

Ventilation Tubes in Pediatric ENT: Mechanism, Application, & Postoperative Complications

Alexandra Corbin, MS2

 Jacobs School of Medicine and Biomedical Sciences
University at Buffalo

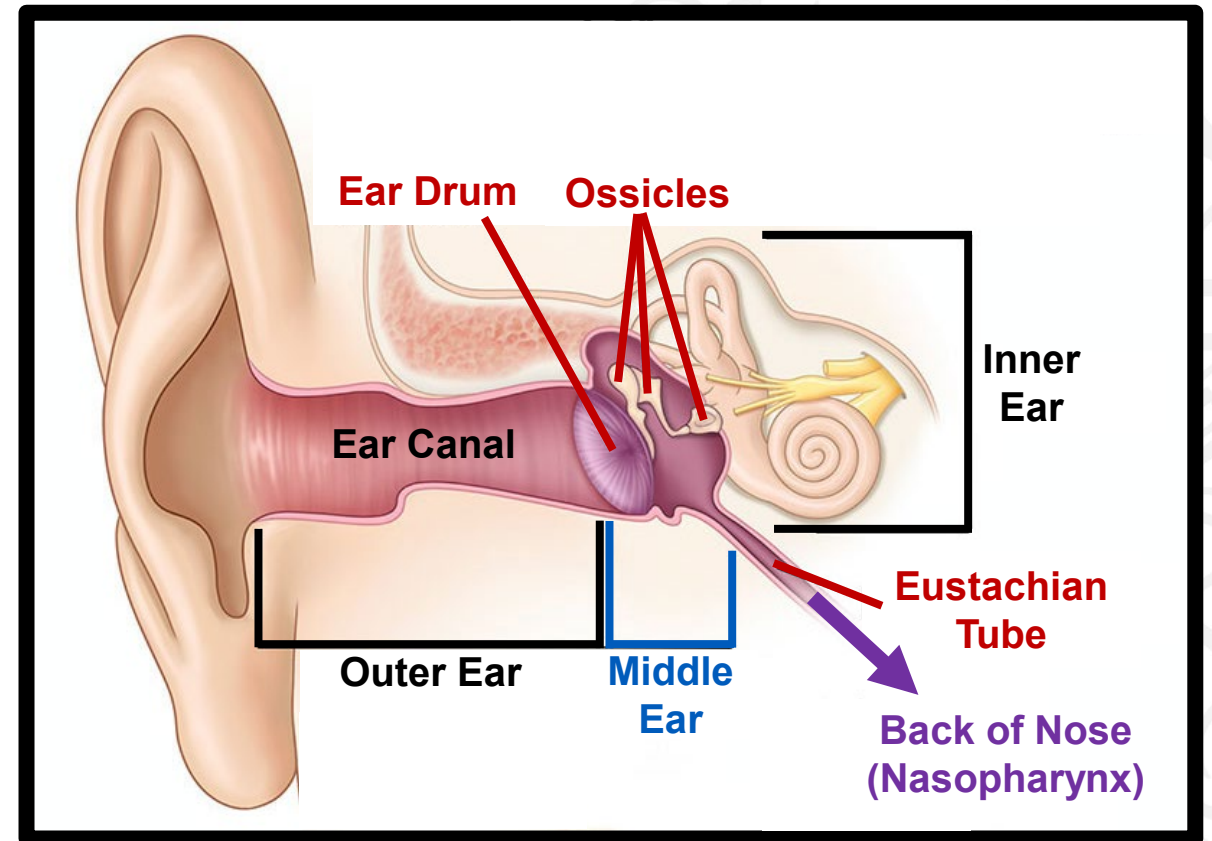


The Middle Ear

Area behind **ear drum** containing:

1. 3 small bones (“**ossicles**”) - vibrate & permit hearing
2. “**Eustachian tube**” opening - connects middle ear to **back of nose** for ventilation

Right Ear Anatomy

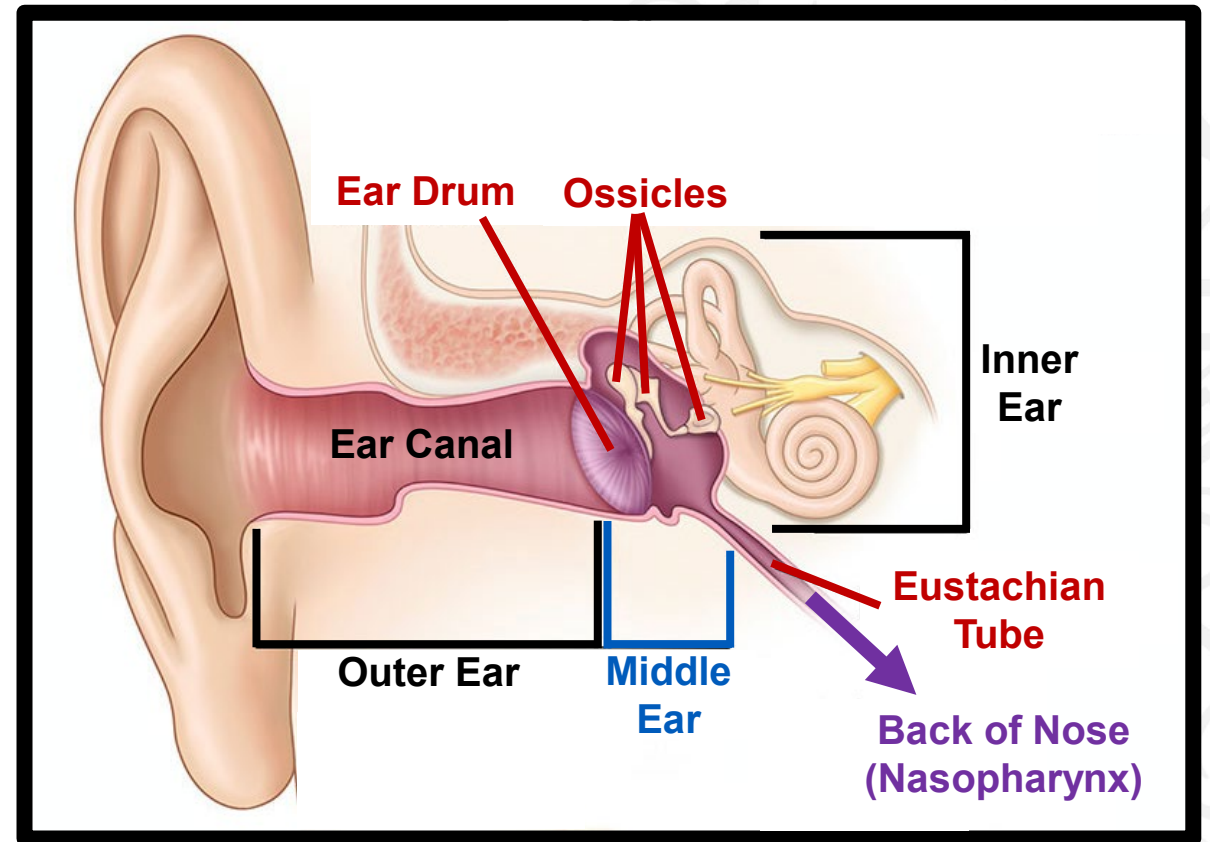


The Middle Ear

Functions of Eustachian Tube:

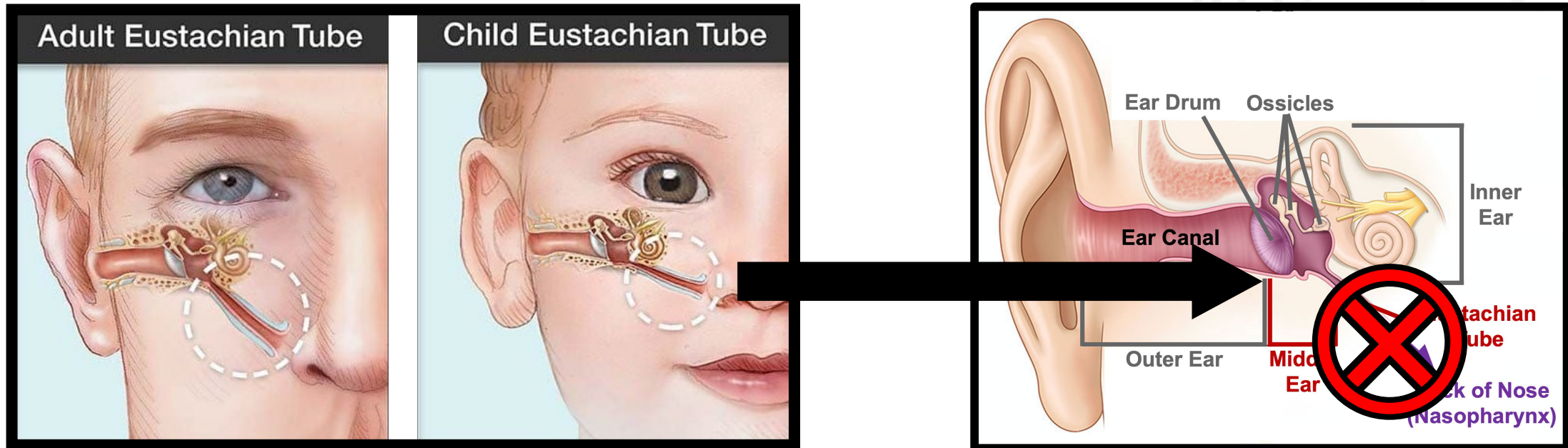
1. Maintains middle ear air pressure
2. Ventilates air in middle ear
3. Drains middle ear fluid

Right Ear Anatomy



Eustachian Tube Dysfunction

Eustachian tube is **shorter, narrower, and more horizontal** in children

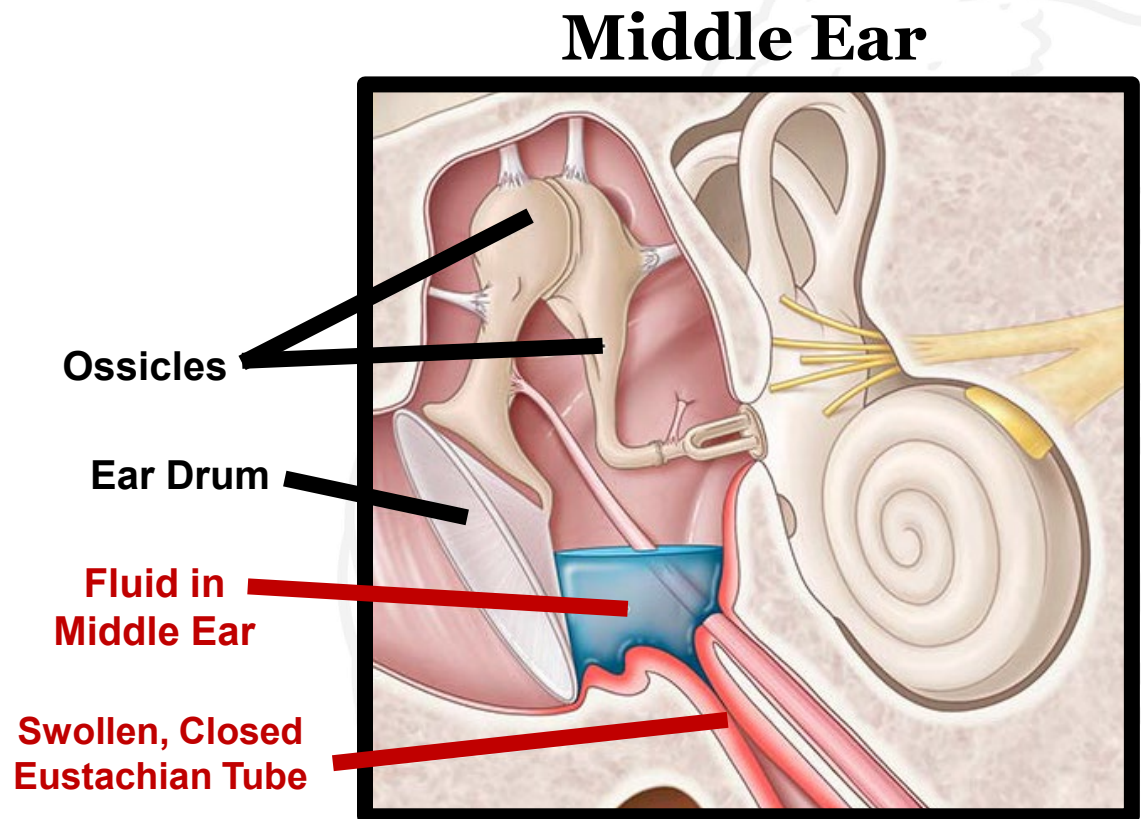


Easier for bacteria to enter middle ear → **increased infection risk**

Harder for middle ear fluid to drain → **more prone to fluid build-up**

Middle Ear Pathologies

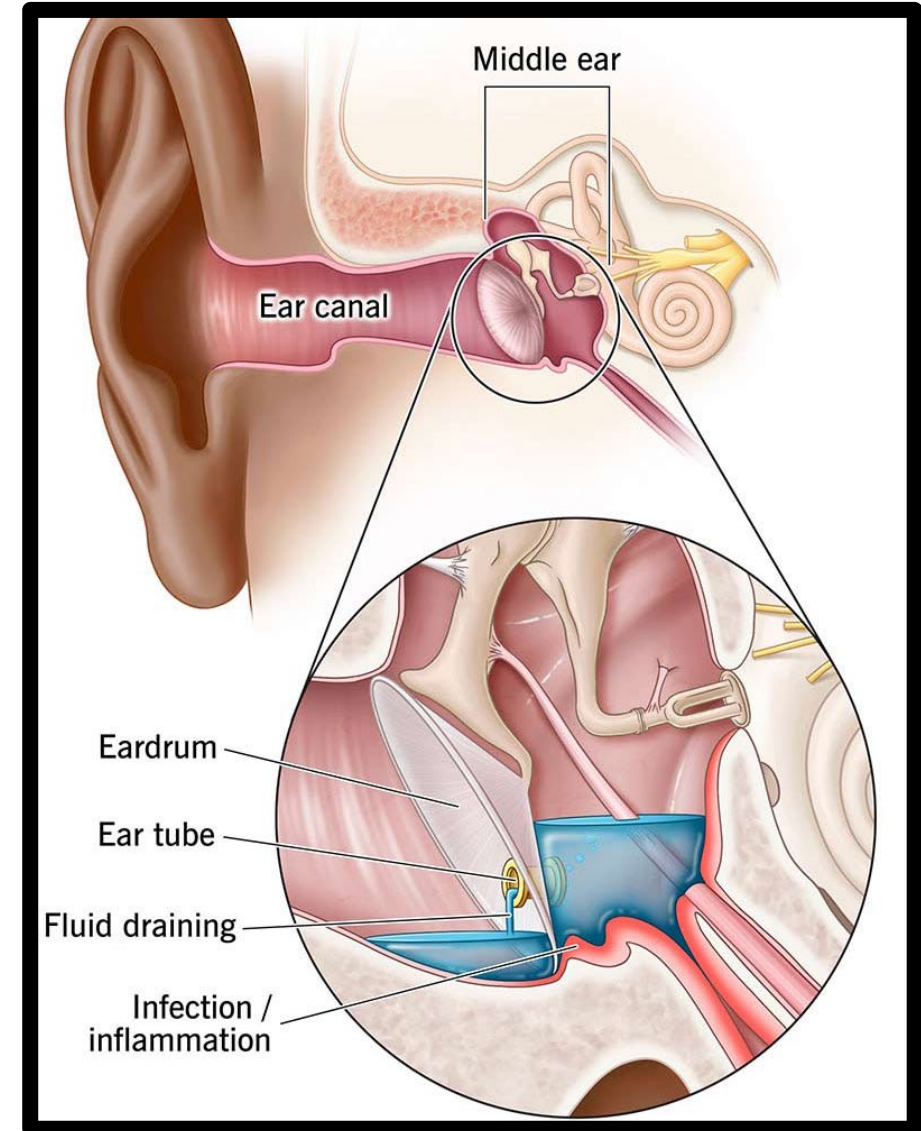
- Acute Otitis Media (AOM)
 - Middle ear infection, recent onset
- Otitis Media w Effusion (OME)
 - Fluid build-up in middle ear



80% of all US children have an ear infection **by age 3**

Ventilation Tube Technology

- Tube placed in ear drum, allows air to enter and fluid to drain from middle ear
- Approved for patients with:
 - Recurrent AOM and fluid
 - Chronic OME and hearing difficulty
 - Persistent infection risk
- **~700,000** US children are treated with ventilation tubes **each year**



Ventilation Tube Surgery



Left Ear

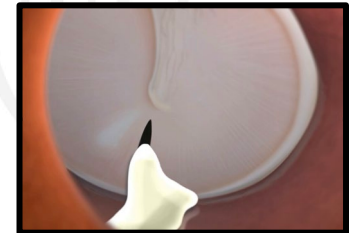
1. Visualize ear drum



2. Make incision in anterior inferior quadrant of ear drum



3. Suction out all middle fluid, if any present



4. Place tube



Postoperative Complications

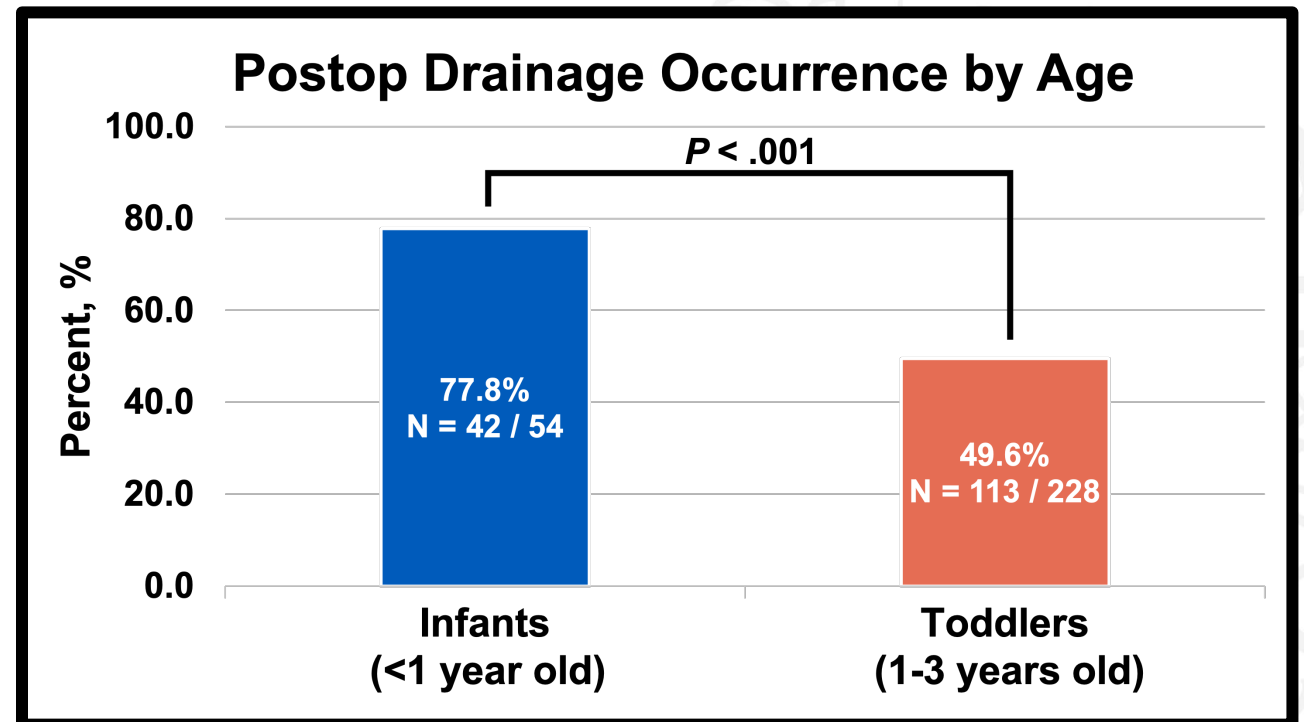
- **Drainage out of ear** is a common complication after tube placement
- ~**50%** of children have **at least 1 drainage episode** after surgery
- Patient **age < 3** years old is a known **risk factor** for drainage

Study Question

Is the incidence of postoperative otorrhea different in infants vs. toddlers?

Methods and Results

- Retrospective chart review of tube patients ≤ 3 years old
- Study population:
 - 54 “infants” (<1 yo)
 - 228 “toddlers” (1-3 yo)



Infants are **more likely** to have drainage after tube placement

Conclusions

- ~78% of infants who undergo ventilation tube surgery experience postoperative drainage
- Parental education on post-tube placement drainage is crucial

References

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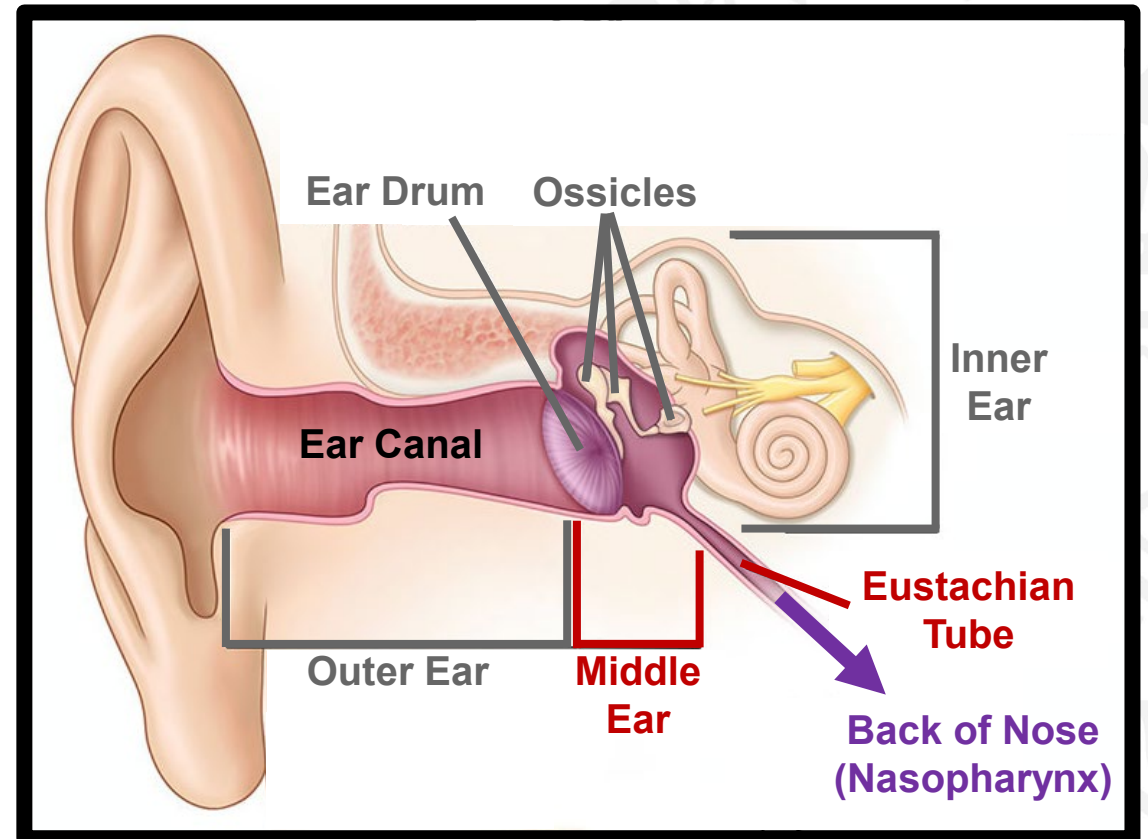
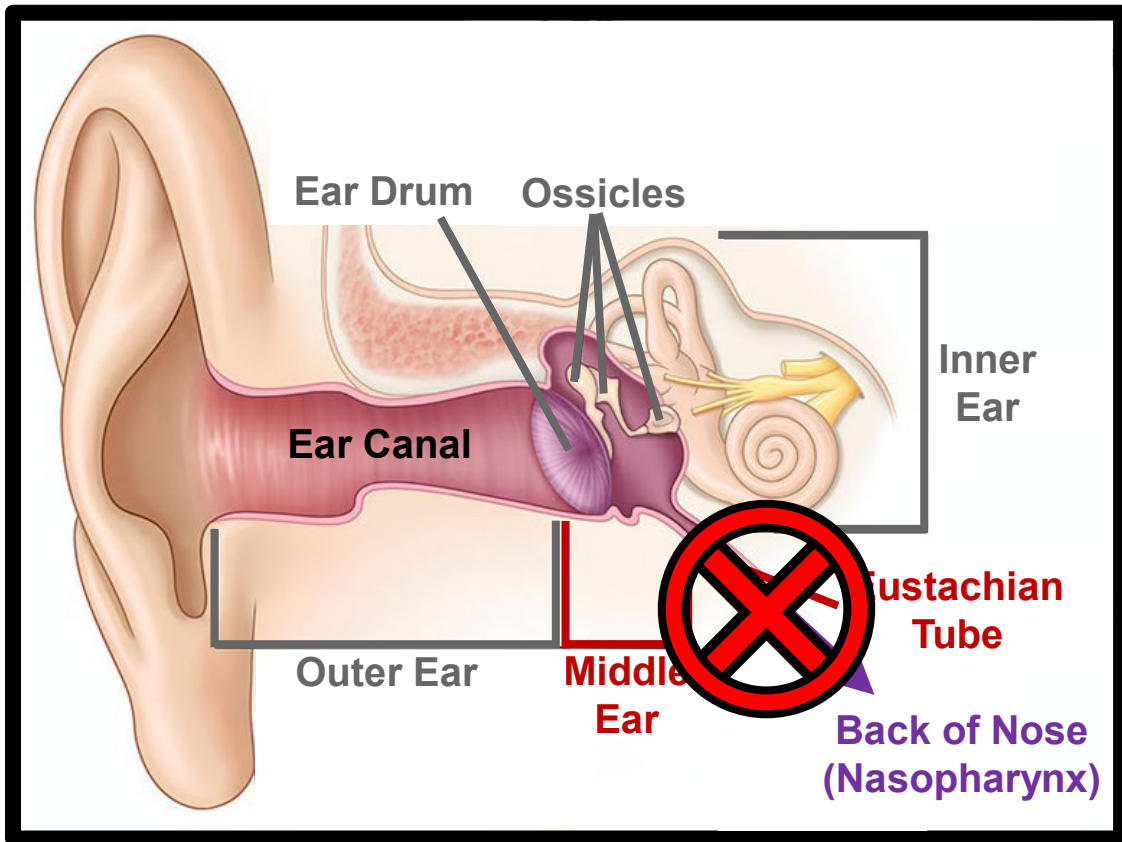
Thank You!

Alexandra Corbin, MS2

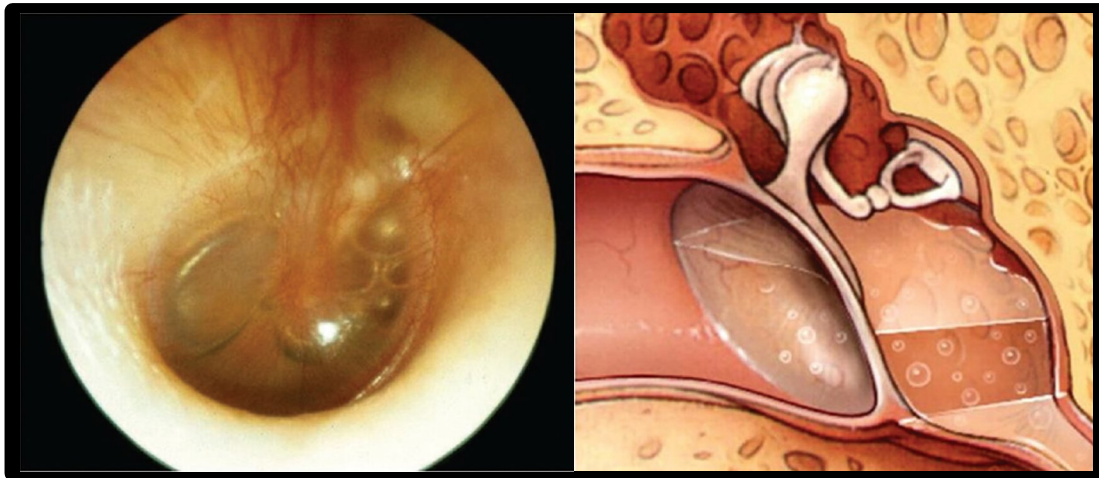
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Eustachian Tube



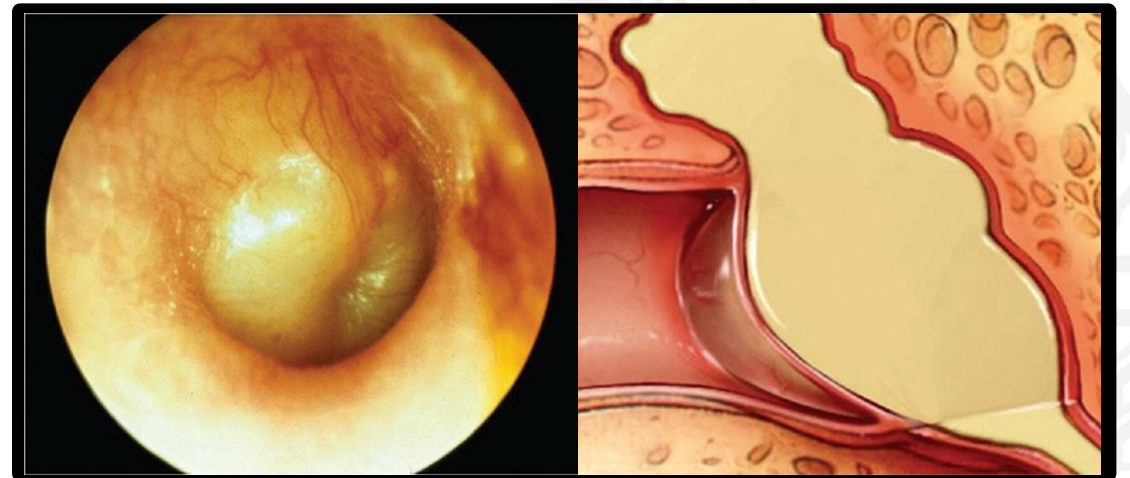
Middle Ear Pathologies



Otitis Media with Effusion

“OME”

(fluid in middle ear)

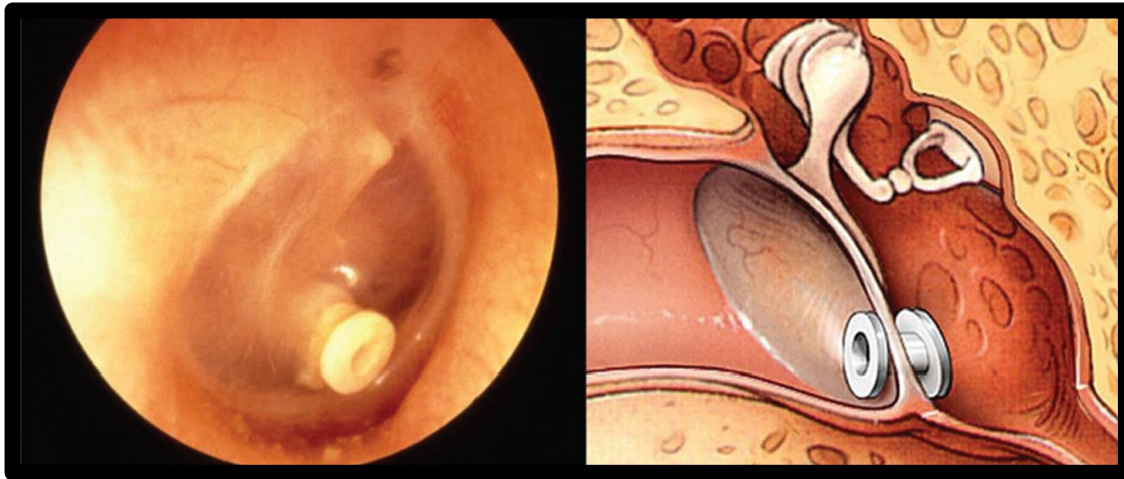


Acute Otitis Media

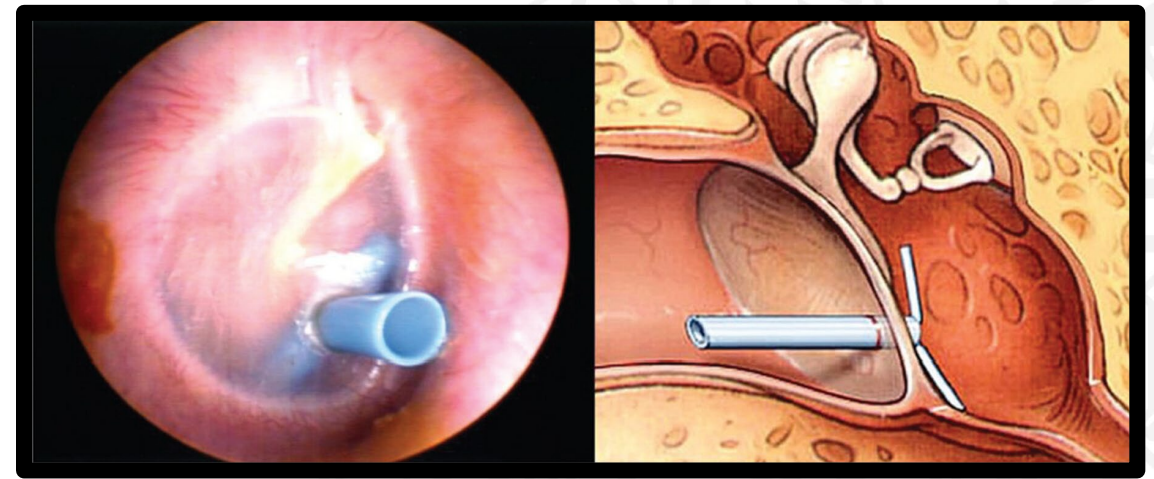
“AOM”

(middle ear infection)

Ventilation Tube Technology

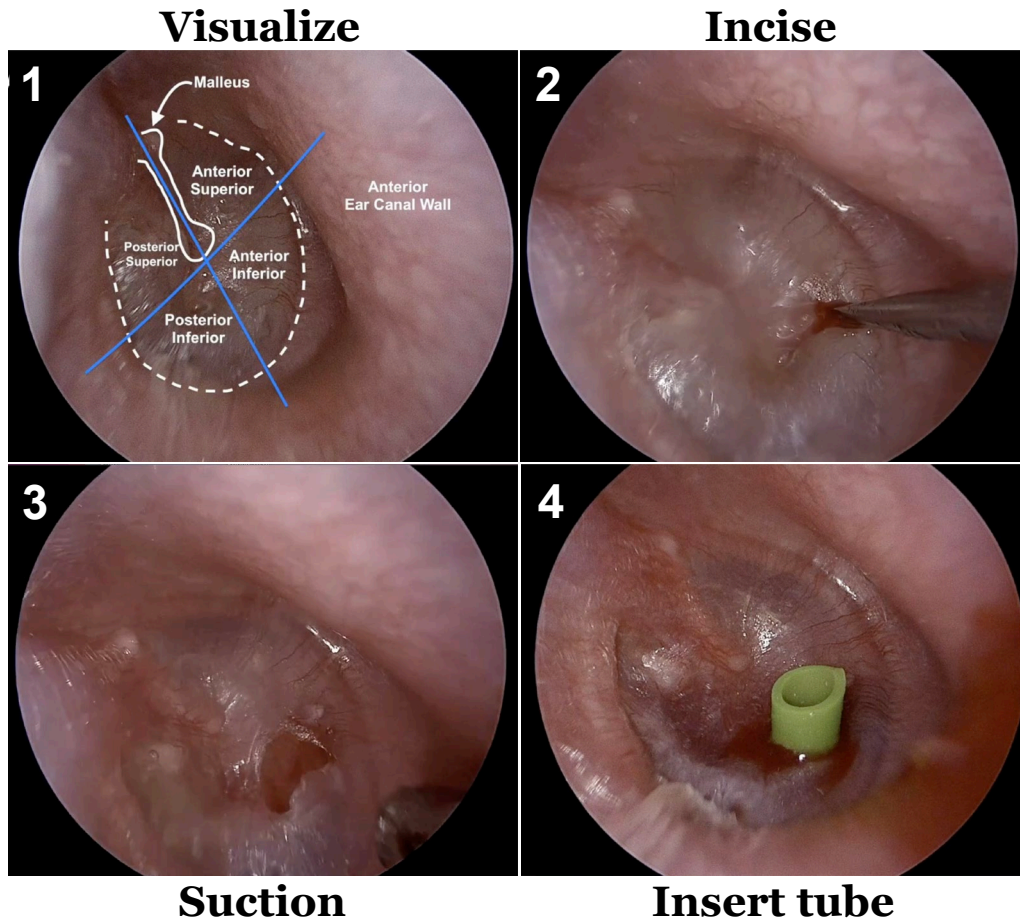


Short-Term Tube
“Armstrong Grommet”



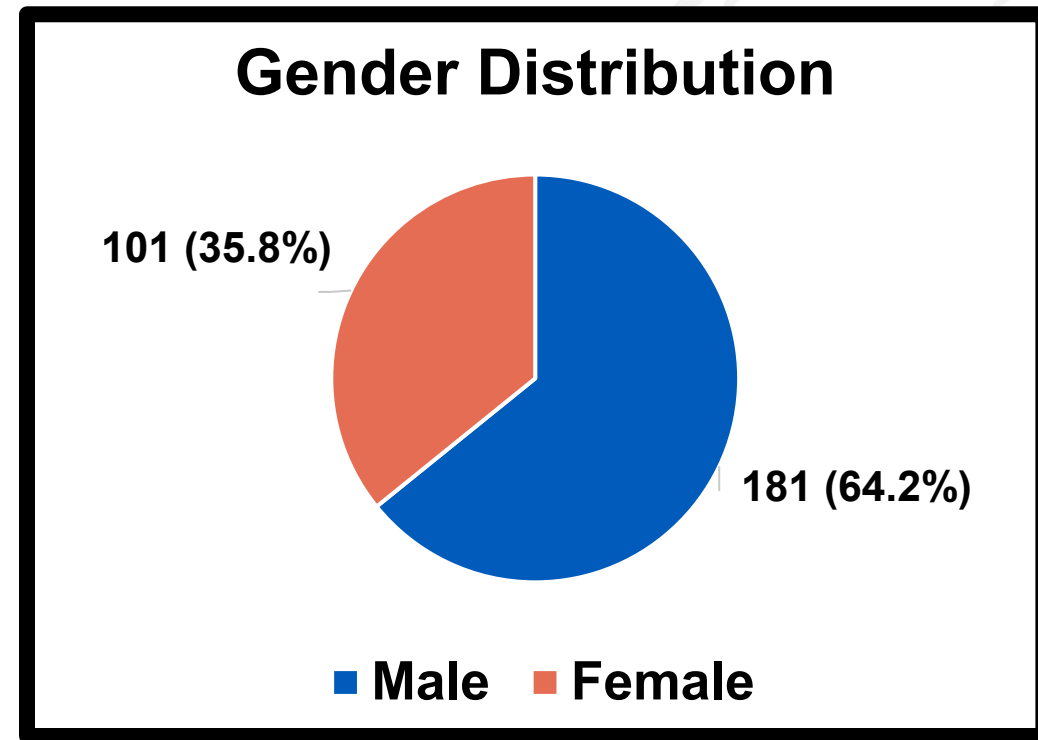
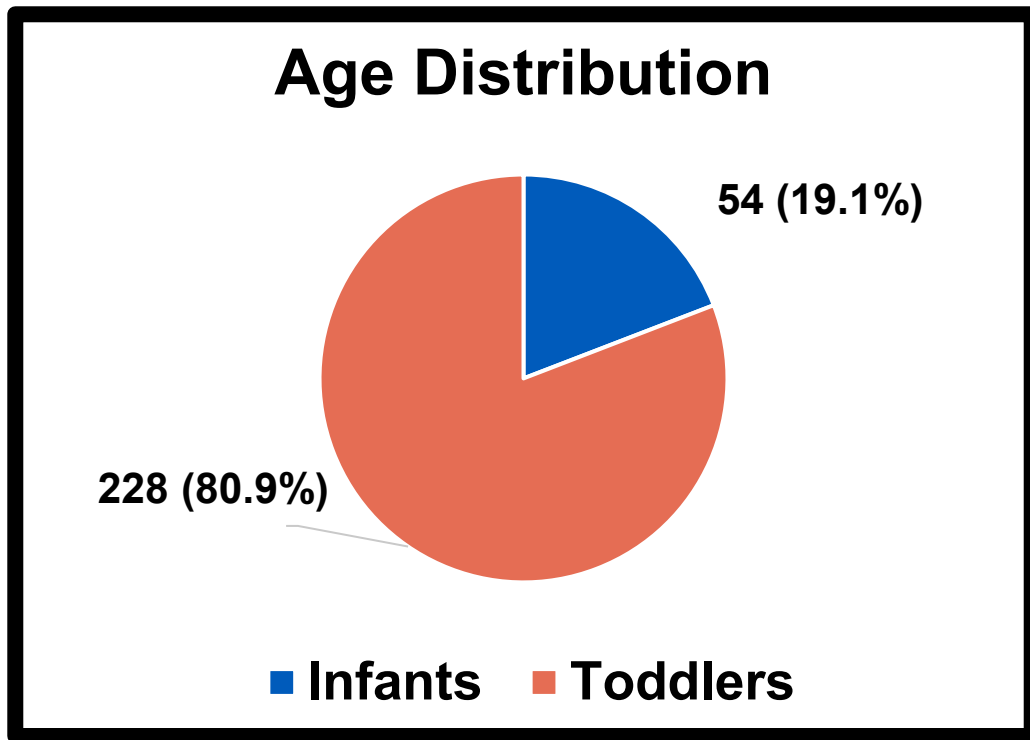
Long-Term Tube
“T-Tube”

Ventilation Tube Surgery



Right Ear

Results



Mean Age

Infants 8.9 mo (95% CI 8.3-9.5)

Toddlers 21.1 mo (95% CI 20.2-22.0)