An infinite number of anomalies is theoretically possible, but only a few are clinically important.
THE EXTERNAL AUDITORY MEATUS

- EAC reaches adult size at 9 years
- Atresia of the EAC may result from a failure of formation of a meatal epithelial plug or from a lack of its canalization
- Middle ear structures are not necessarily involved
- The 1st three months of pregnancy is a critical period
FOREIGN BODIES IN THE EAR

- Extremely common in young children but may be seen in any age group
- It consist of anything that is small enough to enter the canal
- Symptoms are hearing loss, pain, or discharge

Occasionally insects become trapped in the external canal & cause great distress by moving about trying to get out
FOREIGN BODIES IN THE EAR

The ear should be filled with oil or even water, thus drowning the insect to be picked or syringed out.

In adults gentle removal with a FB curette, suction, washing, or forceps with extreme gentleness.

In less cooperative patients, in children & in those patients in whom the FB is wedged into the canal, operative removal under anesthesia is indicated.
FOREIGN BODIES IN THE EAR

- Vegetable FB e.g. dry beans swell & if neglected for a long time, it may require operative intervention
- Inexperienced attempts at removal have resulted in severe laceration of the canal, tympanic membrane perforations, ossicular disruption & facial nerve injury

OTITIS EXTERNA
**EXTERNAL OTITIS**

The skin of the EAC—as everywhere—has an outer layer of epithelium i.e. epidermis, overlying an inner layer of vascular connective tissue or corium i.e. dermis.

Hair follicles, sebaceous & ceruminous glands are found in the dermis of the cartilaginous portion only.

**OTITIS EXTERNA**

FACTORS PREDISPOSING FOR SKIN INFECTION

- Stress or localized neurodermatitis result in itching.
- Itching results in mild inflammation which produces more itching i.e. a vicious cycle continuing until the skin is infected.
OTITIS EXTERNA
FACTORS PREDISPOSING FOR SKIN INFECTION

- Systemic conditions such as anemia, vitamin deficiency & endocrine disorders i.e. diabetes & seborrheic dermatitis
- Skin allergy

Classification of External Otitis

Mawson (1967)

Infective
- Bacterial
- Fungal
- Viral

Reactive
- Eczema
- Seborrheic Dermatitis
- Keratosis Obturans
- Neurodermatitis
- Psoriasis
Furunculosis is an infection of a pilosebaceous follicle. It occurs only in the skin of the outer cartilaginous portion at the junction of conchal & canal skin. Due to staph. Aureus penetrating deeply into a hair follicle, furunculosis shows as a red swelling. Severe pain out of proportion to the size of the visible swelling results as the skin is tightly adherent to the underlying cartilage.
Uncommonly conductive

deafness may be present if the

swelling in addition to any

discharge or debris completely

occludes the external canal

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FURUNCULOSIS

TREATMENT

1) Painkillers

2) Pack for its splinting effect

3) Systemic antibiotics & Rifampicin is the best

4) When the pain fades, the canal should be cleaned carefully & the patient is given a sort of alcoholic or antibiotic containing ear drops to disinfect the skin & so preventing recurrence

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Prof. Dr. Farouk El-Garem
DIFFUSE EXTERNAL OTITIS

- A diffuse bacterial infection of EAC
- Exciting factors are usually scratching e.g. by a dirty fingernail or swimming in contaminated water (swimmer’s ear)
- Most prevalent in places where the relative humidity & temperature are high

DIFFUSE EXTERNAL OTITIS

PREDISPOSING FACTORS

- Diabetes
- Immunosuppression
- Allergy
- Stress
- Frequent removal of skin lipids & absence of cerumen
- Active (discharging) otitis media
DIFFUSE EXTERNAL OTITIS

ACUTE STAGE
Due to Plugging of pilosebaceous follicles there are
- Fullness
- Irritation & discomfort & hot burning pain
- Itching with a scratching cycle

CLINICAL PICTURE

The discharge is at first thin & serous
Later it becomes purulent, gravish white or greenish & of a musty odor

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**DIFFUSE EXTERNAL OTITIS**

**CLINICAL PICTURE**

**CHRONIC STAGE**

- **Thick skin**
- **Debris**
- *In the chronic stage, patients experience less pain but more profound itching & scanty discharge*

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**DIFFUSE EXTERNAL OTITIS**

**TREATMENT**

1. **THE ACUTE PHASE**:

   - Meticulous & gentle removal of all exudate & debris by mobbing or washing
   - Drops of antibiotics combined with steroids (Tobradex) usually give excellent & quick results

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*Prof. Dr. Farouk El-Garem*
DIFFUSE EXTERNAL OTITIS

TREATMENT

2. THE CHRONIC PHASE:

- Reduction of meatal swelling by packing with wicks soaked in 10% ichthammol in glycerin.

- Once sufficient access obtained, thorough cleaning should be carried out.

TREATMENT

2. THE CHRONIC PHASE:

- Topical application of a cortisone derivative together with an antiseptic (rather than an antibiotic) in a water miscible base.

- Failure of treatment may indicate secondary otomycosis.
**MALIGNANT EXTERNAL OTITIS**

- Uncommon infection caused by *Pseudomonas aeruginosa*
- May result in high morbidity & mortality
- Usually occurs in patients with low resistance
- Typically in elderly uncontrolled diabetics

Infection begins in the external canal

Usually in the floor at the junction between the cartilaginous & bony parts

Spreads to the preauricular tissues, parotid & TMJ
MALIGNANT EXTERNAL OTITIS

- Progresses along base of skull with paralysis of facial (75%) & 9th, 10th (70%) & 11th & 12th (55%)

Alternatively the infection may progress from the external canal through the tympanic membrane & throughout the mastoid cells.

- Can reach the petrous apex, intracranial structures & brain stem
MALIGNANT EXTERNAL OTITIS

DIAGNOSIS

1) Refractory progressive otitis externa in an elderly diabetic or immunocompromised patient

2) Pain:
   - Deep seated constant & boring
   - Nocturnal

3) Granulations on the floor with bare & necrotic cartilage

4) Involvement of preauricular region

MALIGNANT EXTERNAL OTITIS

Imaging modalities include

- CT scanning
- Technetium Tc 99m
- Gallium citrate (Ga 67)

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MALIGNANT EXTERNAL OTITIS

- Axial CT scan in a 65-year-old male showing bony destruction of the right temporal bone
- Note the missing posterior wall of the external auditory canal
- Mastoid air cells are secondarily involved compared with the well-aerated left side

TREATMENT

I. Medical Control Diabetes

- Antibiotics
  - Tobramycin
    - 3–5mg/kg/day (80mg every 8hours)
    - Regular monitoring of creatinine to adjust the dose
  - Ciprofloxacin (Rifampicin, cephalosporin)
    - 33–5mg/kg/day
    - 80mg every 8hours
- Ear drops
  - Tobramycin 4% acetic acid
- Do Not Stop until Complete Epithelialization of canal
- Free Gallium scan 6 weeks 6months
**TREATMENT**

**III. Surgery**

- Local Debridment
- Wide local Excision

*Unresponding to antibiotics*
- Severe pain
- Cranial nerve palsies

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**PERICHONDRIITIS & CHONDRIITIS**

- May complicate external otitis, trauma (accidental or surgical e.g. mastoid surgery)
- Pain & fever
- The auricle swells, becomes dusky in color & its normal contour is lost
- The swelling develops on both surfaces
- Necrosis of cartilage may occur & finally the auricle shrivels
PERICHONDritis & CHONDritis

Antibiotics & Incision & debridment of non-viable cartilage

Drainage
Intermittent inflammatory destruction of cartilage
(external ear, larynx, trachea, bronchi)

It is an autoimmune response to type II collagen

Episodic fever, pain, redness, swelling
Anemia & raised SR
Steroids for episodes & indomethacin for chronic systemic manifestations
**OTOMYCOSIS**

- Suspected when there is an intractable otorrhoea in cases of external otitis or infected mastoid cavities
- Primary or on top of bacterial infection
- Increased use of topical antibiotics favors overgrowth of fungus

**MYCOLOGY**

- Most common are:
  1) *Aspergillus fumigatus*
  2) *Aspergillus niger*
  3) *Candida albicans* (monilia)
- They need a warm moist environment & epithelial debris
1) Unsuccessful treatment of external otitis with antibiotics

2) Otoscopic appearance

3) Itching & colorless discharge

4) Severe pain with ulceration on cleaning

5) Mycological laboratory techniques
TREATMENT OF OTOMYCOSIS

1) Frequent dry mopping

2) Application of an antifungal

3) Treatment for at least a week after the condition clears

4) Control of other infected sites in the body

VIRAL EXTERNAL OTITIS

1) HERPES SIMPLEX

- Short living tense blisters
- Unilateral or bilateral
- Not associated with pain, facial palsy, deafness or vertigo
- Treated by application of Vioform hydrocortisone
Initial infection with Varicella-zoster virus results in chickenpox.

Virus lies dormant in the dorsal root ganglia or their cranial analogies and is reactivated to give herpes zoster oticus.

When the ganglia of the facial, vestibular, and cochlear ganglia are affected, we get the Ramsey Hunt Syndrome.
TREATMENT OF RAMSEY HUNT SYNDROME

1) Zovirax

2) Labyrinthine sedatives

3) Oral steroids 1m/kg/day for 2 weeks

4) Decompression if degeneration is more than 90% in 2 weeks

Reactive External Otitis

- Eczema
- Neurodermatitis
- Seborrhoeic dermatitis
- Keratosis obturans
ECZEMA

Localized
(Known external agent)

Infective

Draining Ear

Non-infective

Contact Dermatitis

Generalized
(Unknown agent)

Atopic Dermatitis

Antibiotics

Hearing aids

Ear clips

Cosmetics

Infective Non-infective

NEURODERMATITIS

Primary pruritus

Prurigo Arachnoid Arachnoid Arachnoid Arachnoid

Dermatitis Artefacta Phobias

Erythema

Thickened skin

Scalliness

Lichenification (accentuation of skin markings)

Topical steroids

Tranquilizers

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**SEBORRHOEIC DERMATITIS**

- Patches of erythema & scaling (Dandruff)
- Affects scalp (hair margin) & face & ears
- Itching leads to secondary dermatitis

**KERATOSIS OBTURANS**

- The self cleansing mechanism of the external ear canal is nonfunctional
- There is an increased rate of desquamation within the deep canal & a failure of normal outward migration
- The canal is occluded by a plug of white keratin debris which contains a small amount of normal appearing brown cerumen
KERATOSIS OBTURANS

- The keratin exerting pressure on the walls & producing a widened bony canal.

- A case showing the inferior wall has been resorbed & the fibrous annulus appears "suspended." A small granulation can be seen in the five o'clock position.

- The canal is lined by inflamed hyperemic epithelium due to a FB reaction.

BENIGN TUMORS OF EXTERNAL CANAL

EXOSTOSIS

- Commonest type of benign tumors encountered in the meatus.

- It occurs either as multiple exostosis composed of ivory bone or as a single osteoma of cancellus structure.
1. MULTIPLE EXOSTOSIS:

- Arise as rounded swellings, or as a flat area of thickening of a part of the meatal wall i.e. hyperostosis
- Slowly growing & more common in men than in women

Seldom causes symptoms unless the lumen of the meatus is obstructed by accumulation of wax or epithelial debris & then the patient complains of deafness

Multiple osteomas, which are not giving rise to symptoms, require no treatment, when symptoms are present, removal is necessary
**BENIGN TUMORS OF EXTERNAL CANAL**

2. SINGLE CANCELLUS OSTEOMA:
- Is less common than the multiple variety
- Usually attached to the posterior wall of the osseous meatus by a narrow base
- Appears as a smooth, rounded body, which may completely fill the canal

**MALIGNANT TUMORS OF EXTERNAL CANAL**

- Basal cell & squamous cell carcinoma can involve the external canal
- Squamous cell carcinoma can arise primarily in the external canal, or it extends to the canal from the middle ear
MALIGNANT TUMORS OF EXTERNAL CANAL

- Neoplasia should be suspected when otitis externa is refractory to therapy.
- Persistent granular or necrotic tissue, which bleeds easily & accompanied by pain, should be biopsed to establish the diagnosis.
- Radical surgery is usually required.

IMPACTED WAX

- The accumulated wax may form a solid, often hard, mass giving rise to deafness & discomfort in the ear.
- Tinnitus & disturbance of balance may occur from pressure of the wax on the drumhead.
- A cough reflex due to stimulation of the auricular branch of the vagus.
IMPACTED WAX

- Wax is removed either by instrumental manipulation, suction or by syringing.
- Syringing is by sterile saline solution, warmed to body temperature.

The auricle is pulled upward & backward to straighten out the meatus & the fluid is injected gently along the upper wall of the meatus.
Severe lancinating pain occurs if the drum head is ruptured & this may be accompanied by intense vertigo while the retaining fluid is tinged with blood.

If the solution is too hot or too cold a caloric response may be induced & vertigo experienced by the patient.