As discussed in the section on outer ear disorders, all conductive issues must be referred. While we do not treat or diagnose we must have the knowledge to create a judgment for referral. Middle ear disorders are mostly conductive losses because they prohibit sound from transferring through the system in one way or another.

In this lesson we will discuss the multitude of middle ear disorders and how to recognize them for referral if necessary.

Otitis Media- This is the presence of any kind of fluid being present in the middle ear.

- **Suppurative otitis media–** An infection of the middle ear that is caused by bacteria entering through the eustachian tube from a cold or respiratory infection. This can be either **chronic** which is recurring or lasting a very long time) or acute which is **severe** but not lasting long. Usually the ear drum is bright red. Usually treated with anti-biotics or a **myringotomy** in which a tube is inserted in the eardrum to relieve pressure. If either treatment is not done, the eardrum may rupture to relieve the pressure from the fluid. If chronic drainage occurs from the eardrum it may require a **tympanoplasty** in which the hole is patched and some of the ossicles may be replaced. If the epitympanic cavity is also infected it may require a **mastoidectomy** in which the mastoid air cells are removed. In extreme cases a **radical mastoidectomy** may need performed where the eardrum and entire middle ear is removed.

- **Serous otitis media–** Very similar to suppurative, but the fluid inside the middle ear is now free of bacteria after the anti-biotics from treatment. While the ear may not hurt anymore, this is even more serious because it can go long times without detection. This allows for erosion of the ossicles. The fluid may no longer be bacterial, but it is instead a mucous. This is also sometimes called “glue ear” or “non-suppurative.” The eustachian tube is blocked and the fluid remains trapped in the middle ear. The fluid will not rupture from the drum because bacteria is not present, so a myringotomy is the best solution to let the fluid free. Top right fluid bubble can be seen and bottom right has tube inserted for myringotomy.

Otosclerosis- A disease in which the stapes bone is surrounded by a spongy growth that inhibits movement of the bone. Over time the stapes bone becomes fixed and requires surgery to loosen it. There are two possible surgeries. One is **in-stapes mobilization** in which the spongy growth is scraped away and the bone is again able to move. A concern with this surgery is that the growth will often times reappear a few years later. The second is a **in stapedectomy** in which a tiny steel strut is put in place of the stapes bone. During this surgery the stapedius muscle is severed and the safety mechanism for dampening sound in the middle ear is inhibited. Otosclerosis is often genetic, and pregnancy can trigger it most often in Caucasian than other races.

Cholesteatoma– As mentioned in the outer ear disorders, a cholesteatoma begins in the middle ear as a tumor and can rupture through the ear drum. This is accompanied by constant fluid discharge and a foul odor.

Tinnitus- This is a ringing in the ears and is usually common in conductive losses. This can be caused by many things, but in the case of the middle ear it can occur when the ossicles are fit together wrong and creating a clicking or scratching sound. IN some cases, it is even possible for a third party to hear the sound.

Ossicular discontinuity– The ossicles are no longer fitting together properly which alters the sound they can transfer to the inner ear. This can occur from an accident, extreme sounds, or even something as simple as a slap to the head.

Ossicular fixation- This occurs when tissue or gone grows around the ossicles and stiffens the response of the ossicular chain. This may involve the eardrum as well if there is a calcium build up (tympanosclerosis).

Paget's Disease- Occurs when there is a thickening of the temporal bone in which the middle ear is enclosed in.