculate ganglion is situated near the first genu of facial nerve. It is involved by herpes zoster virus causing facial paralysis and vesicular eruption in the sensory distribution of the nerve, i.e. concha, ear canal, retroauricular groove, palate and anterior two-third of tongue.

Scarpa's ganglion is situated in the lateral part of internal acoustic meatus. It contains bipolar cells. The peripheral processes of which supply the vestibular end organs while central processes form vestibular nerve.

Spiral ganglion is situated on the cochlear nerve in a canal running around the modiolus—the Rosenthal's canal. It also contains bipolar cells, the dendrites of which supply the sensory end organs of hearing and the axons form the cochlear nerve.

Stellate ganglion is situated on the neck of the first rib and is related to sympathetic chain. It is formed by union of the inferior cervical sympathetic ganglion and the first thoracic ganglion.

137. Answer (a)

Facial nerve carries sensory fibres from concha, postauricular area and posterosuperior canal wall. In cases of vestibular schwannoma, the CN VII is compressed causing hyperaesthesia of posterosuperior canal wall. This is also called *Hitzelberger sign*.

138. Answer (b)

All muscles derived from the second arch are supplied by CN VII. They include stapedius, posterior belly of digastric, stylohyoid, auricular muscles (anterior, superior and posterior) and all mimetic muscles of face including buccinator. Anterior belly of digastric is innervated by trigeminal (V_3 division) nerve.

139. Answer (d)

Ramsay Hunt syndrome is herpes zoster infection of geniculate ganglion of facial nerve. Herpetic lesions are seen in areas of skin or mucosa innervated by facial nerve. Facial nerve supplies concha and retroauricular groove via auricular branch of vagus. It also supplies secretomotor fibres to palate via greater auricular nerve. Tragus and the adjoining skin is supplied by auriculotemporal nerve, a branch of mandibular division of trigeminal (V_3).

140. Answer (c)

Bell's palsy is defined as idiopathic peripheral complete or incomplete paralysis of facial nerve. It implies that other causes of facial paralysis such as neurological, otological, overt viral and neoplastic have been excluded. Therefore, (a) and (b) choices being neurological are excluded. Though evidence supports that Bell's palsy could be viral, the infection is not obvious clinically and thus remains idiopathic paralysis. Dry eye is seen in all types of facial paralysis. It is due to evaporation of tear film as eye cannot be closed or due to poor tear secretion because of lesion being proximal to greater superficial petrosal nerve. Choice (d) is excluded as it does not say idiopathic facial paralysis.

141. Answer (a)

Secretomotor fibres to lacrimal glands leave at geniculate ganglion via greater petrosal nerve. Since injury is distal to this branch, lacrimation

will be preserved. However, there is loss of nerve supply to stapedius (absent stapedial reflex and also phonophobia) and loss of taste being carried by chorda tympani from anterior two-third of tongue.

142. Answer (c)

Carcinoma of middle ear occurs in cases of long-standing ear discharge—the chronic irritation is probably its causative factor.

Glomus tumour presenting as a polyp bleeds profusely on touch but the bleeding polyp or granulation tissue which is also friable is typical of carcinoma.

Nocturnal pain is again a feature of carcinoma and differentiates it from CSOM. Features which should alert an otolaryngologist to possibility of carcinoma of middle ear include:

(i) Severe nocturnal pain

(ii) Friable granulations or a polyp with tendency to bleed

(iii) Facial paralysis

(iv) Otitis externa refractory to treatment.

143. Answer (b)

Transverse fractures which are caused by frontal or occipital blow to head run in the transverse axis of temporal bone—from foramen magnum or jugular foramen to foramen spinosum. The fracture line traverses through and injures labyrinthine or eighth CN and may also injure facial nerve in its meatal or labyrinth segment. Facial nerve paralysis occurs in 50% of cases as against 20% seen in longitudinal fractures.

144. Answer (a)

Eighty per cent of temporal bone fractures are longitudinal with only 20% being transverse.

Longitudinal fractures occur due to a parietal blow and fracture line traverses from squamous part of temporal bone to foramen lacerum in the long axis of the bone. On the way it traverses through tegmen of middle ear, tears tympanic membrane, injures ossicles but does not damage cochlea. Thus hearing loss is of a conductive nature. Incidence of facial paralysis is 20% compared to 50% in transverse fractures.

145. Answer (d)

Recurrent facial paralysis has been seen in Bell's palsy (7–10%) diabetes, hypothyroidism, sarcoidosis, Melkersson's syndrome (congenital fissuring of tongue, swelling of lips and facial paralysis) and tumours such as acoustic neuroma.

146. Answer (c)

Iatrogenic facial palsy can occur in middle ear mastoid surgery. Though facial palsy can occur in myringoplasty, stapedectomy and ossicular reconstruction, it occurs more often as a complication of mastoidectomy.

Most common site of palsy in mastoidectomy is second genu or pyramidal segment. It occurs when lowering the facial ridge or failure to locate the mastoid antrum. Most common site of injury in middle ear surgery is tympanic segment of the nerve where dehiscences are seen more often.

147. Answer (d) (see Fig. 1.8).

Neural pathways for hearing are cochlea → CN VIII → cochlear nuclei → olivary complex → lateral lemniscus → inferior colliculus → auditory radiations and superior temporal gyrus.

Since there is damage to CN VIII, neural pathways have been interrupted distal to cochlea. Any device which stimulates cochlea or nerve fibres is not likely to help. Digital hearing aid and cochlear implants (which stimulate eighth nerve fibres in cochlea) will be ineffective. In brain-stem implant, electrodes stimulate cochlear nuclei and that is the only appropriate device to be used.

148. Answer (b)

Geniculate ganglion lies just anterior to processus cochleariformis.

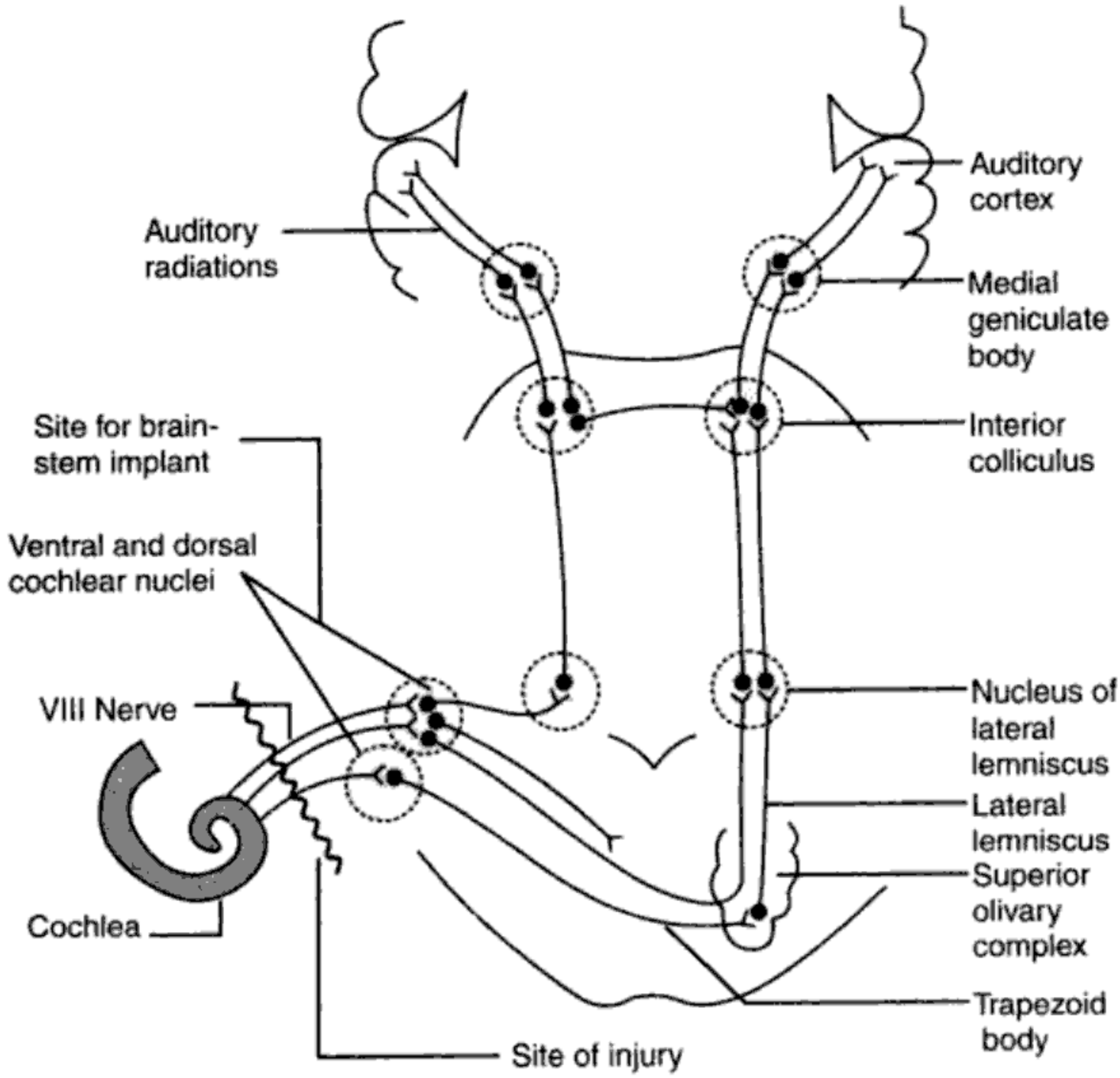

Fig. 1.8. Brain-stem implant: Since CN VIII has been severed, electrodes are used to stimulate cochlear nuclei.

Chapter 2

Nose, Paranasal Sinuses and Nasopharynx

1. The most effective medical treatment of nasal polypi is:

(a) Topical decongestant nasal drops
(b) Antihistaminics
(c) Topical steroids
(d) Non-steroid anti-inflammatory drugs (NSAIDs)

2. A patient with complete anosmia will still respond to inhalation of:

(a) Coffee
(b) Ammonia
(c) Vanilla
(d) Garli

3. Which one of the following arteries belongs to internal carotid system?

(a) Sphenopalatine
(b) Greater palatine
(c) Anterior ethmoidal
(d) Nasopalatine

4. All are true about congenital syphilis except:

(a) Perforation in the nasal septum
(b) Saddle nose deformity
(c) Snuffles in the newborn
(d) Atrophic rhinitis
(e) Mucocutaneous lesions

5. Common cold is most often caused by:

(a) Influenza virus
(b) Rhinovirus
(c) Adenovirus
(d) Respiratory syncytial virus

6. A 20-year-old female from Uttar Pradesh presents with nasal obstruction and crusting of nose. Examination revealed an infiltrating lesion involving the nasal vestibule and upper lip with broadening of nasal dorsum. Likely diagnosis is:

(a) Rhinosporidiosis
(b) Rhinoscleroma
(c) Fungal granuloma
(d) Nasal diphtheria

7. A biopsy taken from a granulomatous lesion of nose revealed Mikulicz's cells and eosinophilic structures in the cytoplasm of the plasma cells, the likely diagnosis is:

(a) Mucormycosis
(b) Rhinosporidiosis
(c) Rhinoscleroma
(d) Nasal leprosy

8. Drugs used in the treatment of rhinoscleroma include all except:

(a) Streptomycin
(b) Ciprofloxacin
(c) Tetracycline
(d) Erythromycin

9. All of the following are associated with Kartagener syndrome (immotile cilia syndrome) except:

(a) Bronchiectasis
(b) Sterility
(c) Chronic sinusitis
(d) Cleft palate

10. Pott's puffy tumour is related to:

(a) Infected cell in middle turbinate
(b) Tuberculous sinusitis
(c) Pyogenic infection of frontal sinus
(d) Cavernous sinus thrombosis

11. An 18-year-old girl presented with multiple nasal polypi in both nostrils with nasal obstruction and sinusitis. CT scan shows dense shadows in the sinuses. Histopathology did not show fungal invasion of tissues. All of the following treatments can be given except:

(a) Amphotericin B
(b) Intranasal corticosteroids
(c) Surgical removal
(d) Antihistaminics

12. Type of carcinoma of the sinonasal tract in wood-workers is:

(a) Adenocarcinoma
(b) Adenoid cystic carcinoma
(c) Squamous cell carcinoma
(d) Olfactory neuroblastoma

13. Risk factors associated with squamous cell carcinoma of the paranasal sinuses include all except:

(a) Nickel and chromium industry
(b) Leather industry
(c) Polycyclic hydrocarbons
(d) Mustard gas
(e) Furniture industry

14. In paranasal sinuses, osteoma commonly involves:

(a) Frontal sinus
(b) Maxillary sinus
(c) Ethmoid sinus
(d) Sphenoid sinus

15. Which of the following drugs is linked with rhinitis medicamentosa?

(a) Intranasal steroid spray
(b) Ipratropium bromide
(c) Xylometazoline
(d) Cocaine

16. In nasal smear number of eosinophils is increased in:

(a) Viral rhinitis
(b) Rhinitis medicamentosa
(c) Vasomotor rhinitis
(d) Non-allergic eosinophilic rhinitis
(e) Both (b) and (d)

17. Regarding ethmoidal infundibulum situated in lateral wall of nose, which of the following statements are true?

(a) It is situated medial to the uncinate process
(b) It communicates with nasal cavity through hiatus semilunaris

(c) Opening of the maxillary sinus is situated in it near its floor
(d) It cannot be localised even on CT scan

18. Most common factor linked to aetiology of maxillary sinusitis is:

(a) Primary immune deficiency
(b) Primary ciliary dyskinesia
(c) Mucosal swelling in ethmoid infundibulum
(d) Turbinal hypertrophy

19. In Caldwell-Luc operation, entry into the maxillary sinus is made through:

(a) Transethmoid approach
(b) Canine fossa
(c) Maxillary alveolus
(d) Middle meatal antrostomy

20. While performing external ethmoidectomy, anterior ethmoidal artery is located at frontoethmoidal suture line. Its distance from anterior lacrimal crest is:

(a) 12 mm
(b) 18 mm
(c) 24 mm
(d) 36 mm

21. Which one of the following drugs provides protection against nasal allergy when used just before exposure to allergen?

(a) Cromolyn sodium
(b) Pseudoephedrine
(c) Prednisolone orally
(d) Budesonide nasal spray

22. Formation of ethmoidal polyps:

23. Crusting of nasal cavity and foul smell:

24. Overuse of decongestant nasal drops:

25. Raised level of total IgE:

26. No effect of decongestant on the size of turbinates:

27. Young's operation:

In the group of questions (28–33) match the statement or phrase of the question with the lettered item. The lettered item may be used once, more than once or not at all:

(a) Maxillary sinus
(b) Frontal sinus
(c) Ethmoid sinus
(d) Sphenoid sinus

28. Acute infection causes diurnal headache:

29. Most common site for osteoma formation:

30. Opens in lower part of infundibulum:

31. Involved in multiple polypi:

32. Site for the origin of antrochoanal polyp:

33. Involved in Pott's puffy tumour:

34. A 10-year-old child presents with history of chronic sinusitis and multiple nasal polypi. He also suffers from recurrent chest infections and malabsorption syndrome. Which one of the following tests would be useful for diagnosis?

(a) Total IgE estimation

(b) ESR
(c) Level of angiotensin converting enzyme
(d) Sweat chloride

35. The ENT manifestation of Peutz-Jegher's syndrome with benign intestinal polyps is:

(a) Vocal polyp
(b) Perioral and buccal mucosal pigmentation
(c) Nasal polyps
(d) Sensorineural hearing loss

36. Vacuum headache is associated with:

(a) Pneumocephalus
(b) Frontal sinus
(c) CSF rhinorrhoea
(d) Excessive nose blowing

37. All are true about sphenopalatine ganglion except:

(a) It is located in infratemporal fossa
(b) It is anaesthetised by injection of local anaesthetic just above and behind the posterior end of middle turbinate
(c) It is anaesthetised by injecting local anaesthetic into greater palatine foramen and canal
(d) It supplies innervation to nose, palate and lacrimal gland

38. Uncinate process seen in the lateral wall of nose is a part of:

(a) Maxilla
(b) Ethmoid bone
(c) Palatine bone
(d) Lacrimal bone
(e) Inferior turbinate

39. Which of the following ganglion is associated with lacrimation?

(a) Otic
(b) Ciliary
(c) Sphenopalatine
(d) Gasserian

40. Vidian nerve section has been used in the treatment of:

(a) Excessive epiphora
(b) Excessive watery rhinorrhoea
(c) Excessive salivation
(d) All of the above

41. All of the following surgical procedures are used for allergic rhinitis except:

(a) Radiofrequency ablation of the inferior turbinate
(b) Laser ablation of the inferior turbinate
(c) Submucosal placement of silastic in inferior turbinate
(d) Inferior turbinectomy

42. The most appropriate management for antrochoanal polyp in children is:

(a) Caldwell-Luc operation
(b) Intranasal polypectomy
(c) Corticosteroids
(d) Wait and watch

43. Complications following septal abscess include all except:

(a) Severe epistaxis
(b) Depression of nasal bridge
(c) Meningitis

(d) Cavernous sinus thrombophlebitis

44. Rhinophyma is associated with: (*AIPGME, 2007*)

(a) Hypertrophy of sebaceous glands
(b) Hypertrophy of sweat glands
(c) Hyperplasia of endothelial cells
(d) Hyperplasia of epithelial cells

45. During inspiration the main current of airflow in a normal nasal cavity is through: (*AIPGME, 2006*)

(a) Middle part of the cavity in the middle meatus in a parabolic curve
(b) Lower part of the cavity in the inferior meatus in a parabolic curve
(c) Superior part of the cavity in the superior meatus
(d) Through olfactory area

46. A 25-year-old boy received 10-day treatment with amoxicillin for acute sinusitis. The symptoms and signs of disease still persist which of the following antibiotics should now be used?

(a) Cephalexin
(b) Ampicillin
(c) Erythromycin
(d) Both amoxicillin and erythromycin
(e) Amoxicillin with clavulanic acid

47. Structures which show indentations into the cavity of sphenoid sinus include all except:

(a) Internal carotid artery
(b) Optic nerve
(c) Vidian nerve
(d) Frontal branch of trigeminal
(e) Maxillary division of trigeminal

48. In an average adult the distance between opening of sphenoid sinus and nasal spine is:

(a) 5 cm
(b) 6 cm
(c) 7 cm
(d) 8 cm

49. A 4-year-old child presents with bleeding from right side of nose. He also gets purulent discharge from the same side. The likely diagnosis is:

(a) Septal deviation with right maxillary sinusitis
(b) Unilateral channel atresia
(c) Antrochoanal polyp
(d) Foreign body

50. Nasal polyps develop in patients with:

(a) Aspirin intolerance
(b) Fungal sinusitis
(c) Chronic rhinosinusitis of non-allergic origin
(d) All of the above
(e) Only (a) and (b)

51. Which of the following statements is/are correct? An antrochoanal polyp:

(a) Arises from maxillary sinus and grows posteriorly
(b) Is often a unilateral condition
(c) Often affects adult males
(d) Is best treated by endoscopic sinus surgery
(e) Should always be treated by Caldwell-Luc operation

52. Which of the following statements is/are correct about nasal polyps?

(a) Commonly arise from ethmoid sinuses

(b) Arise from uncinate process and middle turbinate
(c) Can arise from inferior meatus
(d) Are more common in adults than children
(e) Are premalignant

53. Which of the paranasal sinuses is most commonly involved in malignancy?

(a) Maxillary
(b) Ethmoid
(c) Frontal
(d) Sphenoid

54. Which of the following environmental factors is responsible for nasal and sinus malignancy?

(a) Nickel
(b) Chromium
(c) Wood dust
(d) Zinc
(e) All of the above

55. 'Bleeding polyp' of the nose is another name for:

(a) Antrochoanal polyp
(b) Juvenile angiofibroma
(c) Haemangioma of nasal septum
(d) Rhinosporidiosis

56. A 3-year-old child presented with a unilateral single polyp. It does not bleed. What will be your line of management?

(a) Nasal polypectomy under general anaesthesia
(b) Perform a biopsy
(c) Investigate for intranasal meningocele
(d) Observe the child periodically
(e) Investigate for cystic fibrosis

57. Which of the following statements is/are true about inverted papilloma arising from the lateral wall of nose?

(a) Polypoidal masses resemble allergic nasal polyps
(b) Affects females in adolescent period
(c) Sends early distant metastases
(d) Treatment requires maxillectomy with post-operative radiotherapy

58. Which of the following statements is/are true about ethmoidal malignancy?

(a) Most of the ethmoidal cancers are extensions of carcinoma maxilla
(b) Nodal metastases are rare but distant metastases are frequently seen
(c) Patients with ethmoidal cancer die of meningitis
(d) Most of them are adenoid cystic carcinoma on histology

59. All of the following could result from infection within the right cavernous sinus except:

(a) Loss of pupillary light reflex
(b) Loss of corneal blink reflex
(c) Ptosis
(d) Right ophthalmoplegia

60. An elderly diabetic has left-sided orbital cellulitis. CT scan of paranasal sinuses shows evidence of left-sided maxillary sinusitis. Gram-stained smear of orbital exudates shows irregularly branching septate hyphae. The following is the most likely aetiological agent:

(a) *Aspergillus*
(b) *Rhizopus*
(c) *Mucor*
(d) *Candida*

61. The space between bulla ethmoidalis and uncinate process is called:

(a) Agger nasi
(b) Olfactory cleft
(c) Frontonasal duct
(d) Hiatus semilunaris

62. Arteries which take part in Kiesselbach's plexus include all except:

(a) Anterior ethmoidal
(b) Greater palatine
(c) Superior labial
(d) Inferior labial

63. Constituents of nasal septum include all except:

(a) Vomer
(b) Perpendicular plate of palatine
(c) Quadrangular cartilage
(d) Maxillary crest

64. Which of the following is/are true about nasopharyngeal cancer?

(a) Most common nerve involved is CN X
(b) Causes unilateral serous otitis media
(c) Treatment of choice is radiotherapy
(d) Metastasises to cervical lymph nodes
(e) EB virus is responsible

65. A 45-year-old patient presents with conductive hearing loss, facial pain in temporoparietal and the lower jaw area, and immobile soft palate on the right side. The probable diagnosis is:

(a) Sluder's neuralgia
(b) Costen's syndrome

(c) Trotter's syndrome
(d) Wallenberg's syndrome

66. Which of the following paranasal sinuses is most commonly involved in malignancy?

(a) Frontal
(b) Maxillary
(c) Sphenoid
(d) Ethmoid

67. In relation to opening of maxillary sinus, the nasolacrimal duct courses:

(a) Anterior
(b) Posterior
(c) Lateral
(d) Medial

68. The current treatment of antrochoanal polyp in a 30-year-old man is: (*AIIMS, November 2005*)

(a) Intranasal polypectomy
(b) Caldwell-Luc operation
(c) Endoscopic sinus surgery
(d) Lateral rhinotomy and excision

69. Opening of nasolacrimal duct is situated in:

(a) Superior meatus
(b) Middle meatus
(c) Ethmoid infundibulum
(d) Inferior meatus

70. Commonest cause for acute sinusitis is:

(a) Swimming/Diving
(b) Acute rhinitis

(c) Nasal tumours
(d) Deviated nasal septum

71. Surface landmarks on the mastoid to locate the antrum include all except:

(a) Temporal line
(b) Posterosuperior margin of bony meatus
(c) Donaldson's line
(d) Cribriform area

72. Trismus accompanying peritonsillar abscess is due to spasm of which muscle?

(a) Masseter
(b) Pharyngeal constrictors
(c) Medial pterygoid
(d) Temporalis

73. Lymphoid tissue called Waldeyer's ring is situated in:

(a) Nasopharynx
(b) Oropharynx
(c) Both nasopharynx and oropharynx
(d) Base of tongue

74. Which of the following statement is not correct for ethmoidal polypi?

(a) Allergy is an aetiological factor
(b) Occur in the first decade of life
(c) Are bilateral
(d) Are often associated with bronchial asthma

75. In a patient with multiple bilateral nasal polyps with X-ray showing opacity in the paranasal sinuses. The treatment consists of all of the following, except:

(a) Epinephrine
(b) Corticosteroids

(c) Amphotericin-B
(d) Antihistamines

76. Squamous cell carcinoma of maxilla—$T_3N_0M_0$ staging. Treatment is:

(a) Radiotherapy
(b) Maxillectomy
(c) Radiotherapy and maxillectomy
(d) Maxillectomy and chemotherapy

77. Which of the following sinuses drain anterior to basal lamella?

(a) Posterior ethmoid cells
(b) Sphenoid sinus
(c) Maxillary sinus
(d) Frontal sinus
(e) Agger nasi cells

78. Transillumination test was commonly performed to diagnose infection of:

(a) Maxillary sinus
(b) Frontal sinusitis
(c) Sphenoid sinus
(d) Both (a) and (b)
(e) Both (a) and (c)

79. Orodental fistula is most commonly seen after extraction of:

(a) First premolar
(b) Second premolar
(c) First molar
(d) Second molar

80. Treatment of choice for an antrochoanal polyp in a child is:

(a) Polypectomy
(b) Polypectomy with Caldwell-Luc operation
(c) Polypectomy with intranasal antrostomy
(d) Horgan's operation

81. Posterior fontanelle of nose is situated in:

(a) Inferior meatus
(b) Middle meatus
(c) Superior meatus
(d) Both middle and inferior meatus

82. Which of the following is the common aetiological agent in paranasal sinus mycoses?

(*AIIMS, May 2006*)

(a) *Aspergillus* species
(b) Histoplasma
(c) *Conidiobolus coronatus*
(d) *Candida albicans*

83. Common site for CSF rhinorrhoea is:

(*AIPGME, 2007*)

(a) Ethmoidal sinus
(b) Frontal sinus
(c) Petrous
(d) Cribriform plate

84. The most common site of leak in CSF rhinorrhoea is:

(*AIPGME, 2005*)

(a) Sphenoid sinus
(b) Frontal sinus
(c) Cribriform plate
(d) Tegmen tympani

85. CSF rhinorrhoea is diagnosed by: (*AIPGME, 2007*)

(a) Beta-2 microglobulin
(b) Beta-2 transferrin
(c) Thyroglobulin
(d) Transthyretin

86. Chances of metastases are highest in cancer of:

(a) Buccal mucosa
(b) Hard palate
(c) Paranasal sinuses
(d) Nasopharynx

87. Recurrent or residual cancer of nasopharynx after supervoltage radiotherapy is treated by:

(a) Intracavitary radioactive implants
(b) Cryotherapy
(c) Surgery
(d) All of the above

88. Prognosis of nasopharyngeal cancer is better in which of the following conditions?

(a) Keratinising squamous cell carcinoma
(b) Non-keratinising and anaplastic carcinoma
(c) Very young patient
(d) Very old patient

89. Nasopharyngeal chordoma originates from:

(a) Torus tubarius
(b) Rathke's pouch
(c) Notochord
(d) Pharyngeal bursa

90. Structures passing between superior and middle constrictors are:

(a) Glossopharyngeal nerve

(b) Stylopharyngeus muscle
(c) Stylohyoid muscle
(d) Both (a) and (c)

91. Structure(s) passing between middle and inferior constrictor muscles of pharynx is/are:

(a) Superior laryngeal artery and vein
(b) Styloglossus
(c) Internal laryngeal branch of superior laryngeal nerve
(d) Only (a) and (c)
(e) All of the above

92. A 15-year-old boy has unilateral nasal obstruction, mass in the cheek and epistaxis, the diagnosis is:

(a) Cancer of nasopharynx
(b) Inverted papilloma nose
(c) Maxillary sinusitis
(d) Angiofibroma

93. Juvenile angiofibroma commonly arises from:

(a) Fossa of Rosenmüller
(b) Posterior border of nasal septum
(c) Sphenopalatine foramen
(d) Posterosuperior wall of nasopharynx

94. Histological diagnosis of angiofibroma of nasopharynx is made by:

(a) Punch biopsy
(b) Excision biopsy
(c) FNAC
(d) Exfoliative cytology

95. Antral (Holman-Miller) sign is a feature of:

(a) Acoustic neuroma
(b) Glomus tumour
(c) Nasopharyngeal fibroma
(d) Coalescent mastoiditis

96. Clinical features of nasopharyngeal angiofibroma are:

(a) Occurs in third to fourth decade
(b) Adolescent male
(c) Epistaxis and nasal obstruction is the cardinal symptom
(d) Radiotherapy is the treatment of choice
(e) Arises from posterior nasal cavity

97. Nasopharyngeal cancer can involve:

(a) Nasal cavity
(b) Oropharynx
(c) Oral cavity
(d) Tympanic cavity
(e) Orbit

98. Treatment of choice in angiofibroma of nasopharynx is:

(a) External beam radiotherapy
(b) Surgical excision
(c) Chemotherapy
(d) Hormonal therapy
(e) Wait and watch for spontaneous regression

99. Which of the following are not true about angiofibroma of nasopharynx?

(a) Equal incidence in male and female
(b) Benign tumour
(c) Encapsulated

(d) Erodes bone
(e) Recurs on incomplete removal

100. Thornwaldt's cyst is seen in:

(a) Larynx
(b) Nasopharynx
(c) Base of tongue
(d) Floor of mouth

101. Which of the following is/are not true about nasopharyngeal angiofibroma?

(a) Most commonly seen in adolescent boys
(b) Occasionally can metastasise
(c) Best treated by radiation therapy
(d) Can spread intracranially

102. Horner's syndrome consists of all of the following features except:

(a) Ptosis
(b) Dilated pupil
(c) Anhidrosis
(d) Endophthalmos

103. The most common site for rhabdomyosarcoma of the head and neck is:

(a) Nasopharynx
(b) Orbit
(c) Middle and mastoid
(d) Paranasal sinuses

104. Nasopharyngeal obstruction due to adenoids can lead to all except:

(a) Sinusitis
(b) Serous otitis media

(c) Cor pulmonale
(d) Proptosis

105. Nasopharyngeal carcinoma can present with any of the following except:

(a) Squint
(b) Mass in the parotid
(c) Facial pain
(d) Blindness
(e) Mass in the neck

106. Pharyngeal bursa is a site of origin for:

(a) Craniopharyngioma
(b) Chordoma
(c) Thornwaldt's cyst
(d) Rathke's cyst

107. Adenoid facies include all except:

(a) Open mouth with underslung lower jaw
(b) Pinched nose
(c) High-arched palate
(d) Crowding of teeth
(e) Protruding tongue

108. All of the following statements are true about adenoids except:

(a) They are situated in the roof and posterior wall of nasopharynx
(b) They are present at birth and disappear by puberty
(c) They are lined by squamous epithelium
(d) They do not have a capsule on external surface
(e) They do not have crypts

109. Atlantoaxial dislocation can follow as a complication of all except:

(a) Adenotonsillectomy
(b) Nasopharyngeal infection
(c) Peritonsillitis
(d) Oesophagoscopy in children

110. An 18-year-old boy presented with repeated epistaxis and there was a mass arising from the lateral wall of his nose extending into the nasopharynx. It was decided that he should be operated. All of the following are true regarding his management except that:

(a) He requires adequate amount of blood to be transfused
(b) A lateral rhinotomy approach may be used
(c) Transpalatal approach is used
(d) Transmaxillary approach is used

111. Most common malignant tumour of nasopharynx in children is:

(a) Lymphoma
(b) Rhabdomyosarcoma
(c) Carcinoma
(d) Neuroblastoma
(e) Malignant teratoma

112. Juvenile angiofibroma responds to following modalities of treatment except:

(a) Hormones
(b) Surgical excision
(c) Intensity-modulated radiotherapy
(d) Immunotherapy

113. A 6-year-old child presented with history of recurrent upper respiratory tract infections, mouth breathing,

nasal obstruction and hearing impairment. Management will be:

(AIIMS, November 2006 and May 2007)

(a) Tonsillectomy
(b) Adenoidectomy with grommet insertion
(c) Myringotomy with grommet
(d) Myringotomy

114. Rhinolalia clausa is associated with all of the following except: *(AIPGME, 2007)*

(a) Allergic rhinitis
(b) Palatal paralysis
(c) Adenoids
(d) Nasal polyps

Answer Key

1. (c)
2. (b)
3. (c)
4. (e)
5. (b)
6. (b)
7. (c)
8. (d)
9. (d)
10. (c)
11. (a)
12. (a)
13. (e)
14. (a)
15. (c)
16. (d)
17. (b) and (c)
18. (c)
19. (b)
20. (c)
21. (a)
22. (d)
23. (a)
24. (b)
25. (d)
26. (c)
27. (a)
28. (b)
29. (b)
30. (a)
31. (c)
32. (a)
33. (b)
34. (d)
35. (b)
36. (b)
37. (a)
38. (b)
39. (c)
40. (b)
41. (c)
42. (b)
43. (a)
44. (a)
45. (a)
46. (e)
47. (d)
48. (c)
49. (d)
50. (d)
51. (a), (b) and (d)
52. (a), (b) and (d)
53. (a)
54. (a), (b) and (c)
55. (c)
56. (c)
57. (a)
58. (a) and (c)
59. (a)
60. (a)
61. (d)
62. (d)
63. (b)
64. (b), (c), (d) and (e)
65. (c)
66. (b)
67. (a)
68. (c)
69. (d)
70. (b)
71. (c)
72. (c)
73. (c)
74. (b)
75. (a)
76. (c)
77. (c), (d) and (e)
78. (d)
79. (c)
80. (a)

81. (b)
82. (a)
83. (a) and (d)
84. (c)
85. (b)
86. (d)
87. (d)
88. (a)
89. (c)
90. (a) and (c)
91. (d)
92. (d)
93. (c)
94. (b)
95. (c)
96. (b), (c) and (e)
97. (a), (b), (d) and (e)
98. (b)
99. (a) and (c)
100. (b)
101. (b) and (c)
102. (b)
103. (b)
104. (d)
105. (b)
106 (c)
107. (e)
108. (c)
109. (c)
110. (c)
111. (b)
112. (d)
113. (b)
114. (b)

Explanations to Answers

1. Answer (c)

Topical corticosteroids cause regression of nasal polypi. Antihistaminics do not help in regressing polypi. NSAIDs can actually lead to formation of nasal polypi.

2. Answer (b)

Smell of coffee, vanilla and garlic is sensed by olfactory system. Vapours of ammonia are so strong that they stimulate somatic sensory fibres (V nerve). Ammonia is never used to test sense of smell.

3. Answer (c)

Both external and internal carotid arterial systems supply blood to the nose. Anterior and posterior ethmoidal arteries supplying the upper part of nose are branches of internal carotid systems.

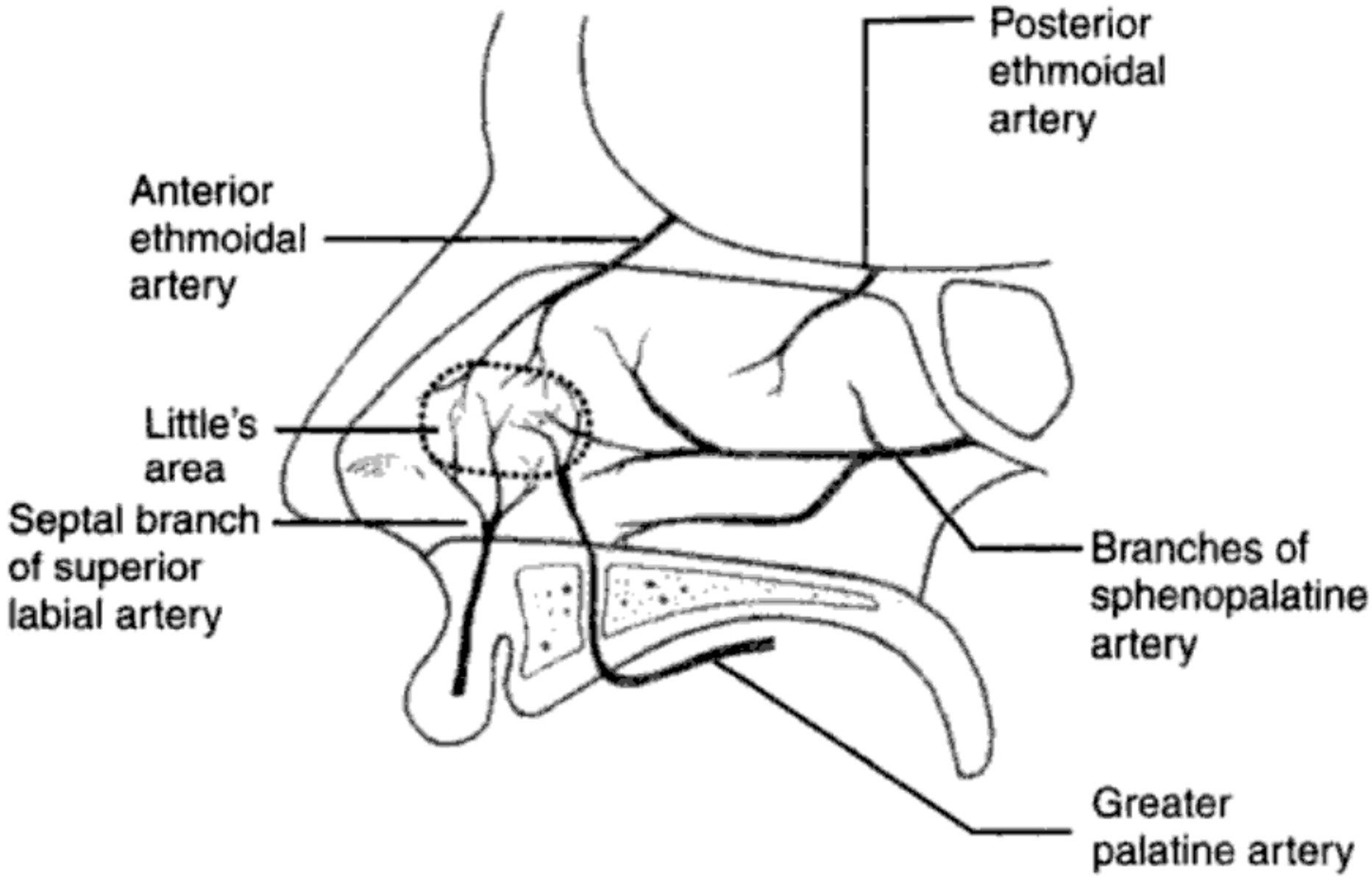

Fig. 2.1. Anterior and posterior ethmoidal arteries belong to internal carotid system while all others are from external carotid system.

4. Answer (e)

Mucocutaneous lesions are seen in secondary syphilis. Cutaneous lesions mostly involve trunk and extremities. Mucous lesions are in the form of erythematous patches. Painless ulcers like aphthous ones in the oral cavity and pharynx.

5. Answer (b)

In more than 50% cases, common cold is caused by rhinovirus of which there are more than 100 serotypes. Other viruses causing common cold are corona, influenza, parainfluenza virus, respiratory syncytial, and adenoviruses.

6. Answer (b)

Rhinoscleroma is common in northern states of India. It is caused by *Klebsiella rhinoscleromatis*—a capsulated gram-negative coccobacillus. The lesion passes through catarrhal, granulomatous and cicatricial stages. Nose is the most frequent site involved. Lesion begins at the mucocutaneous region of nasal vestibule and infiltrates the nasal vestibule, septum and upper lip resulting in broadening of nose and woody hard infiltration of lip.

7. Answer (c)

Mikulicz's cells are foamy histiocytes teaming with gram-negative coccobacilli in the cytoplasm.

Eosinophilic structures seen in the cytoplasm of plasma cells are called *Russell bodies*. Both these structures are characteristics of rhinoscleroma. Diagnosis of rhinoscleroma is made on biopsy and culture of tissues for causative bacilli.

8. Answer (d)

Drugs used for treatment of rhinoscleroma are streptomycin (1 g/day), ciprofloxacin (1 g/day) or tetracycline (2 g/day). Treatment is continued till clinical improvement and negative tissue cultures are obtained.

9. Answer (d)

Kartagener syndrome consists of bronchiectasis, chronic sinusitis, sterility and situs inversus. It is a disorder of ciliary motility. There is a genetic defect in the dynein complexes of axonemes.

10. Answer (c)

Pott's puffy tumour is a complication of pyogenic infection of frontal sinus. Pus collects under the periosteum on the anterior surface of the frontal sinus with associated oedema of skin and subcutaneous tissues.

11. Answer (a)

The clinical picture and CT findings in the above patient indicate a diagnosis of allergic fungal rhinosinusitis. It is a type I hypersensitivity presenting with nasal polypi. CT findings are hyperdense material in the sinus cavity. Histologically no tissue invasion by fungus is seen though fungus can be stained and cultured from the tissues. Since tissue invasion by fungus is absent, there is no need for amphotericin B, though all other modes of treatment would be required to treat nasal polypi and type I hypersensitivity reaction.

12. Answer (a)

Woodworkers are 540 times more prone to get adenocarcinoma of ethmoids.

13. Answer (e)

Wood dust associated with furniture industry causes adenocarcinoma. All others have been associated with squamous cell carcinoma of paranasal sinuses.

14. Answer (a)

Osteomas commonly involve frontal sinus, followed by ethmoid and maxillary in that order.

15. Answer (c)

Xylometazoline is a vasoconstrictor. It immediately relieves nasal congestion but may be followed by a rebound congestion which compels the patient to use it more frequently. With prolonged use, turbinates get hypertrophied.

16. Answer (d)

Increased number of eosinophils on nasal smear is seen in allergic rhinitis, non-allergic eosinophilic rhinitis and aspirin sensitivity.

17. Answer (b) and (c)

Ethmoidal infundibulum is like a curved canal situated between the lamina papyracea laterally and the uncinate process medially. Its floor is formed by the meeting of above two structures. It communicates with nasal cavity through hiatus semilunaris. It can be easily localised in CT scan of paranasal sinuses on coronal cuts.

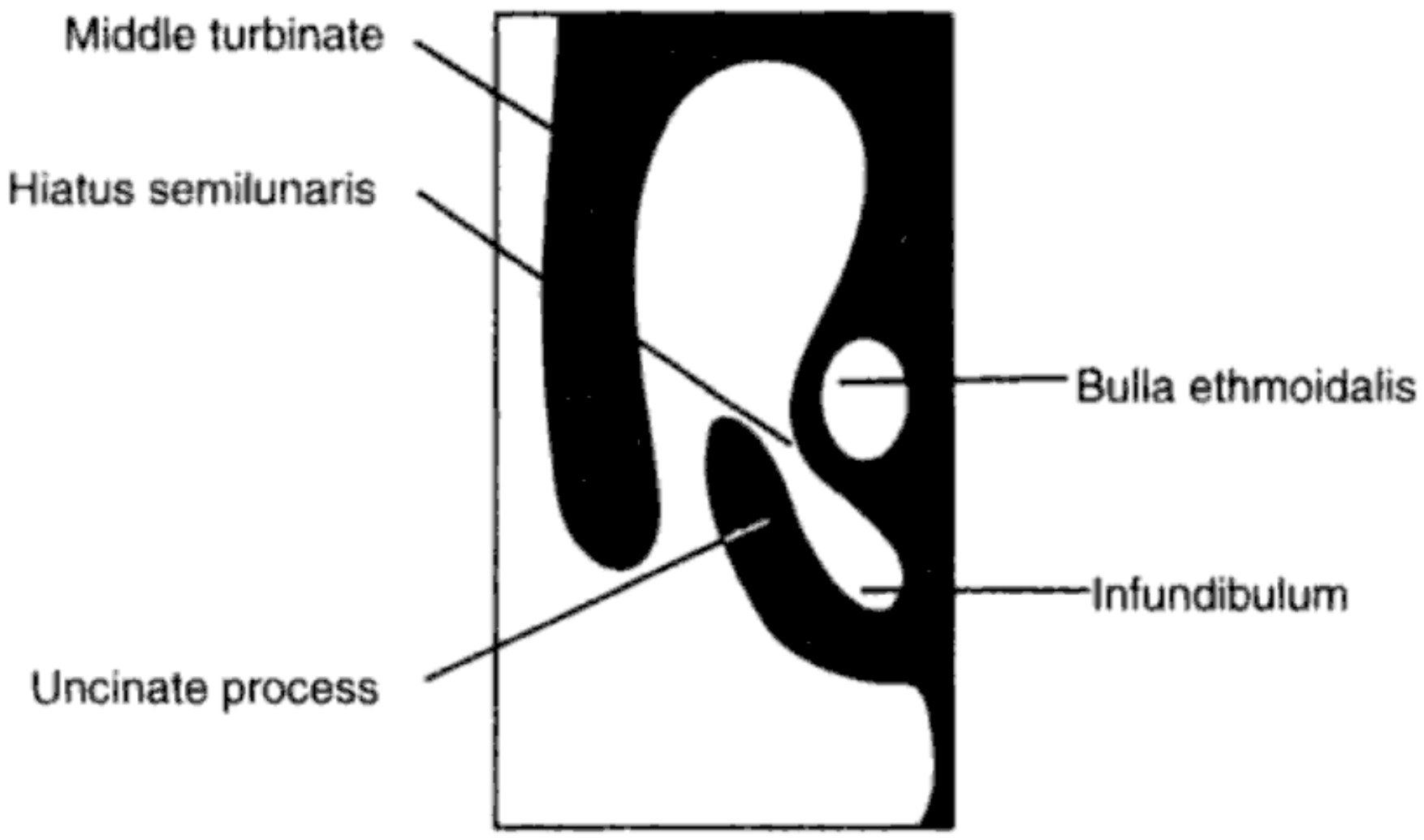

Fig. 2.2. Coronal section showing ethmoidal infundibulum.

18. Answer (c)

Maxillary sinus drains into ethmoidal infundibulum. Blockage of infundibulum due to mucosal swelling blocks the drainage and ventilation of maxillary sinus causing sinusitis.

19. Answer (b)

In Caldwell-Luc operation, maxillary sinus is approached by a sublabial incision and canine fossa. Maxillary sinus is also approached through middle meatal antrostomy in endoscopic sinus surgery. Transethmoid approach is used for sphenoid sinus.

20. Answer (c)

Anterior ethmoidal artery is located approximately 24 mm posterior to anterior lacrimal crest along the frontoethmoidal suture. Posterior ethmoidal artery is situated further back, i.e. 12 mm from the anterior

ethmoidal artery. Optic nerve is situated 6 mm still posterior to posterior ethmoidal artery.

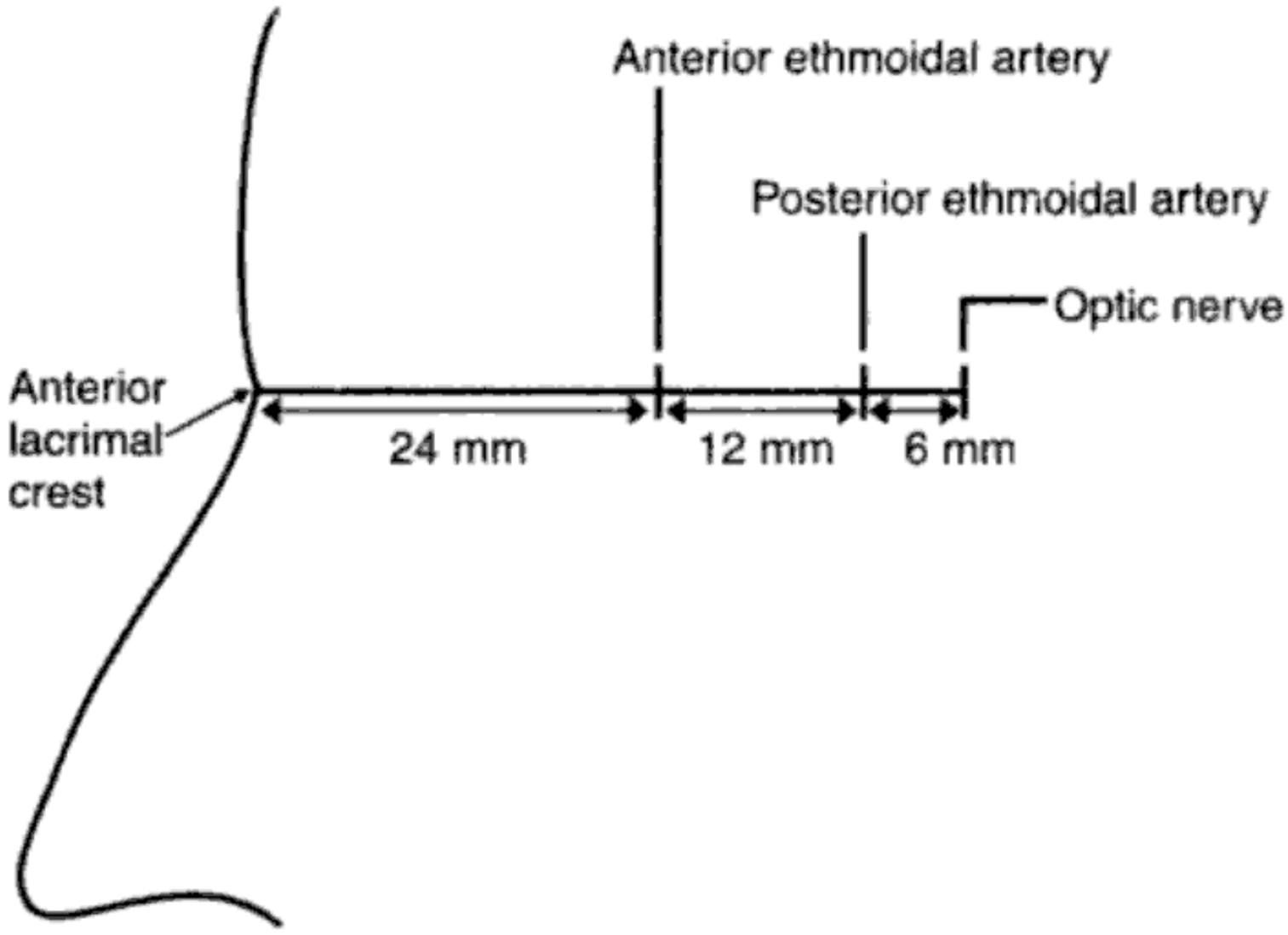

Fig. 2.3. Relationship between anterior and posterior ethmoidal vessels and optic nerve.

21. Answer (a)

Cromolyn sodium prevents mast cell degranulation and thus prevents symptoms of allergy. Pseudoephedrine is oral nasal decongestant and relieves nasal obstruction.

Intranasal steroid sprays like budesonide take a few days for onset of action.

22. Answer (d)

23. Answer (a)

24. Answer (b)

25. Answer (d)

26. Answer (c)

27. Answer (a)

28. Answer (b)

29. Answer (b)

30. Answer (a)

31. Answer (c)

32. Answer (a)

33. Answer (b)

34. Answer (d)

Presence of chronic sinusitis, multiple nasal polypi and malabsorption point towards cystic fibrosis and therefore sweat chloride test would be useful.

35. Answer (b)

Polyps in Peutz-Jegher's syndrome are seen in small intestine. However, macules due to deposition of melanin may appear at mucocutaneous junction of oral cavity (perioral), nasal cavity (perinasal), orbit or buccal mucosa for which ENT consultation is sought.

36. Answer (b)

When ostium of frontal sinus is blocked by oedema of acute rhinitis, no exchange of air takes place. Oxygen already present in the sinus is absorbed, causing relative negative pressure. This vacuum is responsible for headache.

Pneumocephalus is presence of air in the cranial cavity, usually following trauma. Tension pneumocephalus causes brain compression.

37. Answer (a)

Sphenopalatine ganglion is situated in pterygopalatine fossa and suspended from the maxillary division of the trigeminal nerve. Through vidian nerve, it supplies secretomotor fibres to the nasal, palatal and lacrimal glands.

38. Answer (b)

Uncinate process is a part of ethmoid bone. It forms medial boundary of the ethmoid infundibulum. Maxillary and sometimes the frontal sinus drains into the infundibulum, lateral to uncinate process.

39. Answer (c)

Secretomotor fibres for lacrimal gland arise from the facial nerve at geniculate ganglion, travel in greater petrosal nerve and join the

sphenopalatine ganglion as vidian nerve. After relay in the ganglion, they are distributed to lacrimal gland.

40. Answer (b)

Vidian nerve, also called nerve of pterygoid canal, is formed by the greater petrosal nerve and deep petrosal nerve. Greater petrosal nerve carries secretomotor fibres to nasal glands. Section of this nerve relieves excessive rhinorrhoea of vasomotor rhinitis. Though the nerve also carries secretomotor fibres to lacrimal gland and to some extent will decrease lacrimation, the section of this nerve is not used for the treatment of epiphora.

41. Answer (c)

Allergic rhinitis causes hypertrophy of turbinates and nasal obstruction. Procedures (a), (b) and (d) reduce the size of inferior turbinate, providing better patency. Submucosal placement of silastic in inferior turbinate will further impair the nasal patency.

42. Answer (b)

Caldwell-Luc is avoided in children.

43. Answer (a)

Septal abscess rapidly destroys septal cartilage, leading to supratip depression. Similarly it causes septal perforation. Infection can also spread to meningitis and cavernous sinus, leading to meningitis and cavernous sinus thrombophlebitis.

44. Answer (a)

Rhinophyma is also called *potato tumour* due to hypertrophy of sebaceous glands. It is seen in cases of acne rosacea.

45. Answer (a)

During inspiration, the inspiratory air current mainly passes through the middle part of nasal cavity. It mainly passes through (i) the middle meatus and olfactory cleft close to the medial surface of middle turbinate, and (ii) to a lesser extent above the middle turbinate through the superior meatus and sphenoethmoidal recess.

Practically no air current passes through inferior meatus as it gets deflected by its anterior end to anterior end of middle turbinate. Similarly, little air passes through olfactory area hence it requires one to sniff up for air current to reach olfactory area to appreciate smell.

During expiration, air currents follow the same path but form eddies at the anterior end of middle turbinate and limen nasi, and thus aerates the middle meatus and paranasal sinuses.

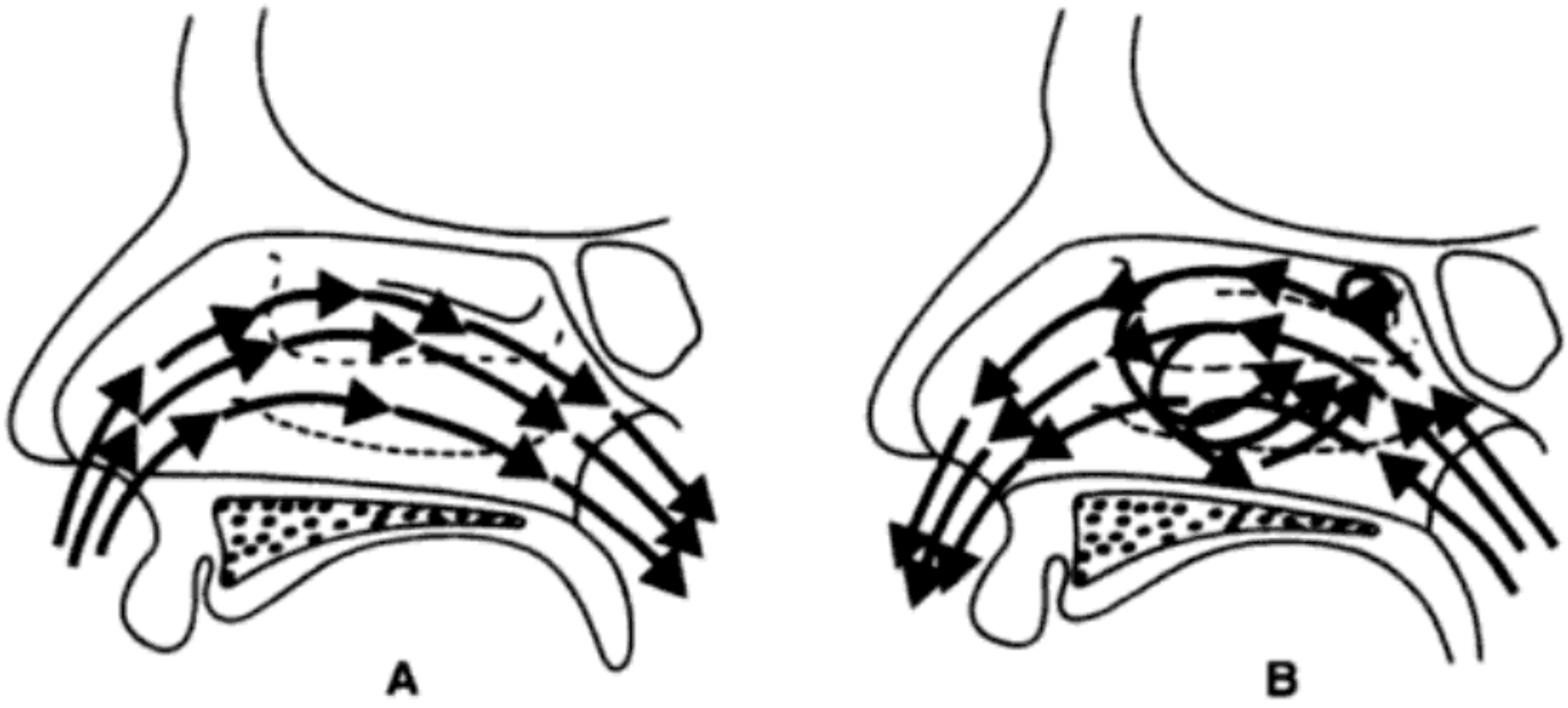

Fig. 2.4. Physiology of nasal airflow. **A.** Inspiration. **B.** Expiration.

46. Answer (e)

Acute sinusitis is commonly caused by *Streptococcus pneumoniae*, *Haemophilus influenzae*, *Moraxella catarrhalis*. Many of the strains of *H. influenzae* and *M. catarrhalis* are beta lactamase positive and resistant to amoxicillin and ampicillin. Drug of choice is now amoxicillin with clavulanic acid.

47. Answer (d)

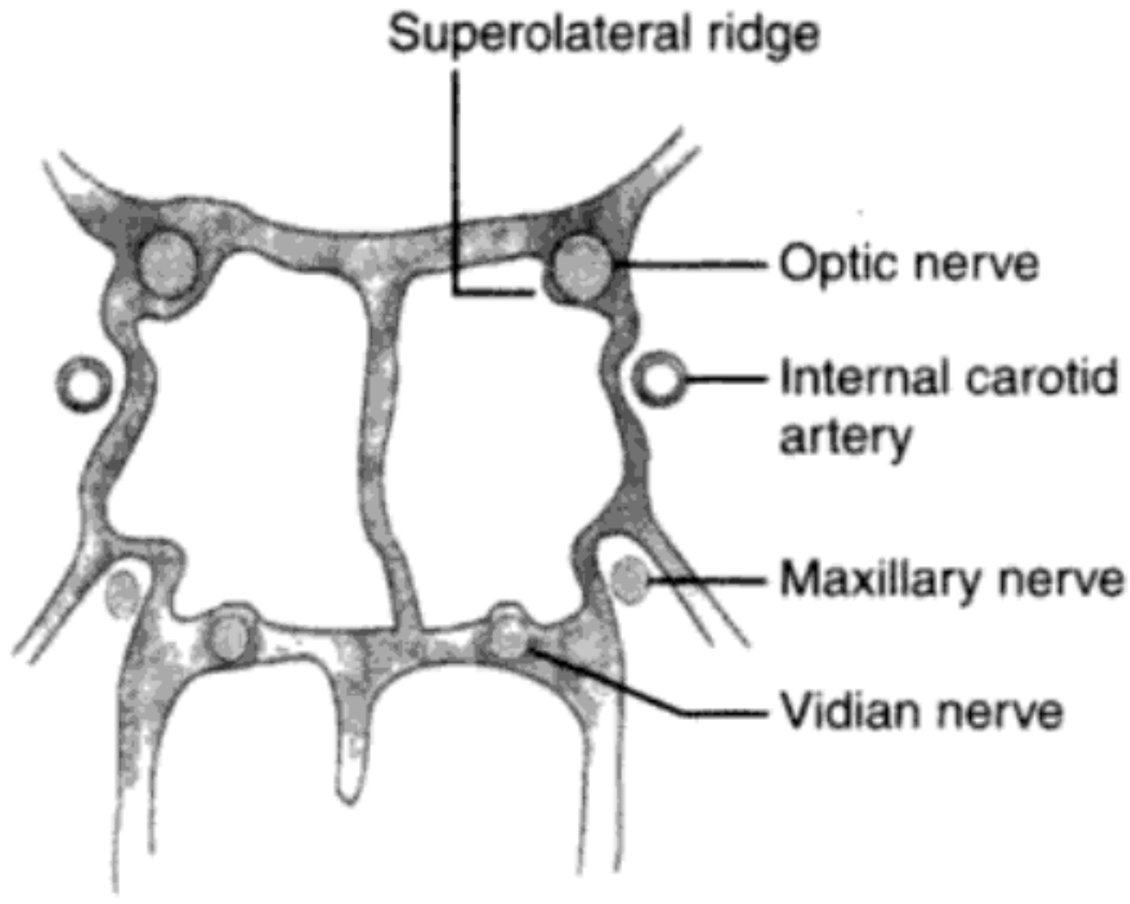

Fig. 2.5. Structures making reliefs in cavity of sphenoid sinus.

Internal carotid artery and optic nerve may show indentations into the sinus wall and are important. They are at risk during transsphenoidal hypophysectomy or endoscopic surgery of sphenoid. Maxillary division of CN V and vidian nerve may also make reliefs in the sinus cavity.

48. Answer (c)

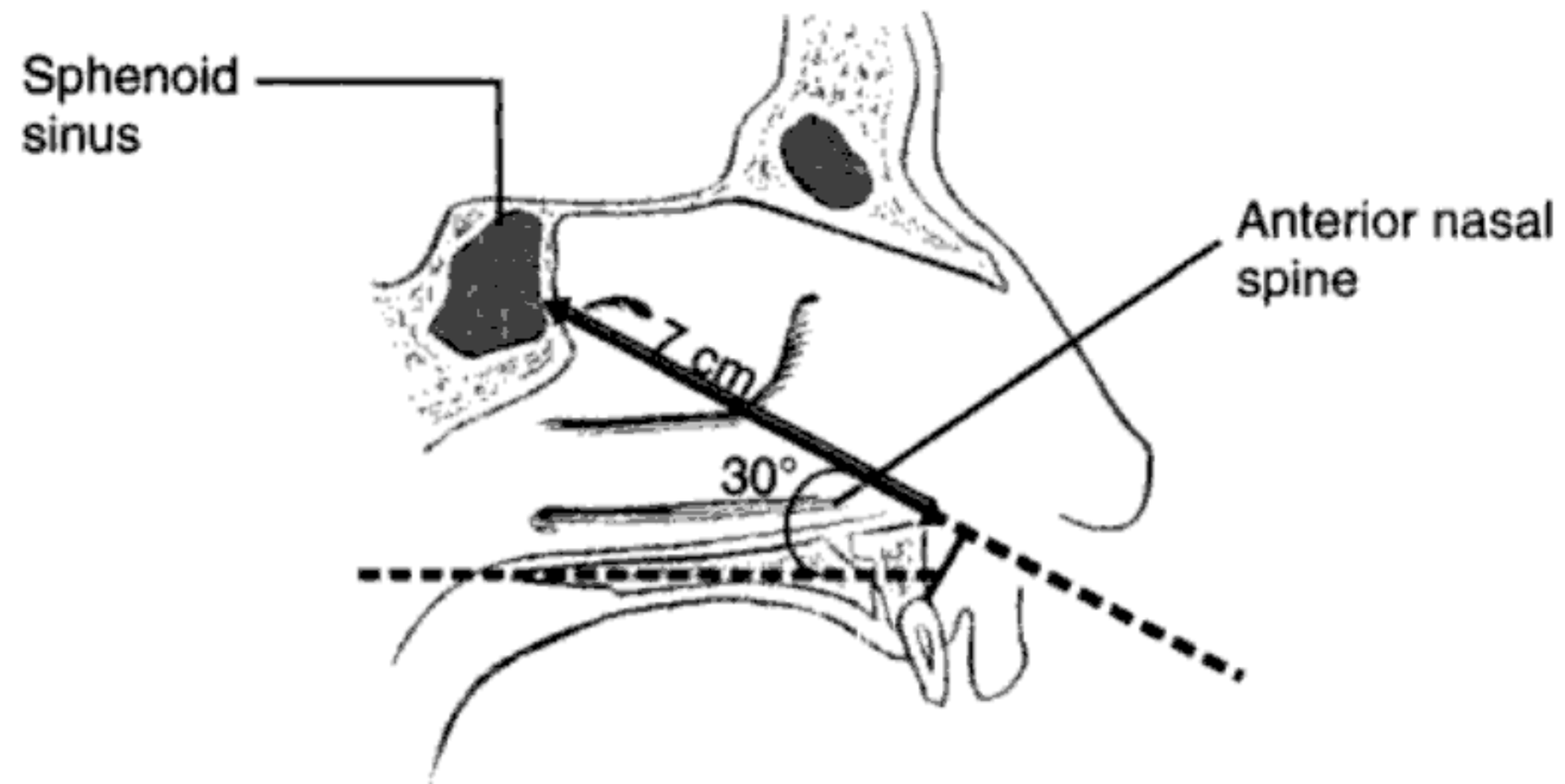

Fig. 2.6. Anterior wall of sphenoid lies approximately 7 cm from anterior nasal spine at an angle of 30°.

49. Answer (d)

Unilateral purulent nasal discharge and bleeding from the nose in a child indicate a foreign body.

In antrochoanal polyp and unilateral choanal atresia, the epistaxis is absent. Similarly unilateral maxillary sinusitis can cause purulent discharge but no significant bleeding.

50. Answer (d)

Aetiology of nasal polyp formation is not well-understood. They are seen in:

(i) Aspirin intolerance
(ii) Allergic fungal sinusitis
(iii) Chronic rhinosinusitis of both allergic and non-allergic origin
(iv) Cystic fibrosis
(v) Disorders of ciliary motility

(vi) Churg-Strauss syndrome (asthma, fever, vasculitis and granuloma).

51. Answer (a), (b) and (d)

An antrochoanal polyp arises from the maxillary sinus, comes out of its accessory opening and then grows posteriorly as a globular mass. It is unilateral and more often affects children of either sex. Aetiology is unknown. Presently antrochoanal polyp can be best treated by endoscopic sinus surgery and removal of its stalk from maxillary sinus. Caldwell-Luc operation is avoided.

52. Answer (a), (b) and (d)

Multiple nasal polyps are commonly seen in the middle meatal arising from the uncinate process, bulla ethmoidalis, ethmoid air cells and lateral aspect of middle turbinate. Inferior meatus is practically never involved. Nasal polyps are never premalignant, however malignancy of nose or paranasal sinuses may present with simple nasal polyps.

53. Answer (a)

Maxillary is the most commonly involved sinus. This is followed by ethmoid, frontal and sphenoid.

54. Answer (a), (b) and (c)

Risk factors for paranasal sinus malignancy are wood dust, nickel and chromium industry, mustard gas, polycyclic hydrocarbons, smoking and air pollution.

55. Answer (c)

56. Answer (c)

Simple nasal polypi below 5 years of age are rare. Meningocele, meningoencephalocele or a glioma can present as a unilateral polyp and biopsy would risk meningitis. Such a child requires CT scan/MRI to establish an intracranial connection and later a neurosurgical approach for removal.

57. Answer (a)

Inverted papilloma, which arises from the mucosa of lateral wall of nose, most frequently affects males in the age group of 30–50 years. Only 10–15% are associated with malignancy. Treatment is complete

excision which amounts to medial maxillectomy. Post-operative radiotherapy is not necessary.

58. Answer (a) and (c)

Primary malignancies of ethmoid are rare. Mostly they are extensions of maxillary carcinoma and histologically prove to be squamous cell variety like malignancies of maxillary sinus. Ethmoid carcinoma spreads locally causing proptosis and broadening of nasal root, intracranially through ethmoid roof or cribriform plate. Lymph node metastases rarely occur and so are the distant ones.

Ascending infections from the nose cause meningitis which is an important cause of death.

59. Answer (a)

Contents of cavernous sinus include internal carotid artery along with its sympathetic plexus, CN III, IV, VI, V_1 and V_2. Thrombophlebitis of right cavernous sinus is likely to involve all these structures.

Engorgement of retinal veins: Venous drainage of eye and orbit is into the cavernous sinus which is now obstructed.

Right ophthalmoplegia: CN III, IV and VI are involved.

Ptosis of right upper lid occurs due to paralysis of Muller's muscle (paralysis of sympathetic fibres travelling along internal carotid artery) and paralysis of CN III which supplies levator palpebrae superioris.

Pupil size does not change in response to light because efferent fibres (CN III) are paralysed.

60. Answer (a)

Rhizopus and *Mucor* (along with *Absidia*) belong to Mucoraceae family. The hyphae in these fungi are broad, practically non-septate and irregularly branching at 90°.

In *Aspergillus* hyphae are septate and show acute branching.

61. Answer (d) (see Fig. 2.2).

62. Answer (d)

Kiesselbach's plexus is formed by four vessels:

(i) Sphenopalatine artery

(ii) Greater palatine artery

(iii) Septal branch of superior labial artery

(iv) Anterior ethmoidal artery

63. Answer (b)

Perpendicular plate of palatine bone forms posterior part of lateral wall of nose. It is the perpendicular plate of ethmoid which forms nasal septum.

64. Answer (b), (c), (d) and (e)

Most common cranial nerve involved in nasopharyngeal cancer is CN VI causing diplopia. Obstruction of eustachian tube causes serous otitis media. Most common presentation of nasopharyngeal cancer is cervical lymph node involvement. Out of the multiple aetiological factors—genetic, dietary and environmental—some cases are caused by EB virus.

65. Answer (c)

Trotter's syndrome or triad which is due to nasopharyngeal carcinoma consists of:

(i) Conductive hearing loss due to eustachian tube obstruction.

(ii) Ipsilateral immobility of palate.

(iii) Neuralgic pain in distribution of mandibular division (V_3) due to spread of growth laterally through sinus of Morgagni to involve (V_3). Costen syndrome consists of ear pain, blocked ear and tinnitus. It is due to abnormality of TM joint caused by defective bite.

Sluder's neuralgia is due to neuralgia of sphenopalatine ganglion (V_2) causing pain in the lower half of face but there is, in addition, congestion of nose, watering of eyes and rhinorrhoea.

Wallenberg's syndrome due to thrombosis of posterior-inferior cerebellar artery leading to ischaemia of lateral part of medulla. It causes:

Vertigo	→	Vestibular nucleus
Anaesthesia of ipsilateral side of face	→	Nucleus and descending tract of CN V
Paralysis of palate, pharynx and larynx	→	Nucleus ambiguous

Horner's syndrome	→	Preganglionic sympathetic fibres
Contralateral anaesthesia of the body	→	Crossed lateral spinothalamic tract

66. Answer (b)

Maxillary sinus is the most commonly involved sinus in malignancy. This is followed by ethmoid, frontal and sphenoid sinuses.

67. Answer (a)

Nasolacrimal duct lies anterior to the uncinate process and the ostium of maxillary sinus. The average distance between the nasolacrimal duct and ostium of maxillary sinus is only 7.0 mm. It makes the lacrimal duct vulnerable to injury when ostium is enlarged anteriorly during endoscopic sinus surgery.

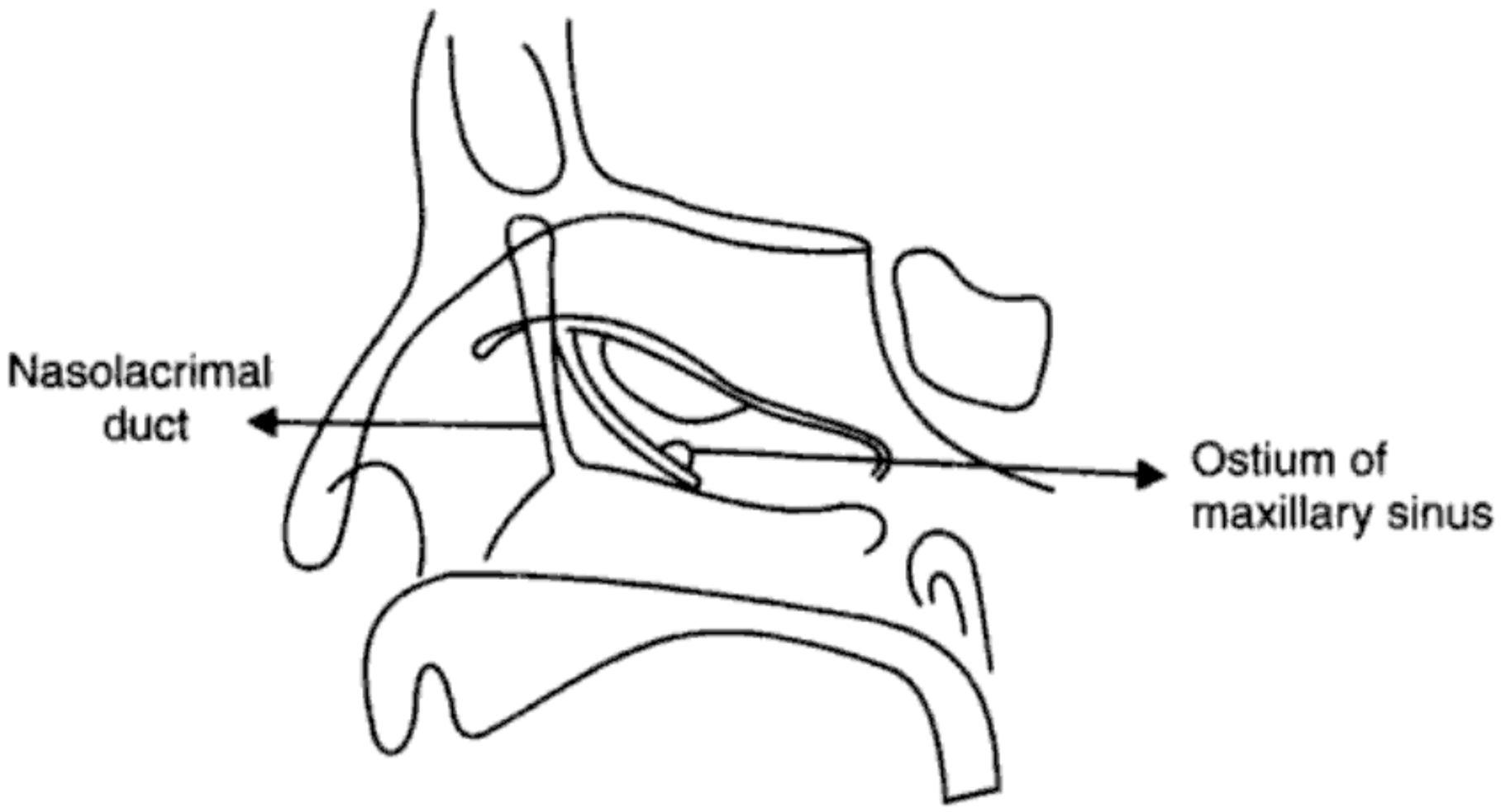

Fig. 2.7. Relationship of nasolacrimal duct to ostium of maxillary sinus.

68. Answer (c)

Antrochoanal polyp originates from within the maxillary antrum, comes out of its accessory ostium into the nose and then grows towards the nasopharynx.

Earlier it was removed in adults by Caldwell-Luc operation to excise its antral origin to prevent recurrence. Caldwell-Luc operation is avoided in

children so as not to interfere with maxillary growth and roots of the developing teeth. And the only treatment in children was intranasal removal of polyp, though at the expense of recurrence. Nevertheless, these days polyp with its stalk can be removed by endoscopic sinus surgery.

69. Answer (d)

Also remember other structures opening in different meatuses.

Superior meatus: Posterior ethmoid cells

Middle meatus: Frontal sinus, maxillary sinus and anterior group of sinuses

Ethmoid infundibulum: A part of middle meatus, maxillary and sometimes the frontal sinus opens in it

Inferior meatus: Nasolacrimal duct

Sphenoethmoid recess: Sphenoid sinus

70. Answer (b)

All of the above can cause frontal sinusitis by obstructing the frontal sinus drainage and ventilation but acute rhinitis is most common.

71. Answer (c)

McEwen's triangle is the landmark to locate the antrum which lies 12–15 mm deep to the surface of mastoid (Fig. 2.8). Its boundaries are temporal line (suprameatal crest), posterosuperior margin of external auditory canal and the tangent drawn from the posterior margin of the opening of external canal.

In children, this triangular area of McEwen's triangle is marked by small perforations through which pass the small blood vessels and has been called the *cribrosa area*.

Donaldson's line is the landmark of endolymphatic sac which lies anterior and inferior to it.

72. Answer (c)

Medial pterygoid muscle lies close to peritonsillar space and goes into spasm. Masseter and temporalis muscle are far away. Spasm of pharyngeal muscles does not cause trismus.

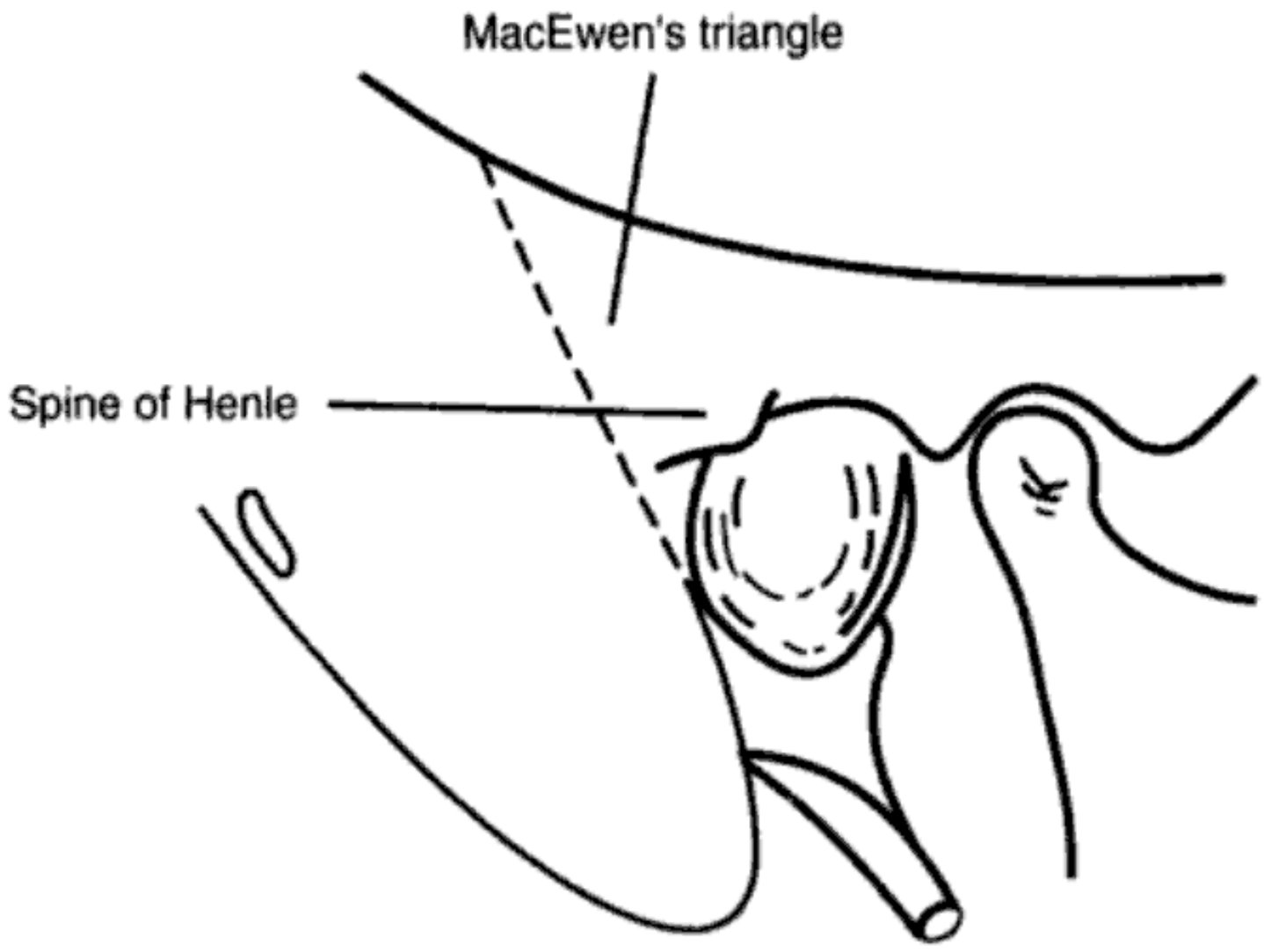

Fig. 2.8. MacEwen's (suprameatal) triangle.

73. Answer (c)

Waldeyer's ring consists of subepithelial collection of lymphoid tissue. It comprises adenoid, tubal tonsil (both in nasopharynx) and palatine tonsils, lingual tonsils and granules in posterior pharyngeal wall (in oropharynx).

74. Answer (b)

Ethmoidal polypi occur in adults and are caused by allergic or non-allergic

rhinosinusitis. Patients of nasal allergy have four times more risk of developing asthma.

75. Answer (a)

Bilateral ethmoidal polypi are either the result of long-standing nasal allergy or fungal sinusitis. Opaque paranasal sinuses can result in both. Treatment therefore can include antihistamines, steroids and, if fungal, amphotericin-B. Epinephrine (adrenaline) has no role.

76. Answer (c)

According to AJCC classification (2002), T_3 tumour of maxillary sinus involves posterior wall of maxillary sinus or subcutaneous tissues of

cheek, floor or medial wall of orbit, pterygoid fossa or ethmoid sinus. This requires surgical excision and post-operative radiotherapy. Post-operative radiation improves local control but has not been demonstrated to increase survival. All maxillary cancers of stage III and IV are treated by combined modality.

77. Answer (c), (d) and (e)

Basal or the grand lamella of middle turbinate separates anterior from posterior group of sinuses. Openings of maxillary, frontal and anterior ethmoid including agger nasi cells are anterior to basal lamella.

78. Answer (d)

A bright light placed against the hard palate transilluminates maxillary sinus and provides information about the presence of pus, tumour or polyp in the sinus. Similarly, a small lighted bulb placed under the floor of frontal sinus in the superomedial angle of orbit transilluminates frontal sinus. Transillumination cannot be done in sphenoid sinus because of its location. This test is now superseded by better methods of testing.

79. Answer (c)

Teeth most commonly related to floor of maxillary sinus are second premolar and first molar. However, depending on pneumatisation of the sinus, all the teeth from canine to the last molar may be related.

80. Answer (a)

Caldwell-Luc operation is avoided in children. Intranasal antrostomy is a drainage operation if sinus is infected. Horgan's operation is transantral ethmoidectomy in which antrum is exposed first and then ethmoid cells are exenterated including removal of ethmoid polyps. It is indicated where maxillary sinus is infected or filled with polyps in addition to those in the ethmoid. Options (b), (c) and (d) are not tenable. However, these days endoscopic sinus surgery has superseded above procedures.

81. Answer (b)

Just above the upper surface of inferior turbinate, in the middle meatus, wall of the maxillary sinus is membranous, i.e. lacks bone and is called the fontanelle, one on either side of conchal process of uncinate.

Posterior fontanelle may have an opening leading to maxillary sinus—accessory ostium of maxillary sinus.

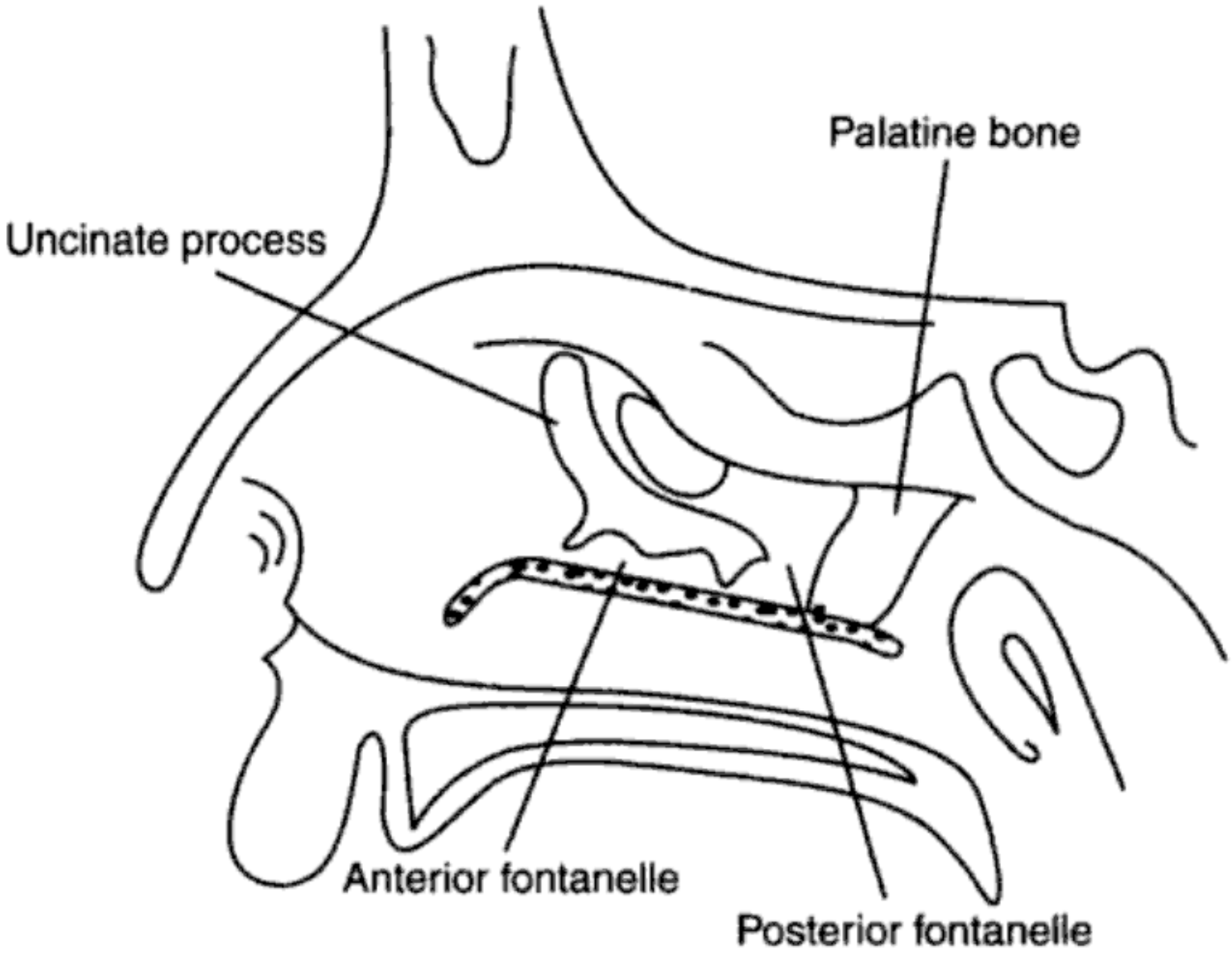

Fig. 2.9. Location of nasal fontanelle in the middle meatus.

82. Answer (a)

Fungi invading paranasal sinuses include *Aspergillus* sp., *Rhizopus* sp., *Candida albicans*, *Fusarium* and *Alternaria* sp. *Aspergillus* sp. is the most common.

83. Answers (a) and (d)

Most common site for CSF rhinorrhoea is cribriform plate and ethmoid roof.

84. Answer (c)

CSF rhinorrhoea is most commonly iatrogenic, following endoscopic sinus surgery. It can occur in surgery of frontal, sphenoid or ethmoid sinus. Injury to cribriform plate and ethmoid roof is the most common cause.

85. Answer (b)

Beta-2 transferrin is specific for CSF. It is not found in tears, nasal secretions and serum. It has been used in the diagnosis CSF rhinorrhoea.

Beta -2 transferrin is also seen in aqueous humour and serum of patients with chronic liver disease due to alcohol.

86. Answer (d)

Patients of nasopharyngeal cancer present with cervical metastases because of rich lymphatic supply. Following are the chances of cervical nodal metastases in different cancers:

Nasopharynx	86–90%
Hypopharynx	52–72%
Pharyngeal wall	50–71%
Base of tongue	50–83%
Tonsillar fossa	58–76%
Supraglottic larynx	35–54%

Chances of cervical nodal metastases are low in cancer of:

Buccal mucosa
Hard palate
Gingiva
Glottis
Subglottis
Paranasal sinuses

87. Answer (d)

If nasopharyngeal carcinoma recurs or is not completely regressed after 6500–7000 cGy radiotherapy, it can be treated by any of the above modes. Surgery involves skull-base and is done in only selected cases.

88. Answer (a)

Keratinising squamous cell carcinoma which is well-differentiated has poorer prognosis and survival than WHO types II and III, i.e. non-keratinising and anaplastic carcinoma. Prognosis is also poor at extremes of age.

89. Answer (c)

Torus tubarius is the tubal elevation in the lateral wall of nasopharynx. It is formed by cartilage of eustachian tube.

Rathke's pouch is clinically represented by a dimple above the adenoids. It is the site of buccal invagination to form anterior lobe of pituitary. Craniopharyngioma arises from it.

Pharyngeal bursa is a median recess in the adenoid mass lined by epithelium. During development notochord is attached to pharyngeal epithelium which pulled posteriorly towards basiocciput. When infected, this epithelial-lined space forms an abscess called Thornwaldt's disease.

Notochord, the remnants of which are represented by nucleus pulposus in intervertebral disc, gives rise to chordoma. Cranially notochord extends through basiocciput and ends caudal to hypophysis thus explaining occurrence of chordoma in clivus (Fig. 2.10).

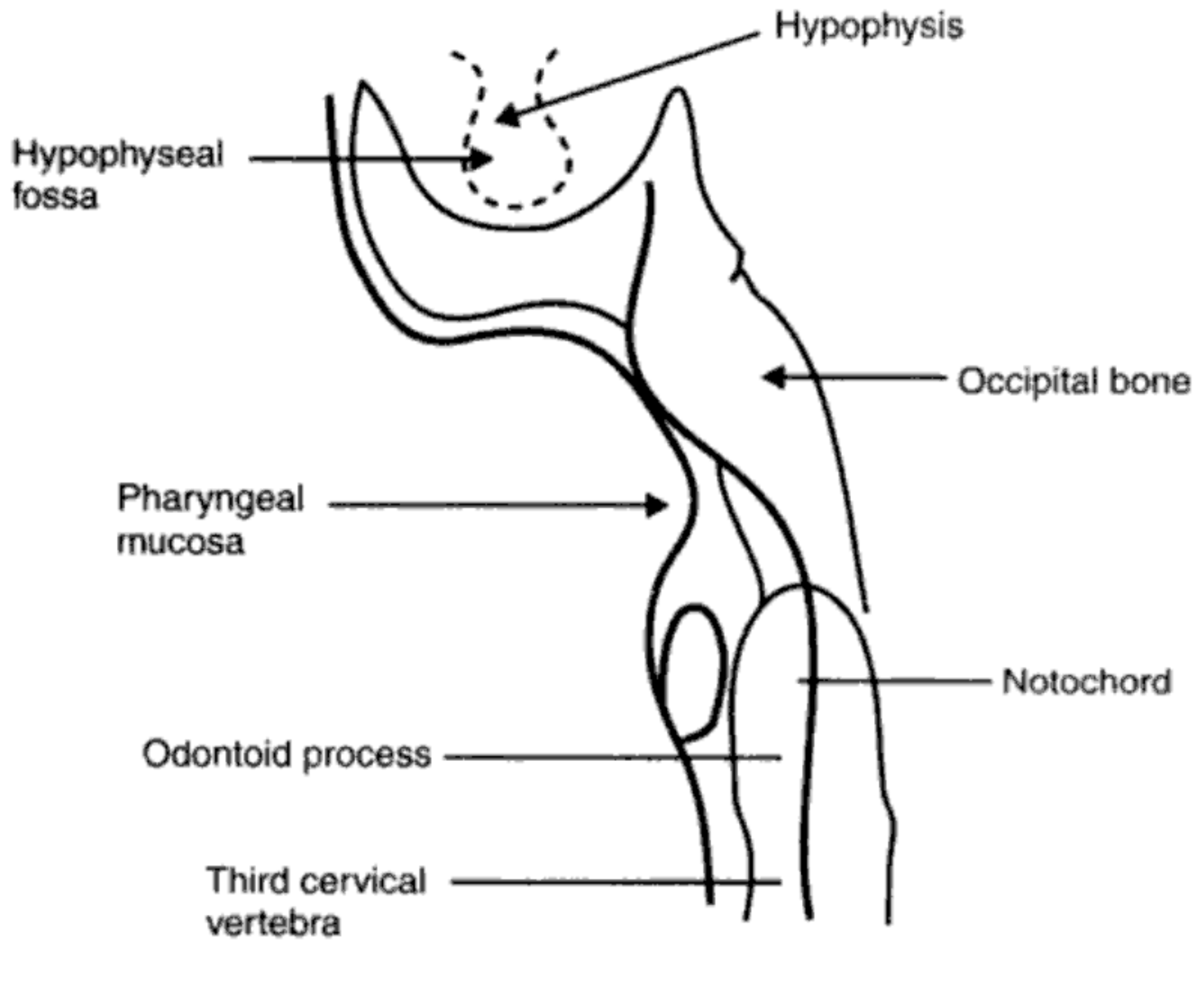

Fig. 2.10. Course of notochord. It runs in the centre of vertebral bodies, enters occipital bone, running dorsal to ventral and lies close to pharyngeal epithelium. It re-enters the base of skull and ends caudal to hypophysis. Remnants of notochord give rise to chordoma.

90. Answer (a) and (c)

Glossopharyngeal nerve and CN IX pass between superior and middle constrictors (Fig. 2.11)

A. Between skull base and superior constrictors
- Levator veli palatine
- Tensor veli palatine
- Eustachian tube
- Ascending pharyngeal artery (branch of external carotid)
- Ascending palatine artery (branch of facial)

B. Between superior and middle constrictors
- Stylopharyngeus
- CN IX

C. Between middle and inferior constrictors
- Internal laryngeal nerve
- Laryngeal artery (branch superior thyroid artery)
- Laryngeal vein

D. Below inferior constrictors
- Recurrent laryngeal nerve
- Laryngeal branch of inferior thyroid artery

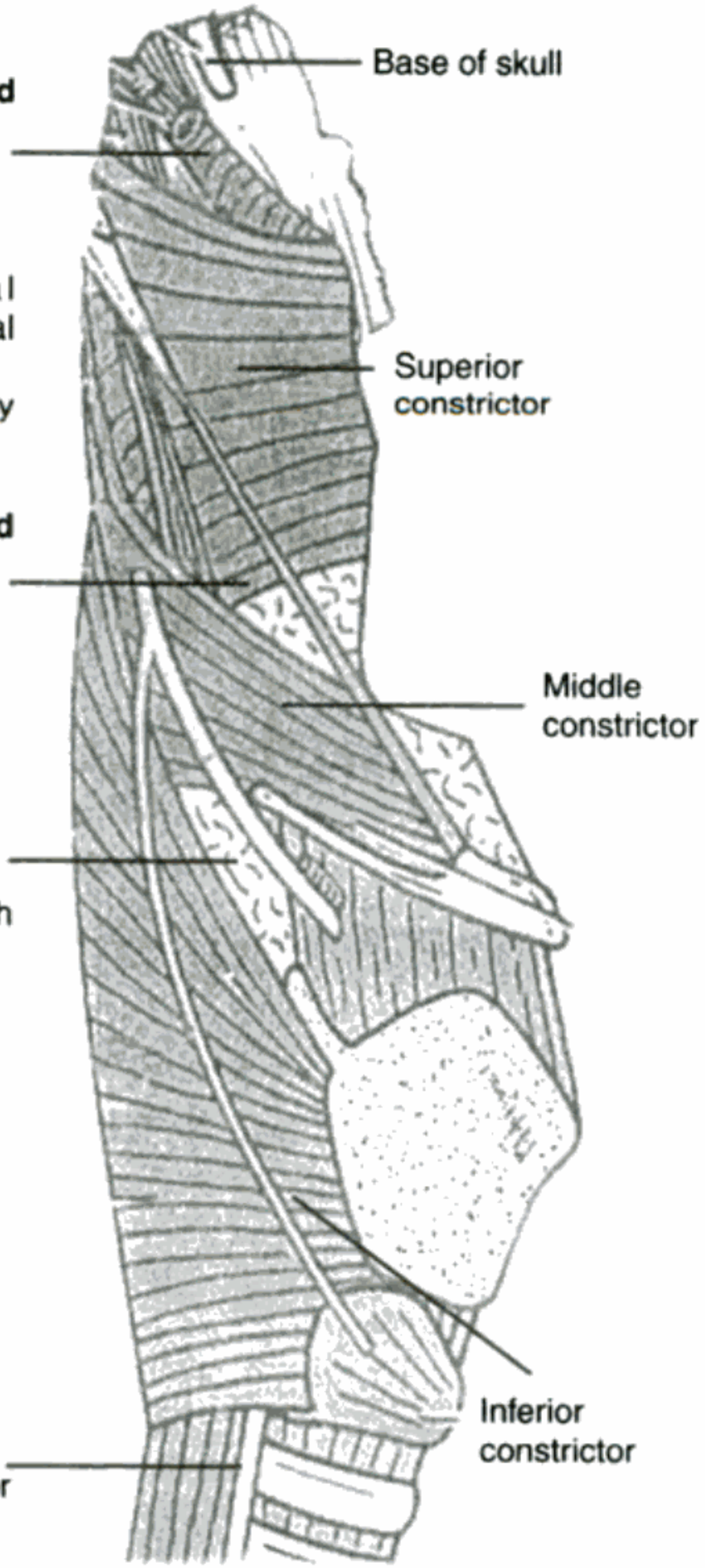

Fig. 2.11. Structures passing between various pharyngeal constrictor muscles.

91. Answer (d)

Superior laryngeal vessels and internal laryngeal branch of superior laryngeal nerve which supplies pyriform fossa and sensory fibres to larynx above the level of vocal cord enters through thyrohyoid membrane between middle and inferior constrictors.

92. Answer (d)

Angiofibroma typically affects males in adolescent age group. After its origin from superior margin of sphenopalatine foramen, it extends to pterygomaxillary fossa, infratemporal fossa and to the cheek producing a cheek swelling. Due to its highly vascular nature, recurrent spontaneous epistaxis and nasal blockage is the presenting feature. Cancer nasopharynx does not cause swelling of cheek. It is characterised by cranial nerve palsies, trismus and cervical lymphadenopathy. Inverted papilloma occurs in age group of 40–70.

93. Answer (c)

Most common site of origin of juvenile angiofibroma is superior margin of sphenopalatine foramen. As the tumour expands it extends to nasal cavity, nasopharynx, oropharynx, pterygomaxillary fossa, cheek, infratemporal fossa, paranasal sinuses, orbit or intracranially.

94. Answer (b)

Angiofibroma of nasopharynx is a very vascular tumour consisting of sinusoids and densely packed fibrous tissue. Biopsy is attended by profuse bleeding. Therefore, excision of the tumour and later confirmation by histopathology is the best course. No biopsy is advised. In atypical presentation, where diagnosis is in doubt, biopsy may be required but it is done in operation theatre with preparation for blood transfusion.

95. Answer (c)

Antral sign is a radiological sign seen in nasopharyngeal fibroma, where posterior wall of maxillary antrum in axial CT scan is seen pushed anteriorly. It is due to presence of angiofibroma in the pterygomaxillary fossa thus pushing the posterior antral wall forward.

96. Answer (b), (c) and (e)

Angiofibroma arises from superior margin of sphenopalatine foramen in the posterior part of nasal cavity. Occurs typically in adolescent males

causing recurrent epistaxis and nasal obstruction. Surgical excision is the treatment of choice.

97. Answer (a), (b), (d) and (e)

Nasopharyngeal cancer arises from lateral wall of nasopharynx (near fossa of Rosenmüller), the most common site, or its posterosuperior wall. It can spread directly to nasal cavity, orbit or superiorly to cranial cavity through foramen lacerum, downwards it can spread to oropharynx.

Nasopharyngeal cancer can invade the lumen of eustachian tube and present as a mass in tympanic cavity but more often middle ear involvement is secondary to obstruction of the eustachian tube.

98. Answer (b)

Surgical excision of the tumour is the best form of treatment. Since tumour occurs at puberty, hormones like diethylstilbestrol and flutamide have been used. Radiation treatment is not favoured due to fear of development of cancer at a later date. However, radiation treatment is used when tumour shows intracranial extension or its blood supply derived from the internal carotid system.

99. Answer (a) and (c)

Angiofibroma almost exclusively occurs in male adolescents. It is a benign, non-encapsulated, lobulated mass which can destroy surrounding bone and skull base by expansion. On incomplete removal, recurrence rate up to 25% has been noted.

100. Answer (b) (see Fig. 2.12).

Thornwaldt's cyst arises from pharyngeal bursa. The latter is located in the middle of posterosuperior wall of the nasopharynx surrounded by adenoid tissue.

101. Answer (b) and (c)

Nasopharyngeal fibroma is a benign neoplasm mostly affecting adolescent males. No metastasis have been recorded, however, it can spread to contiguous structures by pressure. Extensions of angiofibroma can occur into paranasal sinuses, orbit, pterygopalatine fossa, cheek and cranial cavity.

102. Answer (b)

Horner's syndrome is caused by paralysis of sympathetic fibres to the ipsilateral orbit and face.

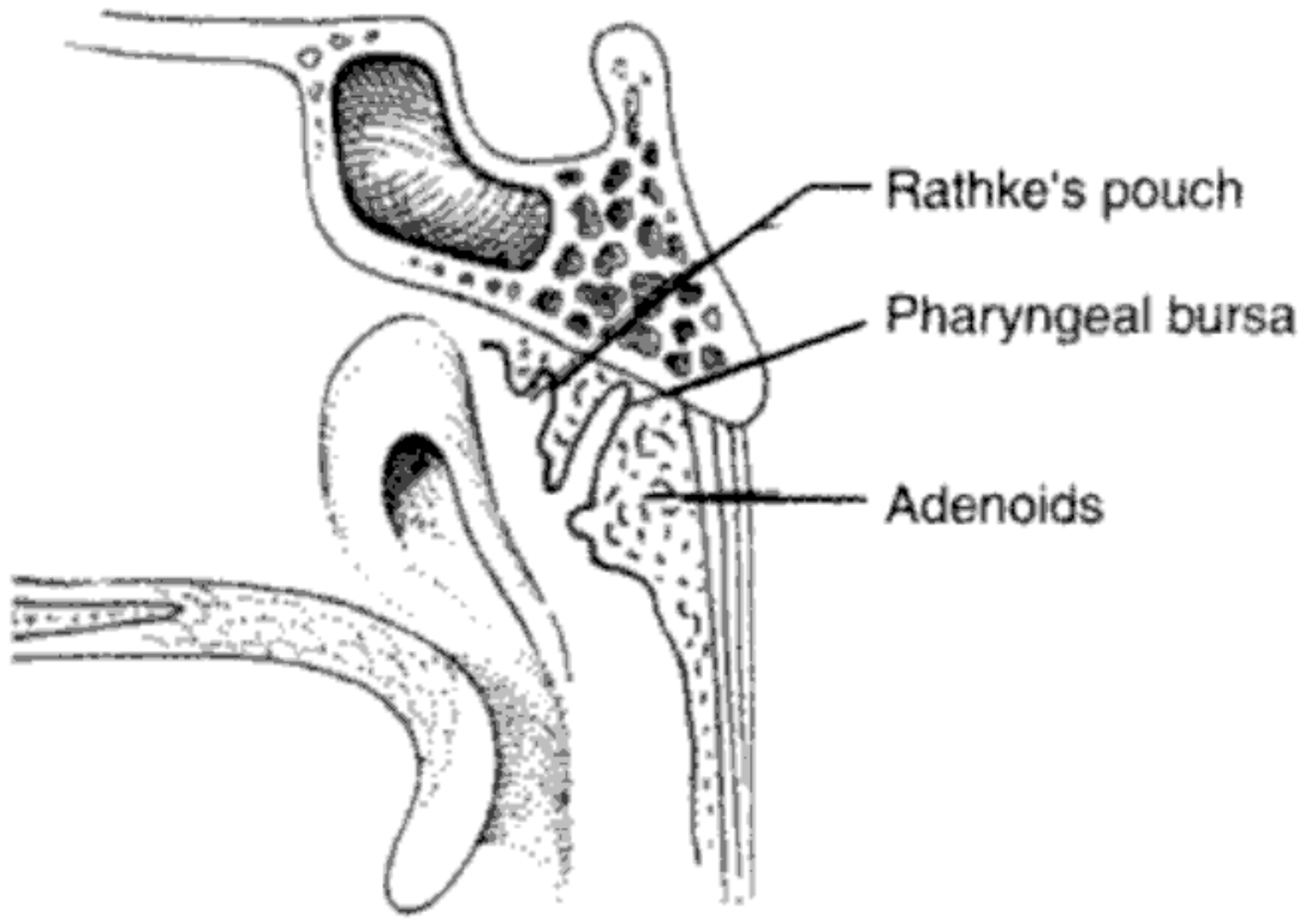

Fig. 2.12. Rathke's pouch is represented by a dimple high in the nasopharynx. Inferior to this within the adenoid mass is the pharyngeal bursa.

Ptosis is due to denervation of Muller's muscle which is supplied by the sympathetic fibres. This muscle arises from aponeurosis of levator palpebrae superior is and inserts in the upper border of tarsal plate. Its function is to raise the lid.

Anhidrosis is due to interruption of secretomotor to sweat glands.

Sympathetic fibres normally dilate the pupil and their interruption would cause constriction of pupil (not dilatation).

103. Answer (b)

Most common location for rhabdomyosarcoma is orbit followed by nasopharynx and paranasal sinuses. It is the most common soft-tissue sarcoma in children.

104. Answer (d)

Sinusitis is commonly associated with adenoids. Serous otitis media is due to eustachian tube obstruction. Long-standing nasal obstruction is the cause of cor pulmonale. Proptosis is a feature of nasopharyngeal tumours like angiofibroma or carcinoma but not adenoids.

105. Answer (b)

Squint is due to involvement of CN VI, facial pain or paraesthesias due CN V (through foramen lacerum) and blindness due to involvement

of optic nerve at orbital apex. Mass in the neck is due to lymph node metastases, which is the presenting feature in 60 to 90% of patients.

106. Answer (c)

Infection of pharyngeal bursa gives rise to Thornwaldt's cyst which causes postnasal discharge, halitosis and occipital headache.

Chordoma arises from remnants of notochord. Craniopharyngioma arises from Rathke's pouch. Rathke's cyst also arises from Rathke's pouch and can get infected, which may extend superiorly into the cranium and gives symptoms of galactorrhoea, visual loss and hypopituitarism.

107. Answer (e)

High-arch palate, also called *gothic* palate, is the result of mouth breathing when dorsal surface of the tongue fails to contact and mould the palate due to open mouth and hanging jaw.

Crowding and projecting teeth results from high-arch palate and lack of moulding action of lips due to open mouth.

Pinched appearance of nose is due to non-use of nasal musculature in breathing.

108. Answer (c)

Nasopharynx is the posterior extension of nose and lining epithelium is like that of the nose. Adenoids are lined by ciliated columnar epithelium. They lack a capsule. Unlike palatine tonsils, they do not have crypts; instead the lymphoid tissue forms into longitudinal folds.

109. Answer (c)

Atlantoaxial dislocation, also known as Grisel's disease, follows nasopharyngeal infection or severe extension of neck during adenoidectomy or adenotonsillectomy. It causes severe neck pain and neck rigidity.

110. Answer (c)

Surgery is the mainstay of treatment in juvenile angiofibroma. The surgical approach is determined by the location of tumour, its extent and surgical expertise. Various approaches used have been as follows:

(i) Transpalatal

(ii) Transpalatal with sublabial extension

(iii) Lateral rhinotomy
(iv) Le Fort I osteotomy
(v) Medial maxillectomy
(vi) Maxillotomy
(vii) Endoscopic transnasal
(viii) Combined intracranial and extracranial approaches

In the present case, the mass is limited to lateral wall of nose and nasopharynx, and transpalatal approach would be the best choice. The other choice would be endoscopic transnasal with pre-operative embolisation.

Lateral rhinotomy approach is required when tumour is more extensive, extending into maxillary and ethmoid sinus, pterygomaxillary fossa or even into cheek.

111. Answer (b)

Rhabdomyosarcoma is the most common malignant tumour of the nasopharynx, though all of the above are seen with different frequency.

112. Answer (d)

Immunotherapy has no role in treatment of angiofibroma. Earlier hormones were used to reduce the tumour vascularity but now it is observed that they play no significant role. Treatment of choice is surgical excision. This is often preceded by preoperative embolisation. Radiotherapy has been used as the primary modality in some centres but is not universally accepted due to hazards of radiation in childhood.

113. Answer (b)

Symptoms of nasal obstruction, mouth breathing and hearing impairment are due to adenoids, and adenoidectomy would be required. Since the child also suffers from hearing impairment (due to otitis media with effusion), a myringotomy with grommet insertion will be required. Simply doing myringotomy (optimised) will lead to recurrence unless cause (adenoids) is removed.

114. Answer (b)

Rhinolalia clausa is a speech when nose or nasopharynx is closed/ blocked. It lacks nasal resonance and occurs in allergic rhinitis, nasal polyps, adenoids, nasal or nasopharyngeal growths.

Palatal paralysis on the contrary causes excessive nasal resonance and speech has a nasal character added to words which normally have no nasal resonance. The condition is also called *rhinolalia aperta* or hypernasal speech. Other conditions which can cause this type of speech are:

(i) Congenitally short soft palate
(ii) Submucous palate
(iii) Cleft palate
(iv) Oronasal fistula
(v) Familial or habitual pattern

Chapter 3

Oral Cavity, Oropharynx and Oesophagus

1. **Hand, foot and mouth disease is caused by which of the following viruses?**
   (a) Cytomegalovirus
   (b) HIV infection
   (c) Coxsackie A virus
   (d) Herpes simplex virus
   (e) Ebstein-Barr virus

2. **Which of the following lesions in the oral cavity has a malignant potential?**
   (a) Hypertrophic candidiasis
   (b) Leukoedema
   (c) Erythroplasia
   (d) White sponge naevus

3. **Presence of Wickham's striae in the oral cavity is a manifestation of:**
   (a) HIV infection
   (b) Lichen planus

(c) Leukaemia
(d) Oral candidiasis

4. All of the following are manifestations of leukaemia except:

(a) Pale mucous membrane of the oral cavity
(b) Gingival hypertrophy
(c) Submucous fibrous bands with blanching of mucous membrane in oropharynx
(d) Petechial haemorrhages of mucous membrane

5. Oral manifestations of HIV include all except:

(a) Oral candidiasis
(b) Hairy leukoplakia
(c) Buccal striae forming a lacing pattern
(d) Recurrent aphthous ulcers

6. The most common site of melanoma in the oral cavity is:

(a) Buccal and labial mucosa
(b) Base of tongue
(c) Oral tongue and floor of mouth
(d) Hard palate and maxillary gingiva

7. Plummer-Vinson syndrome is characterised by all except:

(a) Koilonychia
(b) Dysphagia
(c) Atrophic gastritis
(d) Glossitis
(e) Haematemesis

8. All are true about pharyngoconjunctival fever except:

(a) Caused by cytomegalovirus
(b) Occurs in epidemics
(c) Causes follicular conjunctivitis
(d) Causes acute pharyngitis and fever

9. All are true about herpangina except:

(a) Caused by herpes simplex type I
(b) Common in children
(c) Causes sore throat and fever
(d) Is a self-limiting infection

10. Taste buds are seen in all of the following papillae except:

(a) Circumvallate
(b) Fungi form
(c) Filiform
(d) Foliate

11. In which of the following locations (spaces), there is collection of pus in quinsy?

(a) Peritonsillar space
(b) Parapharyngeal space
(c) Retropharyngeal space
(d) Within tonsil

12. Structures passing between upper border of superior constrictor muscle and base of skull include all except:

(a) Levator palatini
(b) Tensor tympani
(c) Eustachian tube
(d) Ascending palatine artery

13. Which one of the following investigations is most valuable in deep neck infections?

(a) X-ray of soft tissue lateral view neck
(b) CT scan
(c) CT with contrast enhancement
(d) MRI
(e) MRI with contrast

14. Match the muscles with their nerve supply:

(a)	Stylohyoid	(*i*)	CN IX
(b)	Stylopharyngeus	(*ii*)	CN XII
(c)	Styloglossus	(*iii*)	CN VII
(d)	Palatoglossus	(*iv*)	CN XI

15. Type of voice in nasopharyngeal fibroma is:

(a) Rhinolalia aperta
(b) Rhinolalia clausa
(c) Hot-potato voice
(d) Staccato voice

16. Which of the following lesions is/are precancerous?

(a) Erythroplasia
(b) Leukoplakia
(c) Lichen planus
(d) Submucous fibrosis
(e) White sponge naevus

17. Fordyce's spots:

(a) Are seen before the rash in measles
(b) Are premalignant lesions of buccal mucosa
(c) Represent ectopic sebaceous glands and are normal variants
(d) Are petechial haemorrhagic spots of buccal mucosa seen in thrombocytopenic purpura

In the group of questions (18–22) match the statement or phrase of the question with the lettered item. The lettered item may be used once, more than once or not at all:

Lettered items:

(a) Infectious mononucleosis
(b) Vincent's angina
(c) Keratosis pharyngis
(d) Follicular tonsillitis
(e) Faucial diphtheria

18. Yellow spots over the tonsil, not easy to wipe off:

19. Atypical lymphocytes seen in peripheral smear:

20. Generalised lymphadenopathy with splenomegaly:

21. Causes palatal palsy:

22. Causes gingivitis, stomatitis and ulceration of the tonsils:

23. Most common site for carcinoma of oral tongue is:

(a) Tip
(b) Dorsum
(c) Lateral border
(d) Ventral surface

24. A 50-year-old male presents with a growth in the buccal mucosa. Growth measures 3 cm in its greatest dimension. He also has multiple nodes on the ipsilateral side in the submandibular region but none of the nodes is more than 3 cm. Your line of treatment is:

(a) Radiotherapy to the primary and lymph nodes of the neck
(b) Radiotherapy to the primary with supraomohyoid neck dissection

(c) Surgical excision of the primary growth and supraomohyoid neck dissection
(d) Surgical excision of growth, supraomohyoid neck dissection and post-operative radiotherapy

25. All of the following statements about Zenker's diverticulum are correct except:

(a) Arises from posterior part of hypopharynx
(b) Is a traction diverticulum
(c) Causes regurgitation of undigested food
(d) Treated by diverticulectomy and cricopharyngeal myotomy

26. Most common benign tumour of oesophagus is:

(a) Leiomyoma
(b) Lipoma
(c) Fibroma
(d) Papilloma

27. Most common type of oesophageal cancer is:

(a) Squamous cell carcinoma
(b) Adenocarcinoma
(c) Adenoid cystic carcinoma
(d) Mucoepidermoid carcinoma

28. Radiographic findings of cardiac achalasia include all except:

(a) Oesophageal dilatation
(b) Rat-tail appearance
(c) Failure of lower oesophageal sphincter to relax
(d) Diffuse oesophageal spasm

29. A 50-year-old man had drinks followed by a heavy dinner. He had severe vomiting and chest pain and

collapsed. X-ray of chest showed hydropneumothorax. The likely diagnosis is:

(a) Mallory-Weiss syndrome
(b) Boerhaave syndrome
(c) Ruptured duodenal ulcer
(d) Myocardial infarction

30. **A parapharyngeal mass displacing the tonsil and tonsillar fossa medially with pulsations on intra-oral palpation is due to:**

(a) Schwannoma of parapharyngeal space
(b) Carotid body tumour
(c) Internal carotid artery aneurysm
(d) Non-Hodgkin's lymphoma

31. **Earache following tonsillectomy is referred through which nerve(s)?**

(a) Glossopharyngeal
(b) Vagus
(c) Mandibular branch of trigeminal
(d) All of them

32. **Characteristic features of submucous cleft palate include all except:**

(a) Bifid uvula
(b) Notch in posterior border of hard palate
(c) Deficient palatal muscles
(d) Common association with cleft lip

33. **Glossopharyngeal neuralgia is characterised by all except:**

(a) Paroxysmal attacks of pain
(b) Pain radiates in the area of tongue, tonsil and ear

(c) Swallowing, talking and even laughing precipitates pain
(d) Usually a bilateral condition
(e) Responds to carbamazepine

34. Main blood supply to tonsil comes from:

(a) Ascending pharyngeal artery
(b) Dorsal lingual branches of lingual artery
(c) Tonsillar branch of facial artery
(d) Descending palatine from maxillary

35. In quinsy pus lies:

(a) Crypta magna
(b) Medial to superior constrictor
(c) Lateral to superior constrictor
(d) Lateral to buccopharyngeal fascia
(e) None of the above

36. Pulsatile swelling in tonsillar fossa can be due to:

(a) Normal external carotid artery
(b) Carotid body tumour
(c) Aneurysm of internal carotid artery
(d) Peritonsillar abscess

37. Aetiology of otogenic parapharyngeal abscess is:

(a) Zygomatic abscess
(b) Subperiosteal mastoid abscess
(c) Petrositis
(d) Lateral sinus thrombophlebitis

38. Treatment of stage III carcinoma of oral tongue is:

(a) Wide excision
(b) Wide excision with supraomohyoid neck dissection

(c) Wide excision with supraomohyoid neck dissection and post-operative radiotherapy
(d) Radiotherapy delivering 7000 cGy

39. Space(s) primarily involved in Ludwig's angina include:

(a) Sublingual
(b) Submandibular
(c) Submental
(d) Parapharyngeal
(e) Danger space

40. All of the following conditions are associated with snoring except:

(a) Angiofibroma
(b) Laryngeal papillomatosis
(c) Tonsillar enlargement
(d) Antrochoanal polyp
(e) Adenoids

41. A 50-year-old man presents with a mass of lymph nodes in the upper cervical region. Complete physical examination of the upper aerodigestive tract did not reveal any primary tumour. He is a smoker and also drinks two to three times per week. Our next diagnostic step should be:

(a) Incisional biopsy of node
(b) Excision of cervical nodes
(c) Observation for appearance of any primary
(d) Fine needle aspiration cytology (FNAC)
(e) CT scan neck

42. All of the following cause a grey-white membrane on the tonsils except:

(a) Infectious mononucleosis
(b) Ludwig's angina

(c) Streptococcal tonsillitis
(d) Diphtheria

43. A 30-year-old male presented with trismus, fever, swelling pushing the tonsils medially and spreading laterally posterior to the middle of sternocleido-mastoid. He gives a history of extraction of third molar few days back for dental caries. The diagnosis is:

(a) Retropharyngeal abscess
(b) Ludwig's angina
(c) Submental abscess
(d) Parapharyngeal abscess

44. A patient presented with a 3.5-cm size lymph node enlargement, which was hard and present in the submandibular region. Examination of the head and neck did not yield any lesion. Which of the following investigations should follow?

(a) Chest X-ray
(b) Triple endoscopy
(c) Supravital oral mucosa staining
(d) Laryngoscopy

45. Long-standing obstruction due to enlarged tonsils and adenoids can cause:

(a) Left ventricular hypertrophy
(b) Bundle branch block
(c) Cor pulmonale
(d) Cardiac ischaemia

46. Tonsil develops from:

(a) First pouch
(b) Second pouch
(c) Second cleft
(d) First cleft

47. A 5-year-old patient is scheduled for tonsillectomy. On the day of surgery he had running nose, temperature 37.5°C and dry cough. Which of the following should be the most appropriate decision for surgery?

(AIPGME, 2006)

(a) Surgery should be cancelled
(b) Can proceed for surgery if chest is clear and there is no history of asthma
(c) Should get X-ray chest before proceeding for surgery
(d) Cancel surgery for 3 weeks and patient to be on antibiotic

48. Fordyce's (spots) granules in oral cavity arise from:

(AIPGME, 2004)

(a) Mucous glands
(b) Sebaceous glands
(c) Taste buds
(d) Minor salivary glands

Answer Key

1. (c)
2. (c)
3. (b)
4. (c)
5. (c)
6. (d)
7. (e)
8. (a)
9. (a)
10. (c)
11. (a)
12. (b)
13. (c)
14. (a) III, (b) I, (c) II and (d) IV
15. (b)
16. (a), (b), (c) and (d)
17. (c)
18. (c)
19. (a)
20. (a)
21. (e)
22. (b)
23. (c)
24. (d)
25. (c)
26. (a)
27. (a)
28. (d)
29. (b)
30. (c)
31. (a)
32. (d)
33. (d)
34. (c)
35. (b)
36. (c)
37. (c)
38. (c)
39. (a), (b) and (c)
40. (b)
41. (d)
42. (b)
43. (d)
44. (b)
45. (c)
46. (b)
47. (d)
48. (b)

Explanations to Answers

1. Answer (c)

Hand, foot and mouth disease is caused by Coxsackie A virus which usually affects children. Ulcers are seen on the tongue, palate and anterior part of oral cavity. Vesiculopapular lesions are seen on the palms and soles also.

Cytomegalovirus causes large ulcers in oral cavity and exudative pharyngotonsillitis.

Herpes simplex presents in two forms:

(i) Gingivostomatitis

(ii) Herpes labialis

Ebstein-Barr virus causes infectious mononucleosis, nasopharyngeal cancer (non-keratinising type), Burkitt's lymphoma, non-Hodgkin's lymphoma and hairy leukoplakia. In fact Ebstein-Barr virus infection is limited to epithelial cells of the pharynx and B-lymphocytes to cause above ailments in nasopharynx and lymphomas.

2. Answer (c)

Erythroplasia (erythroplakia) has a malignant potential which is 17 times higher than in leukoplakia. No malignant potential is seen in hypertrophic candidiasis and white sponge naevus.

3. Answer (b)

Wickham's striae are interlacing white lines in the buccal mucosa seen in lichen planus—a skin disorder.

HIV infection presents with oral candida infection, angular cheilitis, hairy leukoplakia, periodontitis, gingivitis, diffuse parotid enlargement, recurrent herpetic infections of the oral cavity causing ulcers and Kaposi's sarcoma.

Leukaemia presents with gum hypertrophy, petechiae of mucous membrane of oral cavity, pale oral mucosa and oral ulcers.

Oral candidiasis presents in three forms:

(i) As a thrush, white patches are formed in oral mucosa or tongue and when wiped leave a red base.

(ii) Chronic hypertrophic form presents as a white patch that cannot be wiped off.

(iii) Atrophic form presents as red ulcerated mucosa without any pseudomembrane. It is seen in those using long-term antibiotics, steroids or cytotoxic drugs.

4. Answer (c)

Submucous fibrous bands with blanching of mucosa is a feature of submucous fibrosis—a condition common in India, Pakistan and Sri Lanka.

Leukaemia presents with petechial haemorrhages of mucous membrane (low platelet count), pallor of mucous membrane of oral cavity (due to anaemia), and gingival hypertrophy due to leukaemic deposits. Leukaemic patients also have associated neutropenia which predisposes to secondary infection of the oral cavity and oropharynx. It is common to have ulcers in the oral cavity due to secondary infection.

5. Answer (c)

HIV infection causes a variety of manifestations in the oral cavity, e.g. recurrent oral ulcers, gingivitis, angular stomatitis, hairy leukoplakia and Kaposi's sarcoma. Oral candidiasis is most common in children. Lace-like striae in the buccal mucosa, also called Wickham's striae, are seen in lichen planus.

6. Answer (d)

7. Answer (e)

Plummer-Vinson syndrome is also called sideropenic dysphagia (iron deficiency anaemia and dysphagia) and is characterised by all of the above features except haematemesis. Dysphagia in these cases is due to post-cricoid web—a submucosal fibrotic diaphragm. It can be easily dilated to relieve dysphagia. It is a precancerous condition and can develop into post-cricoid cancer.

8. Answer (a)

Pharyngoconjunctival fever is caused by adenovirus and is characterised by acute pharyngitis, fever and follicular conjunctivitis. It occurs in an epidemic.

9. Answer (a)

Herpangina is a viral infection causing vesicles and ulcers on the anterior pillars, tonsils, posterior-pharyngeal wall and posterior part of oral cavity. It is caused by a cytomegalovirus mostly affecting children between 3 and 10 years. It resolves in about 3–6 days.

10. Answer (c)

Maximum taste buds are seen in circumvallate papillae (each with nearly 250 buds) followed by foliate (nearly 100) and fungi form (1–18). No taste buds are seen in filiform papillae.

11. Answer (a)

Quinsy is also called peritonsillar abscess. It is collection of pus in peritonsillar space which lies between capsule of tonsil and superior constrictor muscle.

Parapharyngeal space (also called pharyngomaxillary or lateral pharyngeal space) lies lateral to pharynx and extends from the base of skull above to the greater cornua of hyoid bone below. Infection of this space causes parapharyngeal abscess.

Retropharyngeal space lies between buccopharyngeal fascia covering the constrictor muscles of pharynx and prevertebral fascia covering prevertebral muscle. Retropharyngeal space extends from skull base to bifurcation of trachea. Infection of this space causes acute or chronic retropharyngeal abscess due to tuberculous lymph nodes which lie in this space.

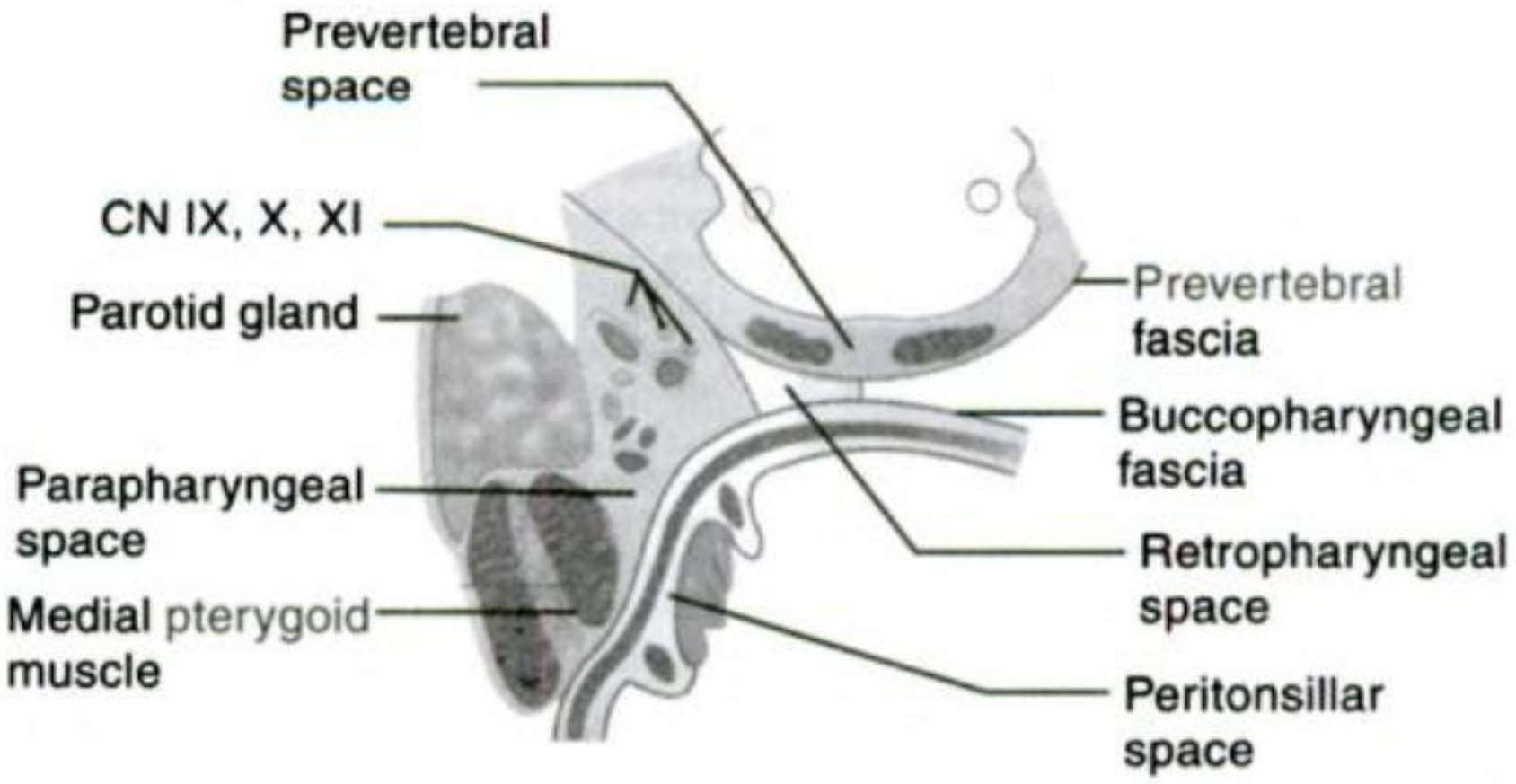

Fig. 3.1. Various head and neck spaces where abscesses can form.

Infection of *prevertebral space* which lies between vertebral bodies and prevertebral fascia causes prevertebral abscess (also called, though improperly, the chronic retropharyngeal abscess). This space extends from skull base to coccyx.

Abscess within the tonsil is formed due to infection of its crypts and forms an *intratonsillar abscess*.

12. Answer (b)

Tensor tympani, as the name indicates, is a muscle of the middle ear. It enters the middle ear through canal for tensor tympani. Its tendon hooks round the processus cochleariformis, turns 90° laterally and gets attached to the neck of malleus.

Structures which pass between base of skull and superior constrictor muscle are:

(i) Levator (veli) palatini
(ii) Tensor (veli) palatini
(iii) Eustachian tube
(iv) Ascending palatine artery (branch of facial artery)
(v) Ascending pharyngeal artery (branch of exterior carotid) (see Fig. 2.11).

13. Answer (c)

Important spaces involved in deep neck infections are retropharyngeal, prevertebral, parapharyngeal, masticator, submandibular and parotid. Radiologic investigations usually depend on space involved but since the question does not specify any specific space, CT scan with contrast is the investigation of choice. It helps to evaluate all deep neck spaces. It can help to:

(i) Know the size and location of abscess and its relationship with the surrounding tissues, e.g. carotid artery and internal jugular vein.
(ii) Differentiate between abscess and cellulitis.
(iii) Find the deviation and compression of the airway.

Abscess is recognised by enhancement of its rim and possible fluid level in the abscess.

14. Answer (a) III, (b) I, (c) II and (d) IV

Stylohyoid	CN VII	All muscles attached to styloid process have different nerve supply.
Stylopharyngeus	CN IX	
Styloglossus	CN XII	

Palatoglossus which forms anterior pillar of tonsil is supplied by cranial part CN XI through pharyngeal plexus.

Also remember all muscles of soft palate (palatoglossus, palatopharyngeus, levator palati and musculus uvulae) are supplied by cranial part of CN XI with the exception of tensor palati. Tensor palati is supplied by mandibular branch of trigeminal.

15. Answer (b)

Rhinolalia clausa is a voice with lack of nasal resonance and is caused when nose or nasopharynx is blocked, e.g. adenoid hyperplasia, nasal or nasopharyngeal tumours or inflammation.

Rhinolalia aperta is nasal resonance for words which are not normally resonated through nose or nasopharynx. It is seen when soft palate fails to cut off nasopharynx or due to an abnormal communication between nose and palate. It is seen in velopharyngeal insufficiency, cleft palate, oronasal fistula, etc.

Hot-potato voice is muffled speech seen in peritonsillar abscess and cancer base of tongue.

Staccato speech is seen in parkinsonism.

16. Answer (a), (b), (c) and (d)

Erythroplasia is 17 times more prone to undergo malignant change than leukoplakia.

Oral lichen planus is also precancerous but rarely.

Oral and oropharyngeal submucous fibrosis commonly seen in tobacco and *pan* chewers in India and Pakistan also has a high potential for malignant change.

White sponge naevus presents as thick white corrugated folds of buccal mucosa more often involving children. It does not have any malignant potential.

17. Answer (c)

Fordyce's spots are yellowish-white granules in the buccal mucosa and represent enlarged ectopic sebaceous glands. It is a developmental anomaly. There is no malignant potential.

18. Answer (c)

19. Answer (a)

20. Answer (a)

21. Answer (e)

22. Answer (b)

23. Answer (c)

Majority of tongue carcinomas arises from its lateral border. A small number of them arise from the dorsal surface, tip or the ventral aspect.

24. Answer (d)

Growth which measures more than 3 cm is classified as T_2. Multiple ipsilateral nodes none more than 3 cm is N_2. The growth (T_2 N_2) thus will be stage III.

Treatment of stage III is surgical excision of growth with supraomohyoid (levels I, II and III nodes) neck dissection followed by post-operative radiotherapy.

25. Answer (c)

Zenker's (or hypopharyngeal) diverticulum arises from a dehiscence between two parts of inferior constrictor, thyropharyngeus and cricopharyngeus, due to incoordinated contractions of these parts. This dehiscence is also called *Killian's dehiscence*. Sometimes it arises from the dehiscence between longitudinal fibres of oesophagus and lower border of cricopharyngeus. It is a pulsion diverticulum. When it is filled with food, the latter is regurgitated and produces cough at night. Dysphagia and foul-breath are other symptoms.

Diagnosis is made on barium swallow and oesophagoscopy.

Early small diverticulum is treated by cricopharyngeal myotomy only but large ones are treated by excision of the diverticulum by cervical approach and cricopharyngeal myotomy. It is also treated endoscopically by Dohlman's operation where septum between

oesophagus and diverticulum is divided by laser or by applying staples and cutting with scissors.

26. Answer (a)

Most common benign tumour of oesophagus is leiomyoma. It is a submucosal tumour. Other less common submucosal tumours are lipoma, neurofibroma, fibroma, angioma and granular cell tumour.

Most common mucosal tumour is squamous papilloma. The other is adenoma which arises in Barrett's oesophagus and is premalignant.

27. Answer (a)

Approximately 90% of oesophageal cancers are squamous cell type and the remaining adenocarcinomas, adenoid cystic carcinoma, lymphomas and others.

Risk factors for oesophageal cancer are:

(i) Alcohol and tobacco abuse
(ii) Achalasia cardia
(iii) Plummer-Vinson syndrome
(iv) Tylosis (palmar and plantar keratoderma)
(v) Chronic stricture
(vi) Barrett's oesophagus.

28. Answer (d)

In cardiac achalasia, there is lack of lower oesophageal sphincter to relax with consequent dilatation of oesophagus. Radiologically dilated oesophagus and spasm of lower oesophageal sphincter gives a "rat-tail" or "bird-beak" appearance. Primary achalasia is associated with idiopathic degeneration of ganglion cells of the Auerbach's plexus.

Secondary cardiac achalasia is caused by:

(i) Carcinoma of distal oesophagus
(ii) Chagas' disease
(iii) Post-vagotomy syndrome
(iv) Cerebrovascular accident
(v) Diabetes.

29. Answer (b)

Severe vomiting can cause tear of oesophageal mucosa only (Mallory-Weiss syndrome) or tear of all the layers of oesophageal wall (Boerhaave syndrome) above the diaphragm due to sudden increase in oesophageal pressure. Since there is hydropneumothorax, all the layers of oesophagus are torn. Oesophagogram with water-soluble die will show tear located just above the diaphragm. Small tears may be missed unless barium is used.

Treatment of Boerhaave syndrome is thoracotomy, repair of the tear and mediastinal drainage. Systemic antibiotics should be used to control infection.

30. Answer (c)

Since the mass presents with pulsation, it is aneurysm of internal carotid artery. All other masses are non-pulsatile.

31. Answer (a)

Glossopharyngeal nerve supplies both the tonsil and the ear. After tonsillectomy, pain is referred to the ear via tympanic branch of glossopharyngeal.

32. Answer (d)

Submucous cleft palate is characterised by the first three items. Soft palate has deficient musculature, so much so that it is made of two mucosal layers. It forms a contraindication for adenoidectomy as it results in velopharyngeal insufficiency and speech defects.

33. Answer (d)

It is usually a unilateral condition. Neuralgic pain can be controlled by carbamazepine and phenytoin. Sometimes intractable pain is controlled by section of IX nerve in cranial fossa. Injection of alcohol into the tonsillar fossa to block the nerve should be avoided because of proximity of internal carotid artery which may undergo necrosis.

34. Answer (c)

Although all the listed arteries supply the tonsil, tonsillar branch from the facial artery is the main blood supply.

35. Answer (b)

In quinsy (peritonsillar abscess) pus collects lateral to tonsillar capsule and medial to superior constrictor. Lateral to buccopharyngeal fascia lies the parapharyngeal space (see Fig. 3.1).

36. Answer (c)

Aneurysm of internal carotid artery presents as a parapharyngeal mass pushing the tonsil medially and is pulsatile.

37. Answer (c)

Parapharyngeal space extends from skull base (under surface of petrous bone) to the hyoid bone. Infection of petrous cells (petrositis) is responsible for this abscess.

38. Answer (c)

Stage III carcinoma tongue means tumour more than 4 cm in greatest dimension with no neck nodes or tumour of T_1 (< 2 cm), T_2 (2–4 cm) or T_3 (> 4 cm) with a single ipsilateral node > 3 cm.

Treatment will include wide excision of primary tumour with neck dissection and post-operative radiotherapy.

All patients with stage III or stage IV carcinoma require post-operative radiotherapy in addition to surgery as this improves locoregional control of disease.

39. Answer (a), (b) and (c)

Ludwig's angina is infection of both sublingual, submandibular and submental spaces. Parapharyngeal space can be secondarily involved.

40. Answer (b)

Snoring occurs due to nasal, nasopharyngeal or oropharyngeal obstruction. Multiple laryngeal papillomatosis causes stridor and respiratory distress.

41. Answer (d)

Since the patient is in cancer age group with risk factors of smoking and drinking, metastases from an occult primary are highly suspected. FNAC is very sensitive and can detect squamous cell carcinoma. Once metastases are proved, work-up for occult primary should continue.

42. Answer (b)

Streptococcal tonsillitis, diphtheria and infectious mononucleosis involve the tonsils and form a greyish-white membrane but Ludwig's angina is cellulitis of the floor of mouth involving sublingual, submandibular and submental spaces. However, Vincent's angina (not Ludwig's) does form a pseudomembrane over the tonsil with pain in throat, fetid breath and cervical lymph node enlargement. It is caused by *Treponema vincentii*, *Fusobacterium necrophorum* (a fusiform bacillus) and anaerobic bacteria (*Bacteroides* family and *Peptococcus*).

43. Answer (d)

Abscess in the parapharyngeal space pushes the tonsil medially and it also lies deep to sternocleidomastoid. Trismus is due to spasm of medial pterygoid muscle. Retropharyngeal abscess pushes the posterior pharyngeal wall anteriorly while Ludwig's angina and submental abscess cause swelling in submental area.

44. Answer (b)

Suspected lymph node may have metastases from the upper aerodigestive tract. Since no lesion is found on physical examination of head and neck, triple endoscopy would be justified next. Supravital staining helps in selecting the site of biopsy in a lesion. As no lesion is discovered, it will not be very useful.

45. Answer (c)

Right ventricular hypertrophy and cor pulmonale are seen in long-standing tonsil and adenoid obstruction. It is reversible after adenotonsillectomy.

46. Answer (b)

47. Answer (d)

Tonsillectomy should be avoided in acute infections and rescheduled when infection has cleared and patient fully recovered.

48. Answer (b)

See explanation of Q. 17.

Chapter 4

Salivary Glands

1. Amount of saliva secreted in 24 hours is:

(a) 50–100 ml
(b) 200–300 ml
(c) 600–800 ml
(d) 1000–1500 ml

2. Major amount of saliva, when salivary glands are not stimulated is contributed by:

(a) Parotid glands
(b) Submandibular glands
(c) Sublingual glands
(d) Minor salivary glands

3. Excessive salivation is caused by all except:

(a) Iodides taken orally
(b) Poorly fitting denture
(c) Diabetes insipidus
(d) Ulcers in oral cavity
(e) Peritonsillitis

4. Xerostomia can be caused by all of the following except:

(a) Antihistamines
(b) Uraemia
(c) Sjögren's syndrome
(d) Mouth breathing
(e) Cerebral palsy

5. Non-neoplastic, non-inflammatory enlargement of parotid glands is seen in:

(a) Obesity
(b) Hypothyroidism
(c) Diabetes mellitus
(d) Malnutrition
(e) All of the above

6. Sjögren's syndrome is:

(a) Chronic granulomatous disease
(b) A viral infection
(c) An autoimmune process
(d) Associated with collagen disorder
(e) Both (c) and (d)

7. The percentage of salivary calculi seen in submandibular gland is:

(a) 20%
(b) 40%
(c) 60%
(d) 80%

8. What percentage of calculi in the submandibular gland is radiolucent?

(a) 20%
(b) 30%

(c) 50%
(d) 80%

9. A 10-day-old female infant presented with a unilateral parotid swelling with bluish overlying skin. Swelling increases when the child cries. No other abnormality was detected. The likely diagnosis is:

(a) Lipoma of the parotid
(b) Neurofibroma
(c) Haemangioma
(d) Lymphangioma
(e) Cyst of first branchial arch

10. Most common site of origin of pleomorphic adenoma is:

(a) Parotid gland
(b) Submandibular salivary gland
(c) Minor salivary glands of soft and hard palate
(d) Minor salivary glands of lip

11. Most common malignant tumour of submandibular salivary gland is:

(a) Mucoepidermoid carcinoma
(b) Squamous cell carcinoma
(c) Adenoid cystic carcinoma
(d) Adenocarcinoma
(e) Malignant mixed tumour

12. Which of the following malignant salivary gland tumours has a tendency for perineural invasion?

(a) Mucoepidermoid carcinoma
(b) Adenoid cystic carcinoma
(c) Adenocarcinoma
(d) Acinous cell carcinoma
(e) Carcinoma arising in pleomorphic adenoma

13. Which of the following parotid malignancies has the best prognosis?

(a) Malignant mixed tumour
(b) Adenocarcinoma
(c) Adenoid cystic carcinoma
(d) Acinous cell carcinoma

14. Superficial parotidectomy is adequate in the management of all of the following except:

(a) Oncocytoma
(b) Pleomorphic adenoma
(c) Basal cell adenoma
(d) Acinic cell carcinoma
(e) Adenocarcinoma

15. Frey's syndrome is due to:

(a) Aberrant cross-innervation of post-ganglionic parasympathetic fibres for parotid to post-ganglionic sympathetic fibres supplying the sweat glands of skin
(b) Pre-ganglionic parasympathetic fibres of parotid to post-ganglionic sympathetic fibres of sweat glands of skin
(c) Post-ganglionic parasympathetic fibres secretomotor of the parotid to pre-ganglionic sympathetic fibres of sweat glands of skin
(d) None of the above

16. Sarcoidosis can present with the following manifestations except:

(a) Facial paralysis
(b) Cervical lymphadenopathy
(c) Circumoral oedema
(d) Parotid swelling
(e) Diabetes insipidus

Answer Key

1. (d)
2. (b)
3. (c)
4. (e)
5. (e)
6. (e)
7. (d)
8. (a)
9. (c)
10. (a)
11. (c)
12. (b)
13. (d)
14. (e)
15. (a)
16. (c)

Explanations to Answers

1. Answer (d)

Volume of saliva secreted in 24 hours is 1000–1500 ml, i.e. on an average 1 ml/min.

2. Answer (b)

When salivary glands are not stimulated major amount of saliva is contributed by submandibular glands (parotid 26%, submandibular 69% and sublingual 5%). However, when stimulated, major contribution is by parotid glands (about 66%) and rest by submandibular and sublingual glands. Minor salivary glands, independent of stimulation, contribute 7–8% of total saliva.

3. Answer (c)

Diabetes insipidus causes dryness of mouth due to excessive loss of water. Excessive salivation, also known as *ptyalism*, is caused by:

(i) Drugs: Parasympathomimetics and iodides.

(ii) Oral and pharyngeal inflammations: Ulcers, poor orodental hygiene and peritonsillitis.

(iii) Foreign bodies of pharynx.

(iv) Irritation due to poorly fitting denture.

(v) Cerebral palsy.

4. Answer (e)

Conditions (a) to (d) cause dryness of mouth. Cerebral palsy causes excessive salivation and has been treated by bilateral tympanic neurectomies or re-routing parotid ducts with or without bilateral submandibular gland excision.

5. Answer (e)

Diffuse and painless enlargement of salivary glands is seen in conditions (a) to (d). Nutritional deficiency of vitamins A and B, and niacin is also responsible. Painless enlargement of parotid is also seen in alcoholic cirrhosis.

6. Answer (e)

Sjögren's syndrome is an autoimmune process often associated with collagen disorders such as rheumatoid arthritis, myositis, scleroderma or disseminated lupus. Clinically it presents with parotid enlargement, xerostomia, keratoconjunctivitis and arthritis. Biopsy of the lower lip helps in the diagnosis.

7. Answer (d)

Of all the salivary calculi 80% are seen in submandibular and 20% in the parotid gland.

8. Answer (a)

Twenty per cent of submandibular stones are radiolucent while majority of them (80%) are radiopaque and seen on plain radiographs.

In case of parotid gland it is just the reverse; 80% are radiolucent while only 20% are radiopaque.

9. Answer (c)

Haemangioma is the most common benign neoplasm of the parotid seen at birth. The overlying skin shows bluish discolouration. It also increases in size on crying or straining. Lymphangioma is less common while lipoma, neurofibroma and first branchial arch cyst are rare.

Haemangiomas of parotid involute spontaneously by 5 years of age and treatment is only observation. Surgical excision may be required if they fail to involute.

10. Answer (a)

Pleomorphic adenoma most commonly arises from the parotid gland. Ninety per cent are located in the superficial lobe while 10% involve deep lobe and present as parapharyngeal tumours.

11. Answer (c)

Adenoid cystic carcinoma is the most common malignant tumour involving submandibular gland. It is also the most common malignant tumour involving the sublingual and minor salivary glands.

12. Answer (b)

Adenoid cystic carcinoma has a propensity to spread by perineural invasion. Depending on site most common nerves involved are maxillary and mandibular division of trigeminal.

13. Answer (d)

Acinous cell carcinoma is a well-encapsulated carcinoma. It is a low-grade malignancy and a five year survival rate greater than 90% after surgery.

14. Answer (e)

Adenocarcinoma is a highly aggressive tumour. It spreads locally and by distant metastases. Superficial parotidectomy is inadequate. Treatment is total parotidectomy with post-operative radiation.

Oncocytoma is benign tumour seen after the age of 50. It mostly affects superficial lobe of parotid.

Basal cell adenoma is a monomorphic adenoma. It is benign and non-aggressive.

Pleomorphic adenoma, also called mixed salivary tumour, is a benign tumour and the most common tumour of the parotid. It has a thin capsule and also sends prolongations into the surrounding gland. If enucleated, some tumour is left. Superficial parotidectomy is the treatment of choice.

15. Answer (a)

Both fibres are post-ganglionic.

Secretomotor fibres to parotid originate in tympanic branch of CN IX, travel through middle ear, relay in otic ganglion and supply the parotid through auriculotemporal. Similarly, secretomotor fibres to sweat glands of the skin over the parotid area are sympathetic in nature and are post-ganglionic as they relay in cervical sympathetic ganglia.

Aberrant re-innervation, i.e. secretomotor fibres of parotid now making connections with secretomotor fibres of sweat glands causes Frey's syndrome or gustatory sweating. Sweating occurs over the preauricular skin in response to stimulus to secrete saliva from the parotid.

16. Answer (c)

Sarcoidosis is an immunologic disorder involving multiple organs. Cervical lymphadenopathy is the most common head and neck manifestation.

Parotid gland swelling is usually bilateral. The combination of parotid swelling, uveitis and facial paralysis along with fever is called

Heerfordt's disease or *uveoparotid fever*. Other salivary glands (submandibular and sublingual) may also be involved.

Facial nerve involvement may be sudden in onset and sometimes bilateral. It is due to lymphocytic infiltration of the nerve. Sometimes granulomatous leptomeningitis involves multiple cranial nerves such as facial, optic, CN IX, X and VIII. Diabetes insipidus is due to involvement of the pituitary.

Circumoral oedema is a feature of Melkersson-Rosenthal syndrome.

Chapter 5

Larynx and Trachea

1. Cricoid cartilage is a derivative of which branchial arch?

(a) IIIrd arch
(b) IVth arch
(c) VIth arch
(d) Hypobranchial eminence

2. Sensory nerve supply above the level of vocal cords is:

(a) Glossopharyngeal
(b) Superior laryngeal
(c) Recurrent laryngeal
(d) Pharyngeal branch of vagus

3. The thyroid angle in male is:

(a) 60°
(b) 90°
(c) 100°
(d) 120°

4. All of the following laryngeal cartilages undergo calcification except:

(a) Thyroid
(b) Cricoid
(c) Epiglottis
(d) Arytenoid

5. On an average respiratory dead space is:

(a) 100 ml
(b) 150 ml
(c) 200 ml
(d) 250 ml

6. All of the following laryngeal muscles are adductors of vocal cord except:

(a) Lateral cricoarytenoid
(b) Posterior cricoarytenoid
(c) Thyroarytenoid
(d) Oblique arytenoid

7. Paralysis of recurrent laryngeal nerve does not affect function of:

(a) Thyroarytenoid
(b) Lateral cricoarytenoid
(c) Vocalis
(d) Cricothyroid

8. Which of the following muscle is tensor of vocal cord?

(a) Posterior cricoarytenoid
(b) Transverse arytenoid
(c) Lateral cricoarytenoid
(d) Cricothyroid

9. Diagnosis of congenital subglottic stenosis in a premature neonate is made when tip of bronchoscope of the following diameter cannot be passed through subglottis:

(a) 3 mm
(b) 3.5 mm
(c) 4 mm
(d) 4.5 mm

10. Tracheostomy cuts down dead space by:

(a) 10–15%
(b) 20–25%
(c) 30–50%
(d) 60–70%

11. In a full-term newborn infant who has respiratory distress diagnosis of congenital subglottic stenosis is made when tip of bronchoscope of the following diameter cannot be passed:

(a) 3 mm
(b) 3.5 mm
(c) 4 mm
(d) 4.5 mm

12. Anteroposterior size of glottis in males is:

(a) 16 mm
(b) 20 mm
(c) 24 mm
(d) 28 mm

13. Type of epithelium lining the vocal cords is:

(a) Keratinising stratified squamous
(b) Non-keratinising stratified squamous

(c) Pseudostratified ciliated columnar
(d) Cuboidal

14. Laryngeal crepitus is seen in:

(a) Normal persons
(b) Fractures of thyroid cartilage
(c) Post-cricoid carcinoma
(d) Prevertebral abscess

15. Reinke's oedema is responsible for:

(a) Vocal nodule
(b) Vocal polyp
(c) Diffuse polypoid degeneration of vocal cords
(d) Laryngeal cyst

16. Phonation in dysphonia plica ventricularis is produced by:

(a) Anterior thirds of vocal cords only
(b) False cords
(c) Cricopharyngeal segment
(d) Palatopharyngeal fold

17. The best way to diagnose laryngomalacia is:

(a) Symptoms and signs of disease only
(b) Soft tissue lateral view neck
(c) Direct laryngoscopy under general anaesthesia
(d) Flexible fibreoptic laryngoscopy

18. All of the following are true about laryngomalacia except:

(a) Most common cause of congenital laryngeal stridor
(b) Relieved when child is put in prone position

(c) Disappears spontaneously as child grows
(d) Epiglottis appears omega shaped
(e) 50% of patients require surgery

19. Laryngeal web most commonly involves region of:

(a) Supraglottitis
(b) Glottis
(c) Subglottis
(d) Both (a) and (b)

20. An infant after birth is noticed to have stridor and a hoarse cry. All of the following diagnosis are possible except:

(a) Laryngeal web
(b) Laryngeal paralysis
(c) Congenital laryngeal cyst
(d) Laryngomalacia

21. All of the following conditions affect posterior part of larynx except:

(a) Contact ulcer
(b) Pachydermia laryngis
(c) Intubation granuloma
(d) Lupus

22. Acute epiglottitis in children is mostly caused by:

(a) Para-influenzae type I and II
(b) Respiratory syncytial virus
(c) *Streptococcus pneumoniae*
(d) *Haemophilus influenzae* type B

23. Antibiotic of choice for acute epiglottitis is:

(a) Tetracycline
(b) Chloramphenicol

(c) Cephalosporin
(d) Penicillin

24. In a child with suspected diagnosis of epiglottitis, indicate your first line of treatment:

(a) Order an X-ray of soft tissue lateral view neck to establish the diagnosis
(b) Take throat swab and blood culture and start intravenous fluids
(c) Perform a laryngoscopy
(d) Secure an airway by intubation

25. Treatment of choice for stage I cancer larynx is:

(a) Radical surgery
(b) Chemotherapy
(c) Radiotherapy
(d) Surgery followed by radiotherapy

26. A middle aged male comes to the OPD with the only complaint of hoarseness for the past 2 years. He has been a chronic smoker for 30 years. On examination, a reddish area of mucosal irregularity overlying a portion of both cords was seen. Management would include all except:

(a) Cessation of smoking
(b) Bilateral cordectomy
(c) Microlaryngeal surgery for biopsy
(d) Regular follow-up

27. While removing a laryngeal tumour with CO_2 laser a fire occurs in the airway. First step in management would be:

(a) Remove the endotracheal tube
(b) Give 100% oxygen

(c) Stop oxygen
(d) Irrigate with saline

28. Virus responsible for juvenile papillomatosis of larynx is:

(a) Cytomegalovirus
(b) Ebstein-Barr virus
(c) Adenovirus
(d) Papovavirus

29. Regarding multiple laryngeal papillomas of larynx, all are true except:

(a) Caused by a virus
(b) Recurrent in nature
(c) Premalignant
(d) Laser excision is the best treatment

30. Laryngocele arises from:

(a) Vallecula
(b) Laryngeal saccule
(c) Laryngeal ventricle
(d) Aryepiglottic fold

31. Hoarseness is the earliest symptom of carcinoma of:

(a) Glottis
(b) Subglottis
(c) Supraglottis
(d) All of the above

32. All are true of supraglottic cancer except:

(a) Earliest symptom is hoarseness
(b) Most aggressive of laryngeal cancers
(c) High incidence of nodal metastases
(d) Commonest site in supraglottic region is epiglottis

33. A patient is having carcinoma larynx. The most likely other area having a second primary (synchronous second primary) is:

(a) Cancer base of tongue
(b) Cancer oesophagus
(c) Carcinoma bronchus
(d) Carcinoma nasopharynx

34. Chances of cervical nodal metastases are highest in carcinoma of:

(a) Glottis
(b) Subglottis
(c) Supraglottitis
(d) Anterior commissure

35. The highest incidence of distant metastases in laryngeal cancer is seen in:

(a) Lung
(b) Bone
(c) Liver
(d) Brain

36. In cancer of pyriform fossa, pain is referred to ipsilateral ear via:

(a) CN IX
(b) CN X
(c) CN XI
(d) CN XII

37. Phonation in oesophageal speech in a case of laryngectomy is produced by:

(a) Buccal cavity
(b) Pharynx

(c) Pharyngo-oesphageal segment
(d) Trachea

38. Type I thyroplasty is for: *(APIGME,2003)*

(a) Vocal cord medialisation
(b) Vocal cord lateralisation
(c) Vocal cord shortening
(d) Vocal cord lengthening

39. Treatment of verrucous carcinoma of larynx is:

(a) Radiotherapy
(b) Chemotherapy
(c) Surgery
(d) Surgery followed by radiotherapy

40. Ventricle of Morgagni is situated in:

(a) Larynx between true and false cords
(b) Between base of skull and upper border of superior constrictor
(c) Nasopharynx representing epithelial diverticulum which forms anterior lobe of pituitary
(d) Nose above the vestibule and anterior to middle turbinate

41. A 3-year-old male child presents with multiple laryngeal papillomas with hoarse voice and slight airway distress. Papillomas are involving the glottis. The best treatment is:

(a) Tracheostomy and observation
(b) Steroids
(c) Interferon therapy
(d) Microlaryngoscopy and excision

42. The best laser for multiple laryngeal papillomas is:

(a) Argon
(b) Nd: YAG
(c) KTP/532
(d) CO_2
(e) All are equally effective

43. All are true about external laryngocele except:

(a) Produces a swelling in the neck on Valsalva
(b) Communicates with laryngeal ventricle
(c) Can be seen on CT
(d) Herniates through cricothyroid membrane

44. Which of the following are true statements in functional aphonia?

(a) Always affects both cords
(b) Vocal cords fail to adduct on phonation
(c) Vocal cords adduct on coughing
(d) Vocal cords abduct on cough but adduct on phonation

45. Steeple sign seen on posteroanterior view of neck in a child with stridor is indicative of:

(a) Acute epiglottitis
(b) Acute laryngotracheobronchitis
(c) Laryngeal papillomatosis
(d) Bilateral abductor paralysis

46. During laser removal of a benign laryngeal tumour, ignition of the endotracheal tube is seen. Your immediate response should be:

(a) To immediately remove the tube
(b) To stop oxygen

(c) To flood the area with saline to extinguish fire and later continue surgery
(d) To remove the tube, do bronchoscopy and re-establish the airway

47. A 20-year-old male presents with throat pain and easy fatigability of his voice. Indirect laryngeal examination revealed both cords approximately well but leaving a triangular gap in the interarytenoid. Your diagnosis is:

(a) Mutational falsetto voice
(b) Functional aphonia
(c) Ventricular dysphonia
(d) Phonasthenia
(e) Mogiphonia

48. Which of the following statements is not true for contact ulcer?

(a) The commonest site is the junction of anterior 1/3rd and middle 1/3rd of vocal cord and gastro-oesophageal reflux the causative factor
(b) Can be caused by intubation injury
(c) The vocal process is the site and is caused/aggravated by acid reflux
(d) Can be caused by adductor dysphonia

49. Which of the following is indicative of foreign body in tracheobronchial tree in a child?

(a) History of coughing, choking and gagging
(b) X-ray of chest with hyperinflated lung on one side
(c) X-ray of chest with unilateral atelectasis
(d) All of the above
(e) None of the above

50. Which of the following is incorrect? A bronchial foreign body:

(a) Lodges more often in the right bronchus
(b) Can be expelled spontaneously with cough
(c) Causes emphysema lung
(d) Causes collapse of lung
(e) If vegetable, is less dangerous than metallic one

51. Most common congenital anomaly of the larynx is:

(a) Laryngomalacia
(b) Subglottic stenosis
(c) Laryngeal web
(d) Subglottic haemangioma

52. Hypothyroidism can cause all except:

(a) Hoarseness
(b) Dryness of mouth
(c) Nasal stuffiness
(d) Vertigo
(e) Hearing loss

53. A Blom-Singer prosthesis is used:

(a) As a ventilation tube in otitis media with effusion
(b) To close a perforation in nasal septum
(c) To divert tracheal air into oesophagus for voice production in laryngeal patients
(d) In stapedectomy to conduct sound from incus to oval window

54. Which of the following is usually associated with smoking?

(a) Vocal nodule
(b) Contact ulcer

(c) Cyst of vocal cord
(d) Reinke's oedema
(e) Vocal polyp

55. In recurrent respiratory papillomatosis, which method of treatment prevents recurrence?

(a) CO_2 laser
(b) Microlaryngeal surgery using cup forceps
(c) Local injection of cidofovir
(d) Interferon
(e) None

56. A tracheostomised patient, with Portex tracheostomy tube, in the ward, developed sudden complete blockage of the tube. Which of the following is the best next step in management?

(a) Immediate removal of the tracheostomy tube
(b) Suction of tube with sodium bicarbonate
(c) Suction of tube with saline
(d) Jet ventilation

57. "Gold standard" surgical procedure for prevention of aspiration is:

(a) Thyroplasty
(b) Tracheostomy
(c) Tracheal division and permanent tracheostome
(d) Feeding gastrostomy/jejunostomy

58. A patient presented with stridor and dyspnoea which he developed after an attack of upper respiratory tract infection. On examination he was found to have a 3-mm glottic opening. All of the following are used in the management except:

(a) Tracheostomy
(b) Arytenoidectomy

(c) Teflon injection
(d) Cordectomy

59. A patient with hoarseness of voice was found to be having pachydermia laryngis. All of the following are true except:

(a) It is a hyperkeratotic lesion present within the anterior two-third of the vocal cords
(b) It is not premalignant lesion
(c) Diagnosis is made by biopsy
(d) On microscopy it shows acanthosis and hyperkeratosis

60. A 4-year-old child presented in emergency with mild respiratory distress. On laryngoscopy, she was diagnosed to have multiple juvenile papillomatosis of the larynx. Next line of management is:

(a) Tracheostomy
(b) Microlaryngoscopy
(c) Steroids
(d) Antibiotics

61. A 26-year-old female presented with gradually increasing respiratory distress since 4 days. She has history of hospitalisation and mechanical ventilation with orotracheal intubation for 2 weeks. Now she is diagnosed as having severe tracheal stenosis. What would be the next line of management?

(a) Laser excision and stent insertion
(b) Steroids
(c) Tracheal dilation
(d) Tracheal resection and end-to-end anastomosis

62. A laryngocele arises from: *(AIIMS, May 2005)*

(a) True vocal cord

(b) Subglottis
(c) Saccule of the ventricle
(d) Anterior commissure

63. Which focal length in the objective piece of microscope is commonly used for ear surgery?

(*AIIMS, May 2005*)

(a) 100 mm
(b) 250 mm
(c) 450 mm
(d) 950 mm

64. A 10-year-old boy developed hoarseness of voice following an attack of diphtheria. On examination his right vocal was paralysed. The treatment of choice for paralysed vocal cord will be:

(*AIIMS, November 2005*)

(a) Gel foam injection of right vocal cord
(b) Fat injection of right vocal cord
(c) Thyroplasty type-I
(d) Wait for spontaneous recovery of vocal cord

65. A case of carcinoma larynx with the involvement of anterior commissure and right vocal cord developed perichondritis of thyroid cartilage. Which of the following statements is true for the management of this case? (*AIIMS, May 2006*)

(a) He should be given radical radiotherapy as this can cure early tumours
(b) He should be treated with combination of chemotherapy and radiotherapy
(c) He should first receive radiotherapy and if residual tumour is present then should undergo laryngectomy

(d) He should first undergo laryngectomy and then postoperative radiotherapy

66. Laryngocele arises as a herniation of laryngeal mucosa through the following membrane: *(AIPGME, 2006)*

(a) Thyrohyoid
(b) Cricothyroid
(c) Cricotracheal
(d) Cricosternal

67. The most common and earliest manifestation of carcinoma of the glottis is: *(AIPGME, 2005)*

(a) Hoarseness
(b) Haemoptysis
(c) Cervical lymph nodes
(d) Stridor

68. Androphonia can be corrected by doing: *(AIPGME, 2005)*

(a) Type-I thyroplasty
(b) Type-II thyroplasty
(c) Type-III thyroplasty
(d) Type-IV thyroplasty

Answer Key

1. (c)
2. (b)
3. (b)
4. (c)
5. (b)
6. (b)
7. (d)
8. (d)
9. (a)
10. (c)
11. (c)
12. (c)
13. (b)
14. (a)
15. (c)
16. (b)
17. (d)
18. (e)
19. (b)
20. (d)
21. (d)
22. (d)
23. (c)
24. (d)
25. (c)
26. (b)
27. (a)
28. (d)
29. (c)
30. (b)
31. (a)
32. (a)
33. (c)
34. (c)
35. (a)
36. (b)
37. (c)
38. (a)
39. (c)
40. (a)
41. (d)
42. (d)
43. (d)
44. (a), (b) and (c)
45. (b)
46. (d)
47. (d)
48. (a)
49. (d)
50. (e)
51. (a)
52. (b)
53. (c)
54. (d)
55. (e)
56. (a)
57. (c)
58. (c)
59. (a)
60. (a)
61. (b)
62. (c)
63. (b)
64. (d)
65. (d)
66. (a)
67. (a)
68. (d)

Explanations to Answers

1. Answer (c)

Cricoid is derived from VIth arch. Other cartilages of VIth arch derivation are arytenoids and corniculate.

Thyroid and cuneiform cartilages are derived from IVth arch.

Epiglottis is derived from hypobranchial eminence and possibly also from ventral ends of IVth arch.

2. Answer (b)

Sensory nerve supply to larynx above the level of vocal cords is superior laryngeal nerve, while below the cords it is recurrent laryngeal nerve. Superior laryngeal nerve is a branch of vagus. It divides into two branches—external laryngeal supplying motor fibres to cricothyroid muscle and an internal laryngeal nerve which runs submucosally in pyriform fossa and supplies the larynx.

3. Answer (b)

The two laminae of thyroid cartilage meet in the midline forming an angle—the thyroid angle. It is 90° in male and 120° in female. The acute angle formed in male is also responsible for Adam's apple. Thyroid on its inner side gives attachment to vocal cords in its middle while just above it is the attachment of epiglottis.

4. Answer (c)

Calcification occurs in hyaline cartilages such as thyroid, cricoid and greater part of arytenoid. Epiglottis is made of elastic fibrocartilage. It does not undergo calcification. Other cartilages which do not undergo calcification are corniculate, cuneiform and apices of arytenoids. Cartilage of pinna is also made of elastic fibrocartilage and does not calcify. Calcification of laryngeal cartilages begins at 25 years of age and completes by about 65 years.

5. Answer (b)

Respiratory dead space is 150 ml. It is cut down by tracheostomy by 30–50%.

6. Answer (b)

Posterior cricoarytenoid is abductor of the vocal cord. In fact this is the only abductor muscle of the larynx. Lateral cricoarytenoid, thyroarytenoid, oblique arytenoid and transverse arytenoid are adductors of vocal cord.

7. Answer (d)

Cricothyroid muscle which lies outside the larynx is supplied by external laryngeal nerve—a branch of superior laryngeal nerve of vagus. This is the only laryngeal muscle not supplied by recurrent laryngeal nerve.

8. Answer (d)

Cricothyroid muscle is the tensor of vocal cord. It is supplied by external laryngeal branch of superior laryngeal nerve. It lies external to the larynx. Other tensor muscle is the vocalis which is medial part of thyroarytenoid and is supplied by recurrent laryngeal nerve.

9. Answer (a)

In a full-term neonate the diameter of subglottis is 4.5 to 5.5 mm. In premature neonate the diameter is 3.5 mm. When tip of 3.0 mm bronchoscope cannot be passed into the subglottis, diagnosis of congenital subglottic stenosis can be made.

10. Answer (c)

One of the advantages of tracheostomy is that respiratory dead space is cut down by 30–50%, thereby improving respiratory efficiency.

11. Answer (c)

Normal diameter of subglottic region of a full-term neonate is 4.5–5.5 mm. If the tip of 4 mm bronchoscope cannot be passed through subglottic region, diagnosis of subglottic stenosis is made. Congenital subglottic stenosis is due to thickening of subglottic soft-tissues or thickening of anterior part of cricoid ring.

Also remember diameter of subglottic region in premature neonate is 3.5 mm and diagnosis of stenosis is made if bronchoscope of 3 mm cannot be passed.

12. Answer (c)

Anteroposterior size of glottis in adult males is 24 mm. In adult females it is 16 mm.

13. Answer (b)

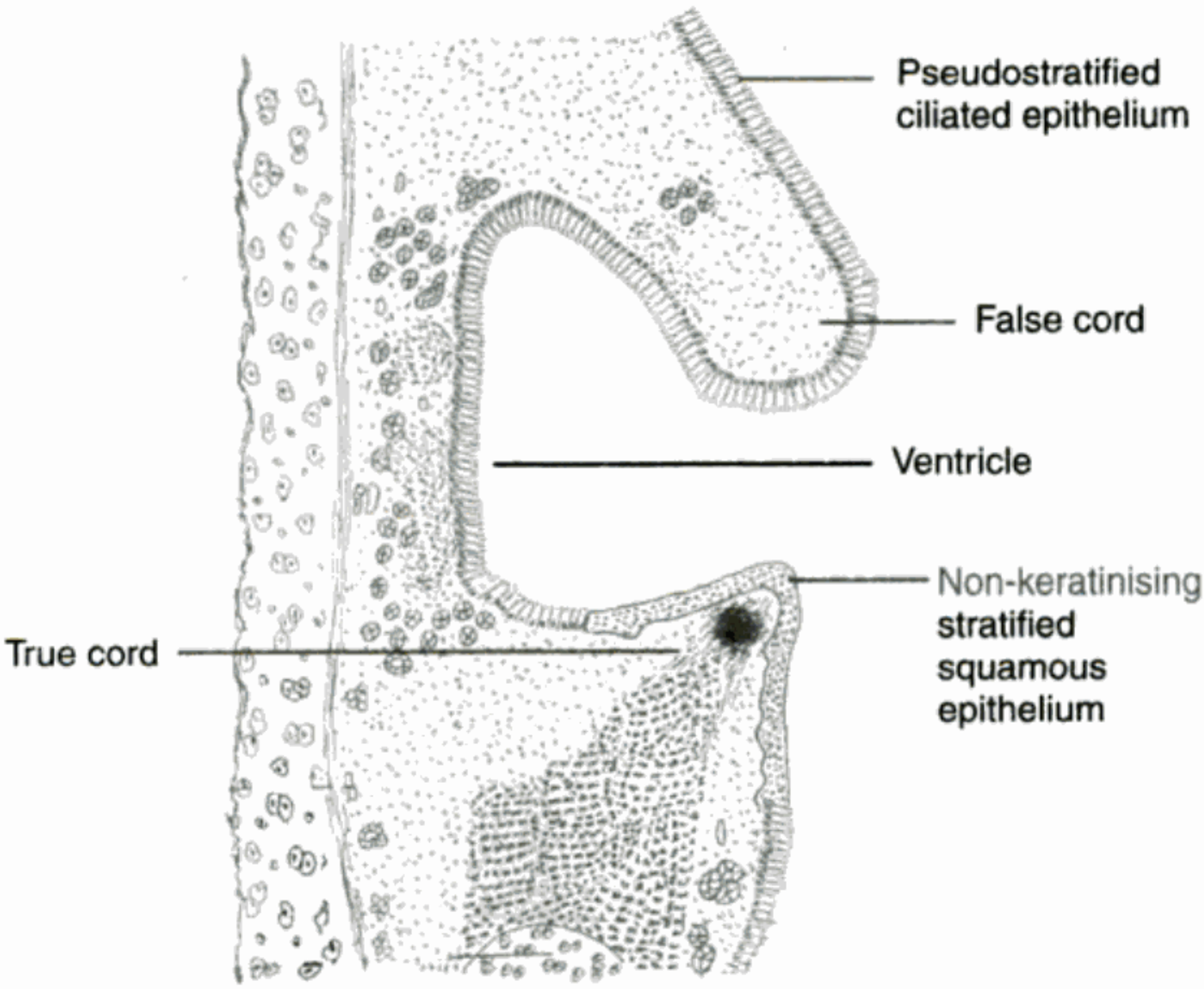

Fig. 5.1. Types of epithelium lining the larynx. Vocal cords are lined by stratified squamous epithelium.

14. Answer (a)

Laryngeal crepitus is a grating sound produced when larynx is moved from side to side. It is produced due to larynx moving against the vertebral column. It is seen in normal persons. However, if something intervenes between thyroid cartilage and vertebral column, it becomes absent as in post-cricoid carcinoma or prevertebral abscess.

15. Answer (c)

Reinke's oedema is collection of fluid in Reinke's space. This space lies under the vocal cord epithelium. Both cords are involved producing a condition called *polypoid degeneration of cords*. Exact cause of the condition is not known, probably chronic irritation as in smokers is responsible.

16. Answer (b)

Voice in dysphonia plica ventricularis is rough and is produced by false cords (ventricular bands—suggested in the name of the condition itself) which usurp the function of true cords when they are diseased as in paralysis, fixation, surgical excision or tumours of the cord. Ventricular band dysphonia can also be psychogenic without any true cord abnormality.

17. Answer (d)

Laryngomalacia is a congenital disorder characterised by flaccidity of supraglottic larynx which gets sucked in during inspiration producing stridor. Flexible fibreoptic laryngoscopy is the best way to study the dynamics of supraglottis in an awake patient. Direct laryngoscopy may miss the diagnosis as supraglottis is put on stretch by the laryngoscope unless its tip is placed only in the vallecula. Other synchronous congenital lesions of larynx, e.g. glottic cysts, laryngeal paralysis or laryngeal web may also be diagnosed.

18. Answer (e)

Laryngomalacia is a self-limiting condition and subsides in 6 months to 2 years. Only extreme cases where there is respiratory distress and fail to thrive may require intubation or tracheostomy.

19. Answer (b)

Approximately 75% of laryngeal webs involve glottic region and are mainly situated anteriorly. Supraglottis and subglottis are involved less often. A laryngeal web is due to incomplete recanalisation of the embryonic larynx.

20. Answer (d)

Laryngomalacia produces stridor but no hoarseness because vocal cords are normal. In other conditions listed at (a), (b) and (c) hoarseness is produced due to involvement of vocal cord. Laryngomalacia is the most common congenital laryngeal anomaly followed by congenital laryngeal paralysis.

21. Answer (d)

Lupus affects anterior part of larynx. It starts at the epiglottis and spreads posteriorly to involve aryepiglottic folds. Slow indolent and

symptomless destruction of epiglottis may occur. Lupus of larynx is secondary to lupus of nose and pharynx.

Contact ulcer occurs at vocal process of arytenoid when one vocal process hammers against another traumatising the overlying mucosa and formation of a granuloma. It is due to vocal abuse.

Pachydermia laryngis is a form of chronic hypertrophic laryngitis. It involves interarytenoid region and both vocal processes of arytenoid where grey or red papilliferous lesions are seen. Biopsy is essential to differentiate from tuberculosis and malignancy.

Intubation granuloma is also seen in the area of vocal processes and is due to prolonged rough intubation or using a large tube. Trauma of tube ulcerates mucosa with the formation of a granuloma.

22. Answer (d)

Acute epiglottitis in children is a bacterial infection. Mostly it is caused by *H. influenzae* type B. Sometimes other bacteria such as diphtheria, *Staphylococcus aureus* and *Streptococcus pneumoniae* may also be responsible.

23. Answer (c)

Earlier ampicillin has been the drug of choice. Now cephalosporins of second and third generations (cefuroxime, cefotaxime and ceftriaxone) are preferred. Chloramphenicol is also effective but is more toxic compared to cephalosporins.

24. Answer (d)

In epiglottitis, the epiglottis and aryepiglottic folds are swollen obstructing the airway. Any attempt to disturb the child such as taking throat swab, blood culture, starting I/V lines may precipitate respiratory obstruction.

Treatment is directed to airway establishment. Child is taken to operation room, anaesthetised and intubated. Blood culture and epiglottic swabs are then taken and antibiotics (second or third generation cephalosporins) started. In the absence of a skilled anaesthetist, a tracheotomy may be performed.

25. Answer (c)

Treatment of choice for stage I cancer larynx (supraglottic, glottic or subglottic region) is radiotherapy. It gives 90% cure rate.

26. Answer (b)

In the data given above, clinical diagnosis of cancer larynx is made but biopsy is mandatory. Indicators are: chronic smoking habits, hoarse voice persisting for 2 years, irregular vocal cord lesion involving both cords. The lesion is stage I glottic cancer as the pathology is localised to glottis. Treatment of choice in this case would be radiotherapy.

27. Answer (a)

The first step in management is to remove the endotracheal tube and place a smaller tube in its place. Since there are chances of burns to larynx, trachea and bronchi, laryngoscopy and bronchoscopy should be performed to find the extent of injury, remove charred material with saline lavage. Antibiotics and steroids are also administered to reduce inflammation and infection.

28. Answer (d) (see explanation to Q. No. 29)

29. Answer (c)

Multiple laryngeal papillomas are caused by human papilloma virus types VI and XI. It is a DNA virus of papova class.

Papillomas are notorious for recurrence and may require repeated laryngoscopies for their removal.

Multiple laryngeal papillomas are not known to undergo malignant change though carcinoma can occur if radiation is given in its treatment.

CO_2 laser allows precise surgical removal and provides haemostasis. Other modes of surgical removal include conventional microsurgical instruments used in laryngeal surgery and microdebriders.

Other treatments which are adjunctive to the above treatment include:

(i) Systemic interferon

(ii) Photodynamic therapy

(iii) Intralesional injection of antiviral drug—cidofovir.

30. Answer (b)

Laryngocele is dilatation of laryngeal saccule. It may be congenital or acquired later in life when conditions exist to increase transglottic pressure, e.g. trumpet blower, glass blower or forceful use of voice. It can also occur if saccule is obstructed by laryngeal carcinoma.

Once distended saccule may also appear outside larynx through thyrohyoid membrane presenting as an external laryngocele.

Vallecula and aryepiglottic folds are common sites for laryngeal cysts due to blockage of ducts of mucous secreting glands.

31. Answer (a)

Hoarseness is the earliest symptom of vocal cord (glottic) carcinoma. As the disease advances, it causes dyspnoea, cough, haemoptysis and pain which are late features.

Earliest symptom of supraglottic cancer is dyspnoea as it compromises the airway which is the narrowest in this region.

Earliest symptom of subglottic cancer is dysphagia or something sticking in the throat. Some patients present with a lump in the neck at the initial visit due to lymph node involvement.

32. Answer (a)

Supraglottic growth remains asymptomatic or present with cough and something sticking in throat. Hoarseness is the earliest symptom in glottic carcinoma.

Commonest site involved in supraglottic region with cancer is epiglottis. From here it spreads to aryepiglottic folds, false cords and ventricles.

Supraglottis has rich lymphatic network and therefore incidence of lymphatic metastasis is high. Some of them present with nodal metastases at the initial visit.

Even in patients with no clinically positive nodes, 30% have shown micrometastases on pathology.

33. Answer (c)

Cancer lung is commonly associated with laryngeal cancer. However, any other area of aerodigestive tract may show synchronous second primary.

34. Answer (c)

In the larynx, chances of cervical nodal metastases are highest in carcinoma of supraglottic region.

35. Answer (a)

Most common site for distant metastases is lung followed by liver and bone.

36. Answer (b)

Pyriform fossa is supplied by internal laryngeal nerve which is a branch of superior laryngeal nerve of vagus. Vagus also supplies the ear.

37. Answer (c)

In a normal person phonation is produced by vocal cords which vibrate in response of force of air produced by lungs. In oesophageal speech, patient "inhales" air into the oesophagus and then ejects it by the contraction of chest muscles. Pharyngo-oesophageal segment functions for the missing vocal cords and vibrates to produce phonation. Since only limited amount of air can be ejected from the oesophagus, maximum phonatory time is short and patient can speak only a few words.

38. Answer (a)

Thyroplasty is a procedure in which changes are brought in the position of vocal cord.

It is divided into four types:

Type I: Vocal cord is displaced medially. It is done for paralysed cord so that it can make contact with the healthy cord for voice production.

Type II: Vocal cord is displaced laterally. The purpose is to provide airway. It is done in long-standing bilateral abductor paralysis where cords lie in paramedian position compromising the airway.

Type III: Vocal cord is shortened in length, i.e. it is relaxed. The distance between anterior and posterior ends of vocal cord lowers the pitch. It is done in puberphonia in which child-like high pitch voice persists or is done in cases who have undergone gender transformation from female to male.

Type IV: It is the procedure to lengthen (or tighten) the vocal cord. A tightened cord produces higher pitch. Thus male character voice (low pitch) is converted to female character (higher pitch). It is used for patients who have undergone sex change from male to female.

39. Answer (c)

Verrucous carcinoma is a very well-differentiated cancer of larynx and presents as exophytic hyperkeratotic growth seldom with lymph node

metastases. Treatment of choice is surgery. With radiotherapy, there is risk of its anaplastic transformation and more aggressive growth. Radiotherapy is avoided in such case.

40. Answer (a)

Ventricle of Morgagni, commonly called the ventricle of larynx, is situated between the false and true vocal cords.

The defect between base of skull and upper border of superior constrictor which is covered by buccopharyngeal fascia and pierced by eustachian tube is called sinus of Morgagni.

The diverticulum of nasopharyngeal mucosa which gives rise to anterior lobe of pituitary is called Rathke's pouch. It may persist as craniopharyngeal canal.

41. Answer (d)

Preferred treatment is microlaryngoscopy and excision. As the recurrence is common, repeated excisions may be required. Tracheostomy is avoided to prevent distal spread. Interferon therapy has not shown sustained benefit.

42. Answer (d)

Carbon dioxide laser is the best. It gives precise cutting and does not burn deep to cause damage to vocalis muscle.

Nd: YAG causes wide thermal damage. It is more useful for obstructing carcinoma.

Similarly, KTP/532 causes injury to vocalis muscle.

Argon laser is absorbed by pigments such as melanin and haemoglobin. It is more useful to coagulate haemangiomas, port-wine stain or telangiectasias.

43. Answer (d)

A laryngocele is an air sac formed by dilatation and prolongation of laryngeal saccule and is in communication with the ventricle. It herniates through *thyrohyoid* membrane.

44. Answer (a), (b) and (c)

Psychogenic (functional) aphonia is a conversion reaction dysphonia in which vocal cords remain abducted and do not approximate on

phonation, however they fully adduct on coughing. It is more often seen in women after an emotional traumatic experience.

45. Answer (b)

Steeple sign indicates narrowing of the airway in the subglottic area. It is typically seen in acute laryngotracheobronchitis in children.

Thumb sign is typically seen in acute epiglottitis due to swollen epiglottis. It is better appreciated in lateral view of neck.

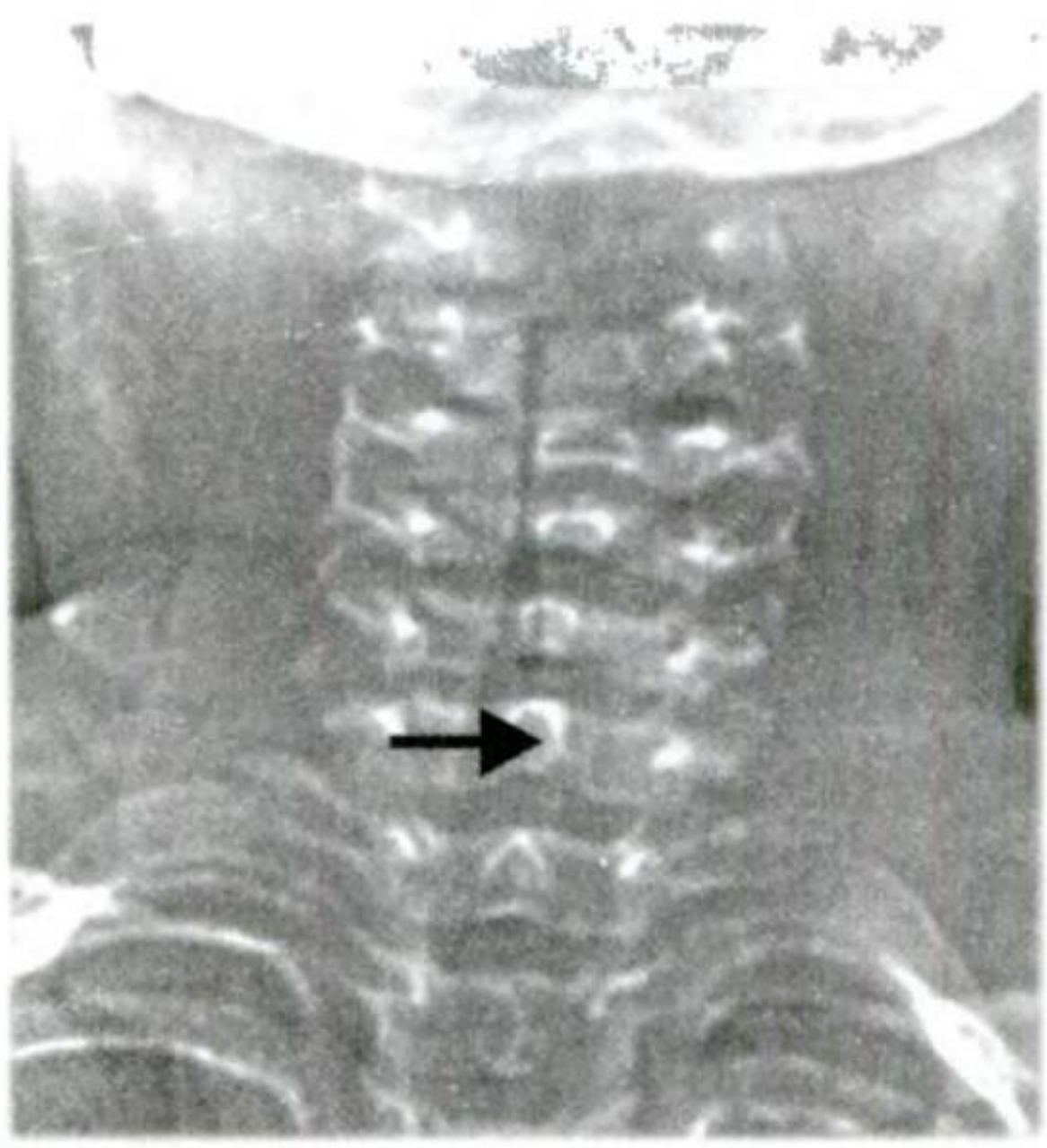

Fig. 5.2. Steeple sign (like a church tower) is seen in laryngotracheobronchitis (croup) in PA view of neck. Note the air shadow (arrow).

46. Answer (d)

Endotracheal tube is removed to prevent further burns to larynx and trachea. Bronchoscopy is performed to assess the damage to trachea and remove any foreign material. Airway is established by another endotracheal tube. In severe burns, tracheostomy is required.

47. Answer (d)

In *phonasthenia* there is weakness of laryngeal muscles due to inflammation (laryngitis) or overuse or abuse of voice. If both thyroarytenoid muscles are affected vocal cords leave an elliptical space between them and do not approximate; but when only interarytenoid muscles are affected, there is a triangular gap in posterior larynx as in the case above. In case of weakness of both thyroarytenoid and interarytenoid, glottis gives a "key-hole appearance."

Mutational falsetto voice or *puberphonia* is seen in male adolescents when voice character is changing from high-pitched voice of the child to a low-pitched one of the adult male.

In *ventricular dysphonia* false cords (ventricular bands) usurp the function of true cords. Voice is produced by approximation of false cords and is rough. Ventricular bands also obstruct the view of true cords on indirect laryngoscopy.

Mogiphonia is a psychoneurotic condition in which vocal cords are firmly pressed together after uttering a few words and no further sound can be produced. It occurs when trying to speak or sing in public but disappears entirely in normal conversation.

48. Answer (a)

Contact ulcer is seen on the vocal process(es) of the larynx. Acute ulceration can occur after intubation but contact ulcer with a granuloma is the result of vocal abuse, repeated throat clearing and gastro-oesophageal reflux. Prolonged intubation causes ulceration of mucosa over the vocal process, infection and granuloma formation. However, adductor dysphonia is a type of spasmodic dysphonia in which there is irregular hyperadduction of cords.

49. Answer (d)

Hyperinflated lung or one of its lobes occurs when foreign body allows ingress of air but prevents egress. Such hyperinflated lung can also burst causing pneumothorax, surgical emphysema or mediastinal emphysema.

Unilateral atelectasis occurs when foreign body obstructs the bronchus completely preventing ingress and egress of air. The air in the lung or its lobe is absorbed.

A history of coughing, choking and gagging is suggestive of foreign body aspiration.

50. Answer (e)

Vegetable foreign bodies cause severe bronchitis than the inert metallic ones.

A foreign body can be expelled spontaneously with cough but the chances are few therefore all tracheobronchial foreign bodies should be removed surgically.

Complete obstruction by a foreign body causes collapse of lung or its lobe but a ball-valve obstruction which allows only ingress of air but not egress causes emphysema lung or rupture of emphysematous bulla to cause pneumothorax.

51. Answer (a)

Laryngomalacia is the most common congenital laryngeal anomaly. This is followed by: (i) congenital vocal cord paralysis and (ii) congenital subglottic stenosis.

52. Answer (b)

Hoarseness is due to deposition of myxomatous tissue in the vocal cords. Nasal stuffiness is due to predominance of parasympathetic activity. Hypothyroidism also causes Meniere's like syndrome.

53. Answer (c)

Blom-Singer prosthesis is used in laryngectomised patients to divert tracheal air to oesophagus for production of voice.

Prosthesis used to ventilate middle ear in otitis media with effusion is called a "grommet" or ventilation tube.

Septal button made of silicon or Teflon is used to close septal perforation.

Stapes replacement prosthesis made of Teflon, tefwire, platinum or stainless steel is used in stapedectomy.

54. Answer (d)

Reinke's oedema presents as bilateral diffuse polyposis, also called smoker's polyps, is seen in smokers who also abuse their voice.

Cysts of vocal cord are either retention cysts due to obstruction of the duct of mucous gland or epidermoid inclusion cysts.

Vocal nodules occur in mid-portion of membranous vocal cords due to chronic vocal abuse; the latter causing hyalinisation of Reinke's space and some thickening of the overlying epithelium.

Contact ulcer presents as a granuloma in area of vocal process of arytenoids and is often seen in males. Vocal abuse, chronic cough, habitual throat clearing and acid reflux from the stomach are usual aetiological agents.

55. Answer (e)

All modalities of treatment listed from (a) to (d) have been used but none is successful in preventing recurrence.

56. Answer (a)

Sudden complete obstruction of the tracheotomy tube is an emergency situation. Efficacy of other alternatives is in question and will take time aggravating the situation. Immediate removal of the tube is a safe alternative. Portex tracheostomy does not have an inner tube. However, if it were a tracheostomy tube with an inner cannula (e.g. Jackson's or Fuller's metallic tubes) removal of only the inner cannula and not the entire tube would be a better alternative.

57. Answer (c)

Normally aspiration into the lungs is prevented by cough reflex and, closure of three-tier system of laryngeal sphincters, i.e. (i) epiglottis and aryepiglottic folds, (ii) false cords and (iii) true cords.

Aspiration occurs in laryngeal paralysis and tongue base surgery. Tracheostomy and thyroplasty will not completely prevent aspiration. The "gold standard" is separation of larynx from the trachea and a permanent tracheostome for breathing. Other surgical procedures used in chronic aspiration include the following:

(i) Laryngectomy

(ii) Subperichondrial cricoidectomy: Anterior arch of cricoid is removed, preserving its external and internal perichondrium which are closed, thus completely obliterating the upper airway. Patient is left with a permanent tracheostomy

(iii) Epiglottic flap closure of larynx

(iv) Vertical laryngoplasty epiglottis and aryepiglottic folds are stitched together, forming a vertical tube. It is usually done after tongue base surgery in cancer

(v) Glottic closure: Both vocal cords are denuded of mucosa and stitched together. Similarly false cords are also stitched. Thus, nothing passes down the larynx. A tracheostomy is mandatory

(v) Tracheo-oesophageal separation: Trachea is cut horizontally at fourth and fifth tracheal rings. Upper segment is attached to oesophagus (end to side). Lower tracheal stump acts as permanent tracheostoma

(vii) Laryngotracheal respiration: Upper tracheal stump is closed while lower one is used as a tracheostoma.

58. Answer (c)

Stridor and dyspnoea are the result of narrowed airway which would require widening. Choices (a), (b) and (d) will provide airway. Teflon injection is used to medialise the cord in vocal cord paralysis. It will further narrow the glottis.

59. Answer (a)

Pachydermia laryngis is a hyperkeratotic lesion involving posterior part of larynx. It is not premalignant. Biopsy is essential to exclude tuberculosis and cancer.

60. Answer (a)

Since the child has come to emergency with respiratory distress and suffers from multiple laryngeal papillomas, tracheostomy is the best option. Steroids and antibiotics are of no use. The patient would later require microlaryngoscopy and laser ablation of laryngeal papillomas.

61. Answer (b)

Prolonged intubation implies tracheal stenosis. Line of treatment will depend on the site of stenosis and its extent. Since the patient developed respiratory distress only 4 days back, it implies inflammation superimposed on stenosed area. Steroids administration would be the best option.

62. Answer (c)

63. Answer (b)

Operating microscope is an integral part of surgery of ear, nose and larynx. Objectives of different focal lengths used for different sites are given below.

(i) Ear: 250 mm
(ii) Nose: 300 mm
(iii) Larynx: 400 mm

Greater the focal length, more is the working distance. Longer instruments can be used for nose and larynx with larger focal length of the objective.

64. Answer (d)

Diphtheria is known to cause cranial nerve palsies and peripheral neuritis. It may cause paralysis of palate, pharynx, larynx and face. Recovery may also occur in a few weeks or months. Thus patient has a chance to recover vocal cord paralysis and the wait and watch policy would be the right option. Also compensation by the left vocal cord is possible if recovery dose not take place. Thyroplasty type-I, i.e. medialisation of right vocal cord would be the option if even the compensation fails. Compensation by the healthy cord may take 6 months to 1 year.

65. Answer (d)

Presence of perichondritis implies invasion of thyroid cartilage by growth. Growths of anterior commissure are known to invade thyroid cartilage. Any type of radiotherapy in the presence of perichondritis is contraindicated as it causes cartilage necrosis and infection. Since invasion of thyroid cartilage has occurred, growth will be T4 and postoperative radiotherapy will be useful to improve the cure rate. Treatment of the case would be laryngectomy with postoperative radiotherapy.

66. Answer (a)

Laryngocele is dilatation of saccule. It is of three types:

(i) External: The dilated air sac protrudes above the thyroid cartilage, through the thyrohyoid membrane into the neck where it presents as a reducible swelling.

(ii) Internal: Dilatation is limited within the larynx. It presents as a swelling of vestibular and aryepiglottic folds and may cause dyspnoea, dysphagia and cough.

(iii) Combined: It will have both internal and external components.

67. Answer (a)

68. Answer (d)

Androphonia is the male character of voice. It is required to be changed to female voice when surgery for sex change has been performed. It is done by lengthening or tightening the cord and thus requires type-IV thyroplasty.

See explanation of Q. 38.

As an *aide mémorie*, types of thyroplasties can be remembered by MLS-L.

Type-I: Medialisation of cord

Type-II: Lateralisation of cord

Type-III: Shortening of cord

Type-IV: Lengthening of cord

Chapter 6

HIV and ENT

1. A single needle stick with a hollow bore needle has a chance of seroconversion of:

(a) 1: 100
(b) 1: 200
(c) 1: 1000
(d) 1: 2000

2. Which of the following is true about HIV?

(a) Reverse transcriptase of the virus produces DNA from viral RNA
(b) Glycoprotein 120 and 41 are situated in the core of the virus
(c) Virus contains one copy of single-stranded RNA in its core
(d) CD_4 receptors are present only on the T-lymphocytes

3. Human immunodeficiency virus (HIV) affects the immune response. The primary change brought about is:

(a) Agammaglobulinaemia
(b) Defect in cell-mediated immunity

(c) Defect in complement system
(d) Defect in natural killer cells

4. In an HIV infected patient, opportunistic infections and malignancies arise when CD_4 count falls below:

(a) 1000/mm³
(b) 500/mm³
(c) 200/mm³
(d) 50/mm³

5. A known HIV infected patient presents with a non-tender parotid gland swelling. The most likely diagnosis is:

(a) B-cell non-Hodgkin's lymphoma
(b) Lymphoepithelial cysts
(c) Sialectasia
(d) Parotid abscess

6. Most common malignancy seen in AIDS patients is:

(a) Non-Hodgkin's lymphoma
(b) Kaposi's sarcoma
(c) Cancer nasopharynx
(d) Hairy leukoplakia

Answer Key

1. (b)
2. (a)
3. (b)
4. (c)
5. (b)
6. (b)

Explanations to Answers

1. Answer (b)

2. Answer (a)

Reverse transcriptase synthesises double-stranded DNA from viral RNA.

Glycoprotein 120 and 41 are present on the envelope of virus. It is through these glycoproteins that virus attaches to the target cells.

HIV has two copies of single-stranded RNA.

Virus attaches to CD_4 receptors which are present on T-lymphocytes and also on macrophages and some somatic cells. Some strains of HIV preferentially attach CD_4 helper cells and others to macrophages or to other type of cells.

3. Answer (b)

HIV infects CD_4 (helper) T-lymphocytes, macrophages and monocytes and leads to cell-mediated immune deficiency which predisposes to opportunistic infections and malignancies.

4. Answer (c)

5. Answer (b)

Benign lymphoepithelial cysts may develop in the parotid glands on one or both sides. They arise from intraparotid lymph nodes. Diagnosis is confirmed on CT scan and fine-needle aspiration cytology.

6. Answer (b)

Kaposi's sarcoma is the most common malignancy seen in AIDS patients. It involves skin or the mucous membrane. Association with herpes virus 8 has been seen in the causation of Kaposi's sarcoma in AIDS patients.

Non-Hodgkin's lymphoma is the second-most common malignancy seen in HIV patients.

Hairy leukoplakia in AIDS patients is caused by Ebstein-Barr virus. It presents as white patches on the lateral border of tongue and may be an early manifestation of disease.

Chapter 7

Headache, Facial Neuralgias, Cancer Chemotherapy and Neck Dissection

1. **All are true concerning migraine except:**
   (a) Affects females more than males
   (b) Causes headache as if whole head is caught in "vise" involving frontal, parietal, temporal and occipital regions
   (c) Causes neuralgic symptoms
   (d) Headache may last for hours or days

2. **Headaches more commonly seen in women are:**
   1. Migraine
   2. Cluster
   3. Trigeminal
   4. Tension
   (a) 1 and 3
   (b) 2 and 4

(c) 1, 3 and 4
(d) 2 only

3. A 45-year-old patient complains of pain in throat which is aggravated on swallowing and radiates to the ear and posterior part of tongue. The likely diagnosis is:

(a) Sluder's neuralgia
(b) Glossopharyngeal neuralgia
(c) Disorder of temporomandibular joint
(d) Trigeminal neuralgia

4. Sluder's neuralgia includes all except:

(a) Neuralgic pain in the upper half of face
(b) Rhinorrhoea
(c) Increased lacrimation
(d) Nasal stuffiness

5. Drug of choice in trigeminal neuralgia is:

(a) Ergotamine
(b) Carbamazepine
(c) Phenytoin
(d) Verapamil
(e) Amitriptyline

6. Chemotherapy used after surgery or radiotherapy for cancer is termed as:

(a) Combination chemotherapy
(b) Adjuvant chemotherapy
(c) Neoadjuvant chemotherapy
(d) Concomitant chemotherapy

7. Which of the following antineoplastic drug causes pulmonary toxicity?

(a) Bleomycin
(b) 5-fluorouracil

(c) Cisplatin
(d) Vincristine

8. Selective neck dissection pertains to:

(a) Radical neck dissection with preservation of spinal accessory nerve, sternomastoid muscle and internal jugular vein
(b) Radical neck dissection for N_o neck
(c) Radical neck dissection when nodes are palpable
(d) Removal of some lymph node groups while sparing the others

9. Which of the following structures are preserved in a radical neck dissection?

(a) Sternomastoid muscle and spinal accessory nerve
(b) Internal jugular vein, spinal accessory and sternomastoid muscle
(c) Hypoglossal, vagus and spinal accessory
(d) Vagus, hypoglossal and phrenic

10. What will be the staging of a squamous cell carcinoma if it T_3 N_2 M_o?

(a) Stage II
(b) Stage III
(c) Stage IV

11. According to American joint committee on cancer classification a T_2 glottic carcinoma means:

(a) Tumour involving both vocal cords
(b) Tumour of vocal cord extending to false cord
(c) Tumour of vocal cord with extension to anterior commissure
(d) Tumour of vocal cord with cord fixity.

12. Which of the following statements is/are true about second arch branchial fistula?

(a) Its external opening is seen along the anterior border of sternomastoid muscle
(b) Its internal opening is seen in the pyriform fossa
(c) The fistulous tract passes between the internal and external carotid arteries
(d) The fistulous tract lies deep to hypoglossal nerve
(e) The fistulous tract passes deep to digastric muscle

13. Which of the following statements is/are false?

(a) MRI is superior to CT in diagnosis of acoustic neuroma
(b) High resolution CT scan is the best to assess temporal bone fractures
(c) Ultrasound is better than CT in differentiating solid from cystic lesions
(d) To see the extent of growth in base of tongue CT is better than MRI

14. Which of the following investigations do not use ionising radiation?

(a) MRI
(b) Conventional tomography
(c) Angiography
(d) Doppler
(e) Ultrasound

15. MRI should not be used in patients with any of the following except:

(a) Cochlear implant
(b) Cardiac pacemaker
(c) Prosthetic cardiac valves
(d) Third trimester of pregnancy

16. Typical clinical features of Horner's syndrome include all except:

(a) Dilated pupil
(b) Ptosis
(c) Enophthalmos
(d) Nasal stuffiness

17. Extranodal lymphoma is commonly a manifestation of:

(a) Hodgkin's disease
(b) Non-Hodgkin's lymphoma
(c) Both (a) and (b)
(d) None of (a) and (b) but a separate entity

18. To cause cell death in cryosurgery, temperature should, at least, reach:

(a) – 15°C
(b) – 30°C
(c) – 45°C
(d) – 60°C

19. Type of laser which is useful for middle ear surgery is:

(a) CO_2
(b) Nd: YAG
(c) Argon
(d) All of the above

20. All are true about thyroglossal duct cyst except:

(a) Presents as a midline swelling near the hyoid bone
(b) Arises from remnants of second branchial cleft
(c) Excision of body of hyoid bone is necessary to prevent recurrence
(d) Cyst may contain thyroid tissue

21. Which of the following statements is/are true about Müller's muscle?

(a) It is a striated muscle
(b) It is supplied by sympathetic fibres
(c) Its paralysis causes ptosis
(d) It is attached to sclera of the eyeball

22. A neck mass suspicious of malignancy but with no clue from history and physical examination about the primary site, what should be the next step in management?

(a) Excisional biopsy
(b) Incisional biopsy
(c) Fine needle aspiration cytology
(d) Open biopsy–frozen section–neck dissection

23. Non-recurrent–recurrent laryngeal nerve is likely to be associated with:

(a) Coarctation of aorta
(b) Anomalous retro-oesophageal left subclavian artery
(c) Anomalous retro-oesophageal right subclavian artery
(d) Dextrocardia

24. Radioactive iodine cannot be used in the ablation of which cancer of the thyroid?

(a) Papillary thyroid cancer
(b) Hurthle cell carcinoma
(c) Medullary carcinoma
(d) Follicular carcinoma

25. In which type of thyroid cancer, elective neck dissection is appropriate:

(a) Papillary
(b) Follicular
(c) Medullary
(d) Anaplastic
(e) Papillary and follicular

26. The aetiology of anterior ethmoidal neuralgia is:

(a) Inferior turbinate pressing on the nasal septum
(b) Middle turbinate pressing on the nasal septum
(c) Superior turbinate pressing on the nasal septum
(d) Causing obstruction of sphenoid opening

27. The treatment of choice for attico-antral variety of chronic suppurative otitis media is:

(a) Mastoidectomy
(b) Medical management
(c) Underlay myringoplasty
(d) Insertion of ventilation tube

28. The cranial nerve with largest intracranial course is:

(a) III
(b) IV
(c) VI
(d) VIII

29. The largest cranial nerve is:

(a) V
(b) VII
(c) X
(d) XI

30. A patient has carcinoma of right tongue on its lateral border of anterior two-third, with lymph node of size 4

cm in level 3 on left side of the neck, stage of disease is: *(AIIMS, May 2007)*

(a) N_0
(b) N_1
(c) N_2
(d) N_3

Answer Key

1. (b)
2. (c)
3. (b)
4. (a)
5. (b)
6. (b)
7. (a)
8. (d)
9. (d)
10. (c)
11. (b)
12. (a), (c), and (e)
13. (d)
14. (a), (d), and (e)
15. (d)
16. (a)
17. (b)
18. (b)
19. (c)
20. (b)
21. (b) and (c)
22. (c)
23. (c)
24. (c)
25. (c)
26. (b)
27. (c)
28. (c)
29. (a)
30. (c)

Explanations to Answers

1. Answer (b)

Headache of migraine is usually unilateral and throbbing and not band-like as if head is caught in a "vise" which is a feature of tension headache.

Migraine often occurs on getting up in the morning and may last from a few hours to 3 days.

Migraine can occur without aura (common migraine) or with aura (classic migraine). Aura may consist of scotomas, paraesthesias, hemiparesis, aphasia, diplopia, tinnitus or vertigo or flashing lights before the eyes.

Ophthalmoplegic migraine is due to involvement of oculomotor nerve.

Retinal migraine is due to retinal ischaemia and causes blindness in one eye.

2. Answer (c)

Migraine, tension headache and trigeminal neuralgia occur more often in women.

Cluster headaches occur four to six times more often in males. Cluster headache is so-named because several episodes, each of few minutes to 3 hours, may occur per day. Each episode of cluster headache is excruciating pain located around the eyes or maxilla associated with unilateral lacrimation, rhinorrhoea and congestion of conjunctiva. Alcohol or histamine precipitate the attack. Ergotamine tartrate and caffeine can abort the attack.

3. Answer (b)

Glossopharyngeal nerve supplies base of tongue, tonsillar fossa and the ear. In glossopharyngeal neuralgia pain radiates to these areas and is precipitated by swallowing or yawning. It is relieved by anaesthetising the area.

4. Answer (a)

Sluder's neuralgia is a variant of cluster headache with pain in lower half of face particularly the maxillary area with associated autonomic symptoms such as rhinorrhoea, lacrimation, nasal stuffiness and ocular congestion. Its origin is from sphenopalatine ganglion.

5. Answer (b)

Carbamazepine is the drug of choice in cranial neuralgias such as trigeminal and sphenopalatine. Ergotamine and dihydro ergotamines are vasoconstrictors and are effective in migraine or cluster headaches. Verapamil is a calcium channel blocker useful in prophylaxis of migraine and cluster headaches.

6. Answer (b)

Combination chemotherapy is the use of multiple drugs together at the same time rather than a single agent. Use of multiple drugs together has advantage of low toxicity, drugs acting on different phases of cell cycle and reduction in drug resistance.

Adjuvant chemotherapy refers to chemotherapy used after operation or completion of course of radiotherapy.

Neoadjuvant chemotherapy is use of chemotherapy before surgery or radiotherapy in the hope to shrink the size of tumour to permit better efficacy of radiation or reduce the size of surgical resection. Also it is expected to eradicate micrometastases.

Neoadjuvant	Concomitant	Adjuvant
Chemotherapy	Chemotherapy	Chemotherapy
Before surgery or radiotherapy	At the same time as radiotherapy	After surgery or radiotherapy

Concomitant chemotherapy refers to simultaneous use of chemotherapy with radiotherapy. It is superior to radiotherapy alone in unresectable tumours and the resectable tumours where surgery is refused.

7. Answer (a)

Bleomycin causes pulmonary toxicity in the form of pneumonitis, dry cough, rales and later pulmonary fibrosis. These complications occur when total dose of 200 units is exceeded.

5-Fluorouracil causes myelosuppression, stomatitis and diarrhoea.

Cisplatin is nephrotoxic and ototoxic. Ototoxicity affects 4000 to 8000 Hz which may be permanent.

Vincristine is neurotoxic and causes sensory or motor peripheral neuropathy.

8. Answer (d)

Selective neck dissection is sparing of one or more lymph node groups that are normally removed in radical neck dissection. It is further classified as:

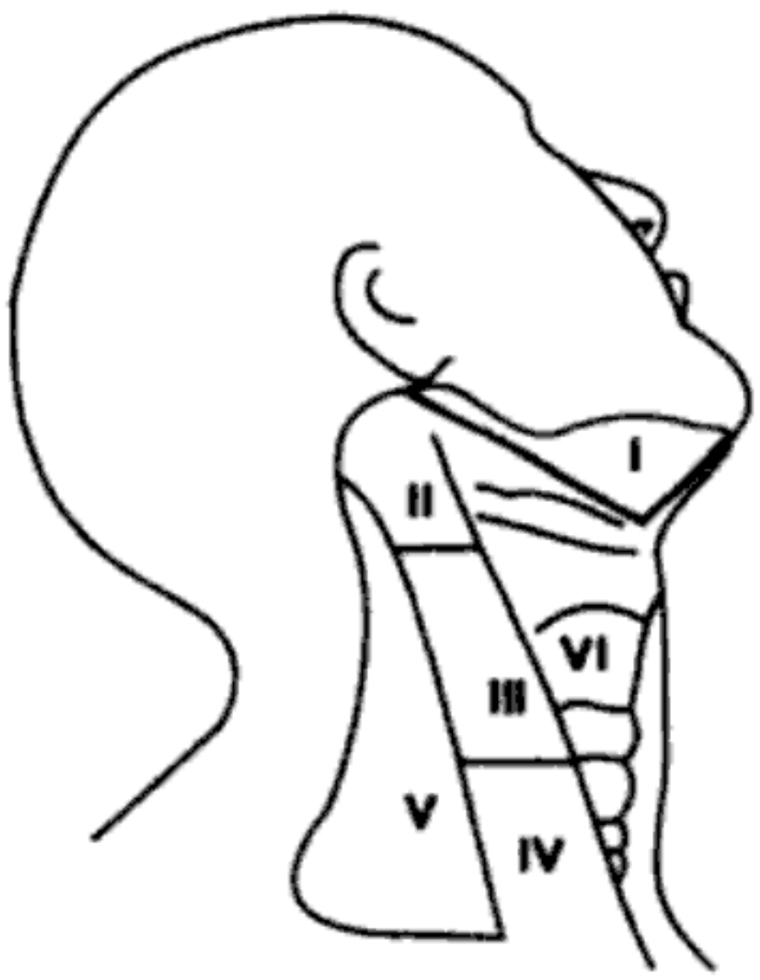

Fig. 7.1. Various levels of neck nodes.

(i) Supraomohyoid (removal of only levels I, II and III nodes)

(ii) Lateral (removal of levels II, III and IV nodes)

(iii) Posterolateral (removal of levels II, III, IV, V and retroauricular and suboccipital nodes)

(iv) Anterior compartment type (removal of level VI nodes).

Neck dissection done for N_o (no neck nodes palpable) is called *elective*. It is done to remove micrometastases in nodes.

Neck dissection performed for clinically palpable nodes is called *therapeutic* neck dissection.

9. Answer (d)

Structures preserved in radical neck dissection are:

(i) Vagus nerve

(ii) Hypoglossal nerve

(iii) Brachial plexus
(iv) Phrenic nerve
(v) Lingual nerve
(vi) Marginal mandibular branch of facial nerve.

Structures removed in radical neck dissection are:

(i) Sternomastoid
(ii) Internal jugular vein
(iii) Spinal accessory nerve
(iv) All lymph nodes in levels I, II, III, IV and V
(v) Submaxillary salivary gland
(vi) Tail of parotid.

10. Answer (c)

Squamous cell carcinoma is classified as stage IV when:

(i) Regional nodal metastases are N_2 or N_3. N_2 node is more than 3 cm but less than 6 cm. It may be a single ipsilateral node, contralateral node or one node in a group of nodes. N_3 means node size is longer than 6 cm.
(ii) When primary growth is T_4 with or without nodal metastases.
(iii) When distant metastases are present with any T.

11. Answer (b)

A glottic tumour is T_2 when it extends into another subsite, i.e. supraglottis or subglottis or impairs mobility of cord. So long as the tumour remains within its subsite whether involving one cord, both cords, anterior or posterior commissure it is still T_1.

When tumour fixes the vocal cord but still remains within the confines of larynx it is T_3.

When tumour spreads beyond larynx, e.g. invades thyroid cartilage, extends into trachea thyroid gland or laryngopharynx, it is T_4.

12. Answer (a), (c) and (e)

The internal opening of fistulous tract is seen near the tonsil, not in the pyriform fossa.

The tract lies superficial to hypoglossal nerve, passes between the internal and external carotid arteries and traverses deep to digastric muscle and ending near the tonsil.

13. Answer (d)

For soft-tissue delineation as growths of base of tongue or floor of mouth, MRI is better than CT.

To differentiate a solid from a cystic lesion ultrasound is better than CT.

Gold standard to diagnose acoustic neuroma is contrast enhanced MRI with T_1 images.

14. Answer (a), (d) and (e)

Ionising radiations are not used in MRI, ultrasound and Doppler.

Plain X-ray studies, CT scan, conventional tomographs, angiography, and radionuclide scans for thyroid and parotid glands use ionising radiation.

15. Answer (d)

All patients with metallic foreign bodies such as cochlear implant, cardiac pacemaker, prosthetic cardiac valves and brain clips are not subjected to MRI.

16. Answer (a)

Horner's syndrome is due to interruption of sympathetic fibres and therefore causes meiosis (constriction of pupil). Nasal stuffiness is due to dilatation of blood vessels.

17. Answer (b)

Extranodal lymphoma is frequently seen in non-Hodgkin's lymphoma. Most common extranodal sites include structures of Waldeyer's ring (tonsil being the most common), nose, paranasal sinuses, orbits, salivary glands, thyroid, brain, bones, etc.

18. Answer (b)

Rapid freezing of tissues to – 30°C or below and their slow-thawing causes tissue destruction.

19. Answer (c)

Argon laser is useful for middle ear surgery such as stapedectomy, lysis of middle ear adhesions and spot welding of tympanoplasty grafts. It falls in the visible spectrum and therefore does not require any other aiming beam. Since treatment and aiming beam are same, argon laser provides accuracy, which is essential in the middle ear surgery.

20. Answer (b)

Thyroglossal duct cyst arises from the thyroglossal duct which starts from the foramen caecum at the base of tongue and then descends in front of, below and behind the body of hyoid bone to form thyroid gland in the neck. Its tract is so intimately connected with the hyoid bone that its body has to be excised to remove the tract completely to prevent recurrence.

21. Answer (b) and (c)

Müller's muscle is a smooth muscle supplied by sympathetic fibres. It is attached to upper margin of tarsal plate and functions to raise the upper lid. It gets paralysed when sympathetic fibres are interrupted and is associated with ptosis as in Horner's syndrome.

22. Answer (c)

The above case has presented with a cervical mass which could be secondary with unknown primary. FNAC is a simple procedure and in most cases will establish the malignant nature or some other lesions. Incisional or excisional biopsy is contraindicated. If FNAC is negative it should be repeated or a core needle biopsy is done. Open biopsy is done when (i) FNAC /FNAB is negative or (ii) FNAC shows probable lymphoma or an epithelial malignancy of uncertain type.

23. Answer (c)

In non-recurrent–recurrent laryngeal nerve, the recurrent laryngeal nerve arises from the vagus and directly reaches the larynx without its recurrent course. It is not found in its usual anatomical position and thus prone to injury. In such cases right subclavian artery arises from left descending aorta and passes behind the oesophagus.

24. Answer (c)

Medullary thyroid cancer arises from parafollicular C-cells of thyroid. They secrete calcitonin and unlike rest of thyroid cells they do not take up iodine.

25. Answer (c)

26. Answer (b)

Anterior ethmoidal nerve is a branch of nasociliary nerve (from ophthalmic division of CN V). It is distributed to anterior part of nasal septum and lateral nasal wall. Mucosal contact between nasal septum and middle turbinate causes headache. This headache can be relieved when mucosal surfaces are separated with application of a nasal decongestant such as xylometazoline or adrenaline and a local anaesthetic like lignocaine—a diagnostic test in these cases. Permanent treatment would be to surgically remove structural deformities, e.g. removal of spur or deflected septum and/or reduction of the size of turbinate.

27. Answer (c)

Attico-antral disease is often due to presence of cholesteatoma and needs modified radical mastoidectomy.

28. Answer (c)

Abducens nerve (CN VI) has the largest intracranial course.

29. Answer (a)

Largest cranial nerve is trigeminal (CN V).

30. Answer (c)

Remember:

(i) Any node 3 cm or less is N_1.

(ii) Any node(s) >3 cm and <6 cm is N_2 whether it is ipsilateral, bilateral, contralateral, single or multiple.

(iii) Any node >6 cm is N_3.

Chapter 8

Assertion-Reason Type of Questions

The following questions consist of two statements. One is labelled as Assertion (A) and the other as Reason (R), you have to examine both statements carefully and select your answer using the codes given below:

(a) Both Assertion (A) and Reason (R) are individually true and R is the correct explanation of A

(b) Both A and R are individually true but R is not the correct explanation of A

(c) A is true but R is false

(d) A is false but R is true

1. **Assertion: Fistula test is positive when cholesteatoma has destroyed the lateral semicircular canal.**

   Reason: Labyrinth is still active and responds to pressure changes during performance of fistula test.

2. **Assertion: Stimulation of the external ear canal in some patients causes cough.**

Reason: External ear canal receives its nerve supply from auriculotemporal nerve.

3. **Assertion: Cholesteatoma of the middle ear and mastoid is due to deposition of cholesterol crystals in these sites.**

   Reason: Persistent negative pressure in the middle and mastoid is responsible for deposition of cholesterol crystals and granuloma formation.

4. **Assertion: Patient's head is raised 30° forward while doing bithermal caloric test.**

   Reason: In the above position, horizontal canal becomes vertical.

5. **Assertion: Meniere's disease is due to raised endolymphatic pressure.**

   Reason: CSF directly communicates with the endolymph through aqueduct of cochlea.

6. **Assertion: Paralysis of left vocal cord is twice as common as right vocal cord.**

   Reason: Right vocal cord is well-protected in the neck and thoracic inlet.

7. **Assertion: A patient with Meniere's disease suffers from intolerance to loud sounds.**

   Reason: Recruitment is positive in patients with Meniere's disease.

8. **Assertion: An ulcerative lesion on the anterior two-third of tongue causes earache.**

   Reason: Anterior two-third of the tongue receives somatosensory innervation from the lingual nerve.

9. **Assertion: Stapedectomy is the treatment of choice in stapedial otosclerosis.**

   Reason: Stapedectomy totally eliminates the focus of otosclerosis.

10. **Assertion: Maxillary sinusitis is often associated with sphenoid sinusitis.**

    Reason: Sphenoid sinus drains directly into the sphenoethmoidal recess.

11. **Assertion: Parapharyngeal abscess causes trismus.**

    Reason: Pus in case of parapharyngeal abscess collects medial to medial pterygoid muscle.

12. **Assertion: Immediately following combined paralysis of both superior and recurrent laryngeal nerves of both sides, the patient gets stridor and hoarseness.**

    Reason: In bilateral combined paralysis both vocal cords lie in cadaveric position.

13. **Assertion: Vocal modules are usually located at the junction of anterior one-third and posterior two-third of vocal cords.**

    Reason: The maximum vibratory area of vocal cords is situated at the junction of anterior one-third and posterior two-third of the vocal cord.

14. **Assertion: A pharyngeal pouch is herniation of pharyngeal mucosa between the fibres of thyropharyngeus and middle constrictor.**

    Reason: Coordination of muscular contraction of pharyngeal muscles is the cause of the mucosal herniation in addition to structural weakness.

15. **Assertion: Superficial parotidectomy is sometimes followed by anaesthesia of the lower part of pinna.**

Reason: Pinna gets is sensory nerve supply from the lesser occipital nerve.

16. **Assertion: A patient of primary atrophic rhinitis cannot perceive offensive smell emanating from his nose.**

    Reason: In patients of atrophic rhinitis vapours of smell cannot reach olfactory area due to the large nasal crusts and discharge.

17. **Assertion: Complete removal of septal cartilage causes depression of bridge of nose.**

    Reason: Septal cartilage provides support to both the cartilaginous and bony dorsum.

18. **Assertion: Lacrimation is lost in infrastapedial lesions of the facial nerve.**

    Reason: Secretomotor fibres for the lacrimal gland leave the facial nerve in greater petrosal nerve.

19. **Assertion: In radical mastoidectomy, opening of eustachian tube is closed with muscle.**

    Reason: Closure of eustachian tube in radical mastoidectomy will prevent infection of middle ear from the nasopharynx.

20. **Assertion: A patient with Sjögren's syndrome has very high risk of developing lymphoma of the salivary gland.**

    Reason: T-cells are hyperactive in Sjögren's syndrome and form a lymphoma.

Answer Key

1. (a)
2. (b)
3. (d)
4. (a)
5. (c)
6. (c)
7. (a)
8. (a)
9. (a)
10. (d)
11. (a)
12. (d)
13. (a)
14. (d)
15. (b)
16. (c)
17. (c)
18. (d)
19. (a)
20. (d)

Explanations to Answers

1. Answer (a)

Fistula test is positive as labyrinth is still active and responds to pressure changes. If the labyrinth were dead, the fistula test would be negative in spite of the presence of fistula.

2. Answer (b)

Cough is caused by stimulation of auricular branch of vagus (Arnold's nerve) which also supplies the external ear canal.

3. Answer (d)

Cholesteatoma of middle and mastoid is due to presence of squamous epithelium in these sites and not the cholesterol crystals.

Persistent negative pressure in middle ear and mastoid results in cholesterol granuloma due to haemorrhages. Cholesterol crystals are derived from blood.

4. Answer (a)

With patient supine and head raised 30° forward horizontal canal becomes vertical. This position helps the convection currents through gravity while performing bithermal caloric test.

5. Answer (c)

CSF directly communicates with perilymph not endolymph in scala tympani through the aqueduct of cochlea.

6. Answer (c)

Paralysis of left vocal cord is more common due to its longer course through the chest. It hooks round arch of aorta in the thorax. Right vocal cord has its course only in the neck. It hooks round the subclavian artery.

7. Answer (a)

Recruitment is positive in cochlear disorders such as Meniere's disease. Its presence makes patient intolerant to loud sounds. This is due to abnormal growth of loudness.

8. Answer (a)

Pain in the ear in this case is referred one. Lingual nerve is a branch of mandibular division of trigeminal (V_3). Nerve supply to the ear is also from V_3 (auriculotemporal).

9. Answer (a)

Stapedectomy is simply a by-pass operation. It is a means to create a pathway for conduction of sound. Otosclerotic foci are not eliminated except in rare case where only footplate is involved and is totally removed.

10. Answer (d)

Maxillary sinusitis is not often associated with sphenoid sinus infections.

11. Answer (a)

Pus of parapharyngeal abscess lies medial to medial pterygoid and parotid salivary gland. Inflammatory process causes spasm of pterygoid muscles and trismus (see Fig. 3.1).

12. Answer (d)

In combined paralysis both superior and recurrent laryngeal nerves are paralysed and the vocal cords come to lie in cadaveric (intermediate) position. There is no stridor as there is sufficient space between the cords.

13. Answer (a)

Maximum vibratory area of the vocal cord is situated in the middle of membranous cord (junction of anterior one-third with posterior two-third) and is put to maximal trauma during vocal misuse or overuse causing nodule formation at this site.

14. Answer (d)

A pharyngeal pouch is herniation of mucosa through two components of inferior constrictor, i.e. thyropharyngeus and cricopharyngeus (not middle constrictor). It is due to uncoordinated contractions of pharyngeal muscles because cricopharyngeus must relax while upper part of the pharynx contracts. Lack of relaxation of cricopharyngeus makes pharyngeal mucosa herniate through the structurally weak area above the cricopharyngeal sphincter.

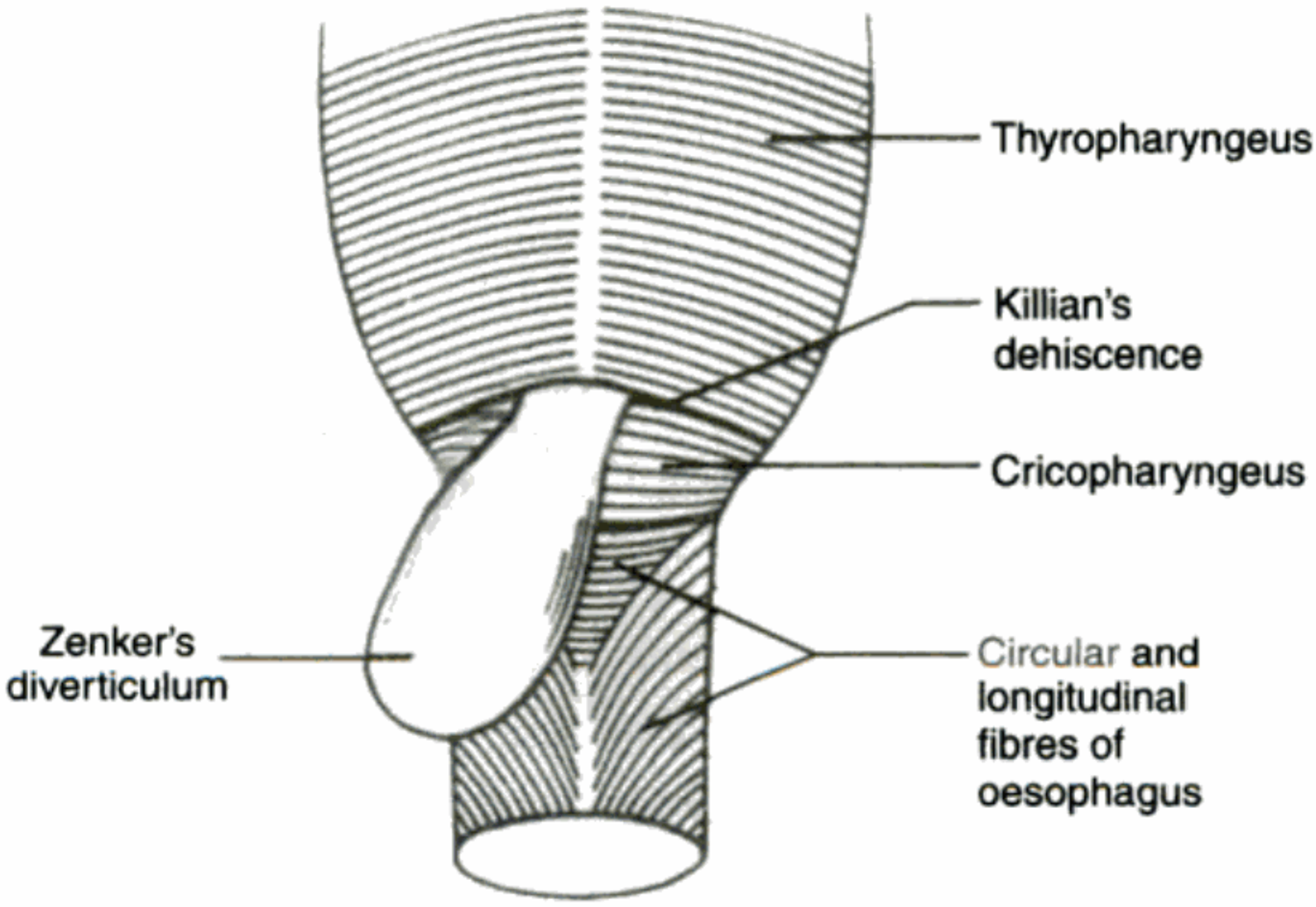

Fig. 8.1. Pharyngeal pouch.

15. Answer (b)

Greater auricular and lesser occipital nerves supply the pinna but the greater auricular nerve supplies the lower part of pinna and has sometimes to be cut in exposure of the parotid in superficial parotidectomy.

16. Answer (c)

In atrophic rhinitis (ozaena), olfactory mucosa like respiratory mucosa also undergoes degenerative changes causing anosmia. Anosmia is not due to obstruction by crusts.

17. Answer (c)

Septal cartilage provides support to only cartilaginous part of nose and not its bony part. Total removal of septal cartilage causes supratip depression affecting only the cartilaginous dorsum.

18. Answer (d) (refer Fig. 1.1)

Secretomotor fibres for the facial nerve leave the facial nerve in greater petrosal nerve at the level of geniculate ganglion. Tearing is lost in

supragenicular or transgeniculate lesions. Infrastapedial lesions of facial nerve do not affect lacrimation or stapedial reflex.

19. Answer (a)

In radical mastoidectomy, tympanic opening of eustachian tube is sealed to present ascending infections from the nasopharynx.

20. Answer (d)

In Sjögren's syndrome, B-cells are hyperactive and cause lymphoma. Patients with Sjögren's syndrome are 44 times more at risk of developing B-cell lymphoma of salivary glands than those without the syndrome.

Index

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ISBN: 978-81-312-1442-8