



SCHOOL OF
MEDICINE

DEPARTMENT OF SURGERY

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OTOLOGY, NEUROTOLOGY & SKULL BASE SURGERY

Vertigo

Perspectives and Approaches for the Primary Care Provider



Objectives

- Overview of the systems that influence perception of equilibrium and balance
- Provide a framework for how to evaluate patients complaining of dizziness
- Summarize surgical treatments for dizziness and explain how neurotologist approach patients with dizziness
- Review Case Studies of common presentations

56-year-old female presents with a 3-day history of episodic spinning vertigo. The dizziness comes on suddenly and lasts for about one minute.

78-year-old male with a history of diabetes, hypertension and OSA is reports with his wife complaining of dizziness and imbalance that have progressed over the last 2 years after a COVID infection.

47-year-old female with a history of palpitations, anxiety disorder and migraine headaches presents with a 6-month history of episodic imbalance and motion intolerance associated with nausea.

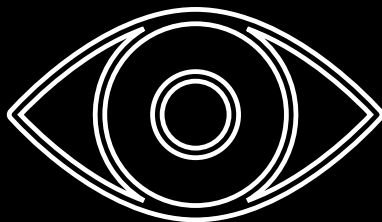
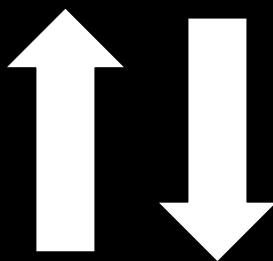
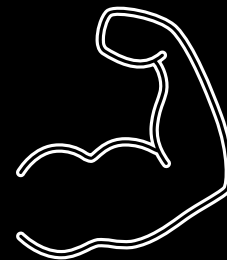
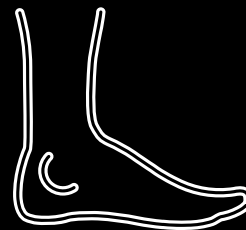
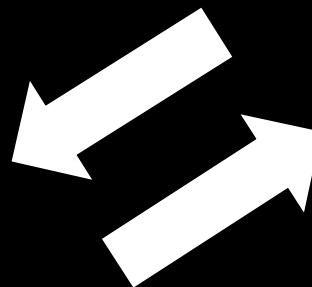
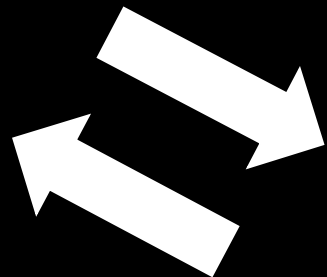
51-year-old male reports complaining of episodes of severe severe spinning sensation that last for 3-4 hours. These are disabling and occur about twice each month.

Definitions

- Dizziness
- Vertigo
- Imbalance
- Lightheaded, Syncope
- Motion Intolerance

Epidemiology

- Prevalence of dizziness in adults 20%
- Prevalence of dizziness from peripheral vestibular disorder 5%, incidence 2%
- Age
- Imbalance
- M:F 1:2.5
- 80% of peripheral vestibular disorders are BPPV
- Vestibular migraine under-diagnosed, Meniere's over-diagnosed



Initial Evaluation

- Start
- Sudden/Gradual
- Event
- Sensation
- Episodic/Constant
- Duration
- Frequency
- Associated Symptoms
- Better/Worse
- Work up/Treatment

Initial Evaluation

Past Medical History

- Diabetes
- Hyper/Hypotension
- CV Risk Factors
- Neck/Spine
- Migraine
- Thyroid Disease
- OSA
- Medications

Initial Evaluation

Physical Exam

- Ears
- Eyes
- Neuro Exam

Do Not Miss!

- Brain Tumor
- Significant Cardiac Pathology
- Neurodegenerative Disorder
- Cerebrovascular Event

HINTS Test

HINTS to Diagnose Stroke in the Acute Vestibular Syndrome

Three-Step Bedside Oculomotor Examination More Sensitive Than Early MRI Diffusion-Weighted Imaging

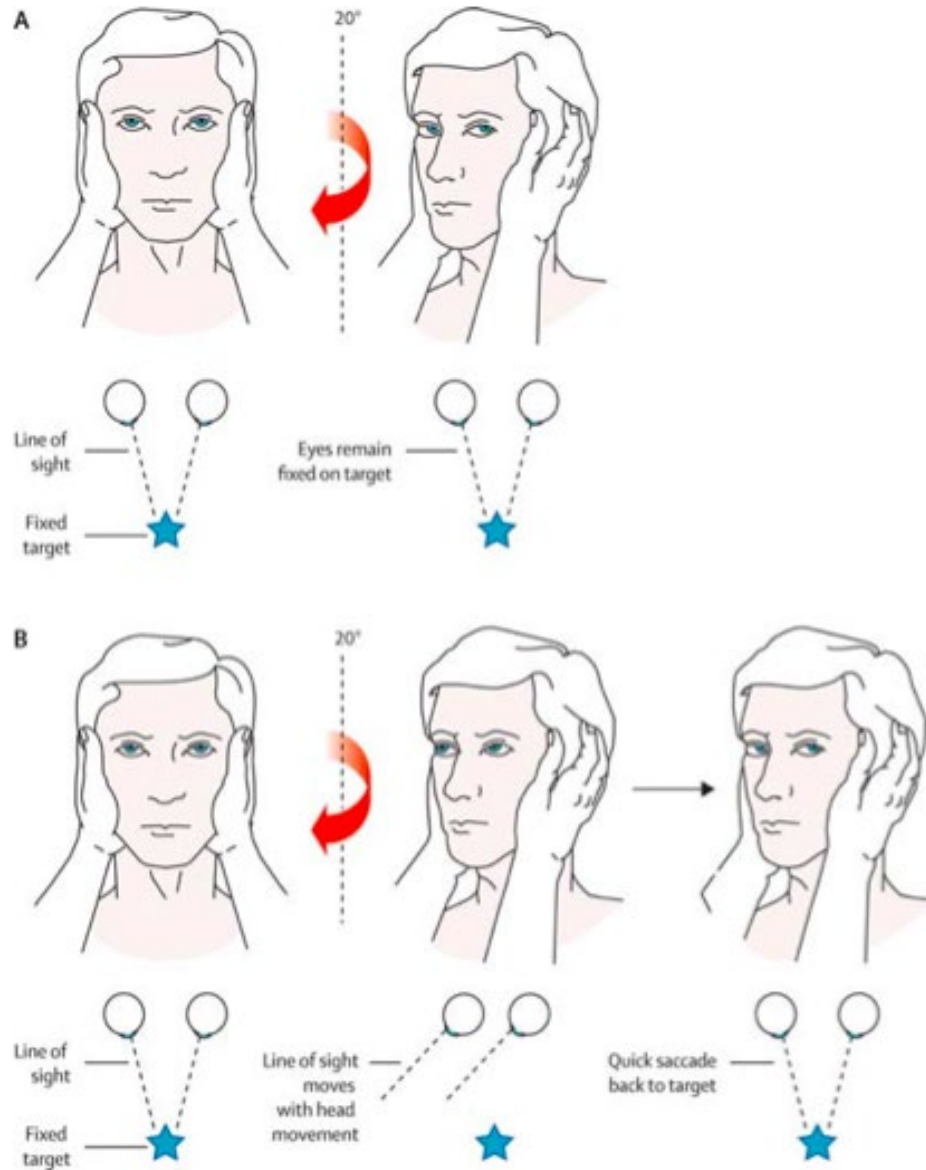
Jorge C. Kattah, MD; Arun V. Talkad, MD; David Z. Wang, DO;
Yu-Hsiang Hsieh, PhD, MS; David E. Newman-Toker, MD, PhD

Stroke. 2009;40:3504-3510.

Acute Vestibular Syndrome

HINTS

- 101 patients with ≥ 1 stroke risk factor
- 100% sensitive, 96% specific
- Head Impulse sensitive, less specific
- Skew less sensitive, more specific
- MRI DWI <48hrs - 12% false negatives

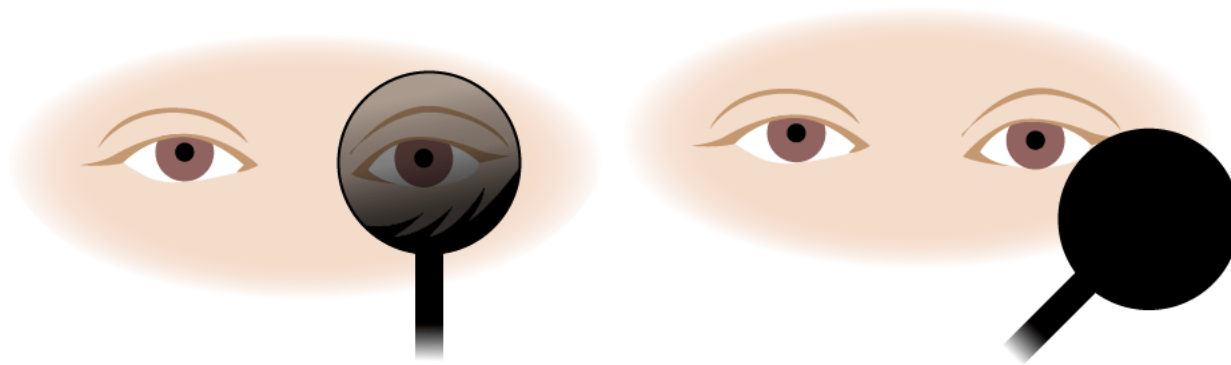


Head Impulse

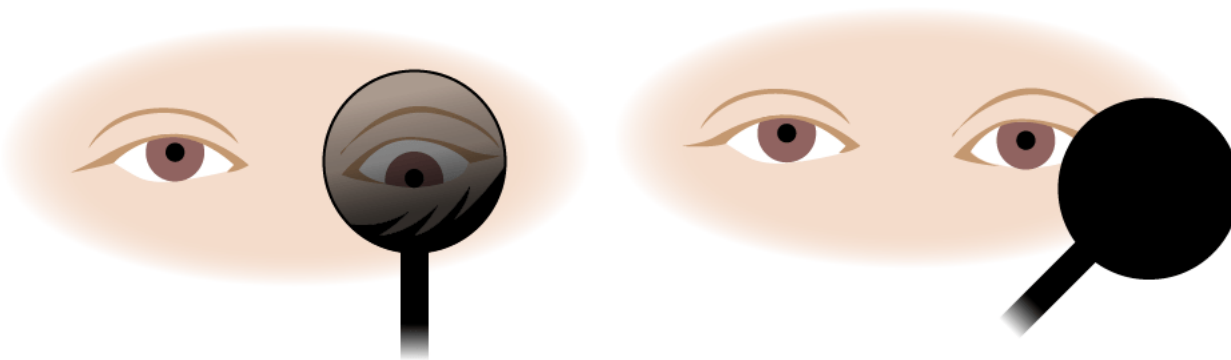


Nystagmus

Normal



Abnormal



Test of Skew

Interpretation

Test	Central Origin	Peripheral Origin
Head Impulse Test	Normal test result -patient keeps visual focus with quick head movement	Abnormal test result - patient loses focus with quick head movement indicating VOR is not intact
Nystagmus	Bidirectional or vertical	None or unidirectional
Test of Skew	Abnormal correction (98% specific ^[3])	Normal, no skew

Neurotologist

Can Do

- Take a detailed history
- Interpret Audiograms and Vestibular Testing
- Interpret Neuroimaging Examinations
- Provide Surgical Treatments for Unilateral Unstable Peripheral Vestibular Disorders

Neurotologist **Can't Do**

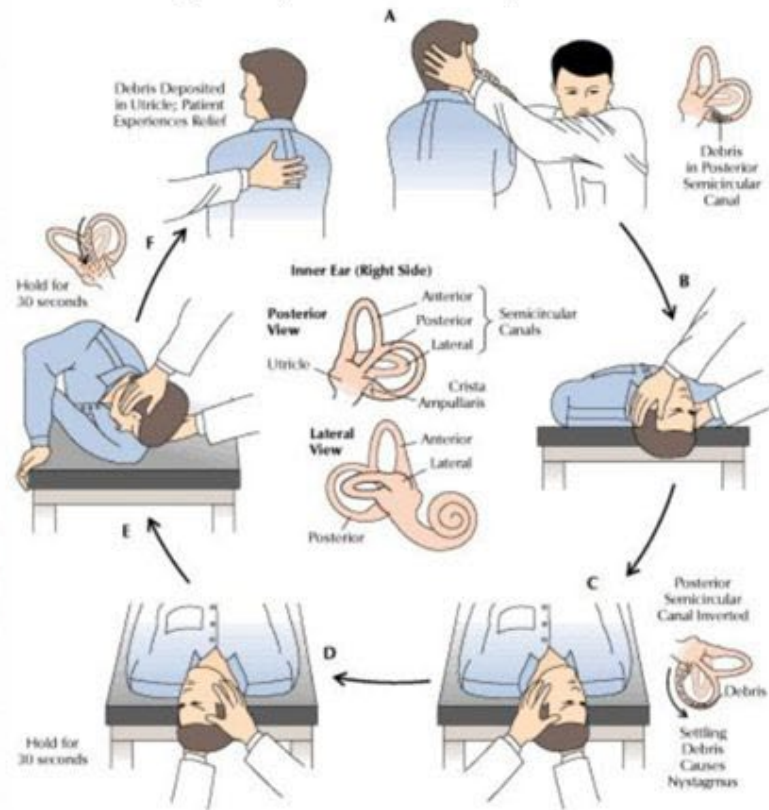
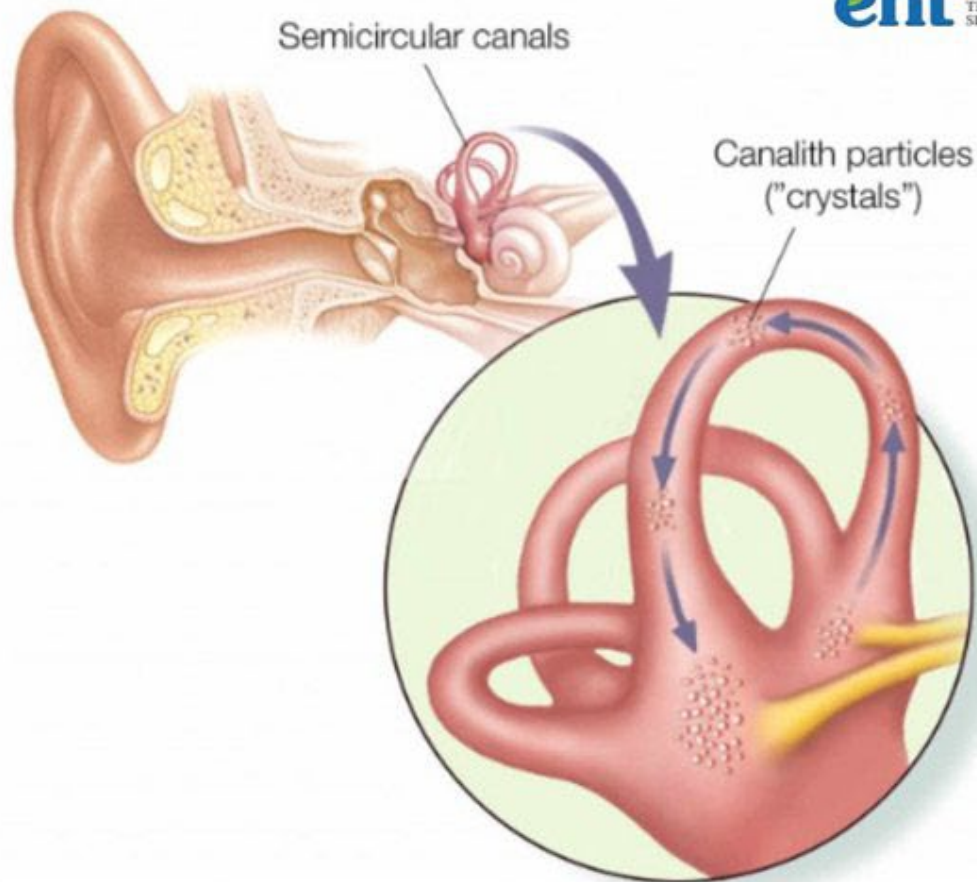
- Bring Peripheral Vestibular Function Back
- Treat Migraine
- Treat Chronic Imbalance
- Treat CNS disease

BPPV

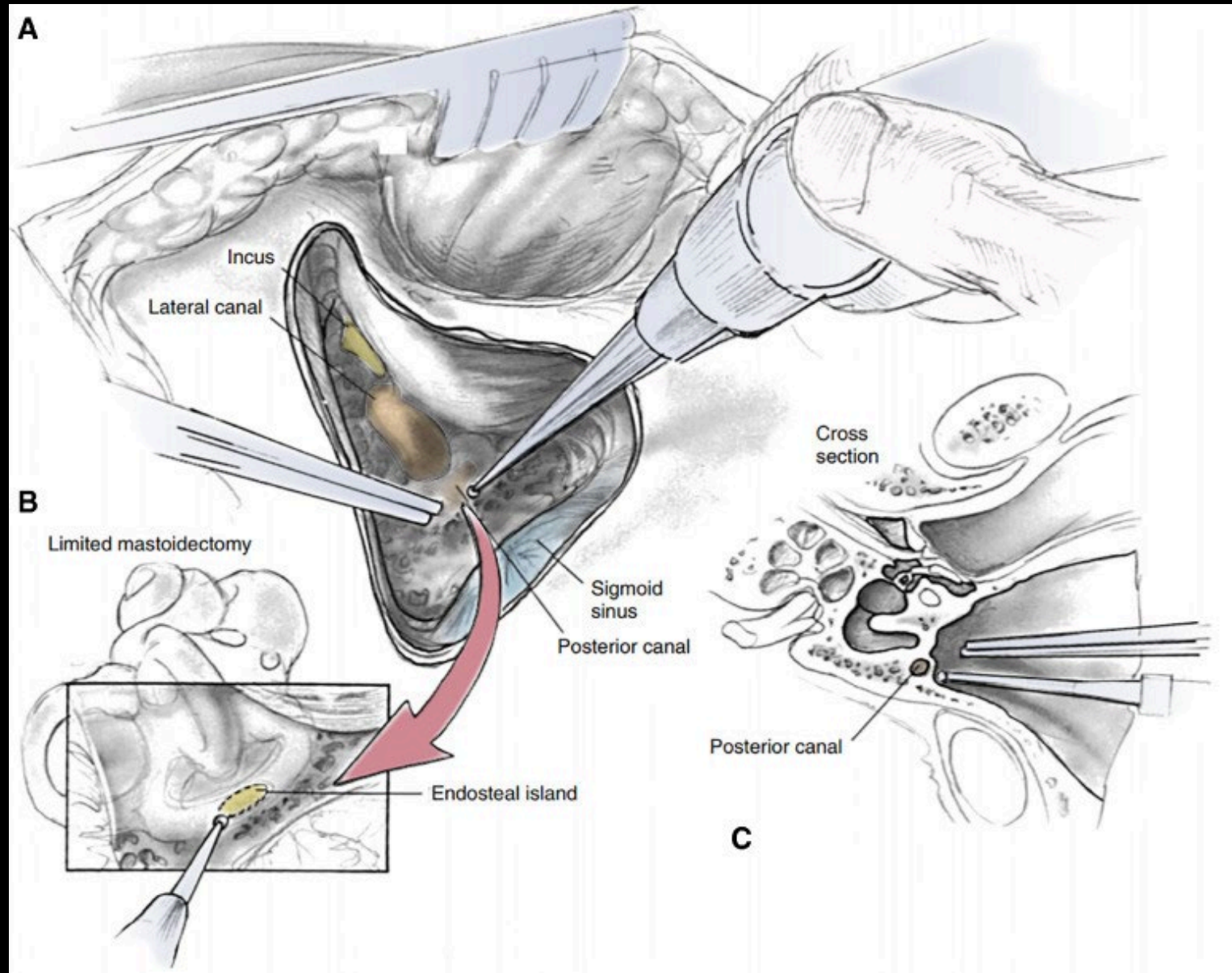
Benign Paroxysmal Positional Vertigo

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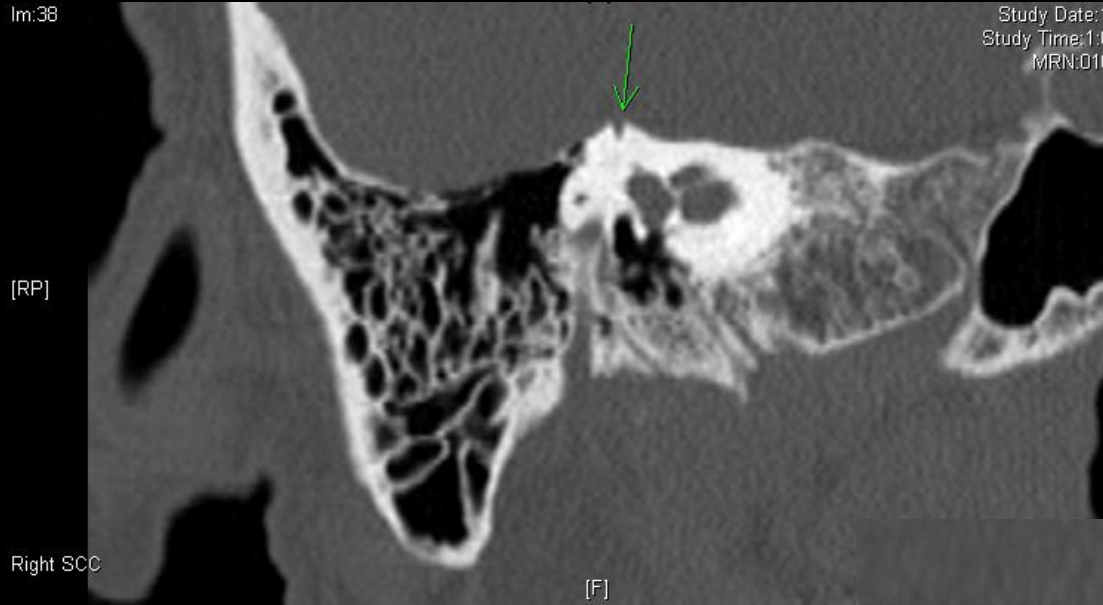
Epley Maneuver Benign Paroxysmal Positional Vertigo Treatment



Posterior Semicircular Canal Occlusion



Superior Semicircular Canal Dehiscence



Meniere's Disease

- Prevalence 190/100,000
- Overdiagnosed
- Prosper Meniere

AAO Practice Guidelines

Barany Society Criteria

- **Definite Meniere's Disease**

1. 2+ episodes of vertigo lasting 20 min – 12 hours
2. Low frequency hearing loss one ear prior, during or after
3. Fluctuating aural fullness/tinnitus in the affected ear
4. No other likely cause

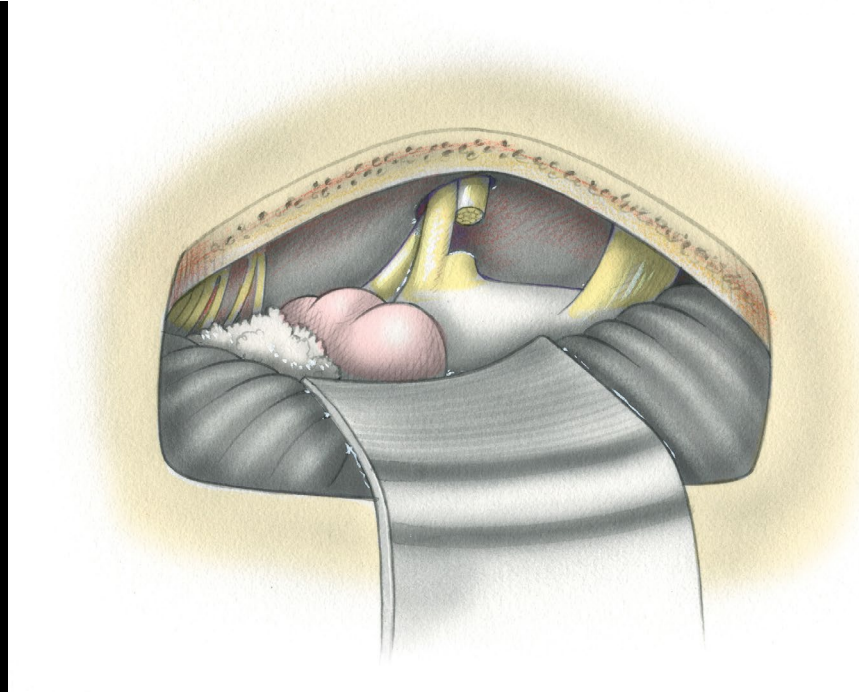
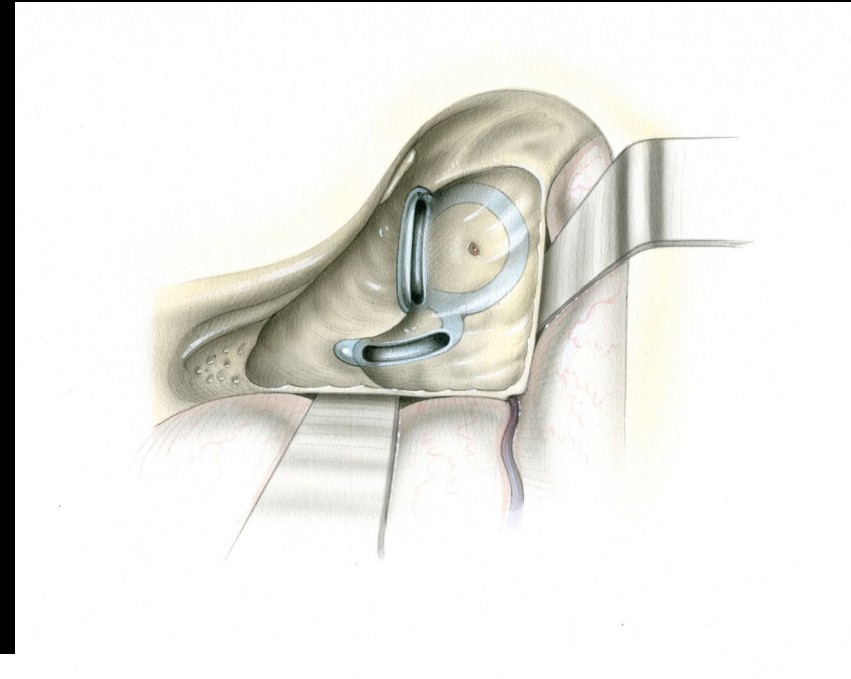
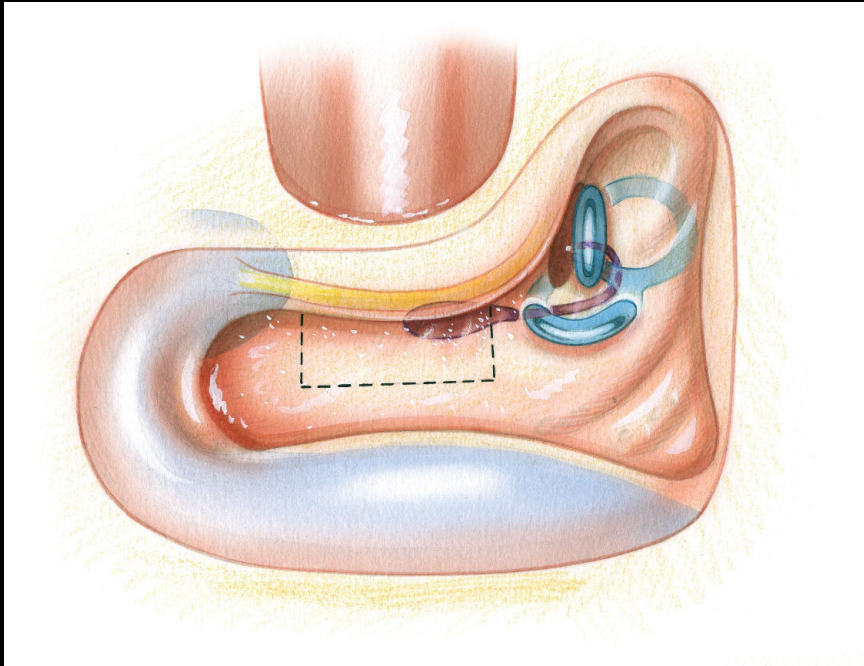
- **Probable Meniere's Disease**

1. 2+ episodes of vertigo lasting 20 min – 24 hours
2. Fluctuating aural fullness/tinnitus in the affected ear
3. No other likely cause

Medical Treatment

- Sodium and caffeine restriction
- Diuretics
- Betahistine
- Oral steroids
- Intratympanic injection

Surgical Treatment



Vestibular Migraine



International Classification of Headache Disorder (ICHD-3)

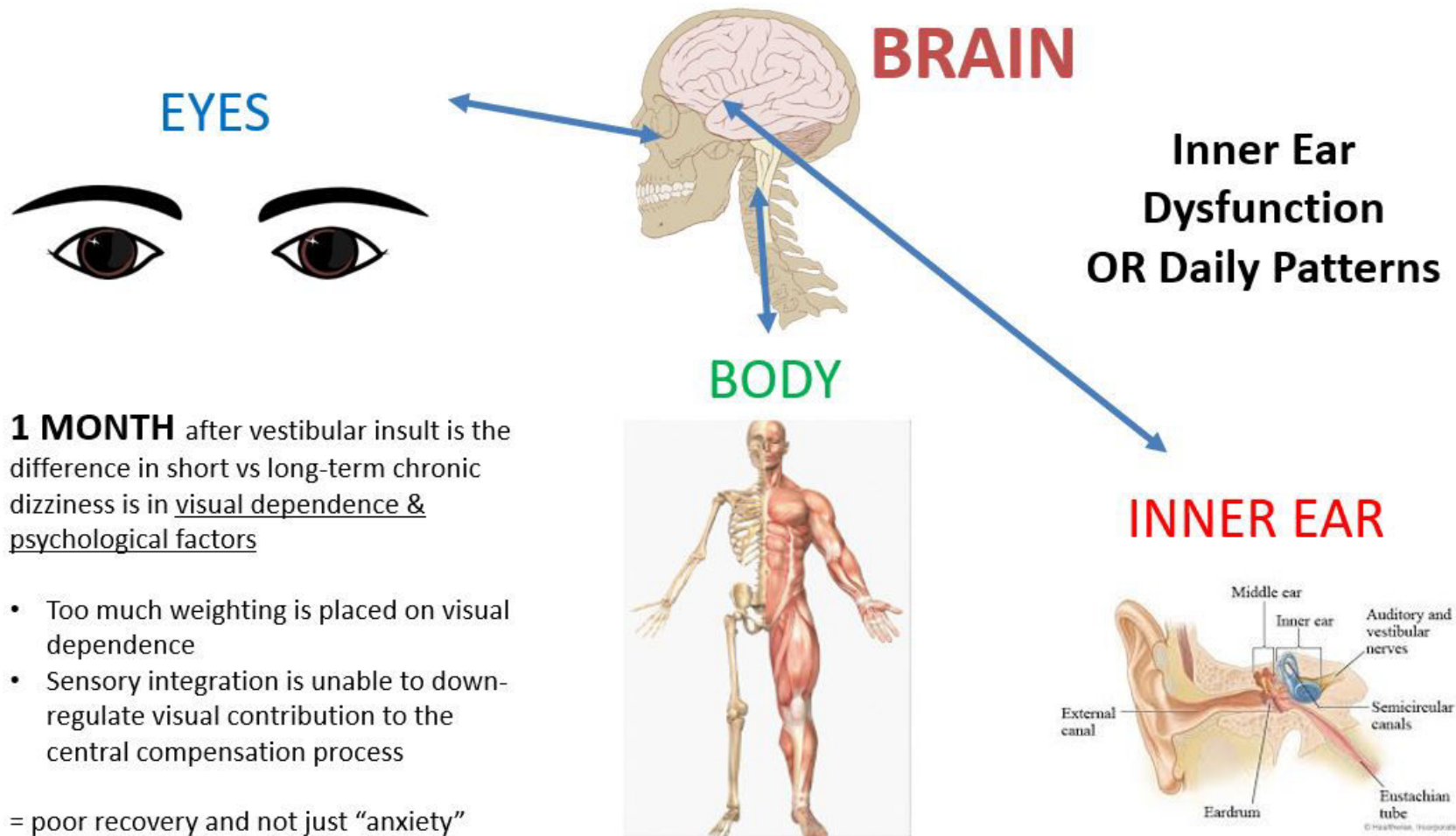
Migraine-associated vertigo/dizziness; migraine-related vestibulopathy; migrainous vertigo.

Diagnostic criteria:

- A. At least five episodes fulfilling criteria C and D
- B. A current or past history of 1.1 *Migraine without aura* or 1.2 *Migraine with aura*¹
- C. Vestibular symptoms² of moderate or severe intensity³, lasting between 5 minutes and 72 hours⁴
- D. At least half of episodes are associated with at least one of the following three migrainous features⁵:
 - 1. headache with at least two of the following four characteristics:
 - a) unilateral location
 - b) pulsating quality
 - c) moderate or severe intensity
 - d) aggravation by routine physical activity
 - 2. photophobia and phonophobia⁶
 - 3. visual aura
- E. Not better accounted for by another ICHD-3 diagnosis or by another vestibular disorder.

PPPD

Persistent Postural Perceptual Dizziness



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