EAR PROCEDURES

AAPC MEETING TUESDAY, JUNE 19, 2012
Ear Anatomy

- Outer Ear
- Malleus (Hammer)
- Incus (Anvil)
- Organ of Balance
- Nerves to the Central Auditory System and Brain
- Ear Canal
- Tympanum (Eardrum)
- Eustachian Tube
- Inner Ear (Cochlea)
- Pinna
- Middle Ear Popcorn Kernel?
Occiclar Chain

Sketched By Abhishek Sharma
Ears is composed of three parts, the outer ear, the middle ear, and the inner ear.

The outer ear consists of the pinna, the part you see on the side of the head, and the outer ear canal. Sound enters through the outer ear canal and strikes the ear drum, which is the outermost boundary of the middle ear.
How the Ear Works Cont.

Sound which strikes the ear drum is transmitted through three bones of the middle ear to the inner ear. The three bones are the malleus (hammer), incus (anvil), and stapes (stirrup). The footplate of the stapes fits into the oval window, which is outermost boundary of the inner ear.

The movement of the footplate causes fluid in the inner ear to move. The bones provide a mechanical advantage which moves the fluid. Without that mechanical advantage, sound bounces off the fluid in the inner ear and the result is a serious loss of hearing.
The inner ear is a fluid filled sac encased in bone, which gives it maximum protection from injury. The organ for hearing is the cochlea (pronounced "cock-lee-uh"). It contains approximately 20,000 cells which can sense movement of the fluid. When these cells sense movement of the fluid, impulses are generated in the nervous system.

These impulses pass through the auditory nervous system and eventually reach the brain. The brain is the centre for discriminating sounds from one another and eventually associating words with ideas.
Disease of the Ear

That affects ear drum, middle ear, stapes, mastoid.
Eardrum perforation may result from chronic infection or, less commonly, from trauma to the eardrum.
Due to trauma, chronic infections or damage from cholesteatoma, one of the bones may become broken or displaced, resulting in a conductive hearing loss. In this situation, a procedure known as an ossiculoplasty can be completed to repair the problem. This repair is usually achieved by placing a tiny prosthesis, or artificial ear bone. The surgery is an elective, outpatient procedure.
patients develop gradual fixation of the stapes (stirrup) bone with associated progressive conductive hearing loss. Using a laser, a tiny (.8mm) opening is made in the base of the stapes, and a stapes prosthesis is placed to repair the problem and restore the hearing.
also called eardrum repair, refers to surgery performed to reconstruct a perforated tympanic membrane (ear drum) or the small bones of the middle ear.
Type 1 involves repair of the tympanic membrane alone, when the middle ear is normal. A type 1 tympanoplasty is synonymous to myringoplasty.

CPT Codes  69620
Type 2 involves repair of the tympanic membrane and middle ear in spite of slight defects in the middle ear ossicles.

CPT CODE
Type 3 involves removal of ossicles and epitypmanum when there are large defects of the malleus and incus. The tympanic membrane is repaired and directly connected to the head of the stapes.
Tympanoplasty type 4 describes a repair when the stapes foot plate is movable, but the crura are missing. The resulting middle ear will only consist of the eustachian tube and hypotympanum.
Type 5 is a repair involving a fixed stapes footplate.
A surgical procedure used for the treatment of otosclerosis – an abnormal bone growth occurring in the middle ear that causes hearing loss. The procedure improves hearing by removing the stapes bone, located in the inner ear, and replacing it with a small prosthesis.
Ossicular Chain Reconstruction

Middle ear consists of three bones known as the malleus, incus, stapes (also called the hammer, anvil, or stirrup). These bones move together to conduct sound from the ear drum to the inner ear.
Mastoid

- Mastoid is a honeycomb of air cells located behind the ear. The air cells are lined by a thin mucous membrane.
- Mastoid is connected to the part of the ear where the hearing and balance mechanisms are located.
Mastoid

Ear Anatomy
Numerous small intercommunicating cavities in the mastoid process of the temporal bone that empty into the mastoid or tympanic antrum.

Mastoid air cells are open spaces containing air that are located throughout the mastoid bone, the prominent bone located behind the ear that projects from the temporal bone of the skull. The air cells are connected to a cavity in the upper part of the bone, which is in turn connected to the middle ear.
Mastoiditis

Infection of mastoid air cells (mastoiditis)
Cholesteatoma

- is a destructive and expanding growth consisting of keratinizing squamous epithelium in the mastoid process
Hollowing out of the mastoid process by curetting, gouging, drilling, or otherwise removing the bony partitions forming the mastoid cells.
Improves middle ear ventilation by widening of the aditus
Why Perform a Mastoidectomy?

to remove infected mastoid air cells resulting from ear infections, such as mastoiditis or chronic otitis, or by inflammatory disease of the middle ear (cholesteatoma).

The mastoid air cells are open spaces containing air that are located throughout the mastoid bone, the prominent bone located behind the ear that projects from the temporal bone of the skull. The air cells are connected to a cavity in the upper part of the bone, which is in turn connected to the middle ear.
Types of mastoid surgeries

- Cortical mastoidectomy
- Modified radical mastoidectomy
- Radical mastoidectomy
Cortical mastoidectomy: Also known as simple mastoidectomy, Schwartz surgery, or complete mastoidectomy. The operation is performed through the ear or through a cut (incision) behind the ear. The surgeon opens the mastoid bone and removes the infected air cells. The eardrum is cut (incised) to drain the middle ear. Topical antibiotics are then placed in the ear.
Modified Radical Mastoidectomy:

The initial steps are the same as for cortical mastoidectomy. After the opening is widened, and posterior canal wall is thinned out, the **Posterior canal wall is removed (removal of bridge)**. The facial ridge is lowered till the level of lateral semicircular canal. After the surgery is completed, a meatoplasty is performed making the external canal, middle ear cavity and mastoid cavity into one continuous self cleaning cavity lined by skin.
Radical mastoidectomy: an operation for the management of extensive cholesteatoma; involves exenteration of the remaining mastoid air cells and removal of the posterior and superior walls of the external auditory canal and the remnants of the tympanic membrane and middle-ear ossicles to exteriorize the mastoid cavity and middle ear through the external auditory canal.