

PERIPHERAL VERTIGO

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OTOLARYGOLOGIST, HEAD AND NECK FELLOWSHIP

SPINNED

PERIPHERAL CENTRAL

<i>Sudden (Onset)</i>	Yes	Slow, gradual
<i>Positional</i>	Yes	No
<i>Intensity</i>	Severe	Ill defined
<i>Nausea/Diaphoresis</i>	Frequent	Infrequent
<i>Nystagmus</i>	Torsional/horizontal	Vertical
<i>Ear (hearing loss)</i>	Can be present	Absent
<i>Duration</i>	Paroxysmal	Constant
<i>CNS signs</i>	Absent	Usually present

DIFFERENTIAL DIAGNOSIS

-
- **Benign paroxysmal positional vertigo (BPPV) (50%)**
 - **Vestibular neuritis**
 - **Labyrinthitis (suppurative, serous, toxic, chronic)**
 - **Meniere's disease**
 - **Perilymphatic fistula.**

CAUSES OF CENTRAL VERTIGO

- **Headache**

 - ✓ ***Migraine***

- **Vascular abnormalities**

 - ✓ ***CVA / Embolism***

- **Pressure effects**

 - ✓ ***Tumors***

- **Cervical spine abnormalities**

- **Multiple sclerosis**

- **Epilepsy (seizures)**

CAUSES OF PERIPHERAL VERTIGO

➤ Few seconds to a minute

- ✓ ***BPPV***
-

➤ Few minutes to few hours

- ✓ ***Meniere's disease***
- ✓ ***Syphilitic otitis***
- ✓ ***Recurrent vestibulopathy***

➤ Few days

- ✓ ***Vestibular neuritis***

➤ Variable

- ✓ ***Inner ear fistula***
- ✓ ***Baro-trauma***



BPPV

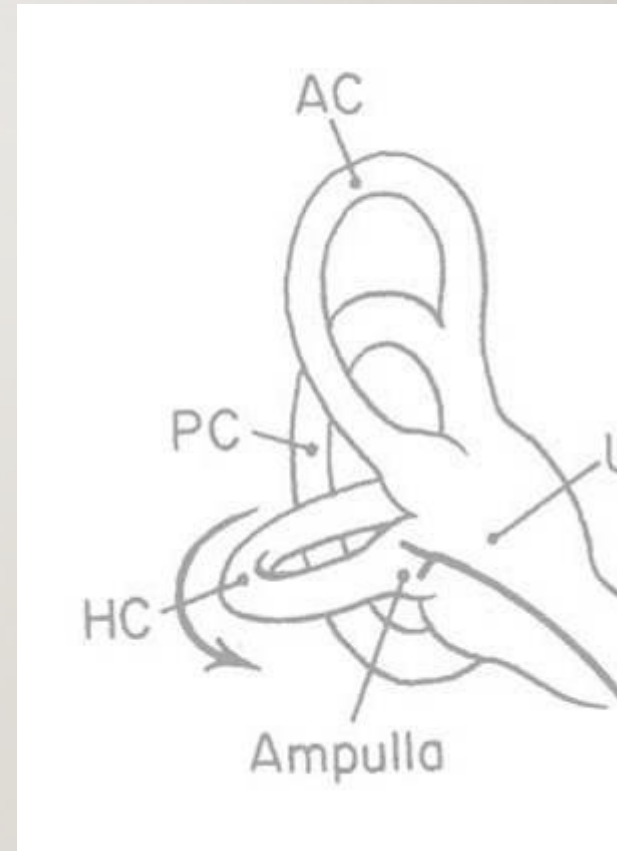
- **Benign Paroxysmal Positional Vertigo**
- **Age 40-60(F:M 2:1)**
- **Head trauma**

CHARACTERISTIC STORY

- **Turn head**
- **After a few seconds delay, vertigo occurs**
- **Resolves within 1 minute if you don't move**
- **Usually with little nausea.**

PATHOPHYSIOLOGY OF BPPV

- **Otoliths become detached from hair cells in utricle**
- **Inappropriately enter the posterior semicircular canal**

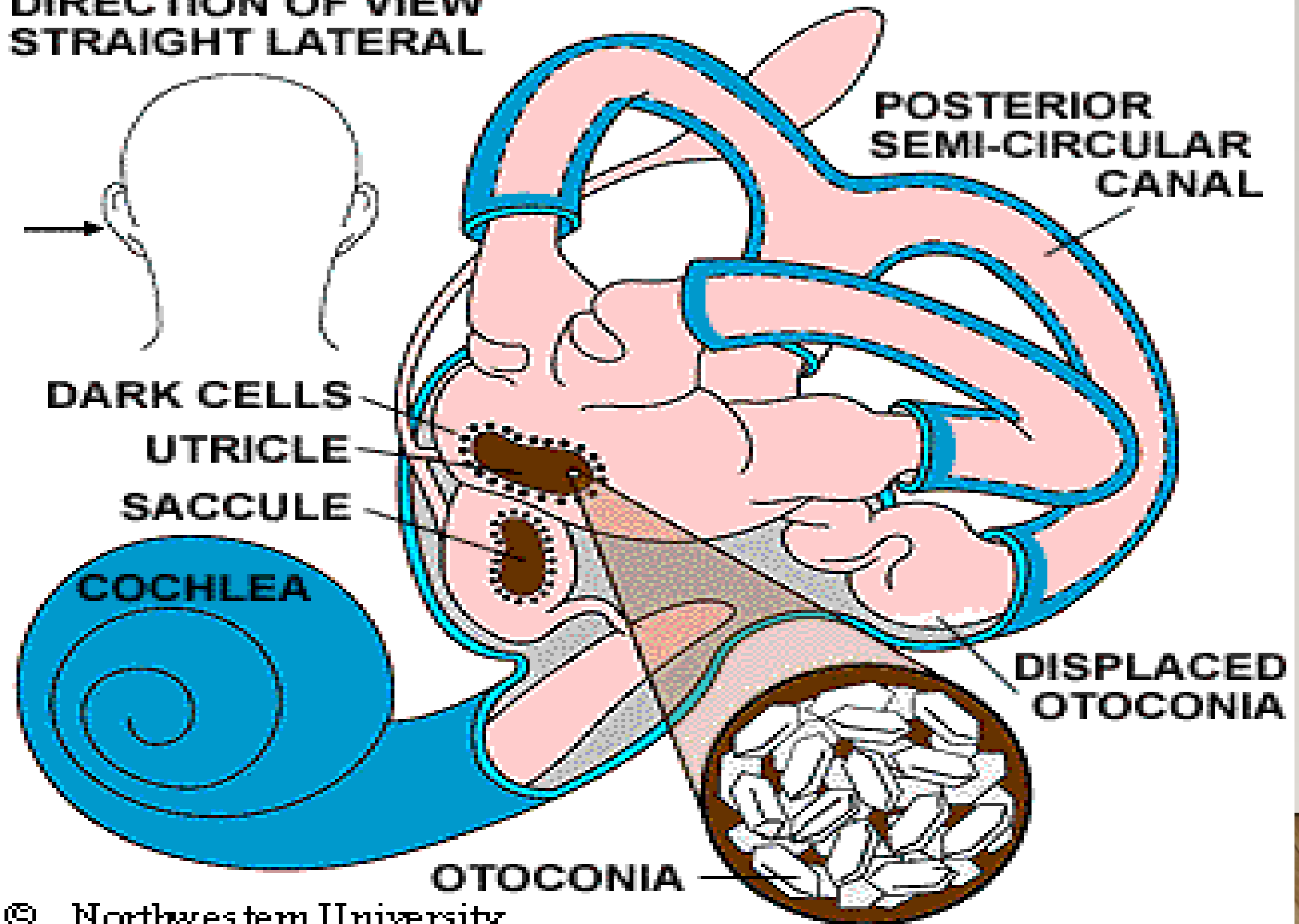


OTOCONIA IN BPPV

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**DIRECTION OF VIEW
STRAIGHT LATERAL**



PHYSIOLOGY

- **Normal situation**
 - As one turns head to the right
 - Endolymph moves → SCC receptors fire → “head turning right”
 - Stop turning head → endolymph stops moving → SCC receptors stop firing → “head has stopped moving”

PATHOPHYSIOLOGY OF BPPV

- **BPPV**

 - Stop turning head → *otoliths keep moving* → drag endolymph → receptors continue to fire inappropriately → “head is still moving”

DIX-HALLPIKE MANEUVER

- **The diagnosis of BPPV is generally from the history.**
- **Can confirm the diagnosis of BPPV**
- **First described by Dix and Hallpike in 1952.**
- **Also called the Nylen-Bárány, Bárány, Nylen, or Hallpike maneuver**

DIX – HALL PIKE POSITIONAL TESTING

- Sitting near the edge of the bed, head turned 45° to the testing ear side
- Patient is suddenly lowered to head-hanging position
- This position is maintained for at least 30 seconds

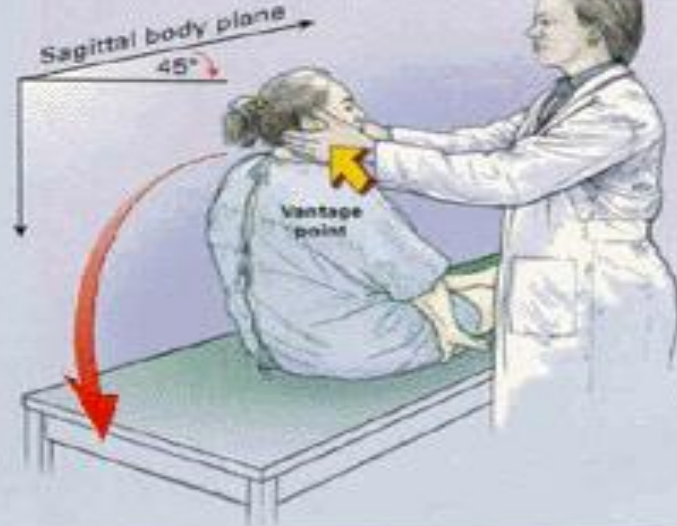
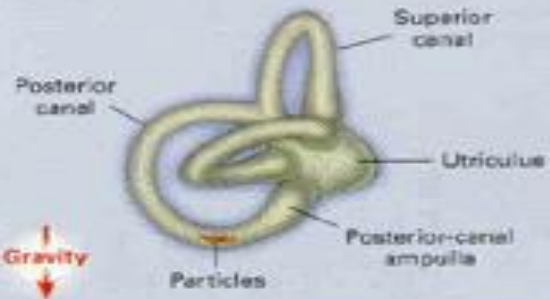


DIX – HALL PIKE POSITIONAL TESTING

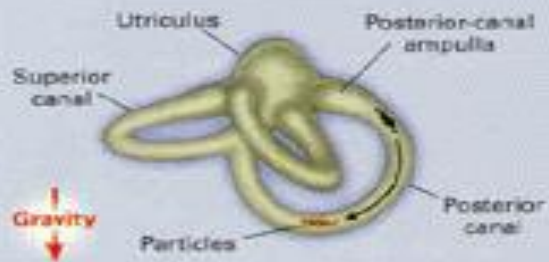
- nystagmus of BPPV begins with a latency of 2 to 10 sec.
- Increases in amplitude over next 30 sec.
- torsional nystagmus directed upward
- Fatigable



A



B



Therapy:

I-THE EPLEY MANEUVER

- **First described in 1992²**
- **Bedside**
- **Immediate relief**
- **Epley reported an 80% success rate after a single time and 100% success rate after more than one session**
- **30% recurrence rate over a 30-month period.**



2. Epley J. *Otolaryngol Head Neck Surg* 1992;107:399-404
3. Lynn S, et al. *Otolaryngol Head Neck Surg* 1995;113:712-20.

EPLEY MANEUVER:

-
- **Randomized controlled trials reported success rates ranging from 44% - 88%**

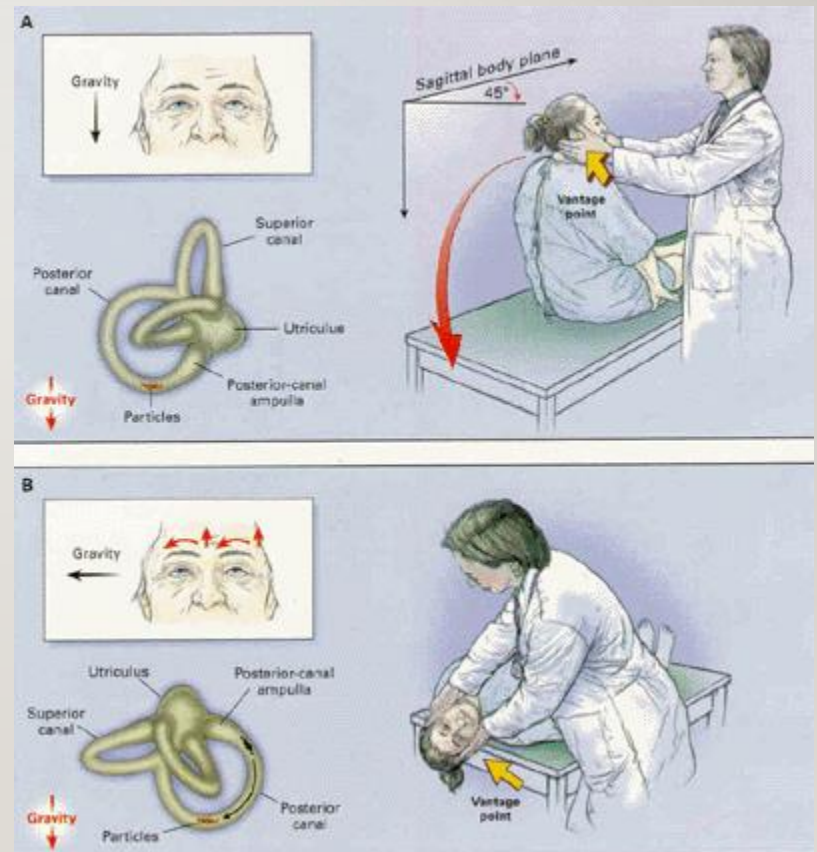
- Froehling et al. *Mayo clin proc* Jul 2000
- Wolf et al. *Clin otolaryngol* feb 1999
- Asawarichianginda et al. *ENT J* Sep 2000

EPLEY MANEUVER

- **Canalith repositioning maneuver**
- **Moves otoliths out of the posterior semicircular canal and back into utricle where they belong**

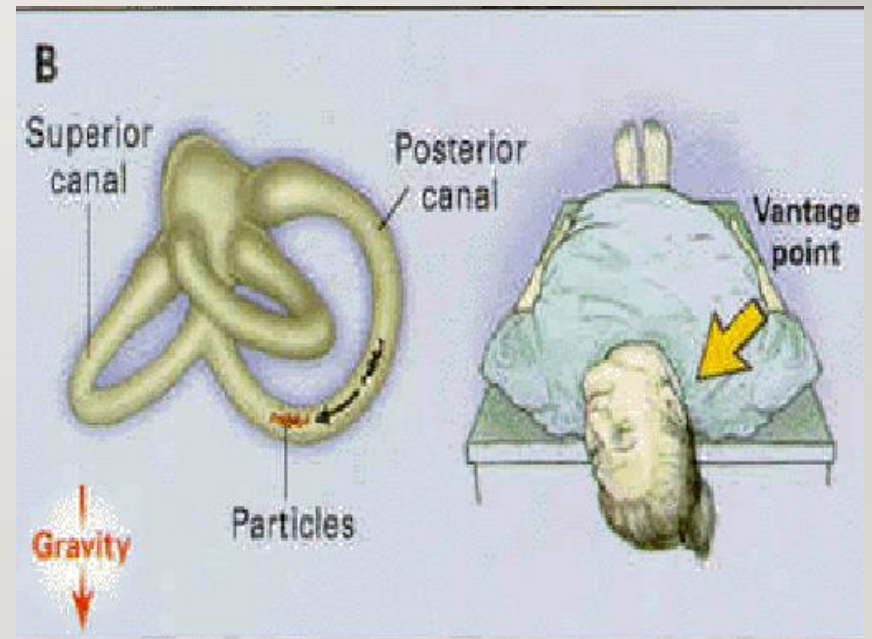
EPLEY MANEUVER

- **I. Repeat Hallpike**
 - Previously performed diagnostic Hallpike test tells you the starting position (right or left)



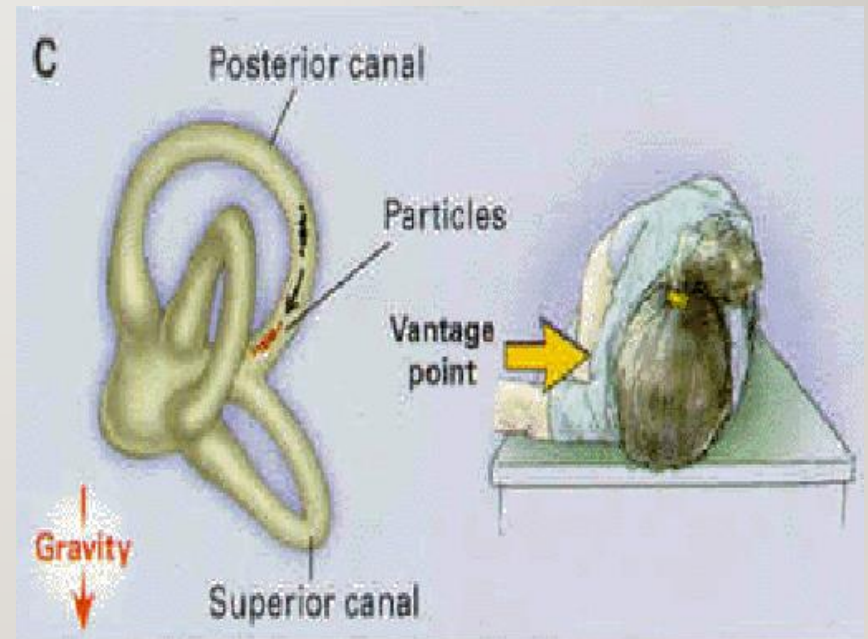
EPLEY MANEUVER

- **2. Turn head 90 degrees in the other direction**

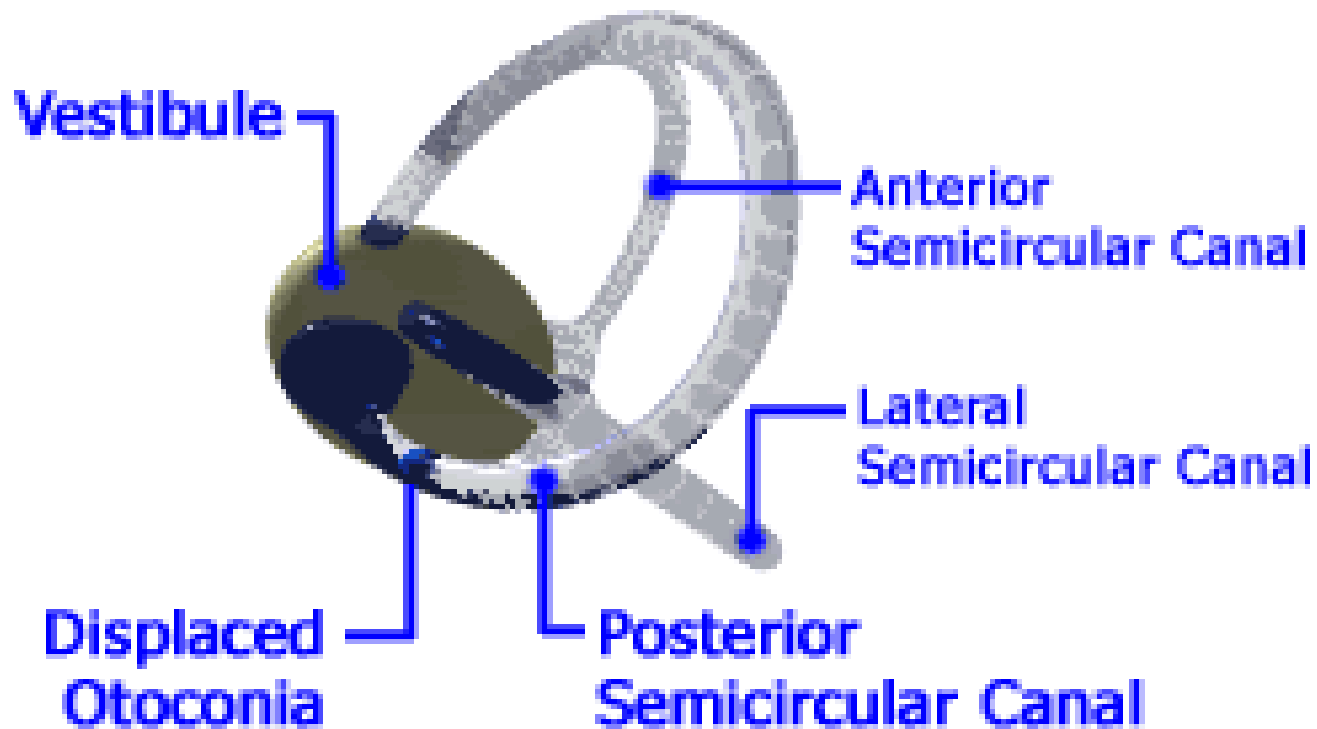


EPLEY MANEUVER

- **3. Patient rolls onto shoulder, rotates head and looks down towards floor**



EPLEY MANEUVER



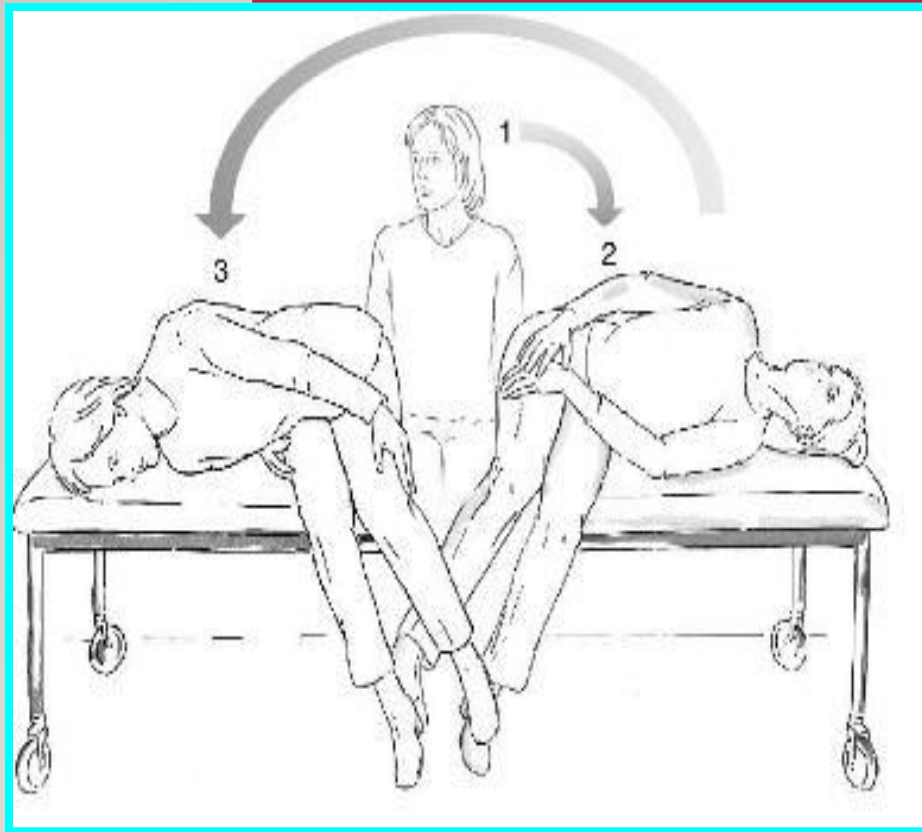
THE EPLEY MANEUVER

- **Contraindications**
 - Unstable heart disease
 - High grade carotid stenosis
 - Severe neck disease
 - Ongoing CNS disease (TIA/stroke)
 - Pregnancy beyond 24th week gestation (relative)

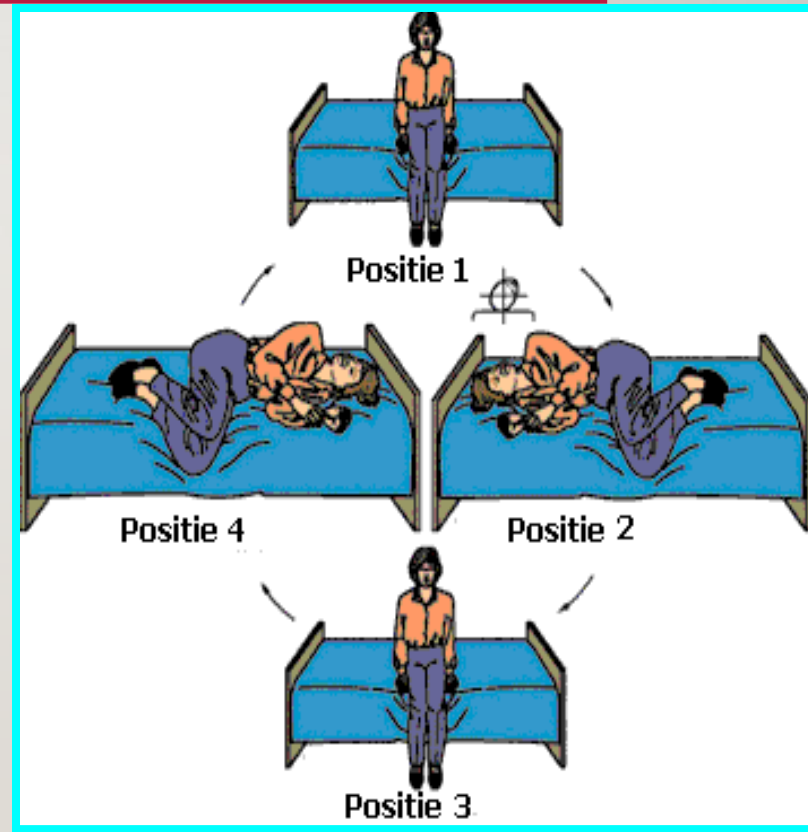
COMPLICATIONS

-
- **Vomiting**
 - **Converting to horizontal canal BPPV**

OTHER MANEUVER FOR BPPV



Semont



Brandt-Daroff

• **Dimenhydrinate (*Gravol*) and diphenhydramine (*Benedryl*) have been used.**

• **Their efficacy is likely mediated by their anticholinergic activity.**

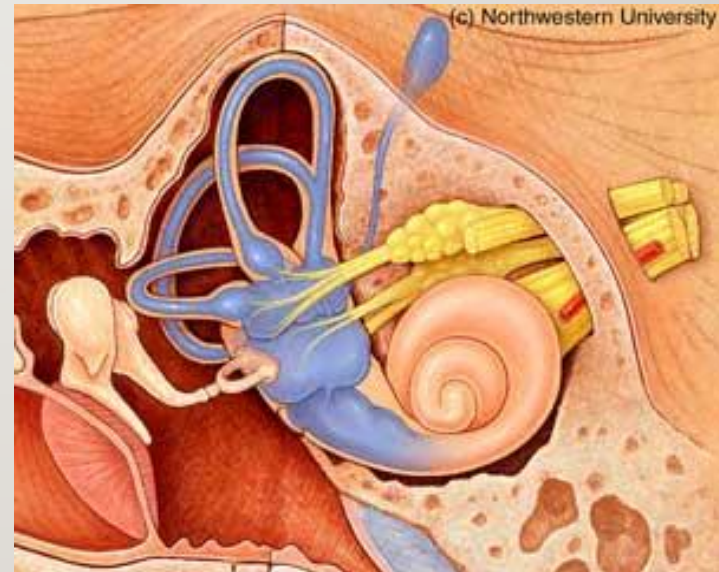
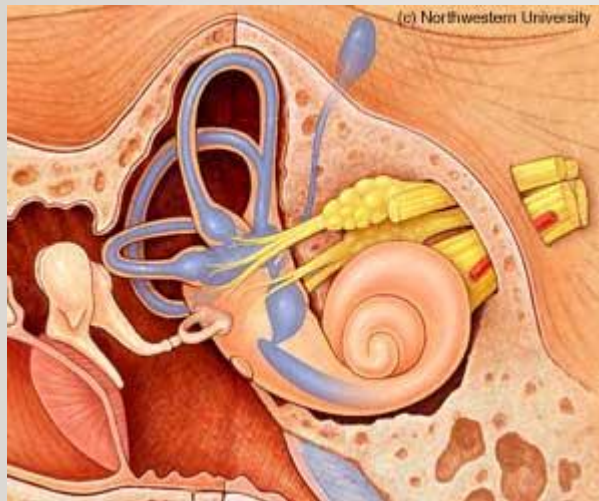
• **If N/V → promethazine (*phenergan*) or prochlorperazine (*stemetil*)**

- The Vast majority of BPPV can be managed conservatively.
- Surgery for intractable and incapacitating symptoms.

MENIERE'S DISEASE

- Attacks of **true vertigo**, aural fullness, **tinnitus**, fluctuating low frequency **SNHL**.
- Vertigo lasts for **20 minutes to hours**.
- Associated with severe nausea & vomiting.
- Cause: **Endo-lymphatic hydrops**
- Treatment: Dietary salt restriction, betahistine, diuretics, surgery.

Meniere's disease



VESTIBULAR NEURITIS

- Sudden single attack of true vertigo
- Severe vertigo lasts for a few hours
- Associated with nausea & vomiting
- Unsteadiness & imbalance lasts for about 6 weeks
- Usually without hearing loss or tinnitus
- Cause: **viral etiology**
- Treatment: assurance, Steroids, Dimenhydrinate.

PERI-LYMPHATIC FISTULA

- ~~Peri-lymph leakage from inner ear windows into middle ear.~~
- **Causes:** iatrogenic, head trauma, acoustic trauma, barotrauma, cholesteatoma, spontaneous.
- **Dx:** otoscopy, fistula test.
- **Treatment:** early surgery

DRUG TOXICITY

- Aminoglycoside antibiotics
- Anticonvulsants
- Salicylates
- Alcohol
- Sedatives
- Antihistamines
- Antidepressants

CENTRAL VERTIGO

- **May include disorders with significant potential morbidity.**
- **Warrants the initiation of further work-up.**

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DIFFERENTIAL DIAGNOSIS:

- **Vertebral-basilar circulation events:**
 - **Migraine**
 - **Post concussive syndrome.**
 - **Tumors (acoustic neuromas)**
 - **Multiple sclerosis**
 - **Infection (encephalitis, meningitis)**

NEUROIMAGING IN VERTIGO:

- **Headache(sudden onset or severe)**
- **Hard neurological findings**
- **No imaging for patients with no risk factors and exam suggestive of peripheral vertigo.**

CT VS MRI:

-
- **MRI/MRA for vertebrobasilar disease and cerebellar ischemia .**
 - **CT is more sensitive for hemorrhage**

THANKS FOR YOUR ATTENTION