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Learning outcomes

Demonstrate the proper impression techniques and procedures for taking an ear impression.

Identify important anatomical landmarks of the ear which are necessary for a good earmold impression.

Evaluate an ear impression for accuracy, fit and retention.

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CONTINU^{ed}



**It all starts with a
good impression**



A Good Foundation

Lowest part of a structure

Without a stable foundation
whatever we are building will not
be reliable

Go back to basics

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CONTINU^{ed}

The Impression

A good impression
is critical for a
successful earmold
or custom product



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Ear Impression



Before the Impression

A close-up photograph of two hands being washed under a stream of water. The hands are covered in white, foamy soap suds. Water droplets are visible in the air around the hands, creating a dynamic and clean appearance. The background is dark, making the white foam and water stand out.

Review the case history

Practice good infection control

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The Best Chance for success



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Patient Preparation

- Explain the procedure
- Otoscopy again
- Re-evaluate
- Check again for any abnormalities



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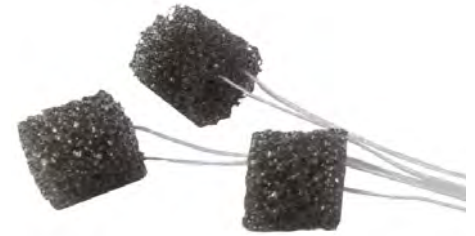


Choosing the Proper Otoblock

- **Can use cotton, foam or vented foam otoblocks**
 - If too small: can get blow-by
 - If too large: canal length too short
 - Just right: otoblock is slightly compressed by ear canal
- **Surgically altered ears may need several otoblocks**
 - Uncomfortable can refer to physician



Cotton



Foam



Blow-by



Short Canal

Various Otoblocks



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POLL

**How many of you have heard
of a vented otoblock?**

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When would you use a vented foam or cotton block?

- a. 85 y/o male who is getting a custom earmold for his BTE
- b. 44 y/o female who is getting custom hearing protection
- c. 65 y/o female who is getting custom half shell
- d. A and B only
- e. None of the above

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Types of Material Injection Methods



Impression Gun

- Uses a cartridge preloaded with material mixed in a cannula
- Less mess as all the material is contained in the cartridge and cannula
- Need greater hand strength to pull the lever



Impression Syringe

- Need to measure and mix equal parts of two material
- Best to mix with a spread pad and spatula
- Better control over the impression process

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Types of Impression Material

Viscosity = consistency

**Low viscosity will be
soft & runny**

**Higher viscosity will be
thicker, firmer**

& stickier



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continued



Poll

Which type of impression material do you prefer?

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Bridge and Brace Technique



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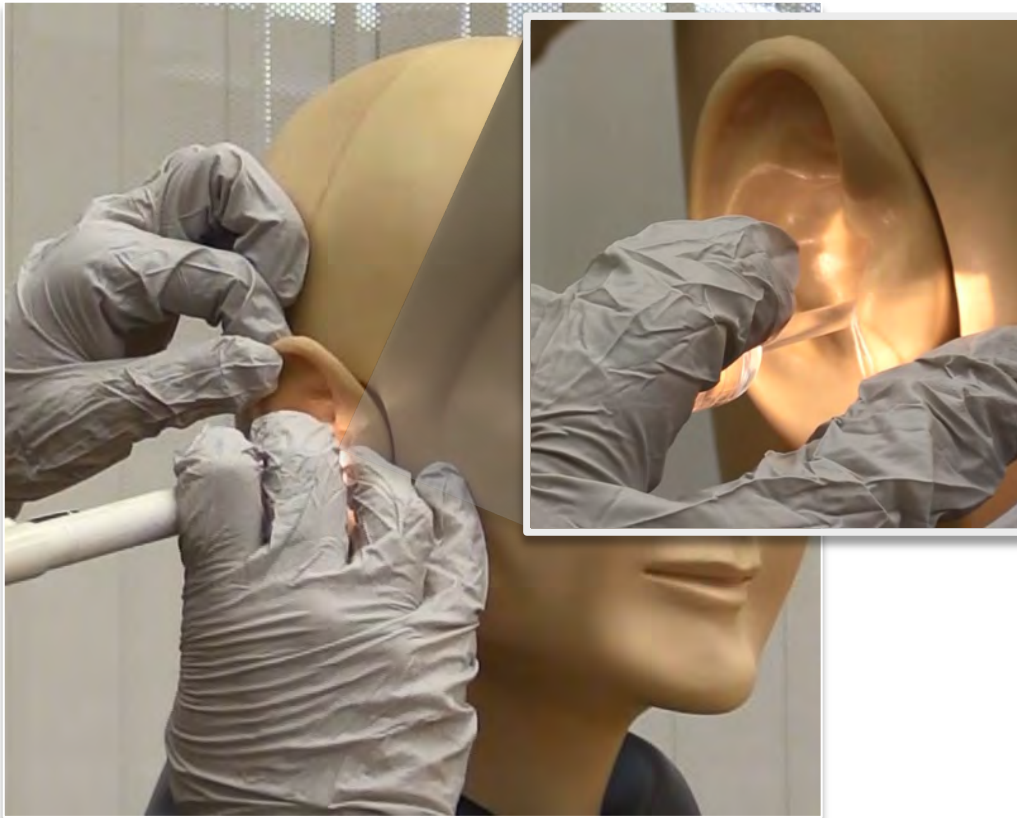
Bracing and Bridging



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Position the Otoblock



Using proper bracing, gently insert the otoblock using an otoscope

Insert using several short pushes to a point 4mm past the second bend

Or just past the isthmus

About 16 mm into the canal

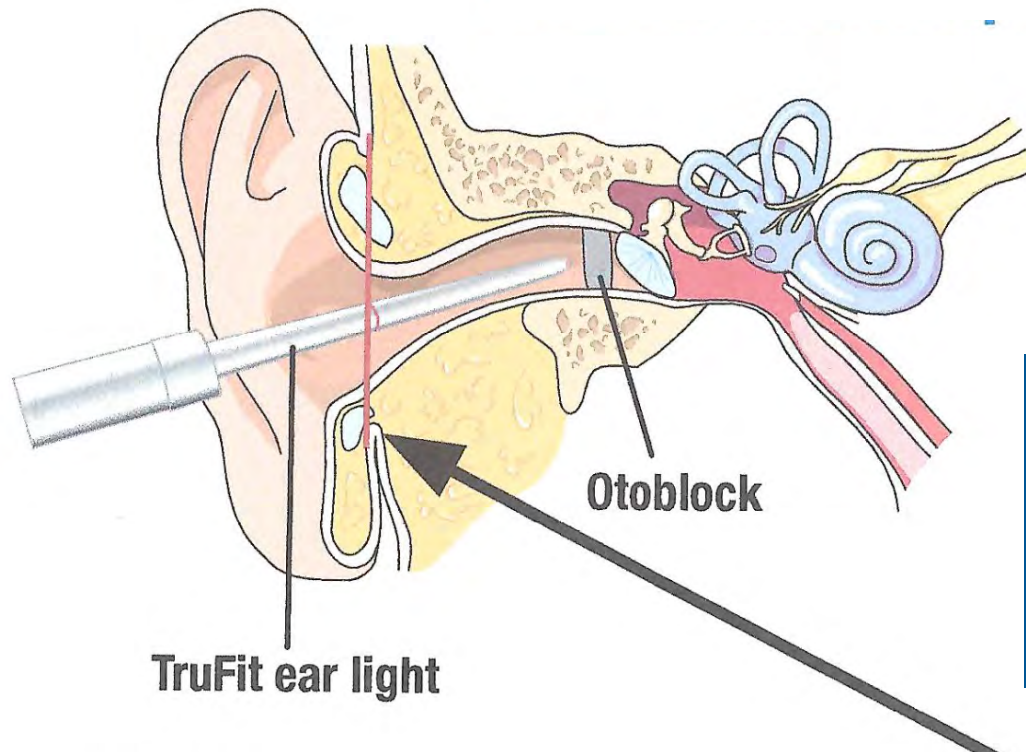
Arnold's reflex

Inspect the position of the otoblock using an otoscope

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The 16/4 Rule



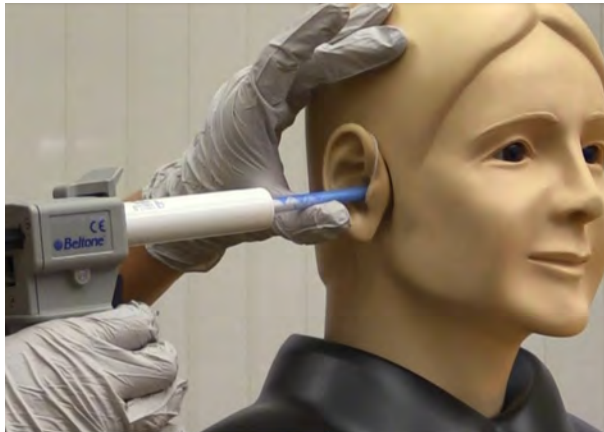
- Using the otolight tip to achieve a 16/4 impression, insert the otoblock so the mark on the otolight tip aligns with the canal aperture.

Align the mark on the otolight with the ear's aperture.

Inject Impression Material



Squeeze the trigger to dispense 1/2 inch of material onto a tissue and discard



Brace hand against side of head and insert the tip of the cannula into the ear canal



Slowly withdraw the tip as the material is injected

Inject Impression Material



The tip of the cannula must be embedded in the impression material at all times



Once canal is filled move to fill concha then move up to fill the helix area



Take your time don't rush

Wait for the Impression to Cure



**Wait for as long as the
material instructions**



**Jaw movements from
patient could distort the
ear canal shape**



**Avoid the need to repeat
the impression**

Microphone Marker Usage



Marks horizontal microphone placement for patient's natural position

Microphones not on the patient's horizontal plane can cause directionality issues, leading to no true front or back microphone



Order from Customer Service

**Placement Key (mic marker)
part # 0490439**

Otolight # OP604230

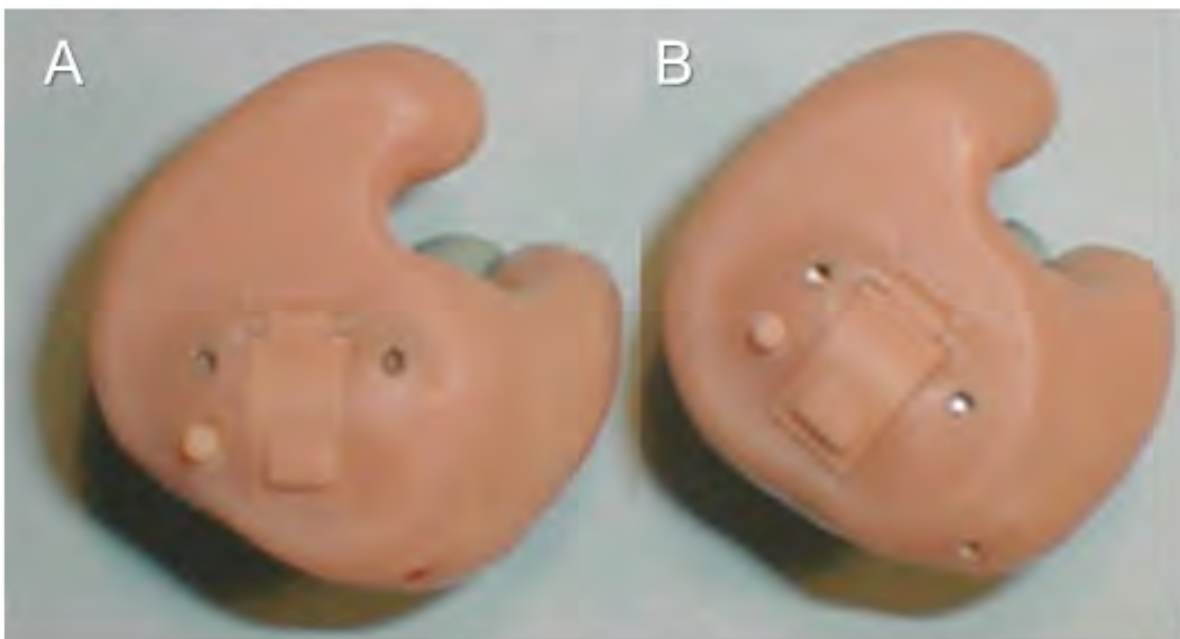
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Marking Microphone Placement



Unmarked EMI





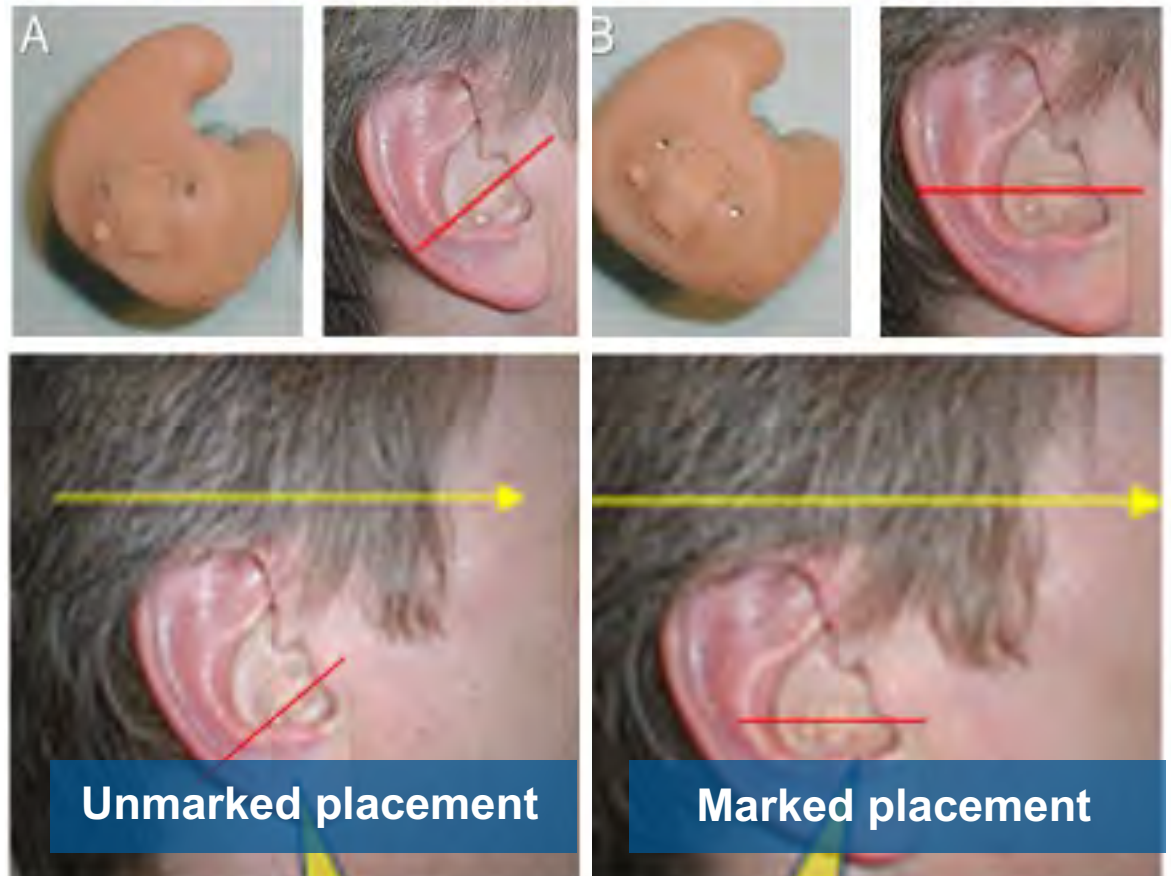
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Which is the correct orientation? A or B?

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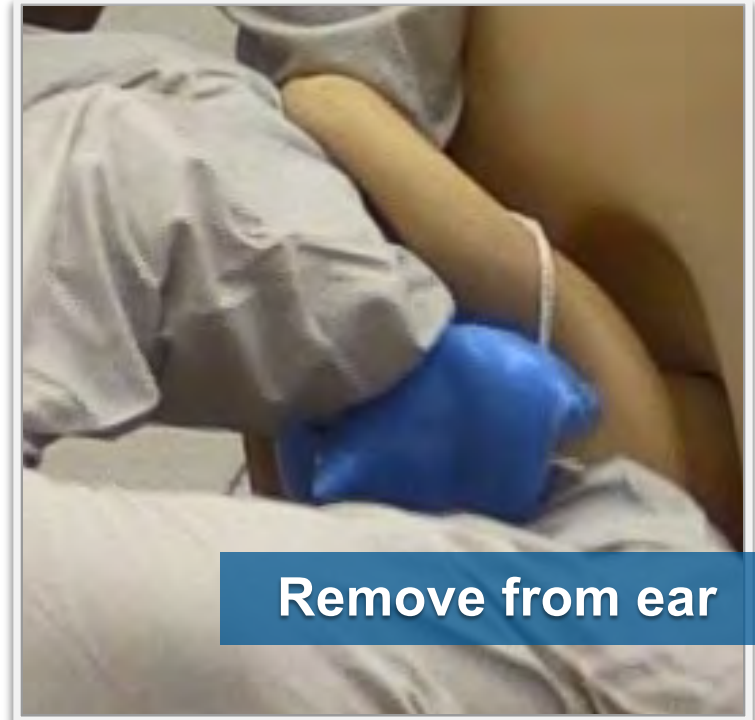
Marking Microphone Placement



Removing the Impression



- Ask the patient to make chewing jaw movements
- Lift or wiggle the pinna



- Remove the helix portion first
- Rotate impression toward the face

After Impression Removal

Inspect

Document

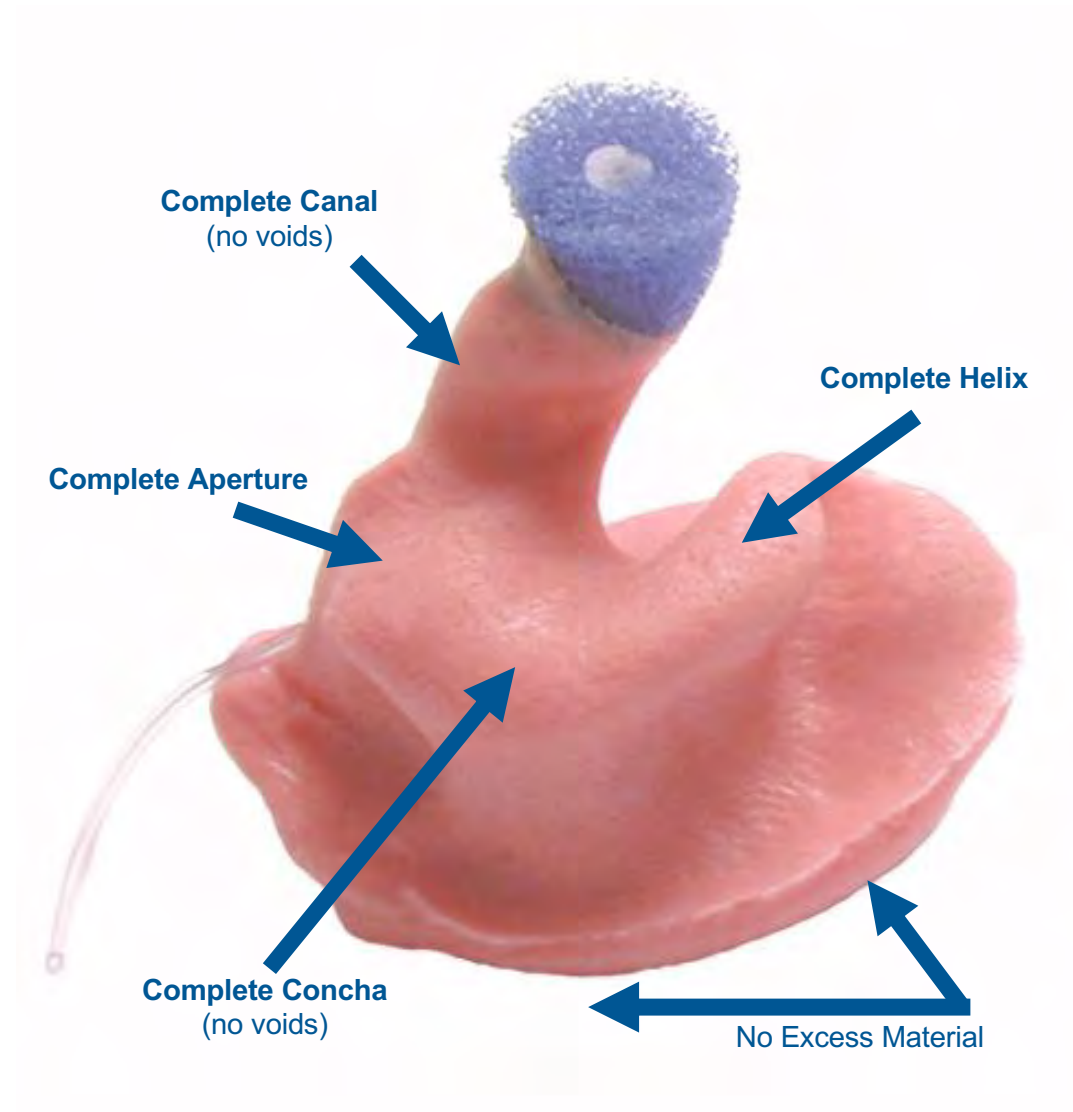
Call



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Critique the Impression



Open vs. Closed Mouth Impressions

“A patient’s ear canal size and shape can dramatically change by altering jaw position”

(Darkner, Larsen & Paulsen, 2007; Oliveira, 1997)

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Poll

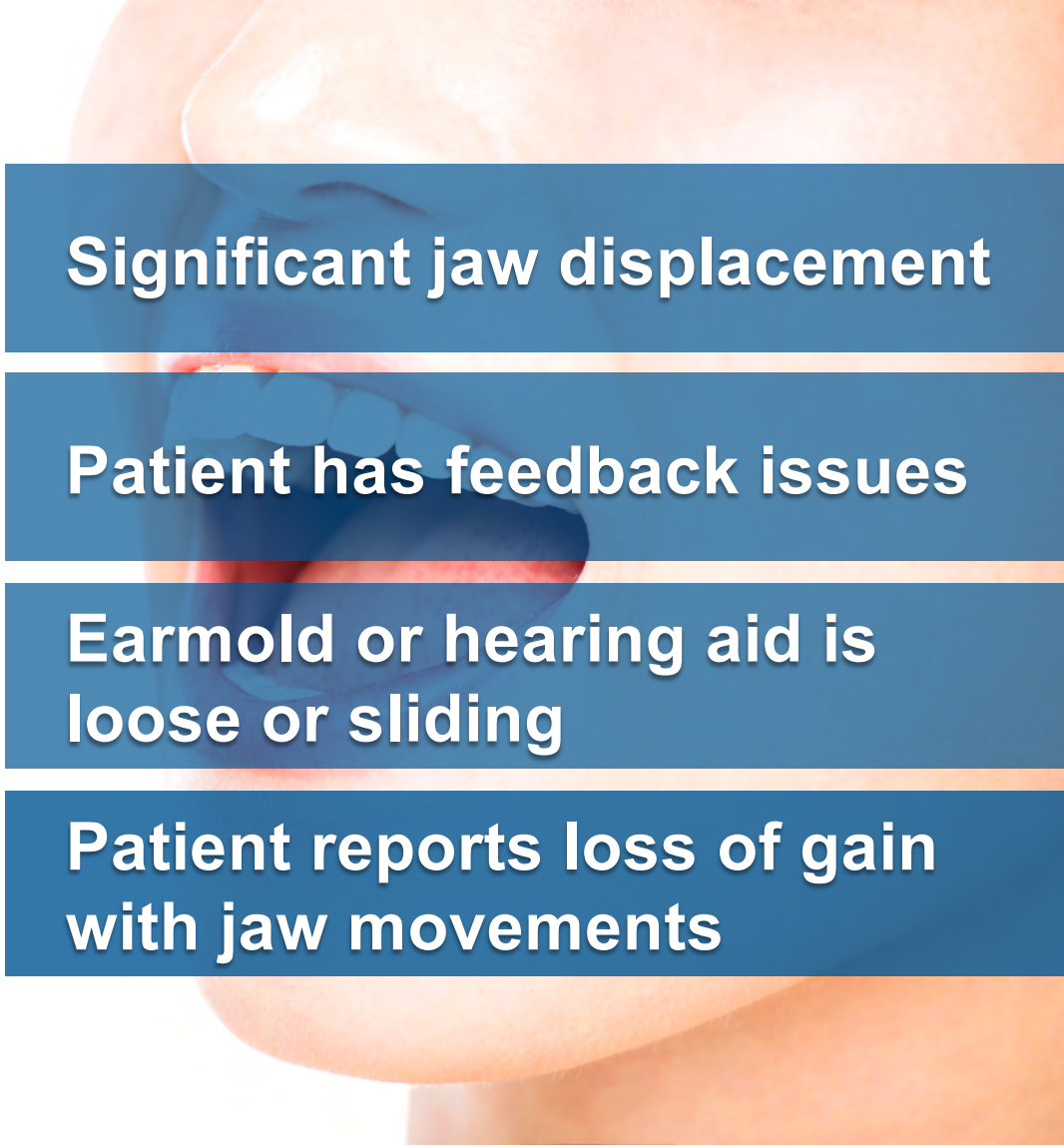
When do you take an open mouth impression?

What is your protocol?

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When do you take an open mouth impression?



Significant jaw displacement

Patient has feedback issues

Earmold or hearing aid is loose or sliding

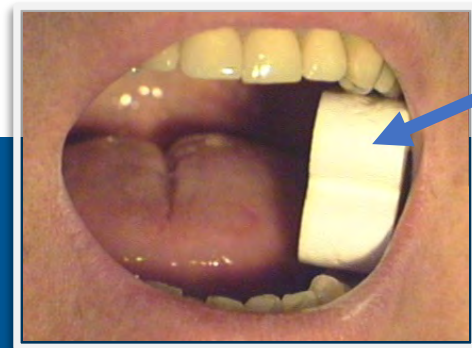
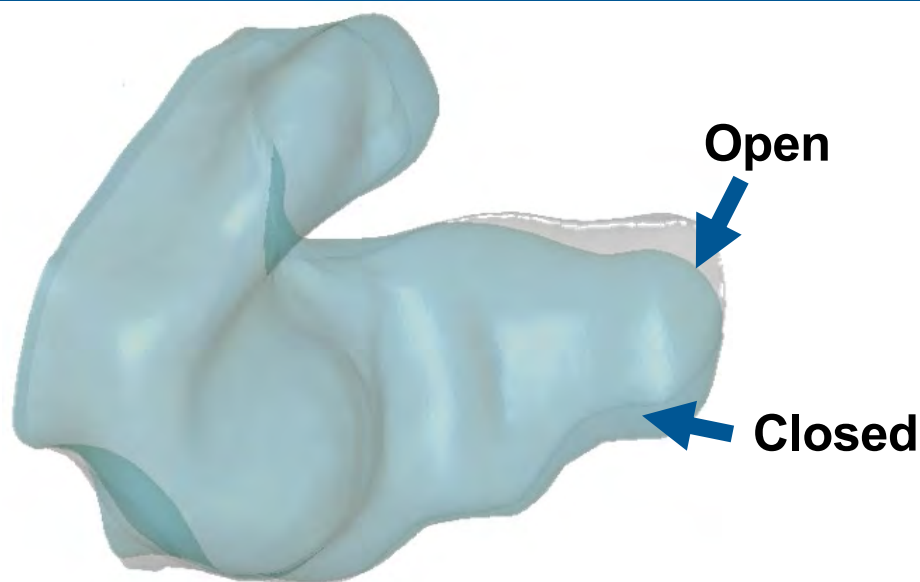
Patient reports loss of gain with jaw movements

Open Mouth Impression

Open mouth impression gives

- The widest canal diameter
- Tighter fit

Use a bite block to keep mouth open



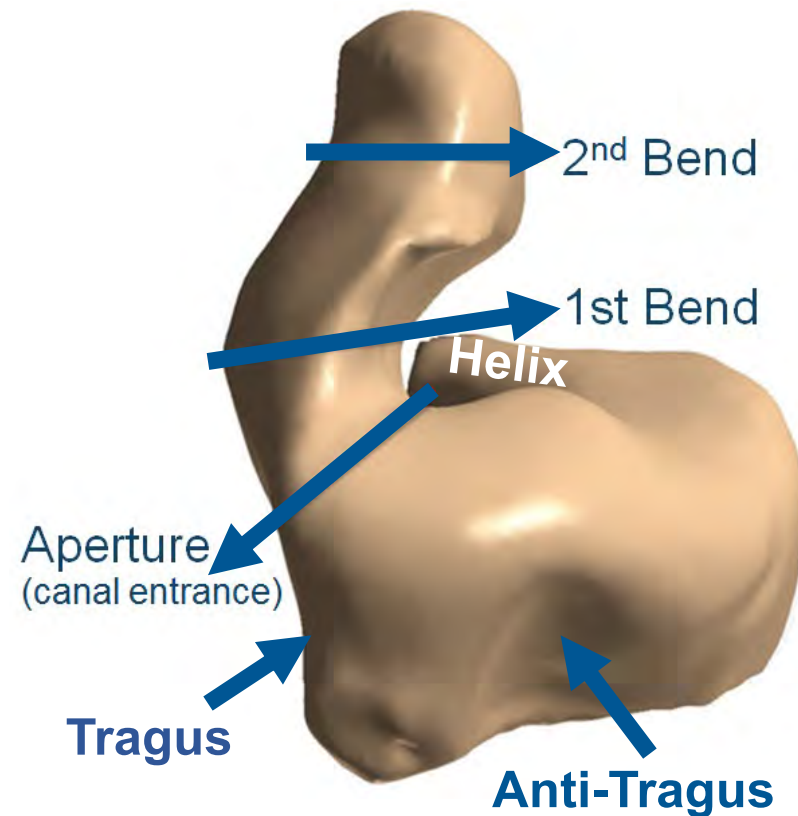
When to take an open mouth impression

- Significant jaw displacement observed
 - Externally or with otoscopy
- Patient has feedback issues
- Earmold or hearing aid is loose in the ear or slide out
- Patient reports lose of gain with jaw movements

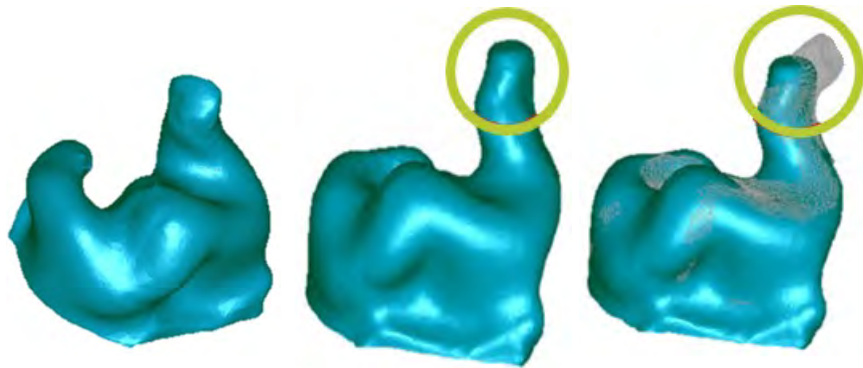
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Considerations for Physical Fit

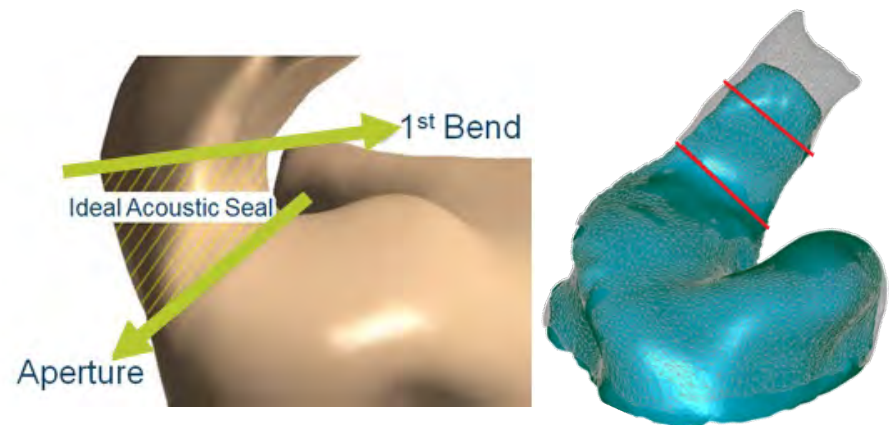
- Sound bore direction
- Acoustic seal
- Retention
- Wearer's comfort
- Ease of insertion
- Cosmetic appeal



Considerations for Physical Fit



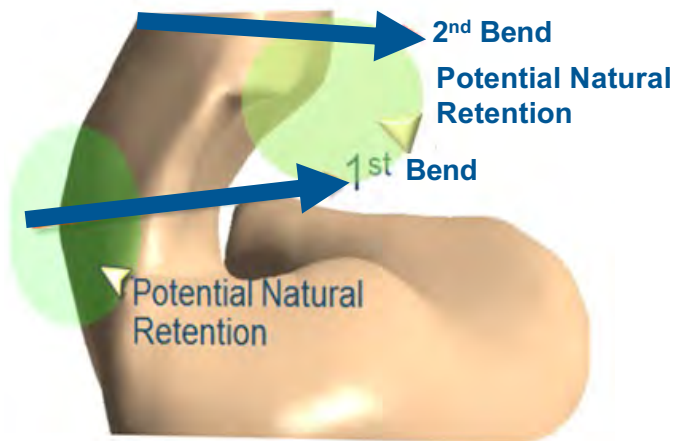
Sound bore direction



Acoustic seal

Considerations for Physical Fit

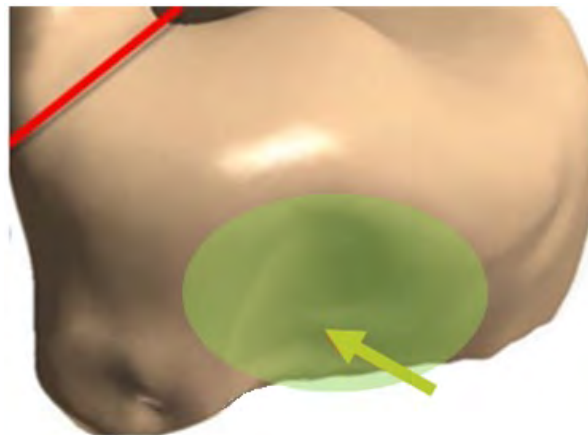
1st and 2nd bends



Retention spots

Want 2nd bend to be tapered for comfort and easy of insertion

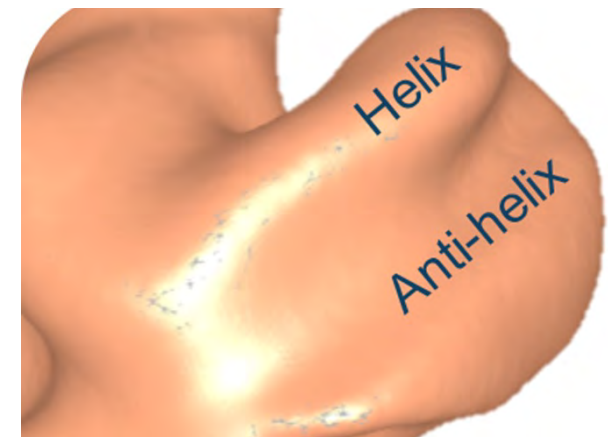
Antitragus



Retention spot

Needs to be in impression to sculpt a cosmetically appealing mold

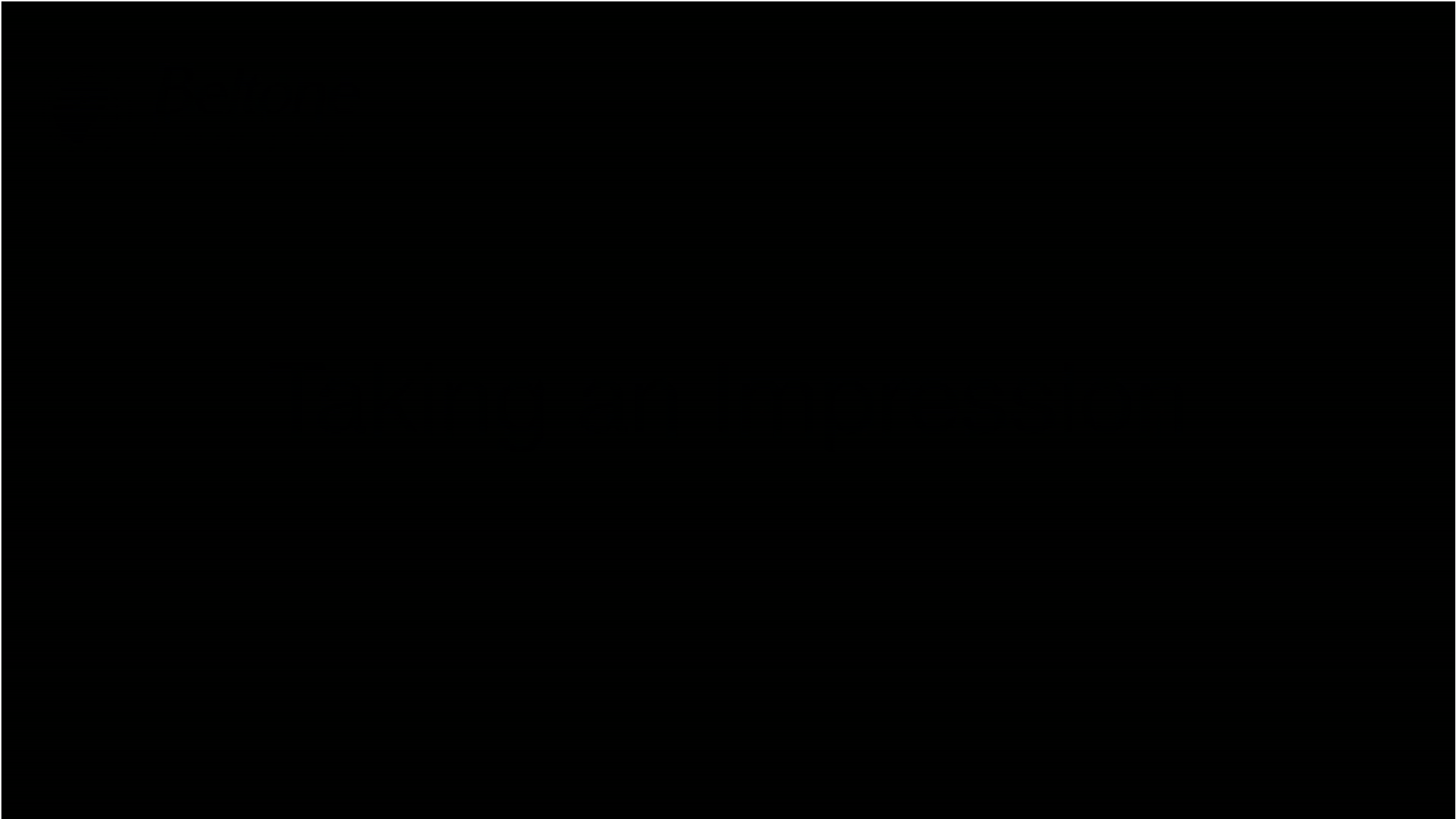
Helix area



Retention spot

Need to balance retention and comfortable fit

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Acoustic Couplers

Must be comfortable

Cosmetically appealing

**Maintain/enhance
acoustic properties**



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Cubick et al in Ear & Hearing

Instant fit domes/tips seal the ear less effectively than custom molds

Problem for flatter losses and more severe hearing loss requiring more low frequency amplification

Difficult to overcome the Vent Effect

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Vent Effect

The size of the vent influences the effect of sound leakage both into and out of the ear canal



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Acoustic Properties

The same dome will vary in how it affects different ears

Choosing a tip which is too small
= increases leakage and the VE

Choosing a tip which is too large
also increases leakage

Acoustic Alterations for Earmolds

Venting: modifies low frequencies

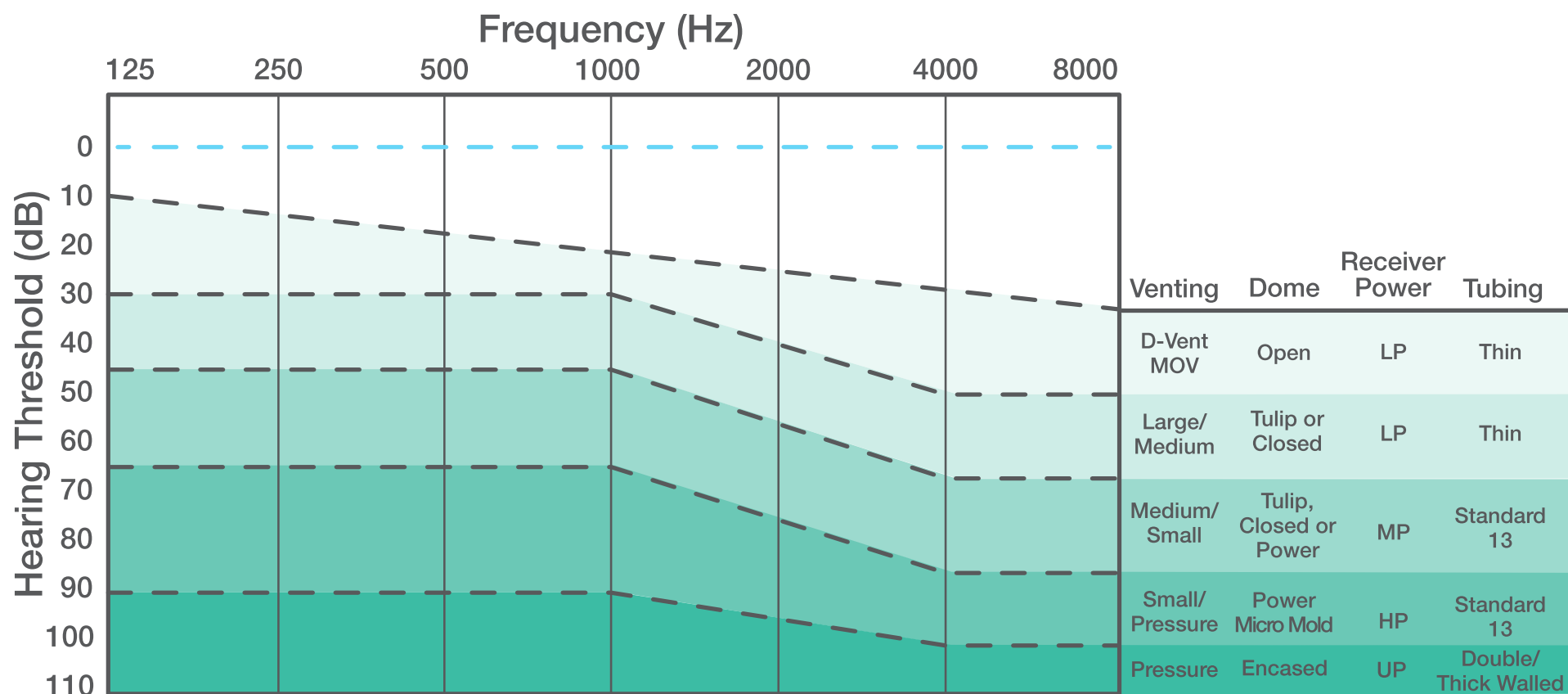
Damping: Smooths out the mid frequencies

Horns: Modifies high frequencies

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Vent Modification & Effect Chart



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Summary of Taking an Ear Impression outcomes

Demonstrate the proper impressing techniques and procedures for taking an ear impression.

Identify important anatomical landmarks of the ear which are necessary for a good earmold impression.

Evaluate an ear impression for accuracy, fit and retention.

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Q&A With Kathy



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