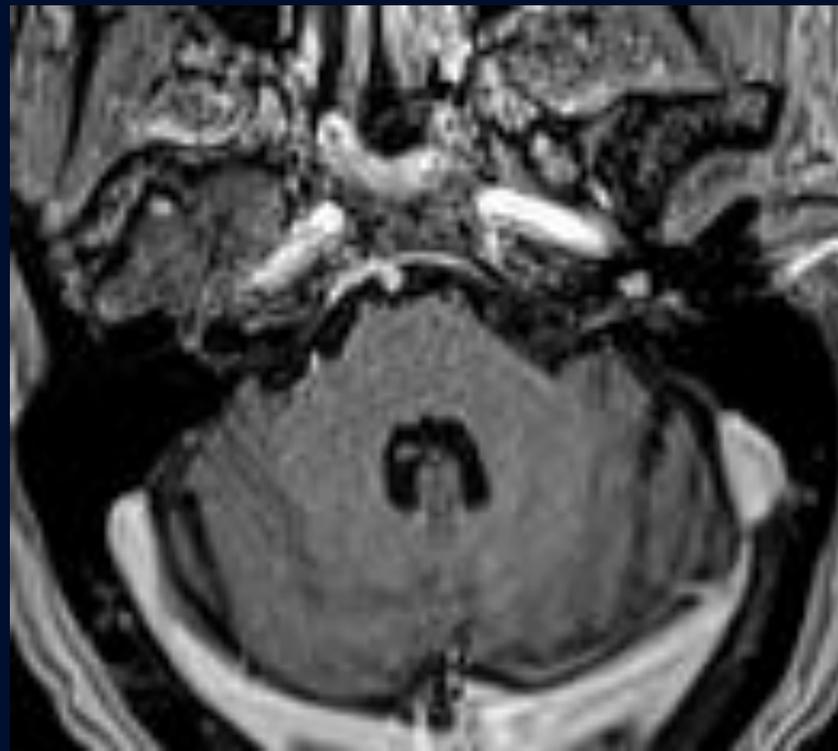
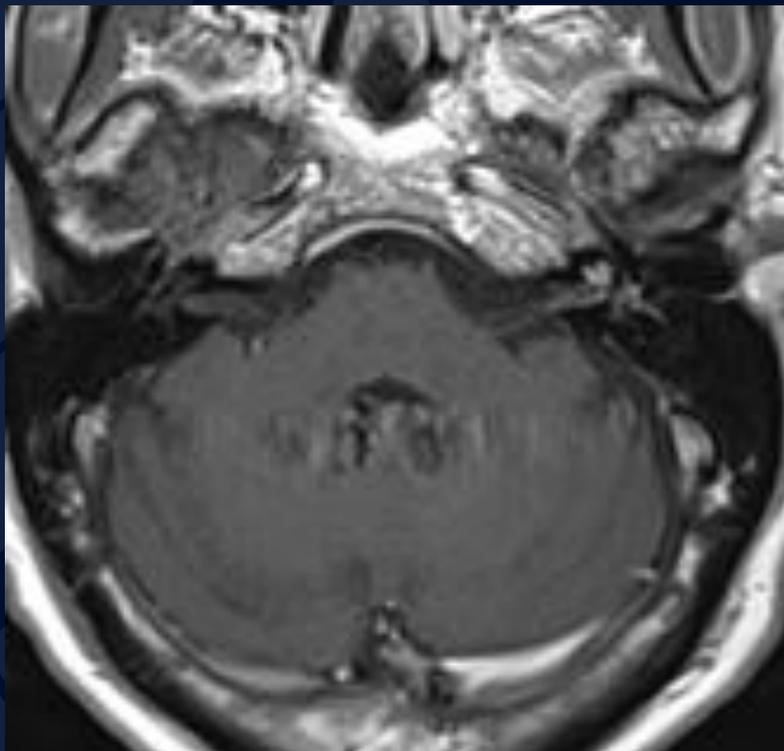
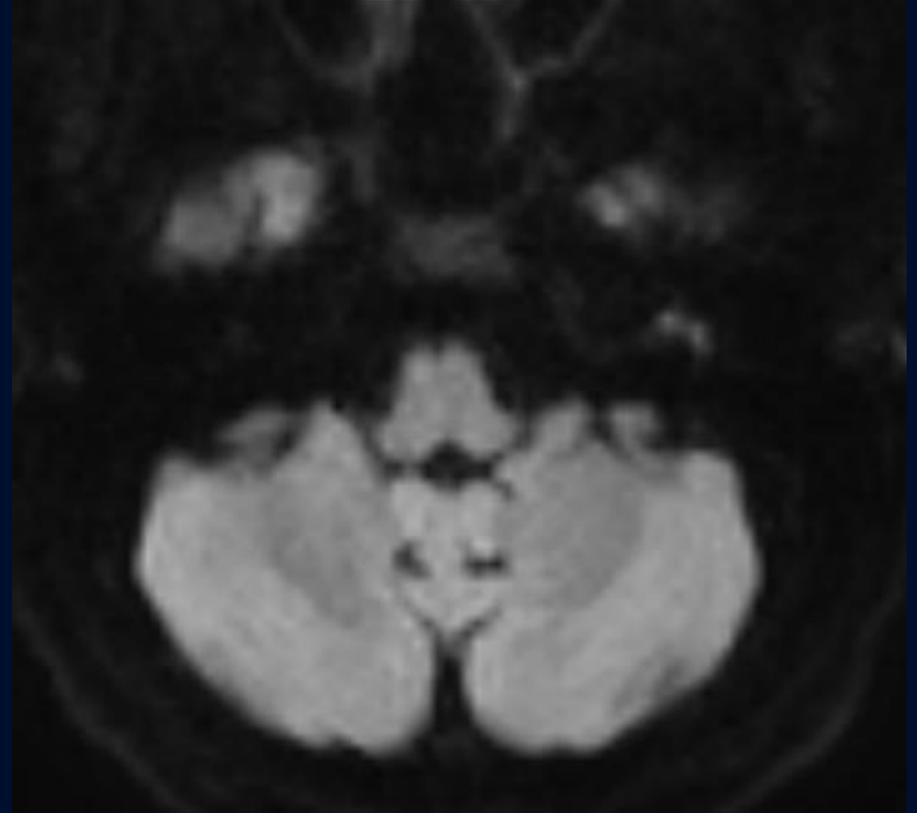
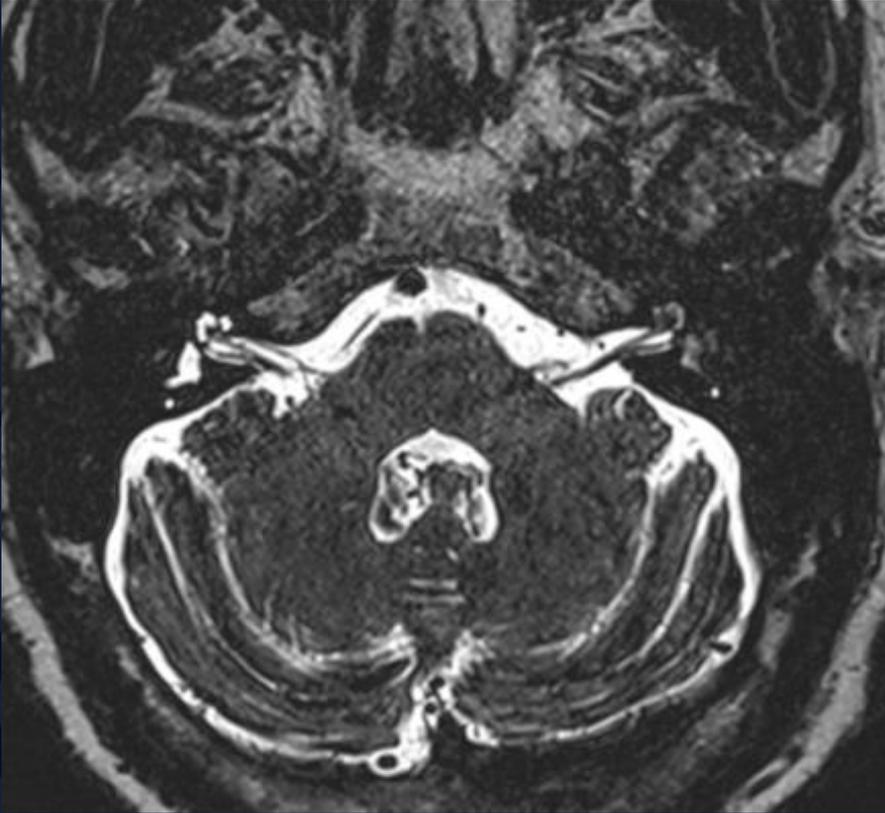


# Complete left-sided sensorineural hearing loss.

John A. Cieslak III, MD, PhD  
Leo Wolansky, MD





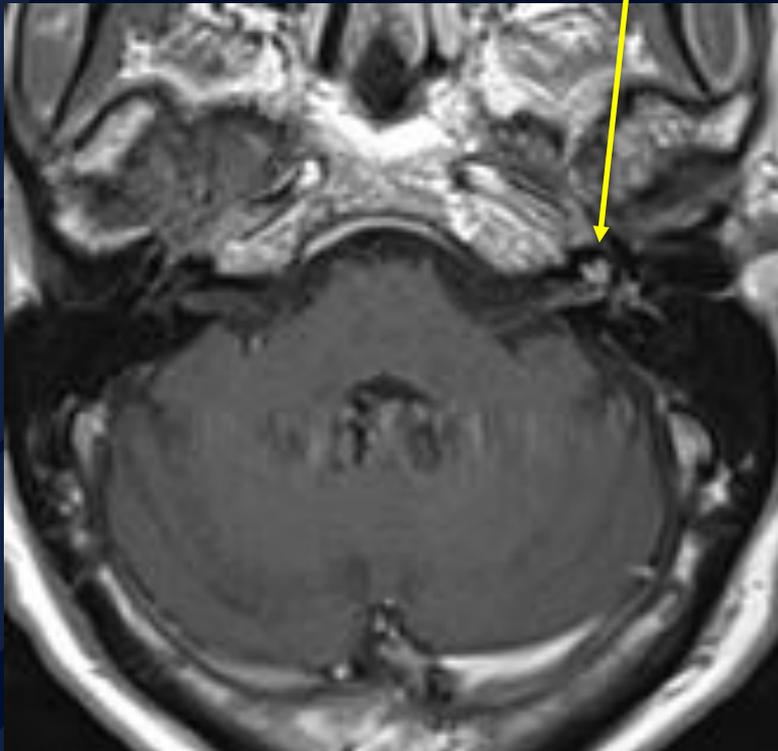
A large, stylized oak leaf graphic in a dark blue color, positioned on the left side of the slide. It features detailed vein patterns and a lobed edge.

?

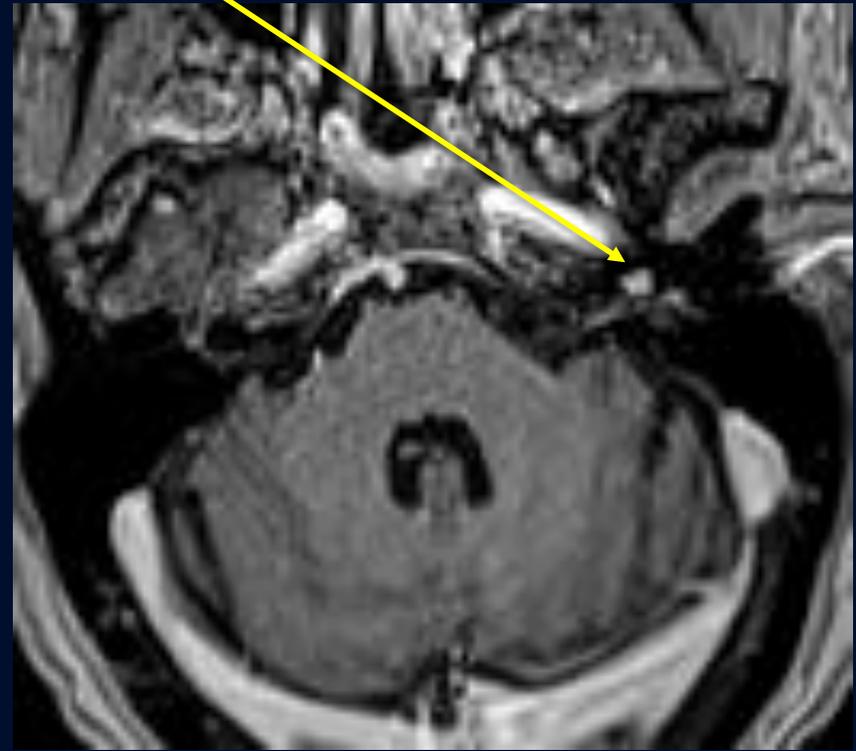
A large, stylized oak leaf graphic in a dark blue color, positioned on the left side of the slide. The leaf has a prominent central vein and several smaller veins branching off, with a scalloped edge.

# Acute Labyrinthitis

Enhancement of the  
labyrinth on the left



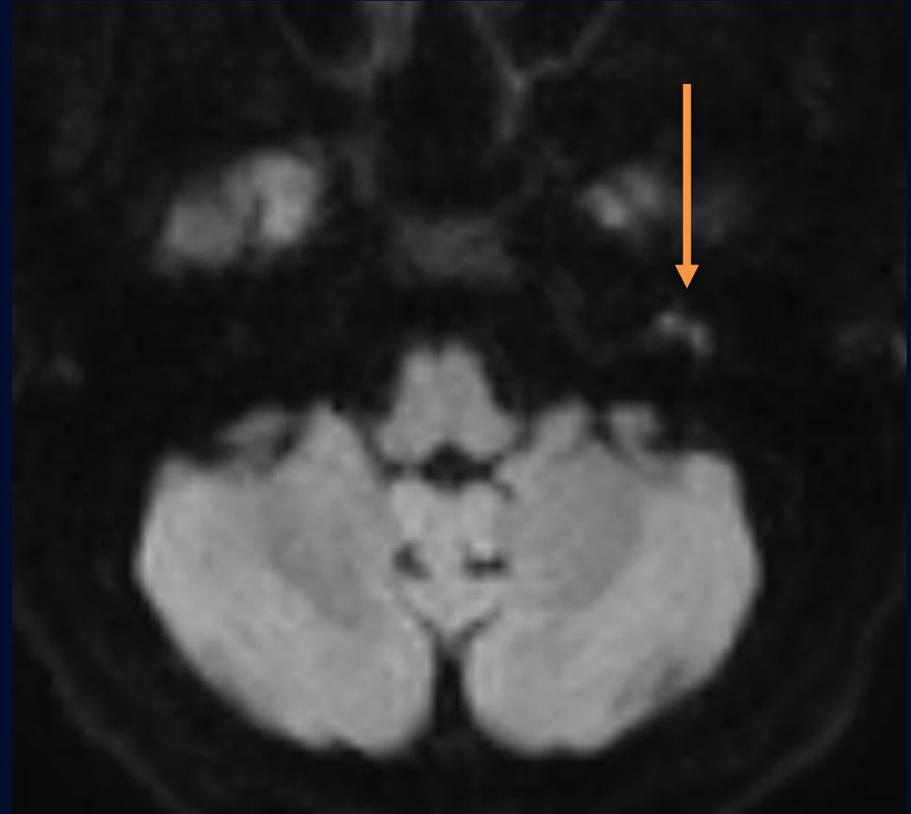
T1-weighted MRI  
image, with contrast,  
axial (2D-FT)



T1-weighted MRI  
image, with contrast,  
axial (3D-FT)



T2-weighted MRI image, axial  
Hypointensity of the labyrinth on affected  
side (yellow arrow)



Diffusion-weighted MRI image, axial  
Restricted diffusion in the affected labyrinth  
(orange arrow)

# Labyrinthitis

- Inflammation of the membranous labyrinth in the inner ear.
- Patients present with vertigo, hearing loss, fever, tinnitus, otorrhea, otalgia.
- Ddx: Vertebrobasilar insufficiency, cerebellar infarct, drug-induced vertigo or hearing loss, presyncope.

# Labyrinthitis

- Etiologies:
  - Tympanogenic
    - Complication of acute mastoiditis with spread of infection from the middle ear to inner ear via the round or oval window.
    - Typically unilateral.
  - Traumatic
    - Post- temporal bone fracture with perilymphatic fistula formation.
  - Meningogenic
    - Most frequently bacterial, typically causing bilateral labyrinthitis, and seen most frequently in children. Most common cause of acquired deafness.
  - Hematogenic
    - Most frequently viral, after respiratory tract infections. Controversial if hematogenous spread is real or direct infection from the middle ear.

# Labyrinthitis

- MRI Findings:
  - Enhancement of the labyrinth on post-contrast T1-weighted images.
  - T2 hypointensity of the affected side in comparison to the normal side.
  - Restricted diffusion.

# References:

1. Radiopedia
2. Boston ME, Strasnick B. Labyrinthitis Workup. eMedicine website. Last updated: January 23, 2017. Accessed April 10, 2018.
3. Verbist BM. Imaging of sensorineural hearing loss: a pattern-based approach to diseases of the inner ear and cerebellopontine angle. *Insights Imaging*. 2012; 3(2): 139-154.
4. Mark AS, Seltzer S, Harnsberger HR. Sensorineural hearing loss: more than meets the eye?. *American Journal of Neuroradiology*. 1993; 14(1): 37-45.
5. Davidson HC. Imaging evaluation of sensorineural hearing loss. *Seminars Ultrasound CT MR*. 2001; 22(3): 229-249.