

# Temporal bone anatomy and drilling technique

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# Aim

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- Explanation of the anatomical structures in the mastoid cell system and middle ear.
- Understanding of how the middle ear are connected with the mastoid and why infections can spread between them.
- Discuss the pathways for the spreading of cholesteatoma and the structures it can affect.
- Understanding of the structures visible in a radical cavity.

# Exercise

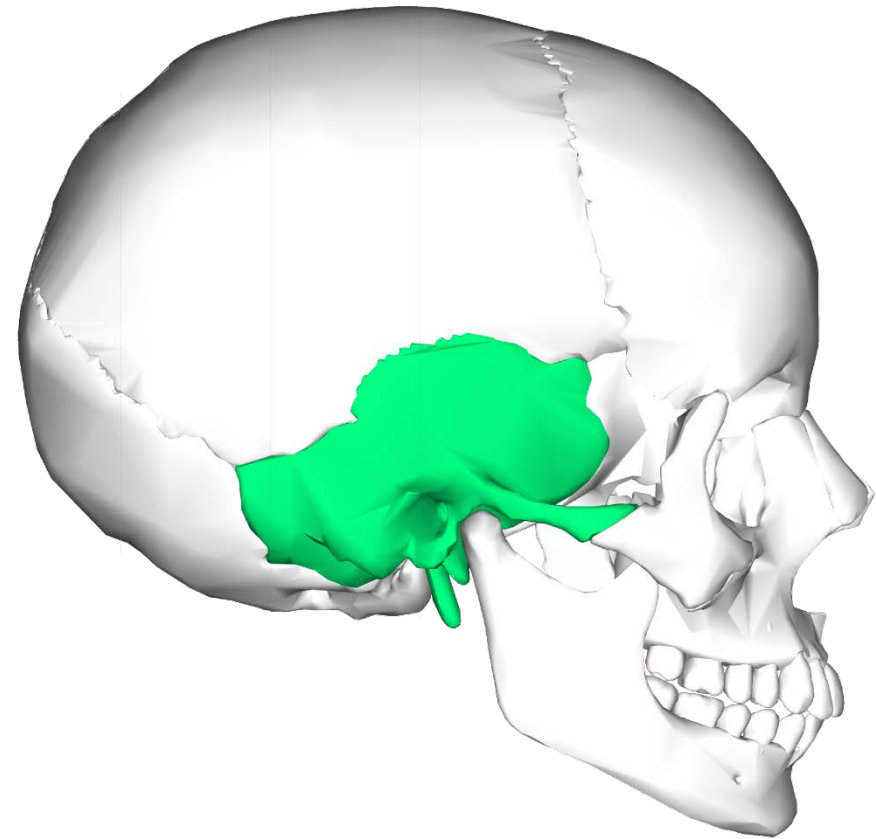
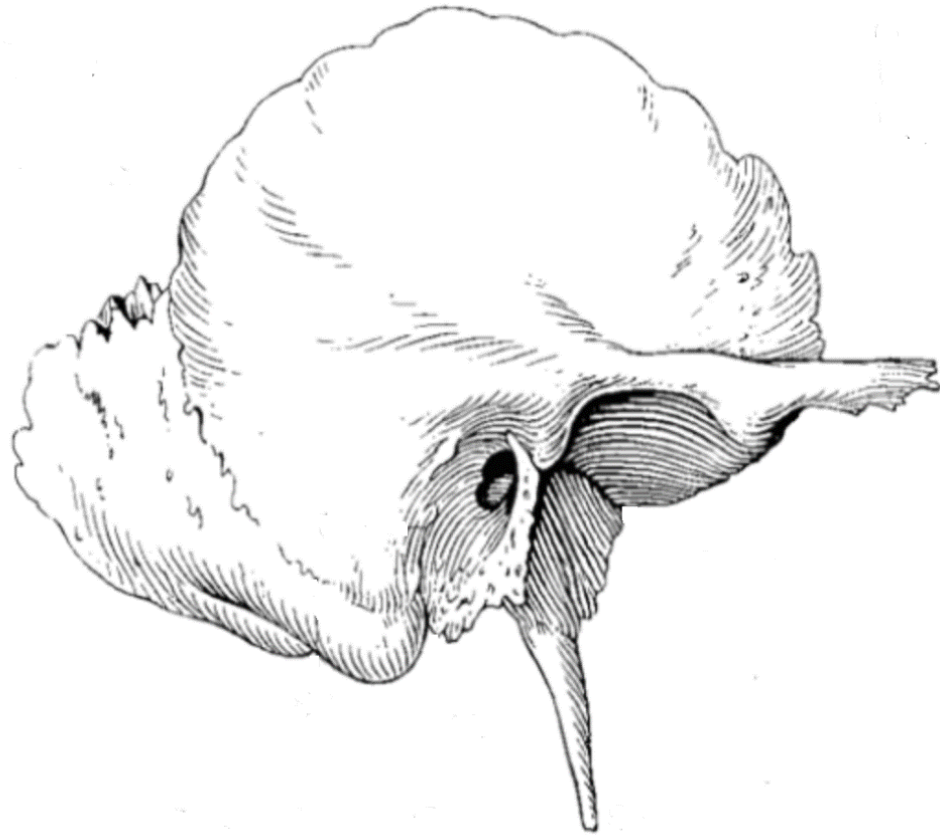
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- Become acquainted with how to handle mastoid drilling instruments.
- How to perform a mastoidectomy in a patient with mastoiditis.



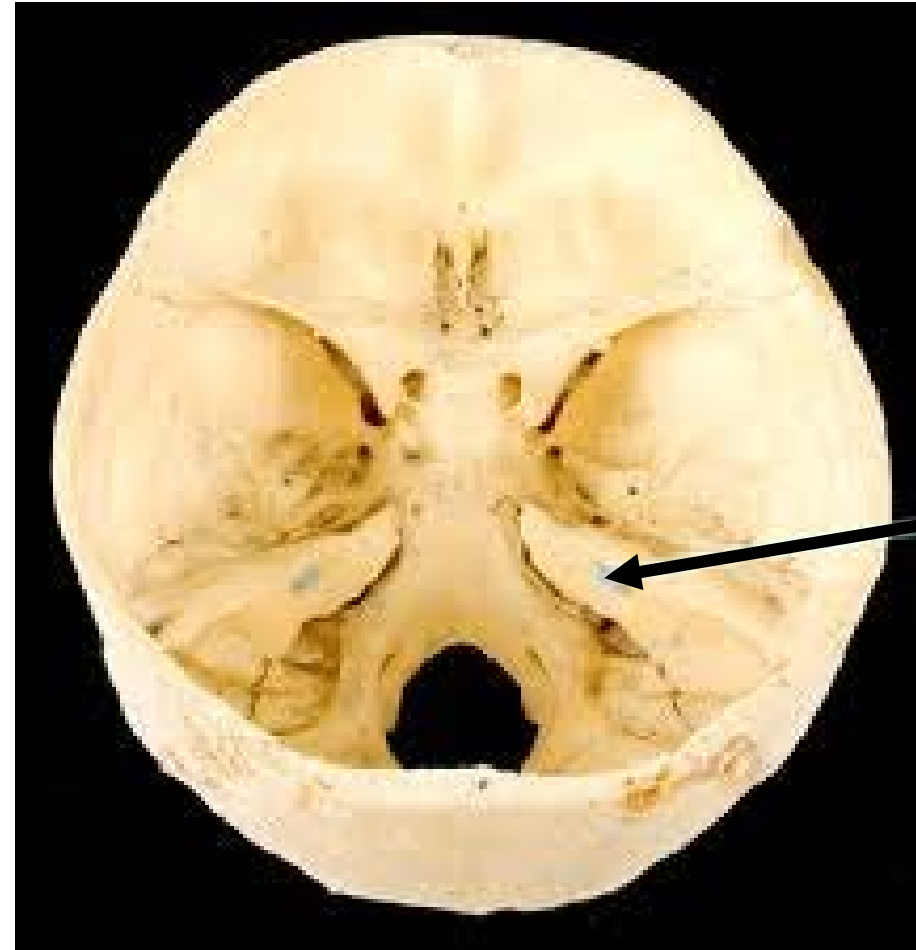
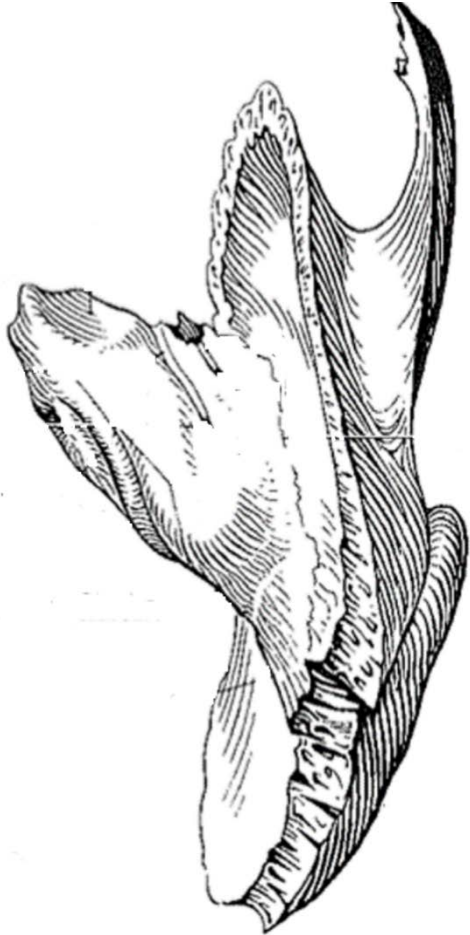
# Anatomy of the temporal bone

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# Anatomy of the temporal bone

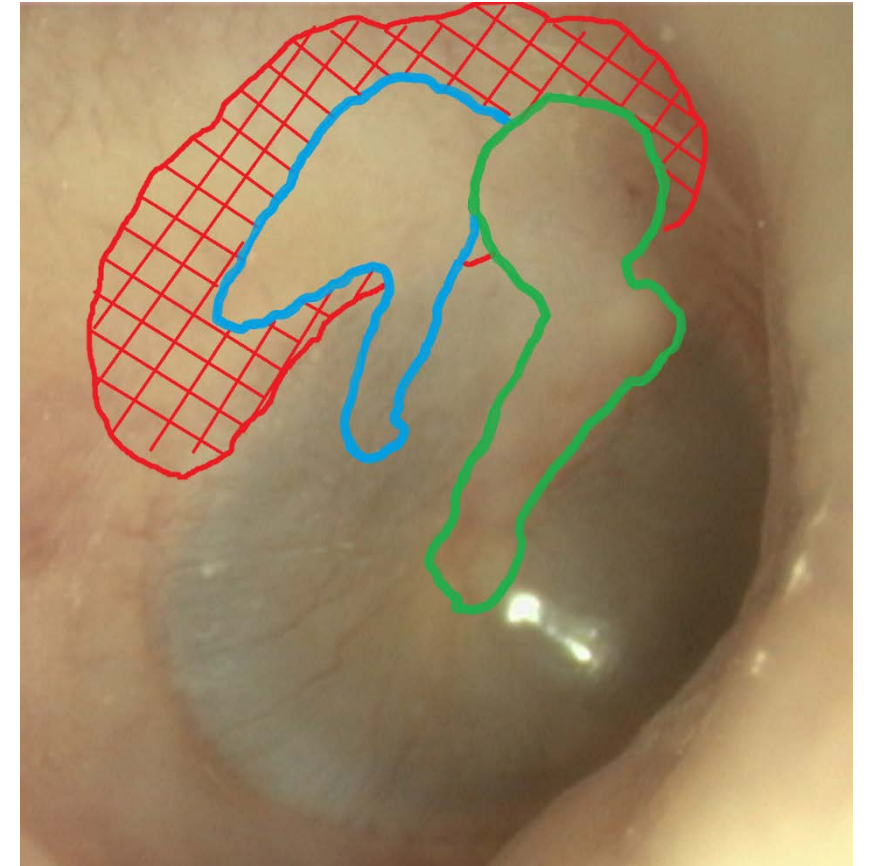
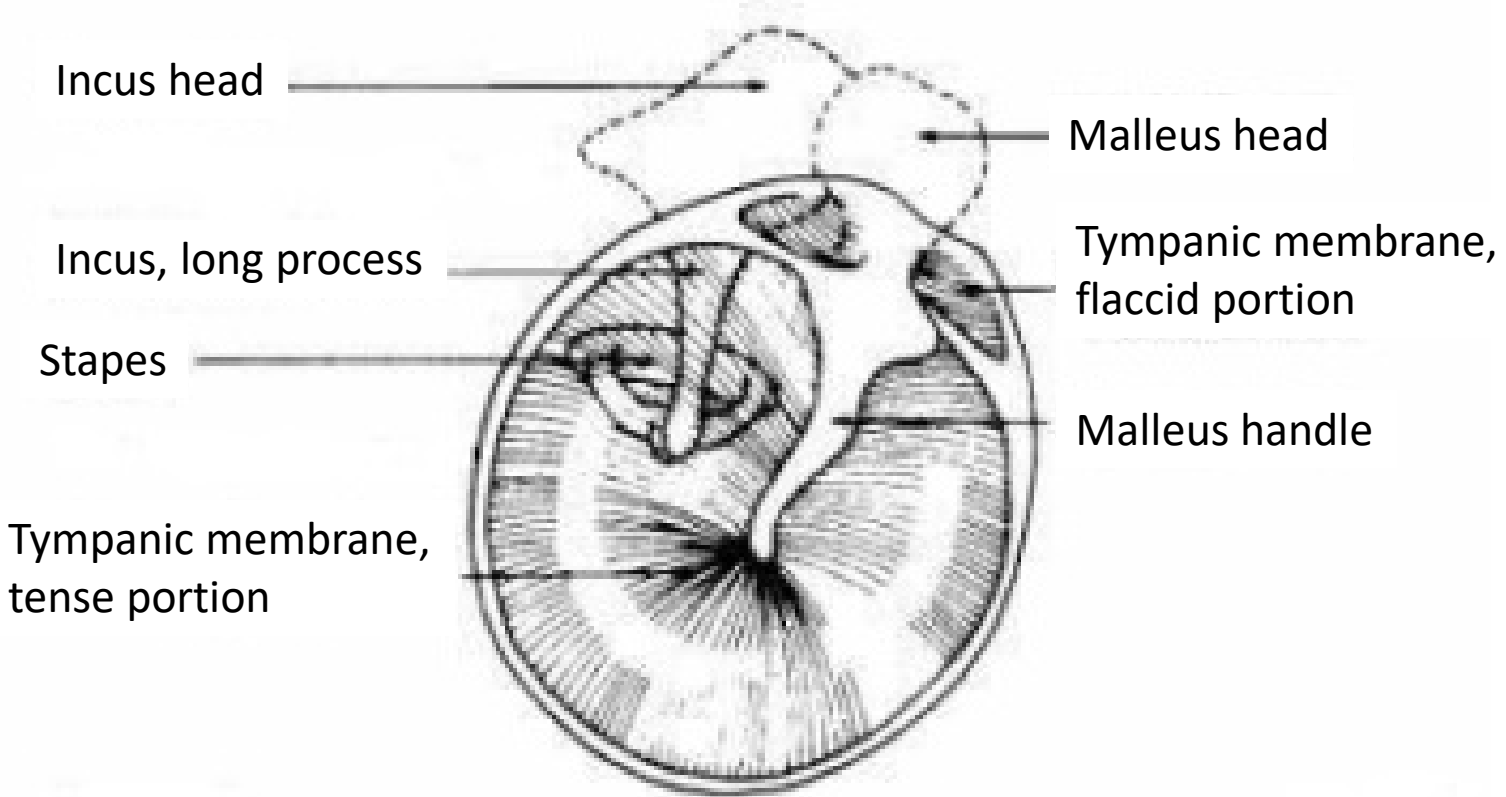
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Temporal  
Bone  
Petrosal part

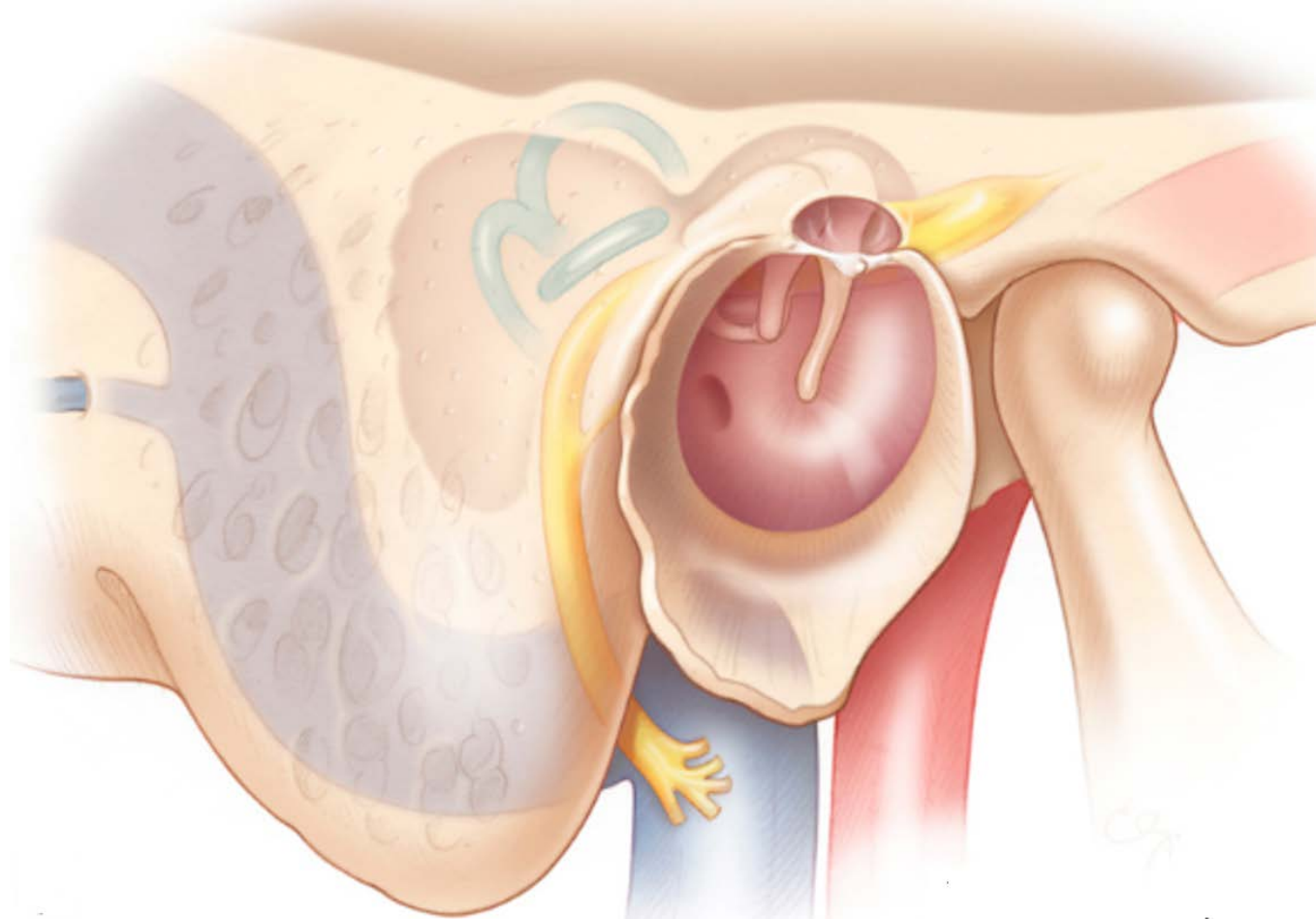
# Anatomy of the middle ear

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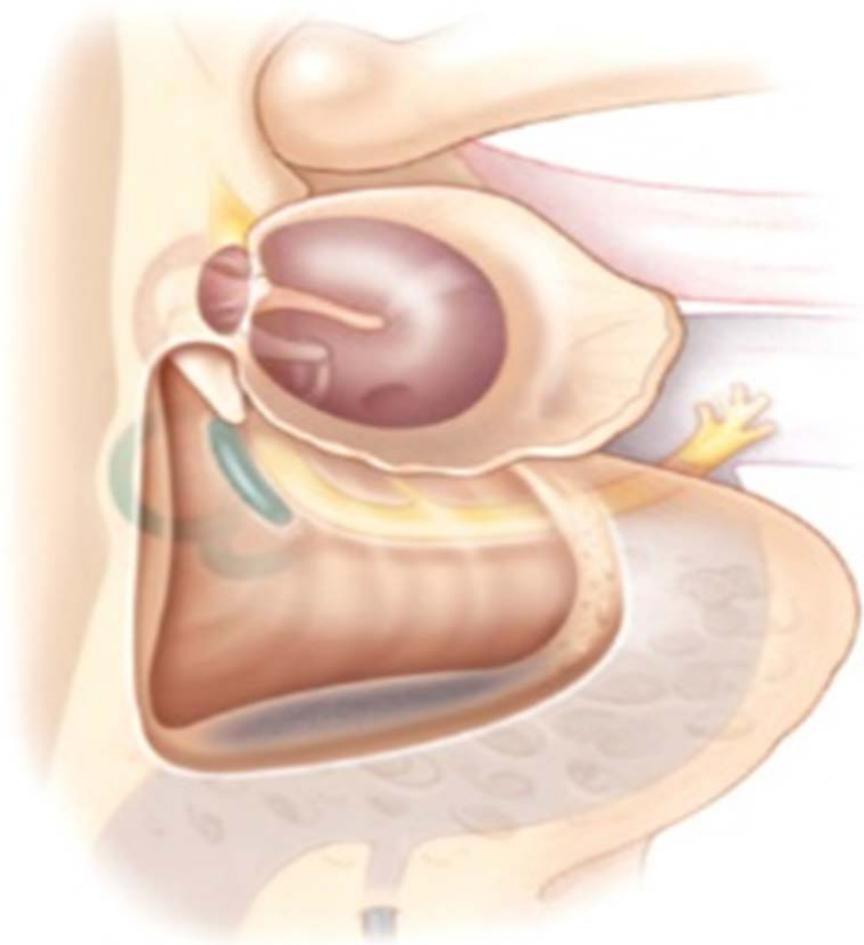
# Anatomy of the mastoid cell system

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# Anatomy of the mastoid cell system

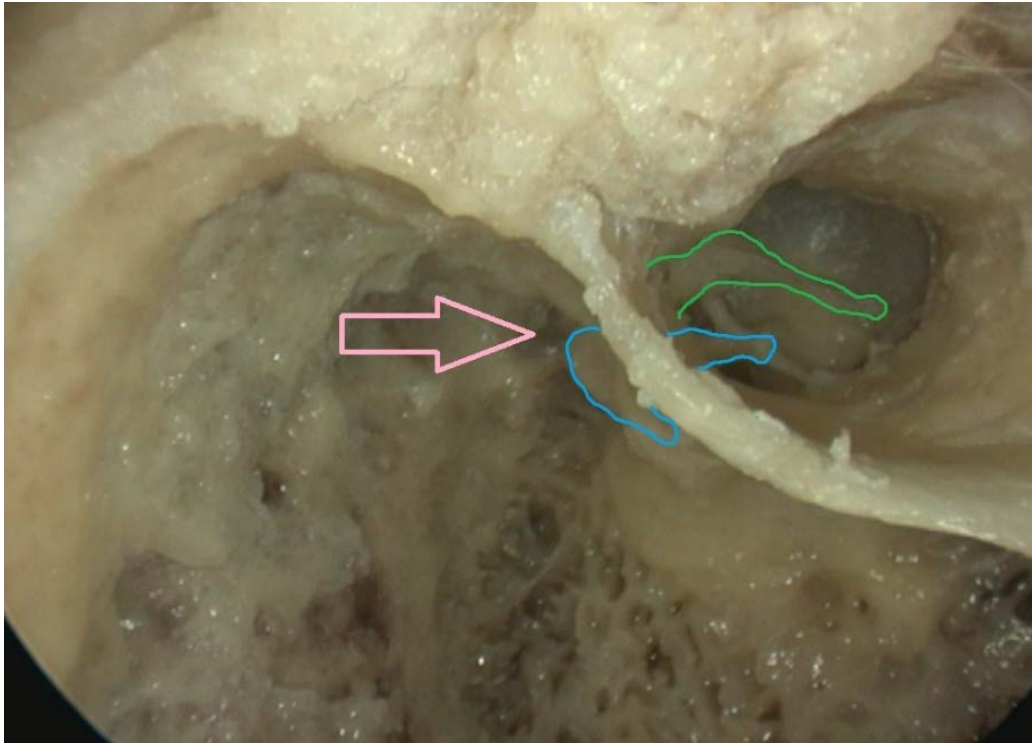
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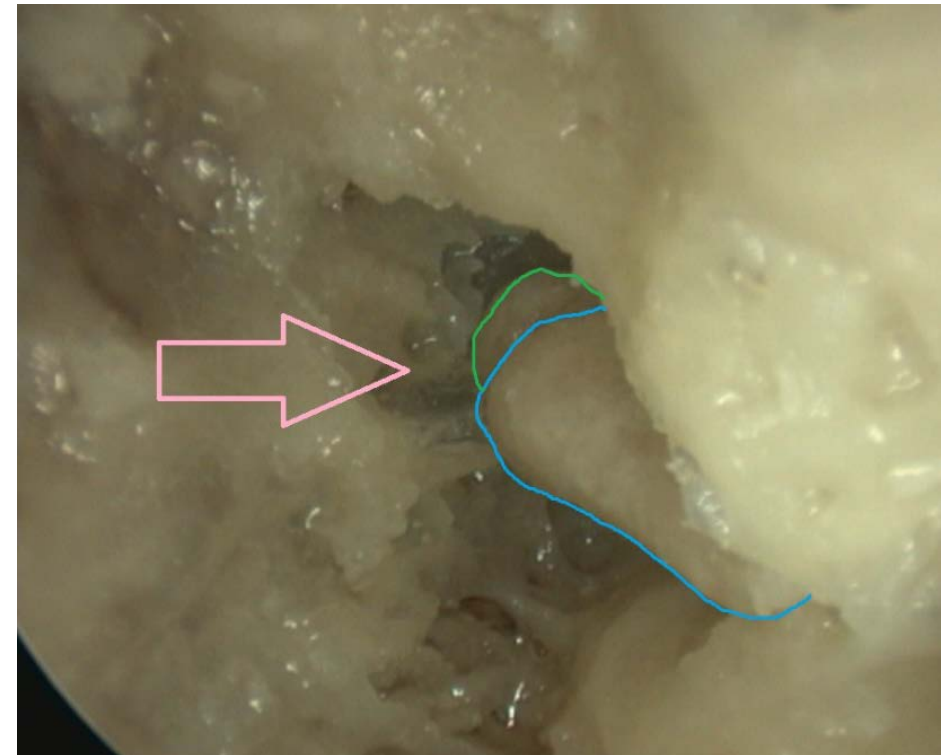


# Anatomy of the mastoid cell system

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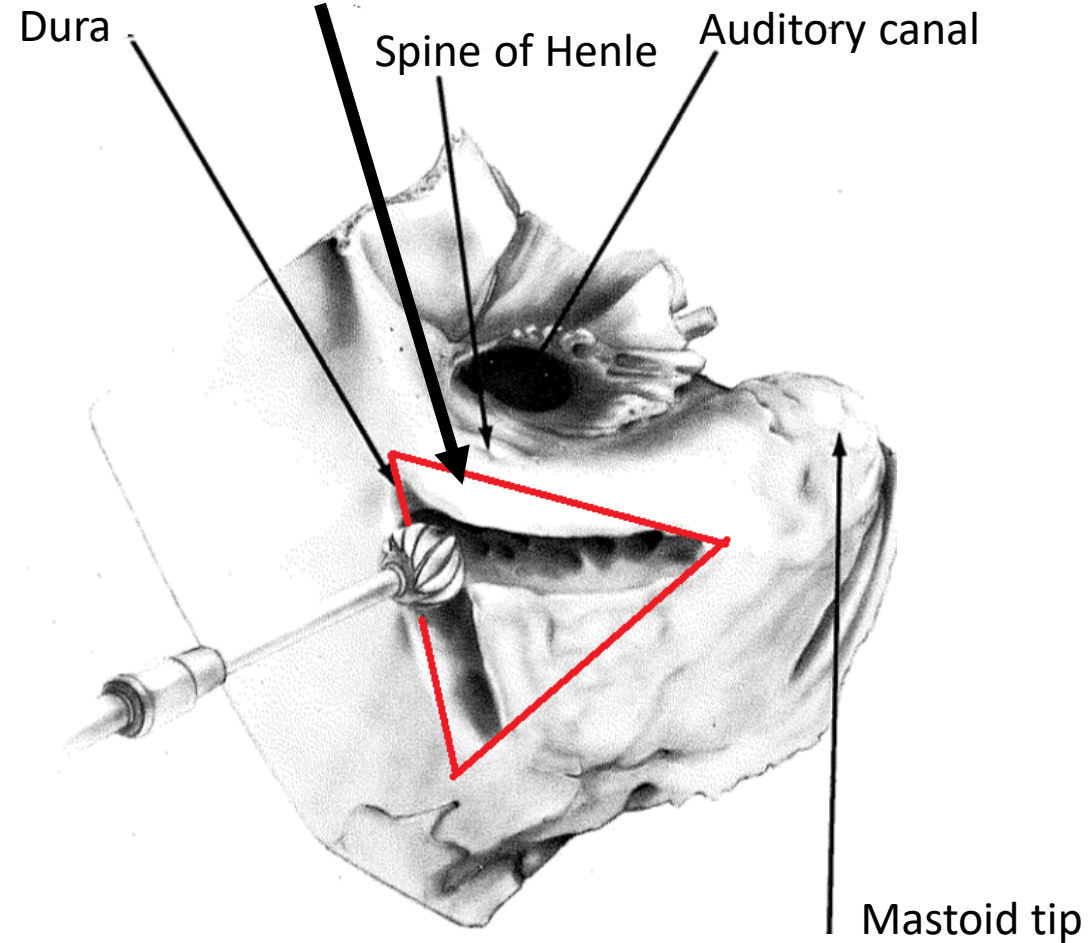


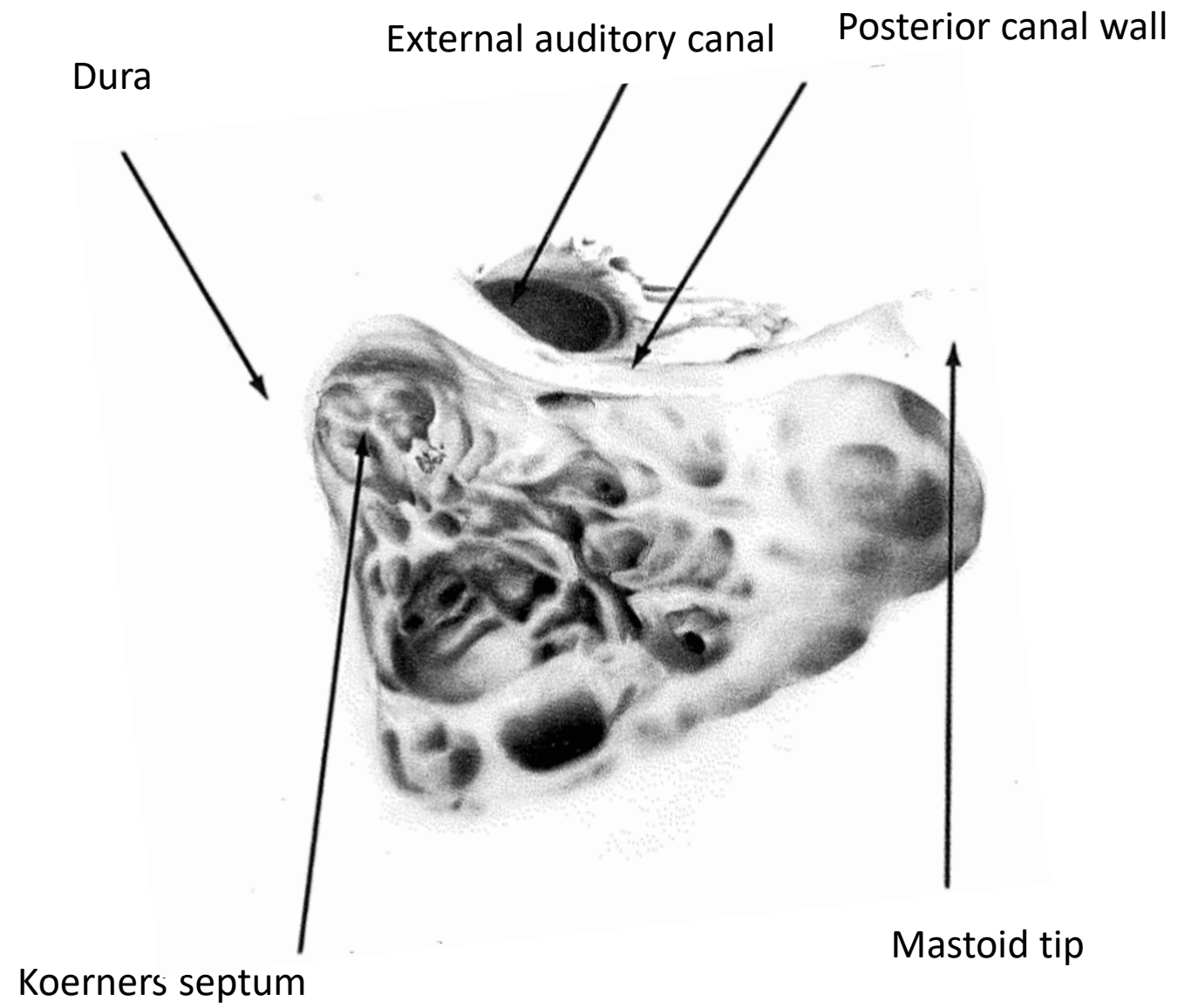
Aditus ad antrum  
Incus  
Malleus

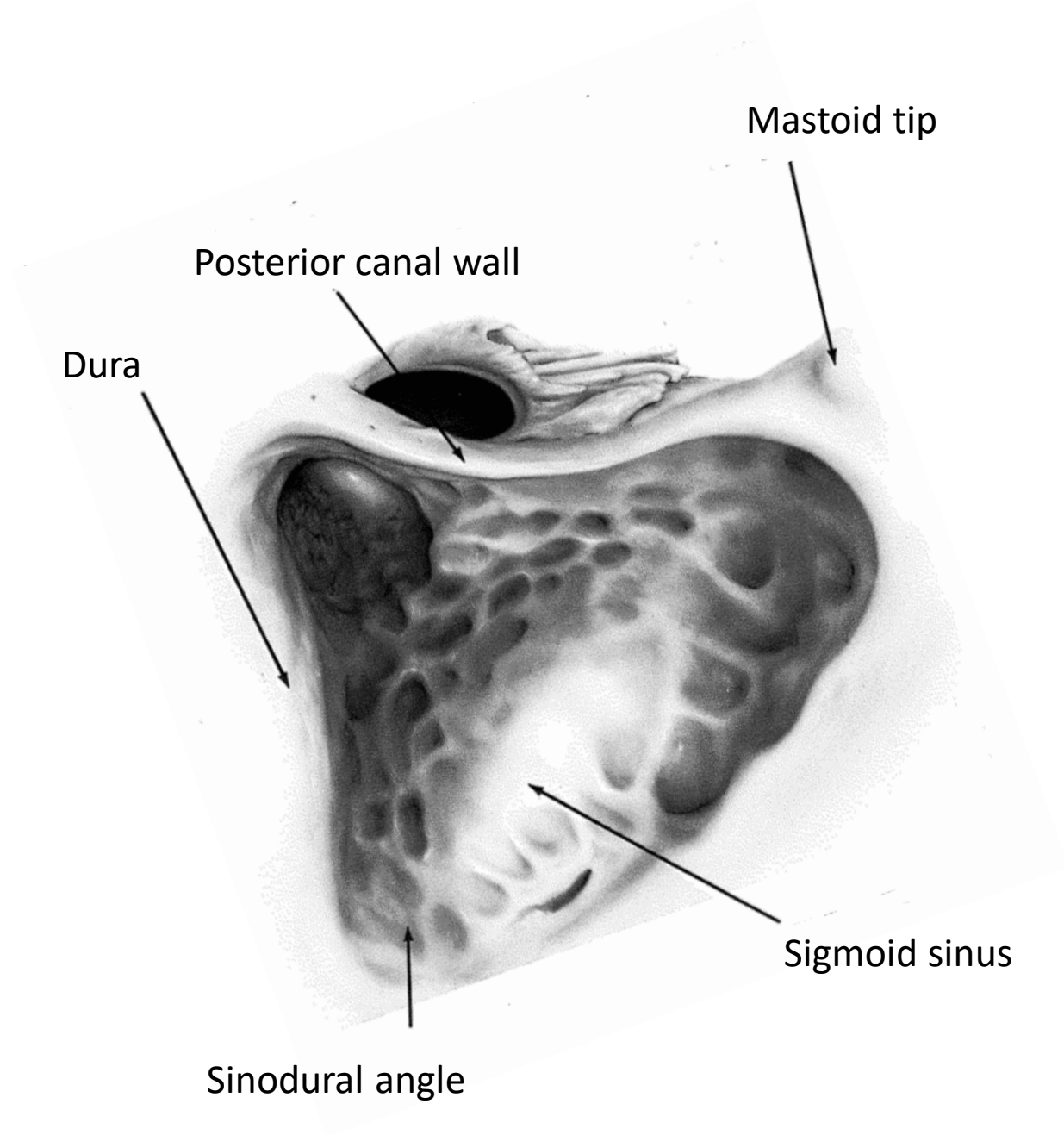


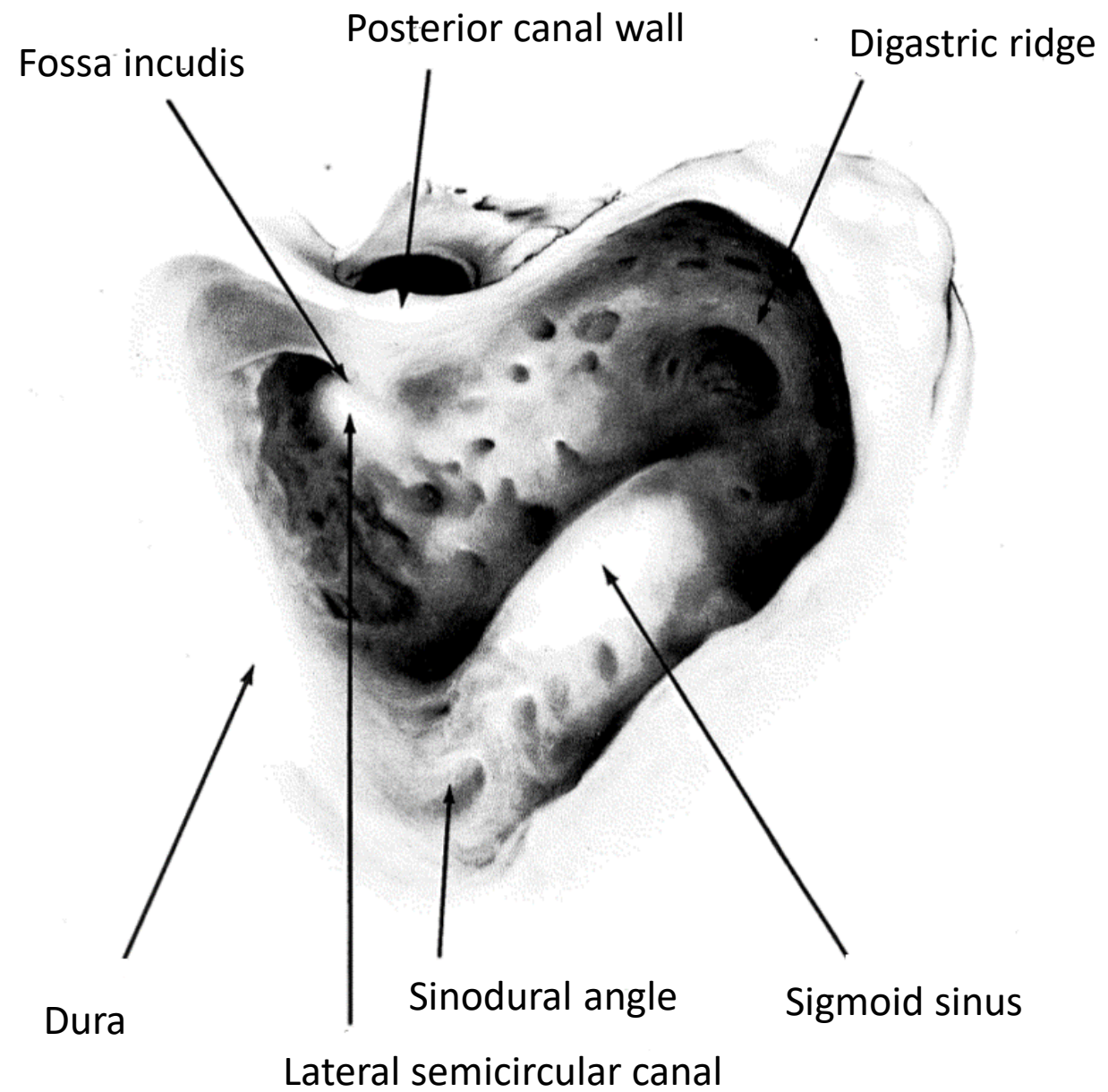
# Temporal Bone Drilling

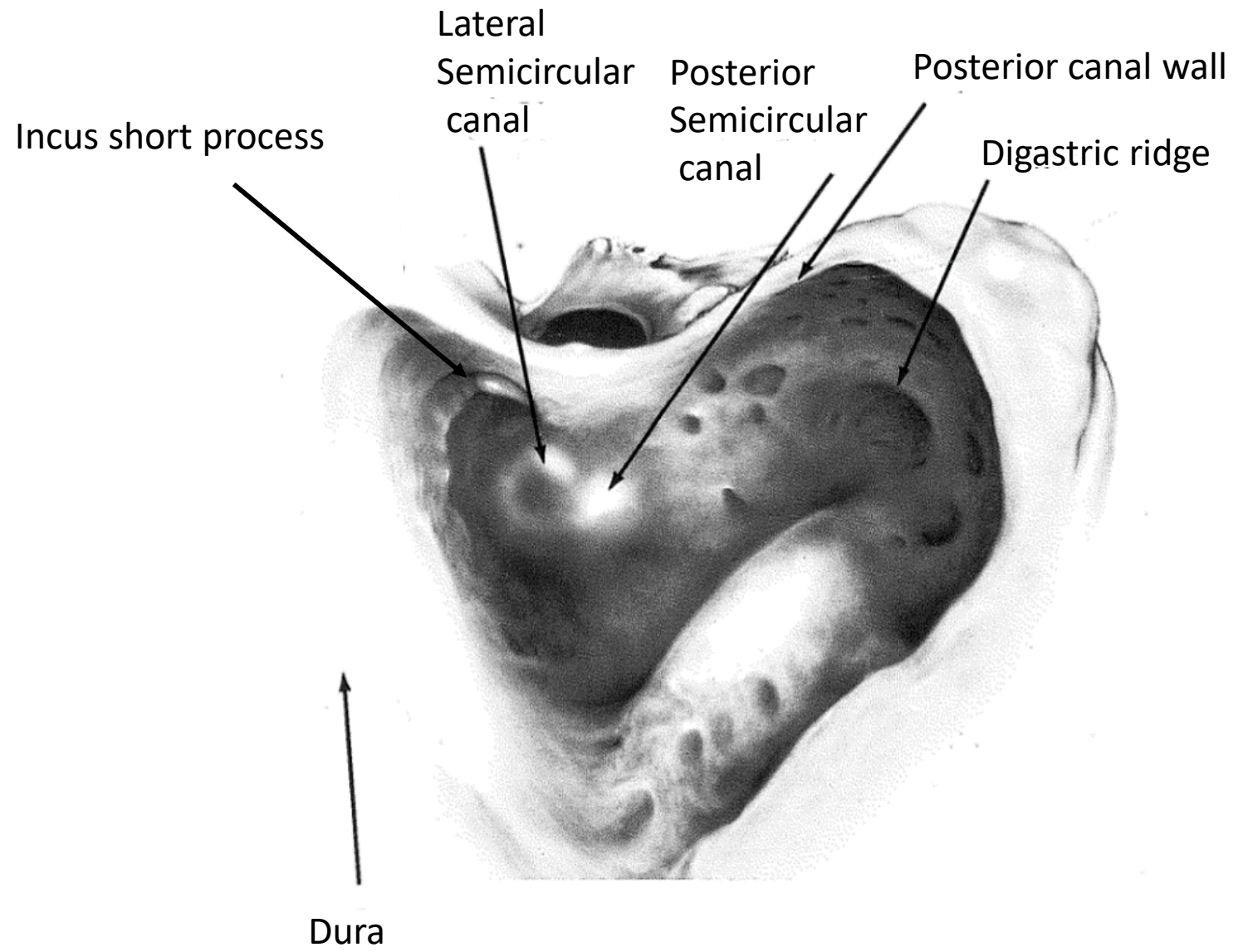
## Triangle of attack











# Case report mastoidectomy

## Case 1

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- Male 30 years old
- In childhood treated with ear tubes
- Feeling of pressure in the ear during the last year
- Fluid draining from the ear over the last few months despite treatment

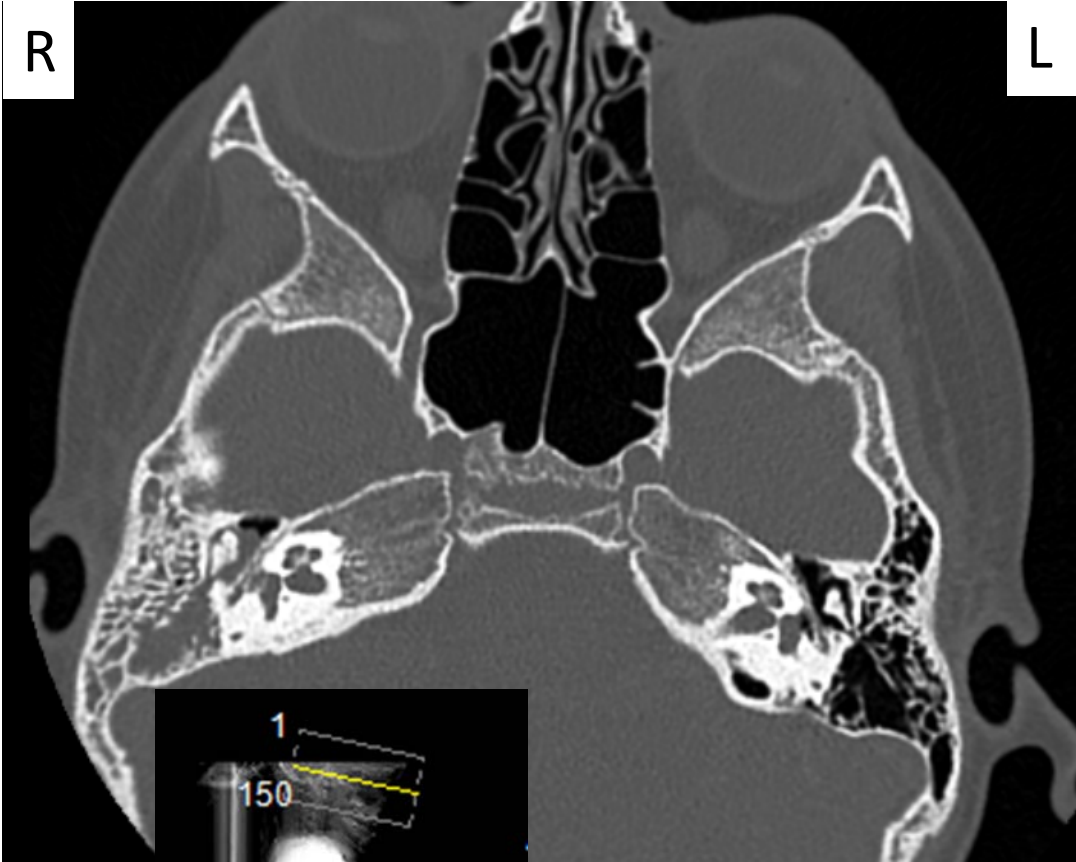
# Otomicroscope right ear

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# CT scan mastoid



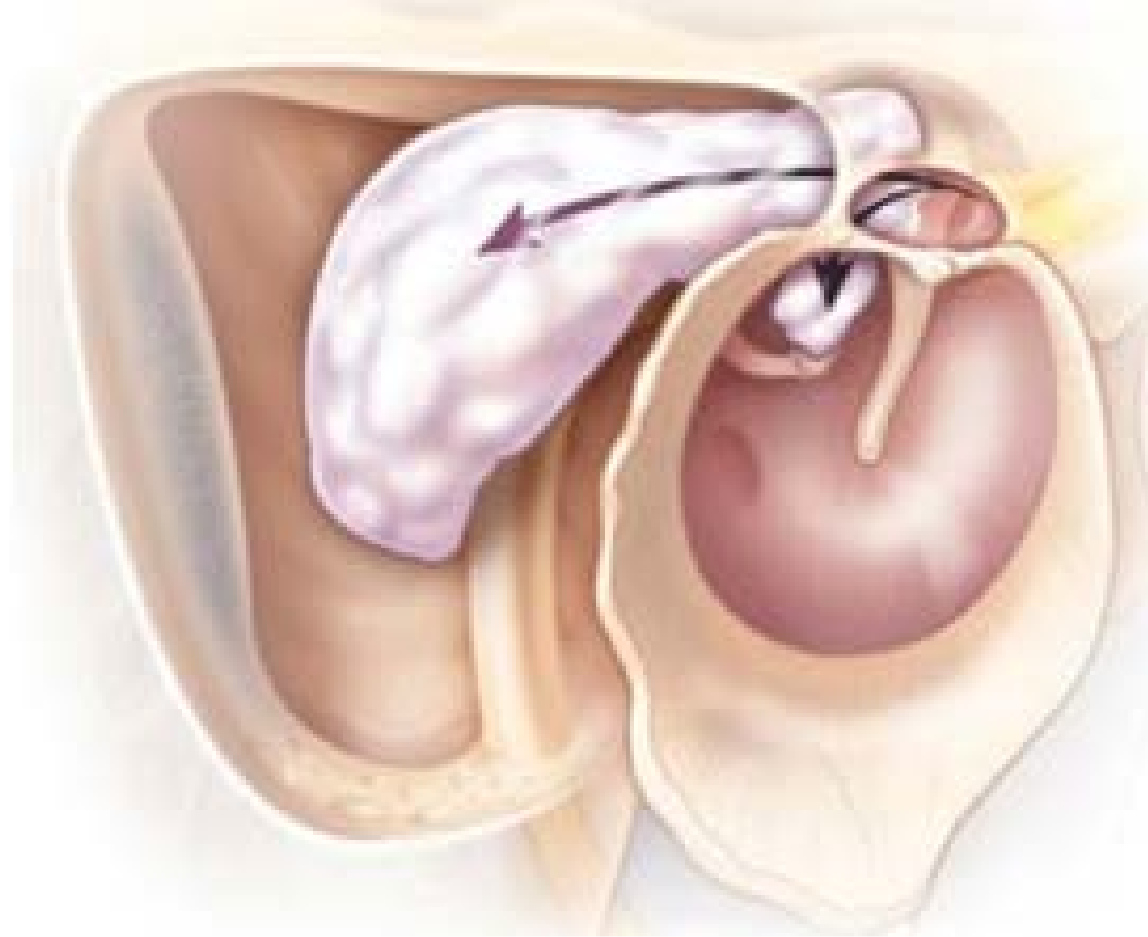
Axial



Coronar

# Cholesteatoma

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# Case 2

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- Girl 2 years old
- Pain in the ear 1 week. Otitis.
- Primarily under observation.
- Failure to recover why she received antibiotics 3 days ago.
- Now presenting acute with protruding right ear and fever.



## Case 2 cont.

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- Inpatient care with intravenous antibiotic treatment
- Paracentesis the same day
- Two days later still fever and pain.
- Mastoidectomy

Keep these two examples in mind when drilling

# Drilling technique

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- Start with cutting bur. When close to sensitive structures (Dura, Sigmoid sinus, Lateral semicircular canal) change to diamond bur.
- Never drill behind edges. See what you are doing. Open widely.
- Use large burs which minimize the risk of cutting into structures.
- Use the sides of the bur, not the top.
- Drill away from, not towards, sensitive structures (facial nerve, incus).



Diamond  
bur

Cutting  
bur

# Drilling task

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- You are going to get a drilling example where the most superficial layer of the cortex is already excised.
- Your mission is to drill further in to the mastoid cell system and find the structures

# And now to the drilling!

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