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University of
Pittsburgh

Comparing Cochlear's Osia 2 to Other Bone Anchored Hearing Devices, presented in partnership with the University of Pittsburgh

Melanie Lutz, AuD ABA-C



Melanie Lutz, AuD

Melanie Lutz is a clinical audiologist at The UPMC Children's Hospital of Pittsburgh. She is the audiology liaison to the Congenital Ear Clinic multidisciplinary team. Melanie performs a wide range of diagnostic testing including behavioral testing and electrophysiologic testing. She also performs amplification management including hearing aids, bone-anchored hearing devices, and cochlear implants. In addition to her clinical work, she is an adjunct professor at The University of Pittsburgh. Melanie also volunteers with The American Academy of Audiology and the Pennsylvania Academy of Audiology.

Disclosures

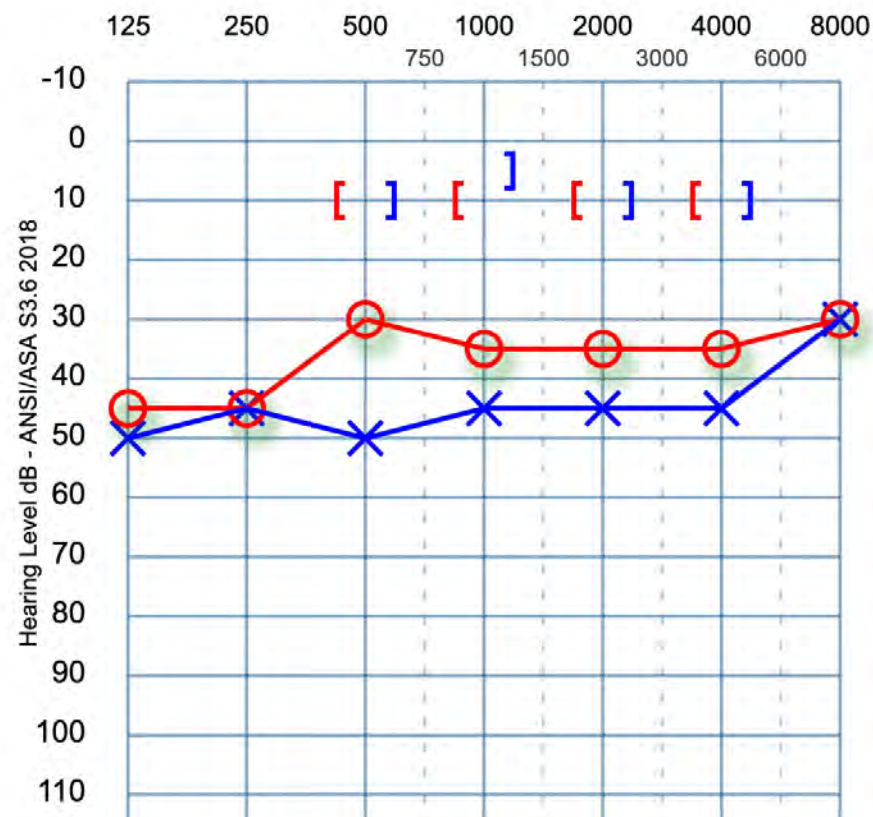
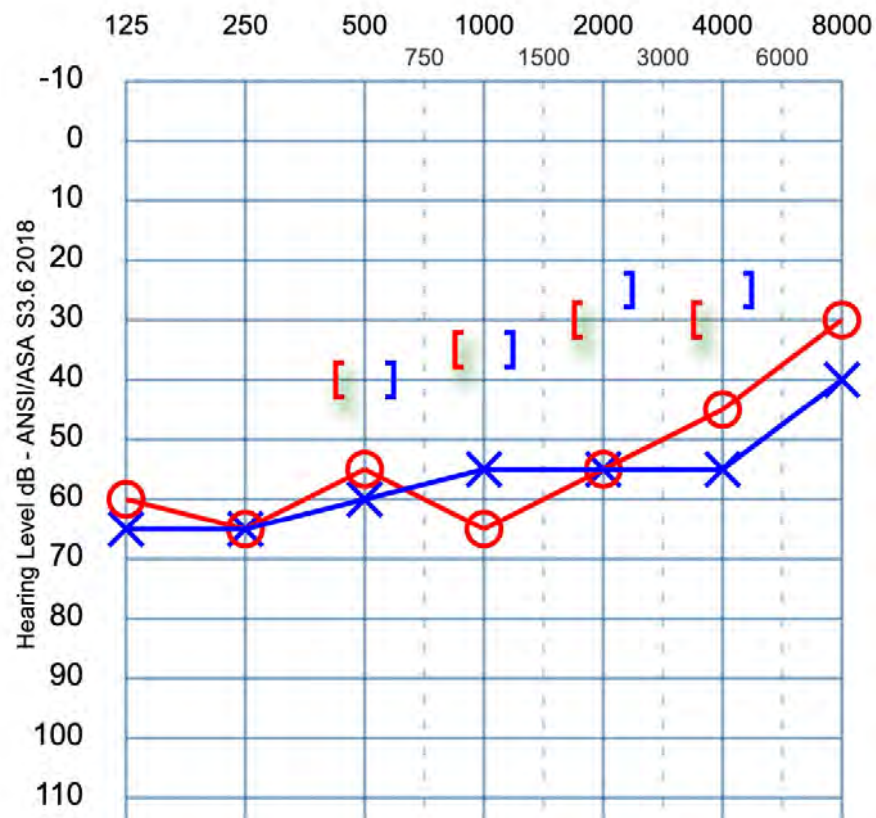
- **Presenter Disclosure:** Financial: Melanie Lutz is an employee of The UPMC Children's Hospital of Pittsburgh. Non-financial: Melanie Lutz has no relevant non-financial relationships to disclose. AudiologyOnline is making a donation to the audiology program at the University of Pittsburgh for this presentation.
- **Content Disclosure:** This learning even focuses on specifically the Cochlear Osia 2 device and compares it to other bone anchored hearing devices.
- **Sponsor Disclosure:** This course is presented by the University of Pittsburgh in partnership with AudiologyOnline.

Learning Outcomes

After this course, participants will be able to:

- Identify characteristics of a bone anchored hearing device (BAHD) candidate.
- Describe the offerings of the Cochlear Osia device.
- Compare the Cochlear Osia to other BAHD options.

Introduction



Introduction

- Amplification options for conductive and mixed hearing loss
- BAHD options
- Cochlear™ Osia® System is a new offering for this patient population

Conductive/Mixed Hearing Loss

- Surgery or amplification?
- Many conductive/mixed hearing losses can be medically managed
- Persistent conductive component remaining post-treatment requires amplification

Conductive/Mixed Hearing Loss

- Air conduction or bone conduction amplification?
 - Anatomy and etiology
 - Size of air-bone gap
 - Patient preference
- Hearing aid performance decreases as air-bone gap increases
- BAHD performance is not impacted

Conductive/Mixed Hearing Loss

- Gain/output needs of conductive/mixed hearing loss
 - More amplification needed to overcome air-bone gap
 - Prescriptive formula will be different than a sensorineural hearing loss
- BAHD does not need to overcome air-bone gap

Candidacy for BAHD

- Surgical vs non-surgical
- Transcutaneous vs percutaneous
- General candidacy
 - When traditional hearing aids are not appropriate
 - Air-bone gap of greater than 30-35 dB HL

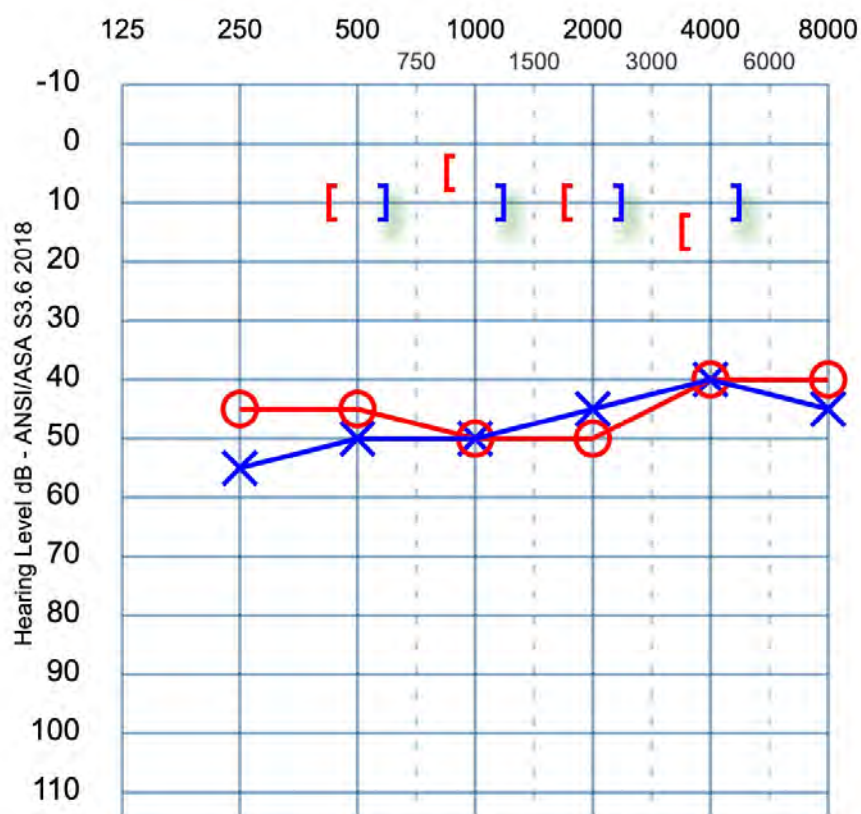
Candidacy for BAHD

- Additional considerations
 - Inability to occlude ear canal
 - Anatomical malformation (congenital or acquired)
 - Microtia and/or atresia
 - Severe ear canal stenosis
 - Chronic otitis media
 - Single Sided Deafness*

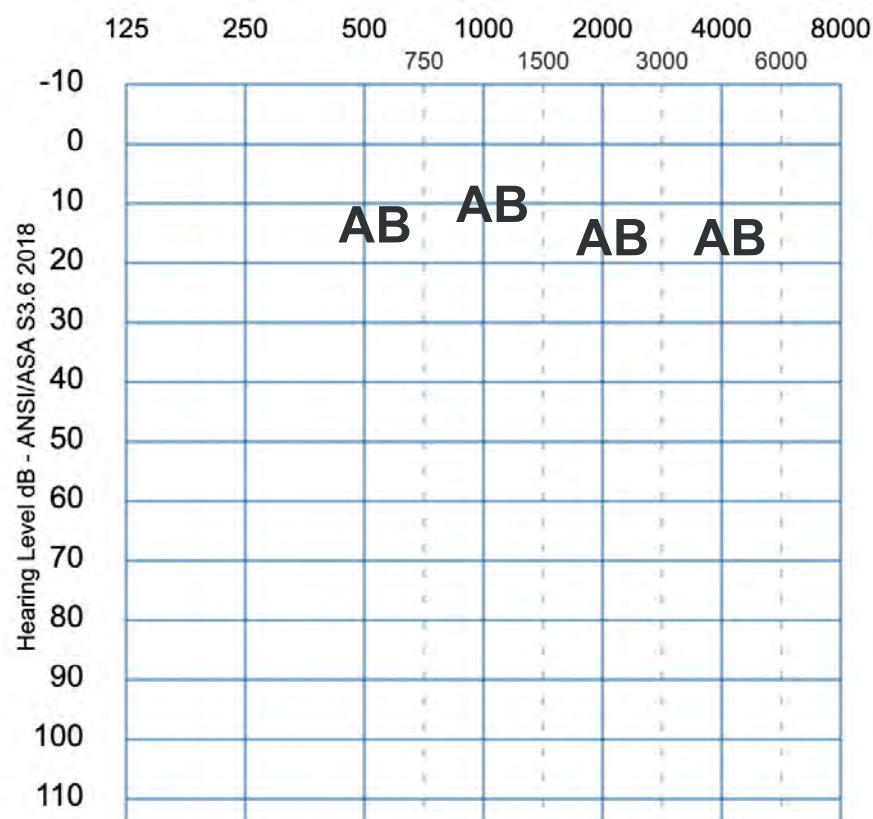
Candidacy for BAHD: Case Study

- 9-year-old with bilateral conductive hearing loss
 - Recurring otitis media with effusion and bilateral cholesteatoma
 - Frequent drainage
 - Previously wore traditional behind-the-ear hearing aids with ear molds
- Multiple otologic surgeries

Candidacy for BAHD: Case Study



Unaided



BAHA 6 Max on Sound Arc

BAHD Amplification Options

- Implanted
 - Transcutaneous
 - Percutaneous
- Non-Implanted
 - Head band
 - Soft band
 - Sticker
 - SoundArc

BAHD Amplification Options

- Non-implanted BAHD
 - No FDA criteria
 - Processor firmly held against skin
 - Transducer limitations
 - Aesthetics
 - High cost, poor reimbursement

BAHD Amplification Options

- Percutaneous
 - Abutment protrudes through bone and skin
 - BAHD transmits vibrations to skull through abutment
- Transcutaneous
 - Internal component implanted into skull
 - Coupled with magnetic plate
 - BAHD connects via magnet and vibrations sent through skin

BAHD Amplification Options

- Percutaneous Advantages
 - Vibrations directly to skull
 - Retention
 - Less pressure against skin
- Transcutaneous Advantages
 - Aesthetics
 - Easy to put on and take off
 - Lower risk of complication of incision site

BAHD Amplification Options

- Percutaneous Limitations
 - Infection and/or skin overgrowth
 - 3-6 months for osseointegration
 - Risk of head trauma
- Transcutaneous Limitations
 - Attenuated signal
 - Pressure from magnet
 - Retention

Cochlear™ Osia® System

- Transducer implanted under skin
- Active Piezoelectric implant
 - Improved output, especially at high frequencies
- Slim off the ear external device

The Cochlear™ Osia® System

Cochlear™ Osia® OSI300 Implant
with Piezo Power™ transducer and
next-generation 3.0 T magnet



**Cochlear™ Osia® 2(I)
Sound Processor**

**Only active system
enabling MRI at 3.0
T^{2*} High-frequency
power
& performance¹**

*The OSI300 implant is MR conditional at 1.5 T and 3.0 T with magnet in place. Refer to Osia MRI guidelines for further information.

1. Osia System R5 Datasheet. Cochlear Limited, Australia. 2023; D1991788
2. MRI Checklist for MED-EL Bone Conduction Implant BCI 602 MED-EL Elektromedizinische Geräte GmbH, Austria; AW52878_1.0 (English US)

Cochlear™ Osia® System

- Limitations of current electromagnetic technology
- Advantages of piezoelectricity
- Slim piezo-powered transducer
- MRI compatible

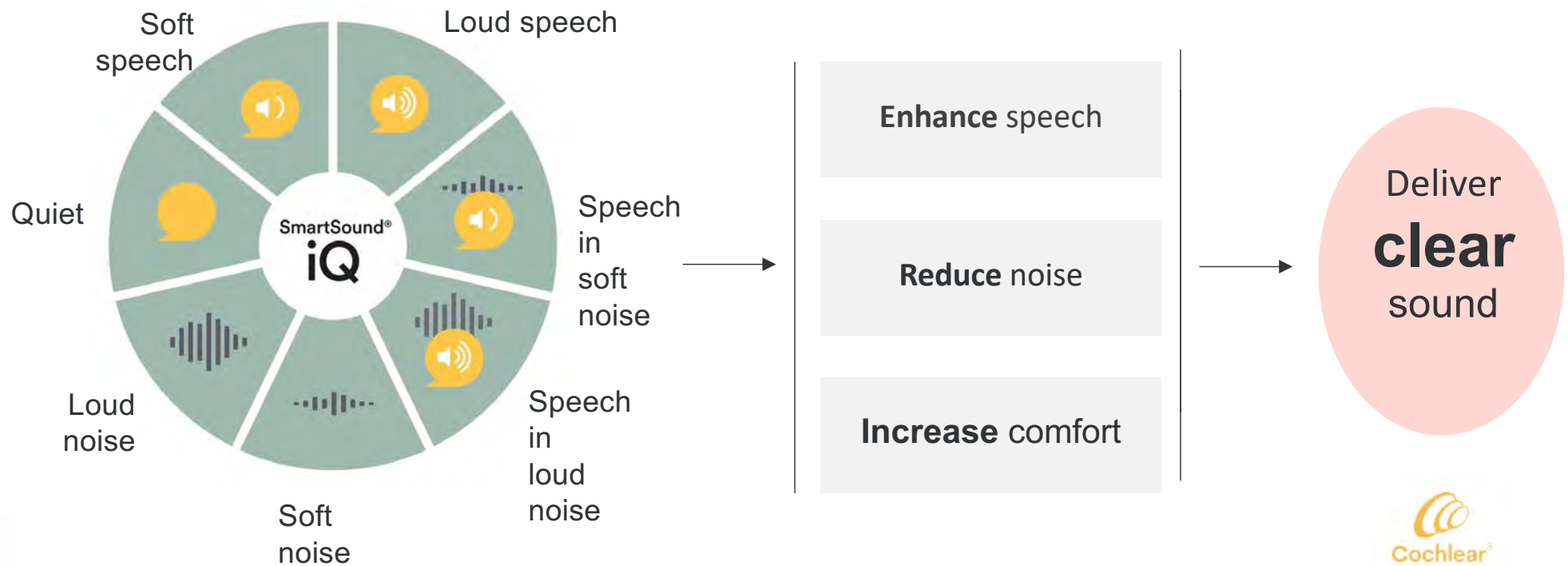
Cochlear™ Osia® System

- Fixed distance between microphone and actuator
- Less feedback
- Straightforward surgery

Cochlear™ Osia® System

- Signal processing
- Ease of use
- New fitting software updates
 - Osia 2.1 Fitting Software
 - Data logging

SmartSound[®] iQ Signal Processing

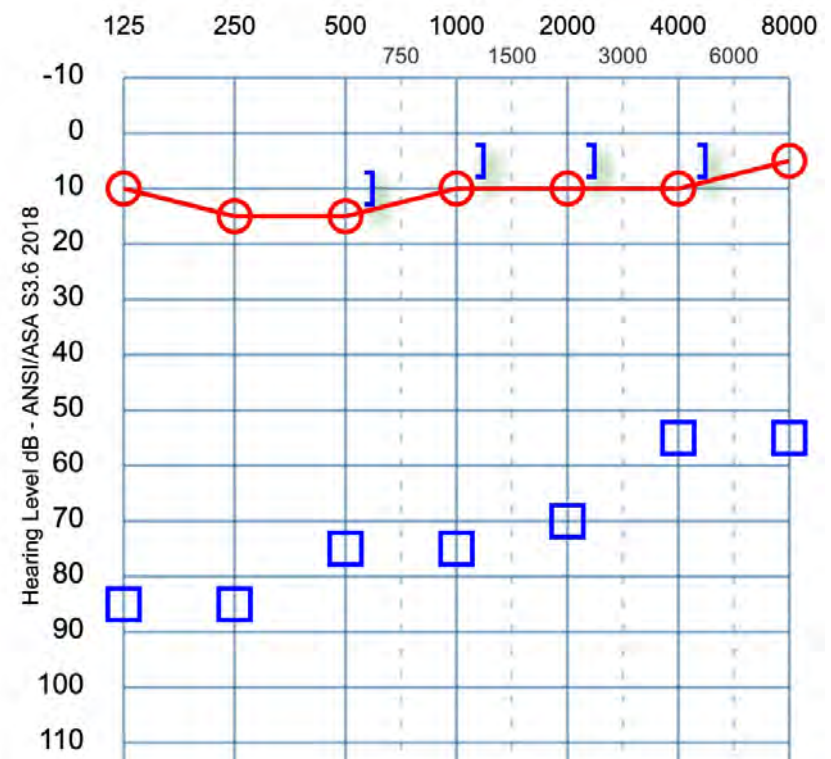


Cochlear™ Osia® System: U.S. Indications

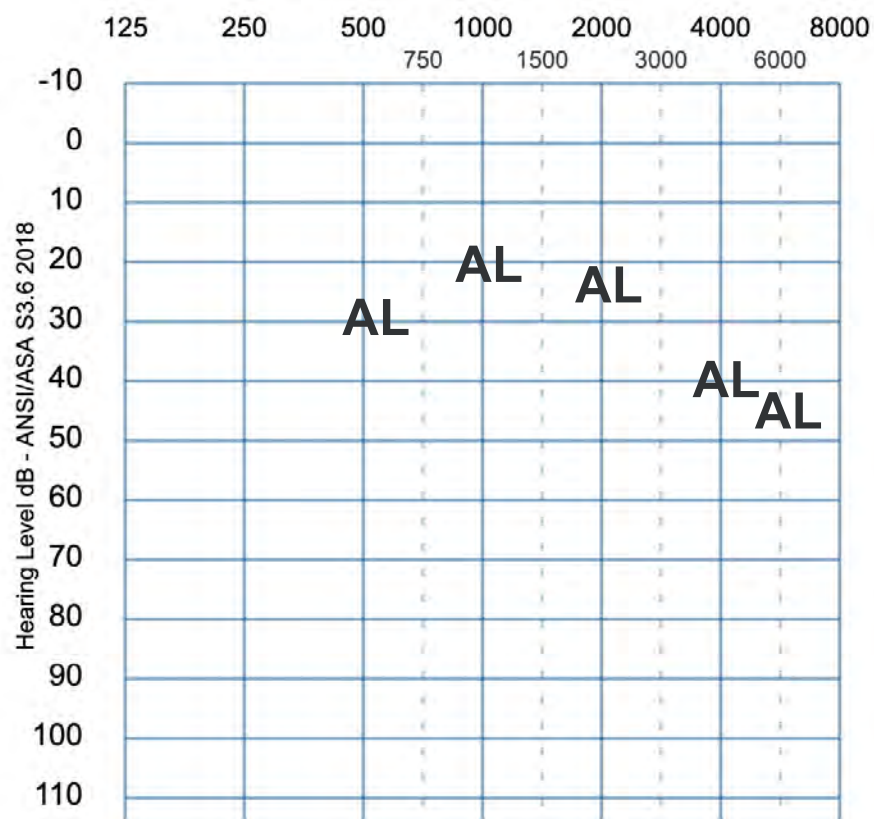
- Patients 12 years or older
- Single sided deafness defined as air conduction PTA equal to or better than 20 dB at 0.5, 1, 2, & 3 kHz
- Conductive or mixed hearing loss wherein bone conduction PTA is equal to or better than 55 dB at 0.5, 1, 2, & 3 kHz

Cochlear™ Osia® System: Case Study

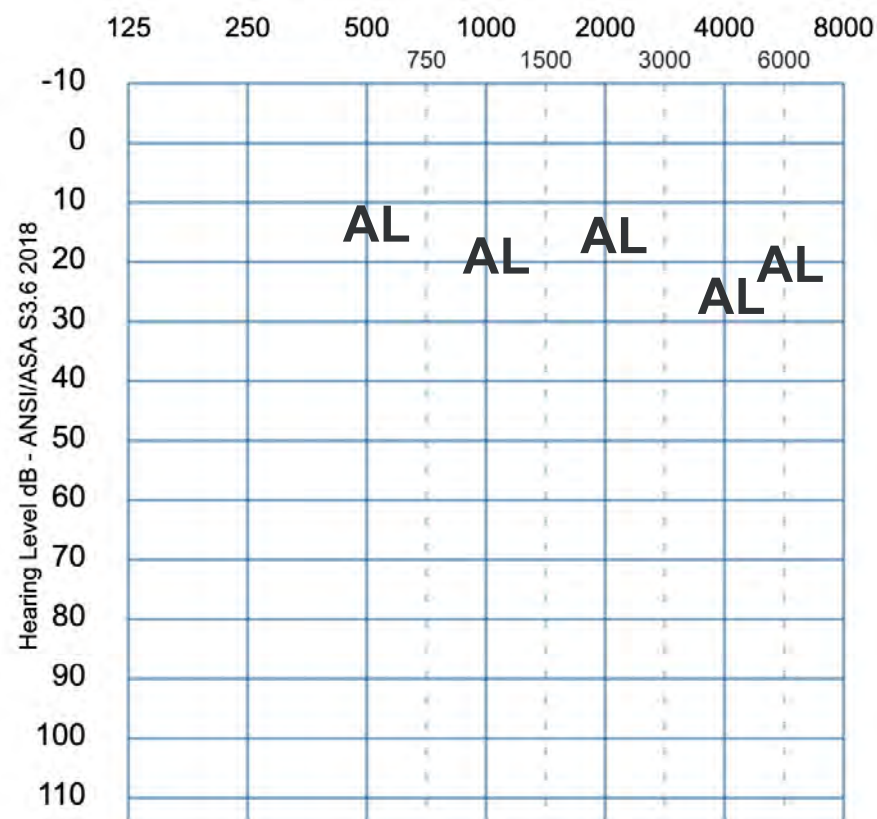
- 15-year-old with left microtia/atresia
- Previously wore Cochlear BAHA 5 on soft band



Cochlear™ Osia® System: Case Study



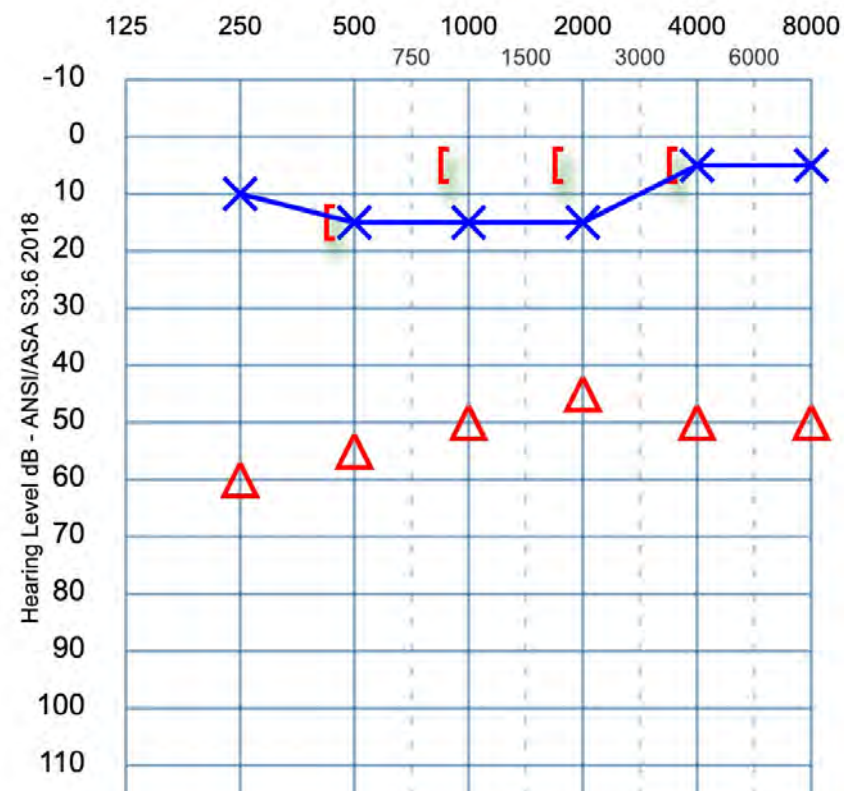
Cochlear BAHA 5 on soft
band



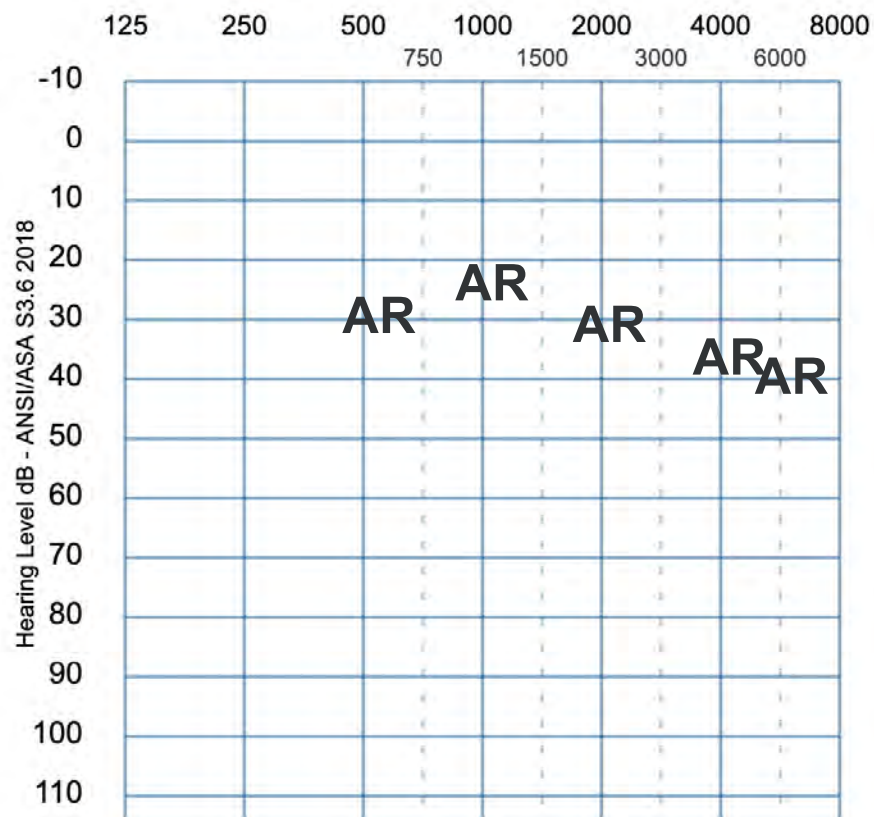
Cochlear Osia

Cochlear™ Osia® System: Case Study

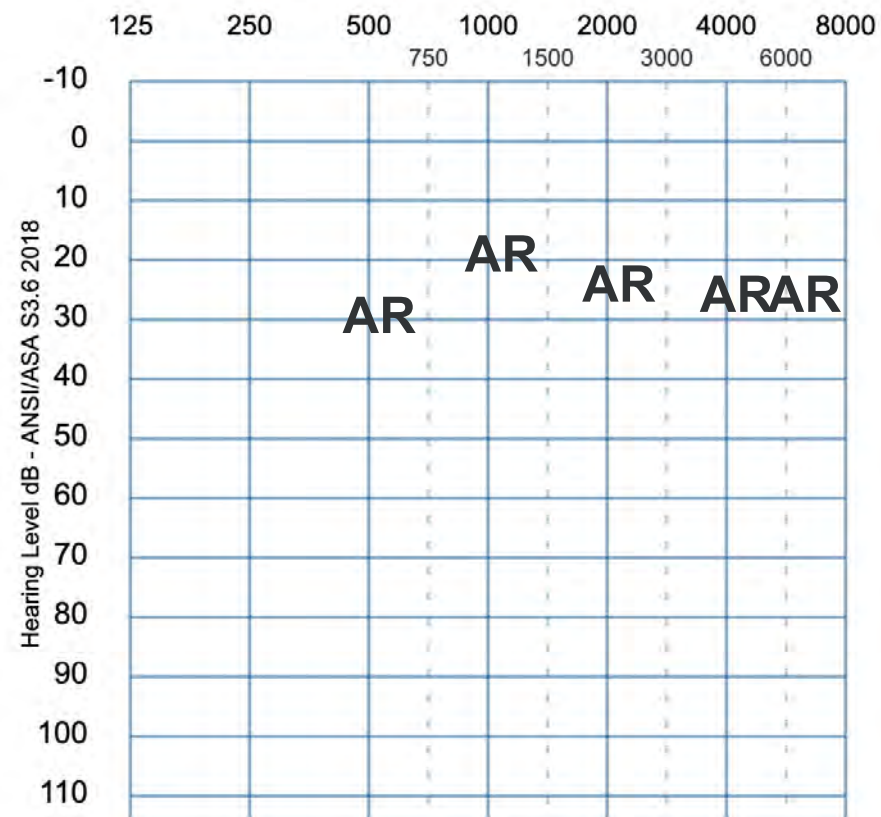
- 7-year-old with right microtia/atresia
- Previously wore Cochlear BAHA 6 Max on soft band



Cochlear™ Osia® System: Case Study



Cochlear BAHA 6 Max on soft
band



Cochlear Osia

Summary

- Conductive and mixed hearing losses may require alternative management approach
- There are many BAHD options for patients, both surgical and non-surgical
- Providers must understand each BAHD to best support patients

Summary

- Cochlear's Osia[®] System is a unique offering with several key advantages
 - Less feedback risk
 - More gain, especially in high frequency region
 - Aesthetic features
 - MRI compatible

Thank You!

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