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# OUTER EAR DISORDERS

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# LEARNING OUTCOMES

- **INDEPTH KNOWLEDGE OF COMMON DISORDERS THAT MAY AFFECT THE OUTER EAR.**
- **DESCRIBE HOW THESE DISORDERS ARE CAUSED AND TREATED.**
- **DIFFERENTIAL DIAGNOSIS AND HOW THEY MAY MANIFEST ON A VARIETY OF AUDIOMETRIC TESTS.**

# DISORDERS OF THE PINNA

- 1. USUALLY PART OF GENETIC SYNDROMES.
- 2. CHILD ALMOST ALWAYS HAS SOME HEARING LOSS, DEGREE OF HEARING LOSS CAN RANGE FROM MILD TO SEVERE. CHILD'S HEARING CAN BE AFFECTED EVEN IF PARTS OF THE MIDDLE EAR APPEAR NORMAL.
- 3. INDICATE MALDEVELOPMENT OR ABSENT DEVELOPMENT AND MIRRORS MIDDLE AND EXTERNAL AUDITORY CANAL DEVELOPMENT.
- 4. PATTERNS:
  - A. COMPLETE/PARTIAL ABSENCE OF AURICLE
  - B. ABNORMAL POSITION/SHAPE OF AURICLE
  - C. PREAURICULAR SINUS/CYST
  - D. ASSOCIATE WITH EAC ABNORMALITIES
- 5. TREATED BY RECONSTRUCTION OR PROSTHESIS

# PROGRESSION IN MICROTIA SEVERITY



Grade 1

Small but  
almost  
normal



Grade 2

Some  
recognizable  
anatomy



Grade 3

Small  
rudiment of  
soft tissue and  
no ear canal



Grade 4

No external  
ear and no  
ear canal

# PROSTHETIC EARS

- [HTTPS://WWW.YOUTUBE.COM/WATCH?V=JFXFG87WUMK](https://www.youtube.com/watch?v=JFXFG87WUMK)





# EAR RECONSTRUCTION SURGERY



# ATRESIA OF THE EAC



# ATRESIA OF THE EAC

- CONDITION OCCURRED WHEN THE CARTILAGINOUS, THE BONY, OR THE ENTIRETY OF THE EAC HAS NEVER FORMED AT ALL.
- COULD BE UNILATERAL OR BILATERAL.
  - a. TREACHER COLLINS SYNDROME WHICH IS AN INHERITED CONDITION INVOLVES ANOMALIES OF THE FACIAL BONES, ESPECIALLY THE CHEEK AND LOWER JAW; THE AURICLE; AND CONGENITAL ATRESIA OF THE EAC. COLLINS SYNDROME PRESENT WITH PREAURICLE TAGS WHICH REPRESENT INCOMPLETE EMBRYOLOGICAL DEVELOPMENT AND APPEAR IN FRONT OF THE AURICLE.
  - b. SURGICAL CORRECTION MAY BE QUITE DIFFICULT WITH TREACHER COLLINS SYNDROME BECAUSE OF THE PRESENCE OF A NUMBER OF ABNORMALITIES OF THE MIDDLE EAR AND TEMPORAL BONE.



# TREACHER COLLINS SYNDROME



# ATRESIA OF THE EAC

- THE CONDITION MAY ALSO BE ACQUIRED, AS A RESULT OF TRAUMA OR BURNS.
- HEMATOMA IS AN UNSIGHTLY BLOOD BLISTER OCCURRED IN RESPONSE TO TRAUMA TO THE OUTER EAR.
- FROSTBITE WHICH IS THE LOSS OF PINNA AFTER BEING DAMAGED BY SUNLIGHT OR EXTREME COLD.
- SURGICAL PROCEDURES FOR CORRECTION OF ATRESIA OF THE EAC HAVE IMPROVED IN RECENT YEARS. IMAGING TECHNIQUES HAVE BEEN ASSISTED GREATLY AND CHANCES OF SUCCESS ARE BETTER WHEN ONLY THE CARTILAGINOUS CANAL IS INVOLVED, AND WHEN THE MIDDLE EAR AND THE TM ARE NORMAL. HOWEVER, THE ULTIMATE DECISION FOR A SURGICAL TREATMENT OR HEARING AID FOR THE BONY CANAL IS ALWAYS LEFT TO THE FAMILY IN CONSULTATION WITH A PHYSICIAN.

# EAR CANAL STENOSIS

- A NARROWED EAR CANAL, WHERE THE EARDRUM CAN STILL BE VIEWED BUT THE CANAL IS NARROWER THAN NORMAL. THIS CONDITION IS CALLED EAR CANAL STENOSIS. THESE CONDITIONS CAN AFFECT ONE OR BOTH EARS.



# **SURGICAL OPTIONS FOR EAR CANAL STENOSIS AND ATRESIA**

- THE GOAL OF SURGERY IS TO CREATE AN EAR CANAL (ATRESIA) OR WIDEN THE EAR CANAL (STENOSIS). WITH ATRESIA, THE AGE RECOMMENDED FOR SURGERY IS USUALLY AGE FIVE OR SIX, ALTHOUGH IT CAN BE PERFORMED PRIOR TO THAT. THE DECISION IS CONTINGENT ON SURGERY TO REPAIR THE EXTERNAL EAR, IF NEEDED. THE EAR WILL REQUIRE DILIGENT EXAMINATIONS OVER TIME TO ENSURE THAT THE NEWLY CREATED EAR CANAL DOESN'T NARROW, CREATING STENOSIS FROM SCAR TISSUE.
- EAR CANAL ATRESIA AND EAR CANAL STENOSIS ARE SERIOUS CONCERNS NOT ONLY FOR THE PRESENT, BUT FOR THE LONG-TERM HEARING HEALTH OF THE PATIENT.



**6.7 Case 7**

**6.7.1 Case History**

The patient was a 23-year-old female with Treacher Collins syndrome. She stated that she had worn hearing aids when she was a child and had consistently used amplification since that time. She reported that the hearing loss was greater in the low-  
her frequencies and that it was about equal bilaterally. She had  
tinnitus in both ears, but the tinnitus was not bothersome. She denied dizziness as well as any otalgia or pressure. The appointment was scheduled to start the process of purchasing new hearing aids because her current hearing aids were 5 years old.

**AUDIOLOGICAL RECORD**

NAME \_\_\_\_\_ TEST DATE 3/8/2010

DOB 8/21/1986 SEX Female

AUDIOLOGIST Steven Smith, Au.D.

AUDIOMETER DD-81

EARPHONE Conventional

**AUDIOGRAM KEY**

Right Left

AC Threshold

AC Middle

AC Bone

Speech Audiometry

Speech Intelligibility Curve

Word Recognition % Correct

Word Recognition List

NU-6

RELIABILITY Good

UNCLITY Acceptable

**TYPANOMETRY**

Canal Volume [mL]

RT LT

Static Admittance (nS) P<sub>0.2</sub> U<sub>0.2</sub>

Peak Pressure (daPa) P<sub>0</sub> U<sub>0</sub>

Type: P<sub>0</sub> U<sub>0</sub>

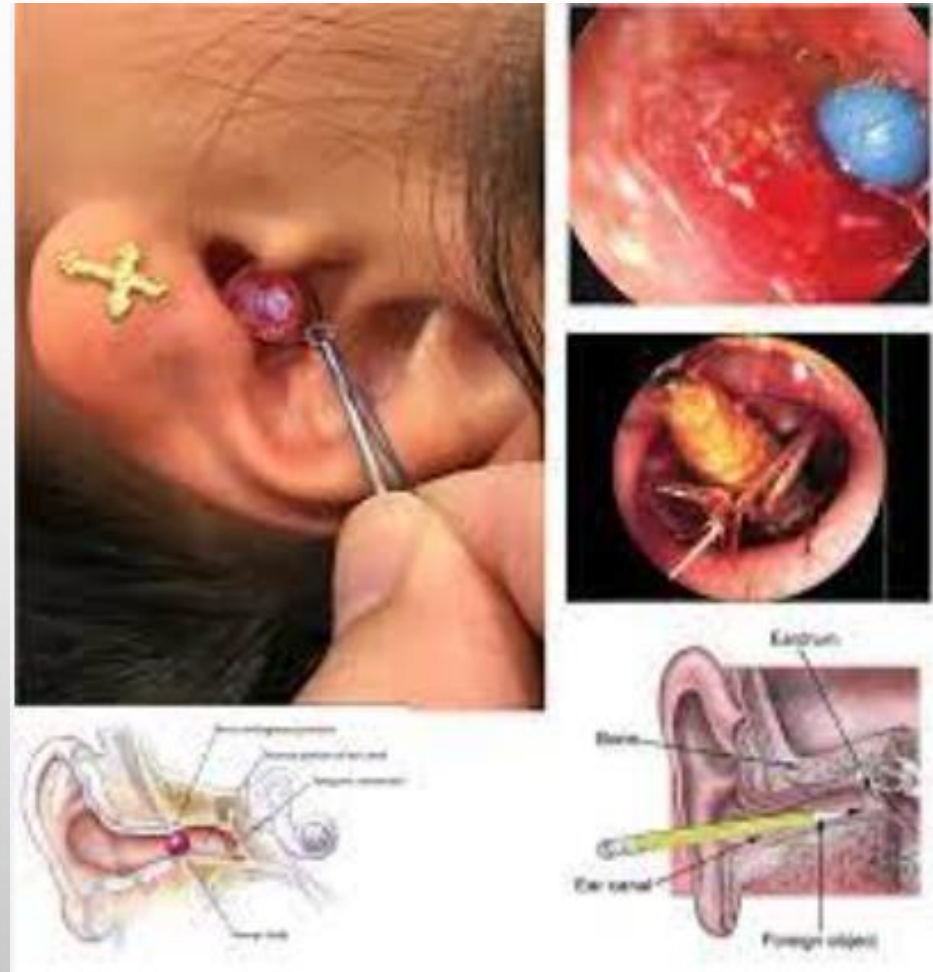
**FIGURE 6.7** Audiogram of a patient with Treacher Collins syndrome.

Uploaded By: Sulaf Salaymeh

# COLLAPSING EXTERNAL AUDITORY CANALS

- CONDITION WHEN A FALSE CONDUCTIVE HEARING LOSS APPEARS DURING EXAMINATION BECAUSE THE PRESSURE OF A SUPRAAURAL EARPHONE CAUSES THE AURICLE TO MOVE FORWARD, BLOCKING THE OPENING OF THE CANAL, AND ATTENUATING SOUND ENTERING IT.
- INCIDENCE FOR THE CONDITION IS 4% OF A TYPICAL AUDIOLOGY CASELOAD.
- MOST INCIDENCES OCCURRING AMONG CHILDREN BEFORE 7 YEARS OF AGE AS THE OUTER PORTION OF THE EAR CANAL IS LESS RIGID, AND AMONG THE ELDERLY BECAUSE OF THE GREATER ELLIPTICAL SHAPE OF THE CANAL AND BEING MORE FLACCID.
- THE OTOSCOPIC EXAMINATION SHOULD INCLUDE INSPECTION FOR CANAL COLLAPSE.

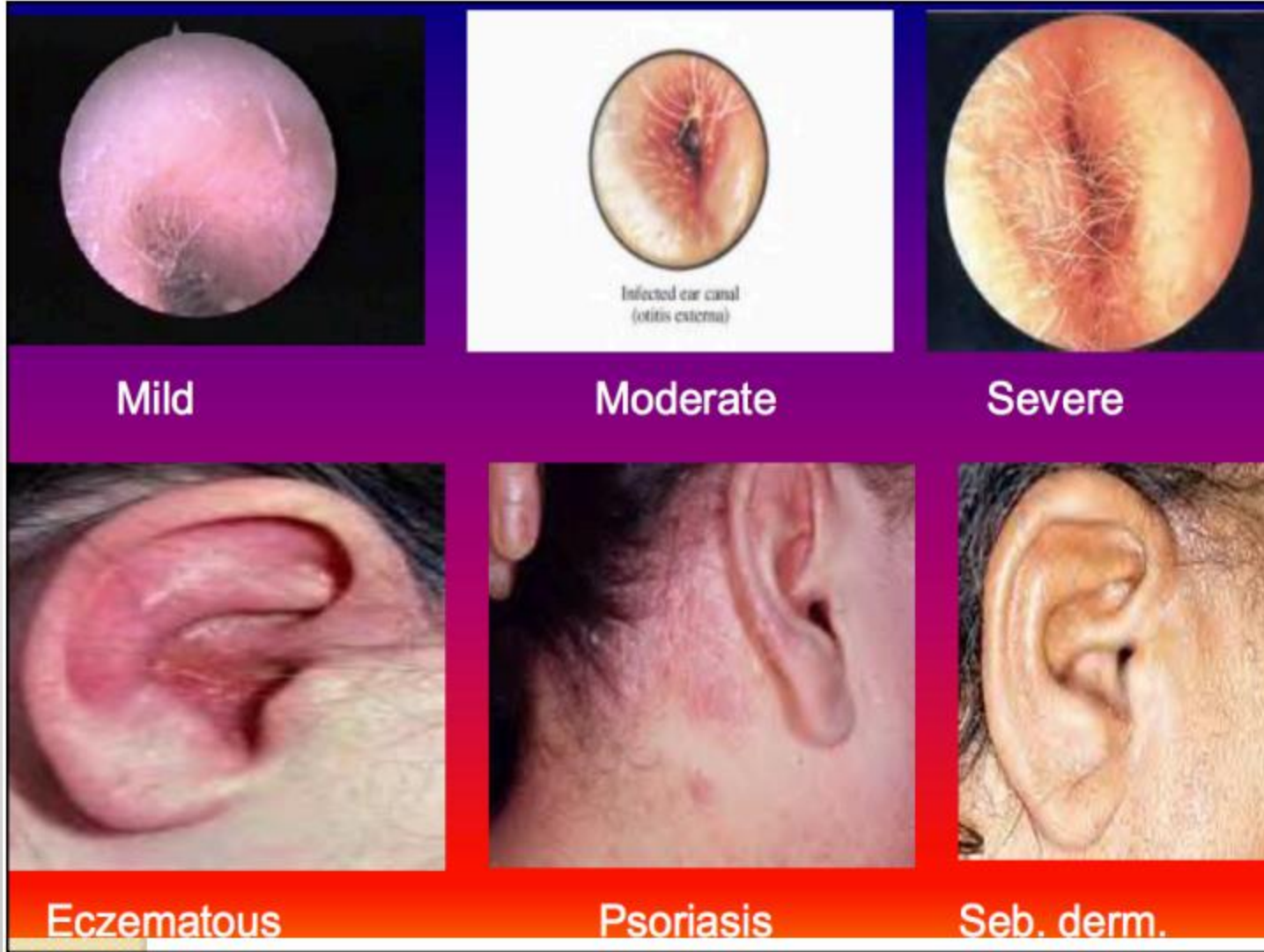
# FOREIGN BODIES IN THE EXTERNAL EAR CANAL



# EXTERNAL OTITIS

- AN INFECTION THAT OCCURS IN THE SKIN OF THE EXTERNAL AUDITORY CANAL. ALSO REFERRED TO AS “SWIMMER’S EAR”.
- MORE COMMON CONDITION IN TROPICAL AREAS. BACTERIAL INFECTIONS ARE MORE COMMON CAUSE.
- OTOMYCOSIS (FUNGAL EXTERNAL-EAR INFECTION) IS RARE.
- MAY ORIGINATES FROM ALLERGIC REACTIONS TO EARPLUGS, HEARING-AID EARMOLDS, SOAP, OR OTHER ALLERGENS.
- FURUNCULOSIS: INFECTION OF HAIR FOLLICLES. PREDISPOSED BY SCRATCHING MAY BE DUE TO IMPACTED WAX & INCREASED EP.
- TURNOVER STARTS WITH ITCHING – PAIN- CRUSTING – DISCHARGE – CHL OFTEN BODY TEMPERATURE ELEVATES.
- CONSTITUTIONAL UPSETS MAY BE ACCOMPANIED WITH AOM OR CSOM 3 CLINICAL TYPES – MILD (CANAL OPEN); MODERATE (CANAL PARTLY OCCLUDED, TM PARTLY SEEN); SEVERE (CANAL FULLY OCCLUDED)
- TREATMENT: SYSTEMATIC ANTIBIOTICS ARE FREQUENTLY UNSUCCESSFUL
- IRRIGATING THE CANAL WITH WARM SALTWATER-DRY IT-APPLY TOPICAL ANTIBIOTICS AND OR TOPICAL STEROIDS FOR THE INFLAMMATION.





# External Otitis

## Myringitis

- Inflammatory condition of TM
- Blood blisters on the surface of the TM
- May be a part of otitis externa
- Topical treatment
- May hide otitis media



# EXTERNAL OTITIS

## OTITIS EXTERNA MALIGNANS

- USUALLY IN DIABETICS/IMMUNE COMPROMISED PATIENTS (ELDERLY PATIENTS).
- CAUSED BY PSEUDOMONAS – RAPIDLY DESTROYS BONE AND AFFECTS MULTIPLE CRANIAL NERVES (OSTEITIS AND OSTEOMYELITIS OF THE TEMPORAL BONE).
- PAIN/DISCHARGE AND NERVE PALSIES
- SYSTEMATIC ANTIBIOTICS AND SURGERY; MAY BE FATAL





# Growths in the External Auditory Canal

## *Swellings*

- Osteomas
  - Usually single
  - Bony tumors, both benign and malignant
  - Usually in outer canal
  - May cause CHL if the size is big enough to occlude the canal
  - May interfere with skin migration
- Exostosis
  - Common in swimmers, usually multiple
  - Usually in deep canal regions
  - May cause CHL
  - May interfere with skin migration
- Both treated by excision if necessary



# Earwax in the External Auditory Canal

- *Remember the commonest cause of hearing aid malfunction is ear wax !*

- **Anatomy**

Secreted by modified sweat glands (ceruminous glands) in the dermis of skin of outer 1/3 rd of EAC

- **Physiology**

- Normal phenomenon but in some cases the wax glands are extremely active

- **Types**

- Wet – autosomal dominant inheritance (Caucasian & African)

- Dry – autosomal recessive inheritance (Mongoloid)

- **Functions**

- Repels moisture and traps dust

- Lubricates EAC for smooth extrusion of dead skin cells

- Bactericidal – hence protective function

- Management (only when accumulates)

- Diagnosis by otoscopy and clearance (microsuction or syringing)

- Wax softeners (olive oil or Sodium bicarbonate)

# Earwax in the External Auditory Canal

- Morbidity associated with wax
- 2.3 million in U.K have problems with wax; 2-6% get impacted wax
- Impacted wax may give rise to otitis externa by interfering with migration of dead skin
- Impacted wax may give rise to pain
- Impacted wax may give rise to CHL
- Impacted wax may give rise to psychological problems including social isolation and withdrawal
- Wax may hide a condition of the middle ear
- Wax may prevent impression taking
- Wax accumulation interferes with & may damage hearing aid mechanism
- Treatment in children may necessitate clearance under GA
- Self cleaning may induce trauma



# Earwax in the External Auditory Canal





# Perforations of the Tympanic Membrane

- Causes:
  - Excessive pressure buildup during a middle-ear disorder.
  - In response to infection.
  - A frequent cause is direct trauma from a pointed object such as a cotton swab (such accidents are extremely painful, and embarrassing).
  - Sudden pressure in the external ear canal, as created by a hand clapped over the ear or an explosion.
- The amount of hearing loss produced by a perforated TM depends on the size and place of the perforation.
- Treatment:
  - Traumatic perforations tend to show spontaneous closure than that perforations from a disease.
  - Perforations in the inferior portion of the TM heal more rapidly than those in the superior portion, because the normal epithelium migration is more active inferiorly.
  - Surgical repair is called myringoplasty

## Perforations of the Tympanic Membrane



## Thickening of the Tympanic Membrane

- Also called tympanosclerosis
- The TM membrane becomes thickened and scarred, often in response to infection.
- Calcium plaques appear, adding to the mass of the TM and interfering with its vibration but sometimes causing no hearing loss.
- Do not respond well to medical or surgical treatment.

# Tympanosclerosis





The background is a light gray gradient with several realistic water droplets of various sizes scattered around the edges. In the center, there is a faint, circular logo or watermark that appears to be a stylized 'S' or a similar emblem.

Thank you