Ear, Nose and Throat Examination

Examination of the ear

This includes an assessment of hearing as well as the appearance of the ear.

History[1]
The following issues should be included:

- Classic symptoms of ear disease: deafness, tinnitus, discharge (otorrhoea), pain (otalgia) and vertigo.
- Previous ear surgery, or head injury.
- Family history of deafness.
- Systemic disease (eg, stroke, multiple sclerosis, cardiovascular disease).
- Ototoxic drugs (antibiotics (eg, gentamicin), diuretics, cytotoxics).
- Exposure to noise (eg, pneumatic drill or shooting).
- History of atopy and allergy in children.

Inspecting the external ear[1]
Inspect the external ear before examination with an otoscope/auriscope. Swab any discharge and remove any wax. Look for obvious signs of abnormality.

- Size and shape of the pinna.
- Extra cartilage tags/pre-auricular sinuses or pits.
- Signs of trauma to the pinna.
- Suspicious skin lesions on the pinna, including neoplasia.
- Skin conditions of the pinna and external canal.
- Infection/inflammation of the external ear canal, with discharge.
- Signs/scars of previous surgery.

Inspecting the ear canal and eardrum
A modern electric otoscope/auriscope with its own light source is primarily used to examine the ear. An otoscope also has its own magnification, which gives a good view of the tympanic membrane (TM). Batteries need to be fully operational to allow optimal light during examination.

The examination technique involves grasping the pinna and pulling it up and backwards (posteriorly and superiorly), which helps to straighten the ear canal and for inspection of the TM. (In infants, only pull the pinna posteriorly not superiorly for examination.)

Hold the otoscope near to the eyepiece rather than at the end; this helps to reduce the patient's discomfort due to hand movements, which are exaggerated in the ear. Modern otoscopes are designed to use a disposable speculum. It is necessary to fit the correct size of speculum to achieve the best view; it is tempting to use a small piece for ease of insertion, but this simply restricts the image available.

Note the condition of the canal skin, and the presence of wax, foreign tissue, or discharge. The mobility of the eardrum can be evaluated using a pneumatic speculum, which attaches to the otoscope. The drum should move on squeezing the balloon.
Inspecting the tympanic membrane

Move the otoscope in order to see several different views of the drum; it is not always possible to see the whole drum in one single view using an otoscope. The drum is roughly circular (~1 cm in diameter). In a normal drum the following structures can be identified:

- Handle/lateral process of the malleus.
- Light reflex/cone of light.
- Pars tensa and pars flaccida (attic).

Occasionally, in a healthy, thin drum, it is possible to see the following:

- Long process of incus.
- Chorda tympani.
- Eustachian opening.
- Promontory of the cochlea.

Common pathological conditions related to the ear include:

- Perforations (note size, site and position).
- Tympanosclerosis.
- Glue ear/middle-ear effusion.
- Retractions of the drum.
- Haemotympanum (blood in the middle ear).

Check facial nerve function if ear pathology is serious.

Basic hearing tests

Detailed hearing tests are usually performed in audiology clinics. A patient with normal hearing should hear equally as well in both ears.

- Tuning fork tests: Weber’s test and Rinne’s test:
  - Weber’s test - this is performed in conjunction with Rinne’s test. The vibrating fork is placed in the middle of the forehead and the patient is asked whether any sound is heard and, if so, whether it is equally heard in both ears or not. In a patient with normal hearing, the tone is heard centrally. If the patient has unilateral hearing loss and the sound is louder in the weaker ear, this suggests a conductive hearing loss. If the sound is louder in the better ear, it is more likely to be a sensorineural hearing loss.
  - Rinne’s test - strike a tuning fork and hold it vertically with its nearest prong about 1 cm away from the patient’s external auditory meatus, making sure that it is not touching any hair. Then immediately transfer it to the mastoid process and hold it firmly there (applying counter pressure to the opposite side of the head) for two seconds. The patient is asked to report on which of the two positions was the louder. Normally, the patient should hear the air conduction better than the bone conduction (ie first position better than the second). This is a positive Rinne’s test. If the Rinne’s test is positive and there is hearing impairment, it is a sensorineural and not a conductive problem. If there is a negative Rinne’s test with hearing loss, then the problem is a conductive one.

- Free field voice testing (whisper from 40 cm).

Examination of the nose

Full nose examinations assess the function, airway resistance and occasionally sense of smell. It includes looking into the mouth and pharynx. Common symptoms of nasal disease include:

- Airway obstruction.
- Rhinorrhoea (runny nose).
- Sneezing.
- Loss of smell (anosmia).
- Facial pain caused by sinusitis.
- Snoring (associated with nasal obstruction).

History

The following issues should be covered:

- Allergies/atopic disease.
- Smoking.
- Pets at home.
- Occupation.
- History of previous surgery.
- Previous trauma.
- General medical history.
- Seasonal or daily variation in symptoms.
**Inspection of the nose**

First look at the external nose. Ask the patient to remove any glasses. Look at the nose from the front and side for any signs of the following:

- Size and shape.
- Obvious bend or deformity: a deviated nose is often best looked at from above.
- Swelling.
- Scars or abnormal creases.
- Redness (evidence of skin disease).
- Discharge or crusting.
- Offensive smell.

The nose can be inspected from the front to examine the anterior nares by lifting the tip of the nose up and looking inside without a speculum. Check patency of each side and ask the patient to sniff. To assess the nasal airway hold a cold metal tongue compressor under the nose while the patient exhales and note the condensation under both nostrils, or occlude one nostril whilst the patient sniffs to give a reasonable idea of airway patency.

Most otolaryngologists use either a head mirror or illuminated spectacles with a Thudichum speculum to open up the nose, which allows examination of the nasal cavity. Holding the instrument comfortably can take practice at first. Insert the Thudichum speculum gently, and identify the nasal septum medially; turbinates laterally; inferior turbinate (nearly always possible to see); the middle turbinate is often difficult to see as it is small.

Check for inflammation (rhinitis), position of the septum, and presence of polyps (touch to check sensitivity; it should be insensitive to touch). A foreign body, usually accompanied by an offensive unilateral discharge, may be seen inside the nose of a child.

A mirror and headlight or an endoscope instrument are used to view the nasopharynx (the postnasal space, which contains the Eustachian tube orifices and pharyngeal recess (of Rosenmüller) and may contain adenoids or nasopharyngeal cancer), but this is not always possible during a routine examination. Finally, examine the palate. Look for large nasal polyps and tumours arising from the soft palate.

**Examination of the throat[1]**

This includes a thorough examination of the oral cavity.

**History**

General history, plus ask the patient about tobacco or alcohol use and dental history.

**Inspection**

Ask the patient to remove dentures, and examine their mouth systemically (use a bright torch): tongue, hard and soft palate, tonsillar fossa, gingivobuccal sulci, floor of mouth/undersurface of tongue as follows:

- Examine the mouth and note the condition of the tongue.
- Examine back of tongue and tonsils (press down on the tongue with a tongue depressor).
- Palpate the base of the tongue (look for tumours that may not be easily visible).
- Inspect the uvula and soft palate.
- Inspect the hard palate (ask the patient to tip their head backwards, until the whole hard palate is visible).
- Examine the buccal area and the gingivobuccal sulcus (the space between cheek and gums).
- Examine the floor of the mouth, check for submandibular duct stones or masses (ask the patient to stick their tongue out).
- Examine the nasopharynx and larynx with a mirror or flexible fiberoptic nasendoscope.

**Further reading & references**

1. ENT Examination techniques including Weber and Rinne tests; University of Bristol ENT Department

**Disclaimer:** This article is for information only and should not be used for the diagnosis or treatment of medical conditions. Patient Platform Limited has used all reasonable care in compiling the information but makes no warranty as to its accuracy. Consult a doctor or other healthcare professional for diagnosis and treatment of medical conditions. For details see our conditions.