

# Contents

<b>Preface</b> .....	x
<b>Contributors</b> .....	xi
<b>1 Adenoids</b> .....	1
<i>Nick Roland, Duncan McRae, Andrew W. McCombe</i>	
<b>2 Age-Associated Hearing Loss</b> .....	4
<i>Nick Roland, Duncan McRae, Andrew W. McCombe</i>	
<b>3 Anaesthesia—General</b> .....	7
<i>Peter Charters</i>	
<b>4 Anaesthesia—Local</b> .....	12
<i>Peter Charters</i>	
<b>5 Anaesthesia—Sedation</b> .....	15
<i>Seema Charters, Peter Charters</i>	
<b>6 Audit, Quality Improvement and Clinical Governance</b> .....	19
<i>Linnea Cheung</i>	
<b>7 Barotrauma</b> .....	23
<i>Nick Roland, Duncan McRae, Andrew W. McCombe</i>	
<b>8 Caloric Tests</b> .....	26
<i>Andrew McCombe, Tony Kay</i>	
<b>9 Cervical Lymphadenopathy</b> .....	28
<i>Nick Roland, Duncan McRae, Andrew W. McCombe</i>	
<b>10 Cholesteatoma</b> .....	36
<i>Tristram Lesser</i>	
<b>11 Clinical Assessment of Hearing</b> ...	39
<i>Nick Roland, Duncan McRae, Andrew W. McCombe</i>	
<b>12 Cochlear Implants</b> .....	42
<i>Andrew C. Hall, Shakeel R. Saeed</i>	
<b>13 Congenital Hearing Disorders</b> ....	47
<i>Soumit Dasgupta</i>	
<b>14 Consent and Capacity</b> .....	52
<i>Kate McCombe</i>	
<b>15 Cosmetic Surgery</b> .....	56
<i>Alwyn D'Souza, Kevin Kulendra</i>	
<b>16 Cough</b> .....	62
<i>Andrew J. Kinshuck, Jarrod J. Homer</i>	
<b>17 Day Case ENT Surgery</b> .....	65
<i>Nick Roland, Duncan McRae, Andrew W. McCombe</i>	
<b>18 Drooling</b> .....	68
<i>Raymond W. Clarke</i>	
<b>19 Epiglottitis</b> .....	69
<i>Nick Roland, Duncan McRae, Andrew W. McCombe</i>	
<b>20 Epistaxis</b> .....	71
<i>Nick Roland, Duncan McRae, Andrew W. McCombe</i>	
<b>21 Eponyms in ENT</b> .....	75
<i>Christopher Loh, Nick Roland</i>	
<b>22 Evidence-Based Medicine</b> .....	84
<i>Martin J. Burton</i>	
<b>23 Evoked Response Audiometry</b> ....	89
<i>Andrew W. McCombe, Tony Kay</i>	
<b>24 Examination of the Ear</b> .....	94
<i>Nick Roland, Duncan McRae, Andrew W. McCombe</i>	
<b>25 Examination of the Head and Neck</b> .....	96
<i>Nick Roland, Duncan McRae, Andrew W. McCombe</i>	
<b>26 Examination of the Nose</b> .....	99
<i>Nick Roland, Duncan McRae, Andrew W. McCombe</i>	

## Contents

---

- 27 Examinations in ENT** ..... 101  
*Andrew C. Swift*
- 28 External Ear Conditions** ..... 106  
*Nick Roland, Duncan McRae,  
Andrew W. McCombe*
- 29 Facial Nerve Palsy** ..... 109  
*Samuel C. Leong*
- 30 Fistula** ..... 114  
*Nick Roland, Duncan McRae,  
Andrew W. McCombe*
- 31 Foreign Bodies in ENT** ..... 118  
*Nick Roland, Duncan McRae,  
Andrew W. McCombe*
- 32 Functional Endoscopic Sinus  
Surgery** ..... 122  
*Nick Roland, Duncan McRae,  
Andrew W. McCombe*
- 33 Globus Pharyngeus** ..... 126  
*Jarrold J. Homer*
- 34 Halitosis** ..... 129  
*Nick Roland, Duncan McRae,  
Andrew W. McCombe*
- 35 Headache and Facial Pain** ..... 132  
*Nick Roland, Duncan McRae,  
Andrew W. McCombe*
- 36 Hearing Aids** ..... 137  
*Angeles Espeso*
- 37 Hearing Loss—Acquired** ..... 141  
*Simon Lloyd*
- 38 HIV in Otolaryngology** ..... 147  
*Nick Roland, Duncan McRae,  
Andrew W. McCombe*
- 39 Hypopharyngeal Carcinoma** ..... 150  
*Nick Roland, Duncan McRae,  
Andrew W. McCombe*
- 40 Imaging in ENT** ..... 154  
*Rebecca Hanlon*
- 41 Impedance Audiometry** ..... 167  
*Nick Roland, Duncan McRae,  
Andrew W. McCombe*
- 42 Labyrinthitis** ..... 170  
*Nick Roland, Duncan McRae,  
Andrew W. McCombe*
- 43 Laryngeal Carcinoma** ..... 173  
*Nick Roland, Duncan McRae,  
Andrew W. McCombe*
- 44 Laryngectomy** ..... 178  
*Nick Roland, Duncan McRae,  
Andrew W. McCombe*
- 45 Lasers in ENT** ..... 182  
*Mike Dilkes*
- 46 Literature Review  
and Statistics** ..... 187  
*Vinidh Paleri*
- 47 Mastoid Surgery** ..... 198  
*Tristram Lesser*
- 48 Medicolegal Aspects  
of ENT** ..... 202  
*Nick Roland, Duncan McRae,  
Andrew W. McCombe*
- 49 Ménière's Disease** ..... 205  
*Don McFerran*
- 50 Nasal Reconstruction** ..... 210  
*Tim Woolford*
- 51 Nasal Trauma** ..... 213  
*Nick Roland, Duncan McRae,  
Andrew W. McCombe*
- 52 Nasopharyngeal Tumours** ..... 216  
*Nick Roland, Duncan McRae,  
Andrew W. McCombe*
- 53 Neck Dissection** ..... 220  
*Nick Roland, Duncan McRae,  
Andrew W. McCombe*
- 54 Neck Swellings** ..... 224  
*Nick Roland, Duncan McRae,  
Andrew W. McCombe*

<b>55 Neck Space Infection</b> ..... 230 <i>Paul Pracy</i>	<b>68 Otorrhoea</b> ..... 280 <i>Nick Roland, Duncan McRae, Andrew W. McCombe</i>
<b>56 Neck Trauma</b> ..... 236 <i>Johannes Fagan</i>	<b>69 Otosclerosis</b> ..... 282 <i>Nick Roland, Duncan McRae, Andrew W. McCombe</i>
<b>57 Noise-Induced Hearing Loss</b> ..... 241 <i>Nick Roland, Duncan McRae, Andrew W. McCombe</i>	<b>70 Ototoxicity</b> ..... 286 <i>Nick Roland, Duncan McRae, Andrew W. McCombe</i>
<b>58 Non-Healing Nasal Granulomata</b> ..... 244 <i>Nick Roland, Duncan McRae, Andrew W. McCombe</i>	<b>71 Paediatric Airway Problems</b> ..... 289 <i>Raymond W. Clarke</i>
<b>59 Non-Organic Hearing Loss</b> ..... 249 <i>Nick Roland, Duncan McRae, Andrew W. McCombe</i>	<b>72 Paediatric Endoscopy</b> ..... 292 <i>Raymond W. Clarke</i>
<b>60 Nutrition in Head and Neck Cancer</b> ..... 250 <i>Bella Talwar, Rachel Donnelly, Rachel Skelly, Muriel Donaldson</i>	<b>73 Paediatric Genetic Syndromes and Associations</b> ..... 295 <i>Raymond W. Clarke</i>
<b>61 Oral Cavity Carcinoma</b> ..... 258 <i>Nick Roland, Duncan McRae, Andrew W. McCombe</i>	<b>74 Paediatric Hearing Assessment</b> ... 297 <i>Soumit Dasgupta</i>
<b>62 Oral Lesions</b> ..... 262 <i>Richard Shaw</i>	<b>75 Paediatric Nasal Obstruction</b> ..... 301 <i>Raymond W. Clarke</i>
<b>63 Oropharyngeal Carcinoma</b> ..... 265 <i>Nick Roland, Duncan McRae, Andrew W. McCombe</i>	<b>76 Papilloma of the Larynx</b> ..... 304 <i>Christopher Loh</i>
<b>64 Otagia</b> ..... 270 <i>Nick Roland, Duncan McRae, Andrew W. McCombe</i>	<b>77 Parathyroid Disease</b> ..... 306 <i>M. Shahed Quraishi</i>
<b>65 Otitis Externa</b> ..... 272 <i>Nick Roland, Duncan McRae, Andrew W. McCombe</i>	<b>78 Perilymph and Labyrinthine Fistula</b> ..... 312 <i>Don McFerran</i>
<b>66 Otitis Media with Effusion</b> ..... 275 <i>Nick Roland, Duncan McRae, Andrew W. McCombe</i>	<b>79 Pharyngeal Pouch</b> ..... 316 <i>Christopher Loh</i>
<b>67 Otoacoustic Emissions</b> ..... 278 <i>Nick Roland, Duncan McRae, Andrew W. McCombe</i>	<b>80 Pure-Tone Audiometry</b> ..... 319 <i>Andrew W. McCombe, Tony Kay</i>
	<b>81 Radiotherapy and Chemotherapy for Head and Neck Cancer</b> ..... 323 <i>Christopher Nutting</i>

## Contents

---

- 82 Reconstructive Surgery** ..... 328  
*Nick Roland, Simon Rogers*
- 83 Rhinitis—Allergic** ..... 332  
*Nick Roland, Duncan McRae,  
Andrew W. McCombe*
- 84 Rhinitis—Non-Allergic**..... 335  
*Nick Roland, Duncan McRae,  
Andrew W. McCombe*
- 85 Rhinoplasty** ..... 338  
*Tim Woolford*
- 86 Rhinosinusitis—Appropriate Terminology** ..... 341  
*Nick Roland, Duncan McRae,  
Andrew W. McCombe*
- 87 Rhinosinusitis—Acute** ..... 342  
*Nick Roland, Duncan McRae,  
Andrew W. McCombe*
- 88 Rhinosinusitis—Chronic without Nasal Polyps** ..... 345  
*Nick Roland, Duncan McRae,  
Andrew W. McCombe*
- 89 Rhinosinusitis-Chronic (with Nasal Polyps)**..... 348  
*Nick Roland, Duncan McRae,  
Andrew W. McCombe*
- 90 Rhinosinusitis—Complications** .... 351  
*Nick Roland, Duncan McRae,  
Andrew W. McCombe*
- 91 Rhinosinusitis—Fungal**..... 354  
*Nick Roland, Duncan McRae,  
Andrew W. McCombe*
- 92 Robots in ENT/Head and Neck Surgery** ..... 356  
*Vinidh Paleri*
- 93 Salivary Gland Diseases**..... 361  
*Nick Roland, Duncan McRae,  
Andrew W. McCombe*
- 94 Salivary Gland Neoplasms**..... 364  
*Nick Roland, Duncan McRae,  
Andrew W. McCombe*
- 95 Septal Perforation** ..... 369  
*Nick Roland, Duncan McRae,  
Andrew W. McCombe*
- 96 Sinonasal Tumours** ..... 372  
*Andrew C. Swift*
- 97 Skin Cancer—Melanoma** ..... 379  
*Nick Roland, Duncan McRae,  
Andrew W. McCombe*
- 98 Skin Cancer—Non-Melanoma**.... 383  
*Nick Roland, Duncan McRae,  
Andrew W. McCombe*
- 99 Smell and Taste Disorders** ..... 388  
*Nick Roland, Duncan McRae,  
Andrew W. McCombe*
- 100 Snoring and Sleep-Related Breathing Disorder** ..... 391  
*Nick Roland, Duncan McRae,  
Andrew W. McCombe*
- 101 Speech and Swallow Rehabilitation Following Head and Neck Surgery** ..... 395  
*Camilla Dawson*
- 102 Speech Audiometry** ..... 399  
*Andrew McCombe, Tony Kay*
- 103 Speech and Language Therapy for Benign Voice Disorders** ..... 402  
*Julia Selby*
- 104 Stertor and Stridor** ..... 405  
*Nick Roland, Duncan McRae,  
Andrew W. McCombe*
- 105 Sudden Hearing Loss** ..... 408  
*Nick Roland, Duncan McRae,  
Andrew W. McCombe*
- 106 Suppurative Otitis Media—Acute**..... 411  
*Nick Roland, Duncan McRae,  
Andrew W. McCombe*
- 107 Suppurative Otitis Media—Chronic** ..... 414  
*James Mitchell*

<b>108 Suppurative Otitis Media— Complications</b> .....	417	<b>116 Tracheostomy</b> .....	449
<i>Nick Roland, Duncan McRae, Andrew W. McCombe</i>		<i>Nick Roland, Lesley Dempsey</i>	
<b>109 Temporal Bone Cancer</b> .....	419	<b>117 Tympanoplasty</b> .....	454
<i>Jarrold J. Homer</i>		<i>Tristram Lesser</i>	
<b>110 Temporal Bone Fractures</b> .....	423	<b>118 Tympanosclerosis</b> .....	457
<i>Simon Freeman</i>		<i>James Mitchell</i>	
<b>111 Thyroid Disease—Benign</b> .....	427	<b>119 Vertigo</b> .....	459
<i>Ricard Simo</i>		<i>Nick Roland, Duncan McRae, Andrew W. McCombe</i>	
<b>112 Thyroid Disease—Malignant</b> .....	432	<b>120 Vestibular Function Tests</b> .....	463
<i>Ricard Simo</i>		<i>Andrew W. McCombe, Tony Kay</i>	
<b>113 Tinnitus</b> .....	440	<b>121 Vestibular Schwannoma</b> .....	467
<i>Nick Roland, Duncan McRae, Andrew W. McCombe</i>		<i>Shakeel R. Saeed, Andrew C. Hall</i>	
<b>114 Tonsil Disease</b> .....	443	<b>122 Vocal Fold Paralysis</b> .....	471
<i>Nick Roland, Duncan McRae, Andrew W. McCombe</i>		<i>Nick Roland, Declan Costello</i>	
<b>115 Tonsillectomy</b> .....	446	<b>123 Voice Disorders</b> .....	474
<i>Nick Roland, Duncan McRae, Andrew W. McCombe</i>		<i>Declan Costello</i>	
<b>Index</b> .....	479		

# 1 Adenoids

The adenoids are a mass of lymphoid tissue found at the junction of the roof and posterior wall of the nasopharynx. They are a normal structure and part of Waldeyer's ring which includes the palatine and lingual tonsils. Their function includes the production of antibodies and activated white blood cells in response to perceived infectious or other inflammatory threats. The size of the adenoids varies, but in general, they attain their maximum size between the ages of 2 and 7 years, as part of the widespread process of lymphoid hyperplasia that occurs in this age group, and then usually regress in size to become almost negligible by the age of 13 years.

## 1.1 Pathology

Inflammation, most commonly due to acute viral and bacterial infections, and also allergy and other inflammatory conditions, results in hyperplasia with enlargement and multiplication of the lymphoid follicles. Most of the pathological effects attributed to the adenoids are due to this increase in size. The symptoms caused by hypertrophy result from the obstruction of the nasopharynx and eustachian tube orifices. Persistent bacterial colonisation and biofilms are also contributory factors.

## 1.2 Clinical Features

1. *Nasal obstruction* leads to mouth breathing, snoring and hyponasal speech. Infants may have difficulty in feeding because they must stop sucking intermittently to take a breath. Nasal discharge, often mucopurulent, and post-nasal drip may develop because of secondary chronic rhinitis and sinusitis. Besides snoring, some children may suffer from episodes of sleep apnoea. The child with the characteristic adenoid facies appearance (an open lip posture, prominent upper incisors, a short upper lip, a thin nose, and a hypoplastic maxilla with a high-arched palate) is rarely seen nowadays because parents and GPs are better informed about the management of obstructive symptoms.

2. *Eustachian tube obstruction* may result in otalgia and deafness due to recurrent bouts of acute otitis media and otitis media with effusion (glue ear).

When there is mild-to-moderate obstruction, the clinical features of adenoid hypertrophy are not always clear-cut. Adenoidal hyperplasia may be incorrectly diagnosed when allergy and rhinitis may be the cause. In most children, examination of the nasopharynx with a paediatric nasopharyngoscope will identify large adenoids.

## 1.3 Investigations

A rarely required investigation is a lateral soft tissue radiograph. This will give a measure of the absolute size of the adenoids and an assessment of their proportion in relation to the size of the airway.

The most reliable means of assessing the size of the adenoids is examination under general anaesthetic at the time of the surgical procedure. If enlarged adenoids are identified then, with appropriate consent, they can be removed.

## 1.4 Indications for Adenoidectomy

Adenoidectomy is only indicated if troublesome symptoms can be attributed to abnormal adenoid hypertrophy. The indications for adenoidectomy are as follows:

- Nasal obstruction—especially if associated with significant and persistent mucopurulent rhinorrhoea, suggesting chronic nasal cavity infection.
- Otitis media with effusion (glue ear).
- Recurrent acute otitis media.
- Sleep apnoea—often an adenoidectomy is performed in association with a tonsillectomy. Traditionally, the procedure has been performed by curettage, but suction diathermy and coblation are popular alternative techniques.

## A

## 1.5 Contraindications for Adenoidectomy

- Recent upper or lower respiratory tract infection.
- An uncontrolled bleeding disorder.
- Cleft palate—either overt or sub-mucosal. The adenoids assist in closure of the nasopharynx from the oropharynx during speech and deglutition, and velopharyngeal insufficiency is a rare complication. They should never be removed in a child who has had a cleft palate repair or a congenitally short palate. All children who have a bifid uvula should have a sub-mucous cleft excluded before proceeding with an adenoidectomy.

## 1.6 Complications

1. Immediate:
  - Anaesthetic complications.
  - Soft palate damage.
  - Persistent haemorrhage.
  - Sub-luxation of the atlanto-axial joint, or other damage to the cervical spine.
2. Intermediate:
  - Secondary haemorrhage.
  - Sub-luxation of the atlanto-occipital joint (secondary to infection).
3. Late:
  - Eustachian tube stenosis.
  - Nasal escape and regurgitation and hypernasal speech (rhinolalia aperta). Hypernasal speech can be a troublesome complication in some children. It often improves with time and speech therapy but may be sufficiently severe to require a pharyngoplasty to correct the problem. It is less likely to occur if children with palatal abnormalities are excluded from operation. Some surgeons advocate removal of the upper part of the adenoid mass leaving a lower ridge of adenoid tissue against which the defective palate may continue to make contact.
  - Persistence of symptoms.

## 1.7 Haemorrhage

The most serious complication is reactionary haemorrhage. This is treated in the same manner as post-tonsillectomy haemorrhage. The child should be returned to theatre and an attempt

made to localise and diathermy the bleeding point with suction diathermy. A post-nasal pack is rarely required because the adenoid bed and any bleeding points can usually be fully visualised either endoscopically, or with palatal retraction and a mirror.

## 1.8 Signs of Hypovolaemic Shock in Children

Children compensate for a reduction in their circulating blood volume (normally 80–85 mL/kg) with an increase in systemic vascular resistance and heart rate. Their ability to compensate is remarkable, meaning that they can lose up to 30% of their blood volume before becoming hypotensive. Consequently, children decompensate late and rapidly and the clinician must be vigilant for signs of shock to avert a critical situation.

Observe child for the following:

- Tachycardia (age adjusted): Although there may be many confounding causes for a rise in heart rate, for example pain, agitation, fever, etc.
- Tachypnoea (age adjusted): This is a useful and sensitive sign.
- Agitation.
- Signs of impaired organ perfusion: Reduced urine output (usually 0.5–1 mL/kg/h); decreased level of consciousness; delayed perfusion—reduced capillary refill time (> 2 seconds), weak pulses and cool peripheries.
- Hypotension (age adjusted): This is a late sign in children.

## 1.9 Immediate Management

Confirm the diagnosis of hypovolaemic shock secondary to haemorrhage.

Initial management should follow the 'ABC' approach:

- Call for help!
- **A** Assess airway—ensure airway is patent. If conscious level is decreased, place the child in the recovery position, slightly head down to decrease the risk of aspiration.
- **B** Assess breathing and apply 100% oxygen—respiratory rate, air entry and oxygen saturations. Alert the anaesthetic team in the face of airway compromise and if a return to theatre is anticipated.

- **C** Assess circulation. Gain intravenous (IV) access and take blood for full blood count (FBC), group and save for cross-matching (depending on severity).

### 1.10 Start Fluid Resuscitation

- A 20 mL/kg bolus of Hartmann's solution—assess physiological response.
- Repeat 20 mL/kg bolus of Hartmann's solution if no response/partial response/initial response followed by deterioration.
- Children who require further fluid resuscitation after these two boluses will require blood as the next resuscitation fluid at an initial dose of 10 mL/kg.
- Institute measures to arrest the bleeding (return to theatre, etc.).

### 1.11 Follow-Up and Aftercare

In view of the problems with accurate diagnosis, and the potential long-term complications, it is

reasonable to review an adenoidectomy child in the outpatient clinic post-operatively.

A

### Further Reading

- Lock C, Wilson J, Steen N, et al. North of England and Scotland Study of Tonsillectomy and Adeno-tonsillectomy in Children (NESSTAC): a pragmatic randomised controlled trial with a parallel non-randomised preference study. *Health Technol Assess.* 2010; 14(13):1–164, iii–iv
- MRC Multicentre Otitis Media Study Group. Adjuvant adenoidectomy in persistent bilateral otitis media with effusion: hearing and revision surgery outcomes through 2 years in the TARGET randomised trial. *Clin Otolaryngol.* 2012; 37(2):107–116
- Robb P. The adenoids and adenoidectomy Chapter 26, Volume 2. *Scott Browns Otolaryngology, Head and Neck Surgery.* 8th edition. CRC Press, 2018

### Related Topics of Interest

Suppurative otitis media—acute  
 Otitis media with effusion  
 Snoring and sleep-related breathing disorder  
 Tonsillectomy  
 Tonsil disease



## 2 Age-Associated Hearing Loss

As with all sensory systems in the human body, there is a progressive degeneration in the auditory system with ageing. Presbycusis is the term that describes the deterioration of hearing that characterises old age, now replaced by the term 'age-associated hearing loss' (AAHL). It may be defined as a progressive bilateral sensorineural hearing loss of mid-to-late adult life, where all other causes have been excluded. Indeed, the definition of AAHL is somewhat arbitrary; there is no agreed age above which an individual suffers from age-related hearing loss and below which one does not. Almost invariably, databases displaying age-related, average hearing thresholds for either screened or unscreened populations show a marked increase in the rate of progression of the hearing loss once into the sixth decade. It is, therefore, reasonable to attribute high-tone hearing loss in an individual over the age of 50 to age-related changes (in the absence of any alternative explanation).

### 2.1 Pathophysiology

Both the sensory peripheral (cochlea) and central (neural) components of the auditory system are affected and the deterioration appears to become more rapid with increasing age. Peripheral degeneration is reported to be responsible for at least two-thirds of the clinical features of presbycusis. A variety of possible mechanisms exist. Cellular degeneration gives rise to a reduction in the numbers of inner and outer hair cells, particularly at the basal end of the cochlea. This can lead to secondary neural degeneration in the spiral ganglion. Circulatory changes such as arteriosclerosis, atrophy of the stria vascularis and microangiopathy can lead to metabolic upset and further cell death. This leads to an elevation of hearing thresholds and a loss of frequency selectivity. Degeneration in the central pathways leads to a reduction in performance in terms of signal processing. The net result in most instances will be a combined sensorineural, rather than an isolated sensory or neural impairment.

### 2.2 Clinical Features

Moderate hearing impairment (45-dB hearing level averaged over 0.5, 1, 2 and 4 kHz) occurs in

4% of the 51 to 60 age group, and in 18% of those aged 71 to 80. Men and women are both affected, although men tend to have a slightly worse loss for the same age group.

Initially, patients will complain of difficulty in hearing, particularly in the presence of background noise, so that they find conversations difficult to follow. As the hearing loss progresses, they will become aware of not hearing words and sounds. Recruitment is a frequent problem and adds to the distortion. In addition, the problems and consequences of AAHL are compounded in the elderly because of additional degenerative processes in the central nervous system. This can result in a relative loss in neuronal plasticity, a loss of cognitive abilities and other sensory modalities, particularly sight.

Decreasing hearing acuity also correlates with an increased incidence of falls, depression and dementia in the elderly. The feelings of imprisonment and anxiety that result from the consequent social isolation lead to reduced higher cognitive functioning and psychological well-being, which can in turn increase the economic and societal burden of AAHL. Therefore, it is important, as the life expectancy of our population increases, to make the diagnosis and offer treatment early.

In the absence of any other otological pathology, clinical examination is normal.

### 2.3 Investigations

In the presence of an appropriate history and a symmetrical sensorineural hearing loss on pure-tone audiometry, little further investigation is required. Hearing loss in a young patient, asymmetry on a pure-tone audiogram, unilateral tinnitus or a conductive component to the audiogram may require further investigation.

MRI scanning may be necessary to exclude a cerebellopontine angle tumour, such as a vestibular schwannoma, in any patient thought to be at risk (as suggested by significant asymmetry or persistent unilateral tinnitus). Most departments will have their own guidelines.

The National Institute for Clinical Excellence (NICE) state that an MRI of the internal auditory meati should be considered for adults with