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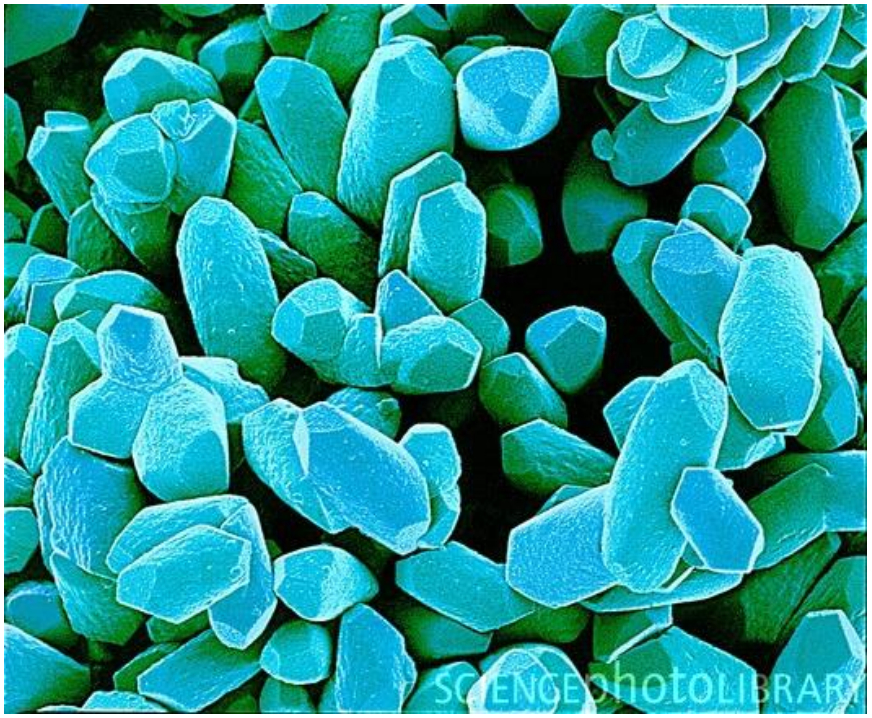
BPPV and Pitfalls in its Management



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Otologist & Neurotologist

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Objectives

- 1-The best methods of diagnosis of BPV
- 2-How to differentiate between different types of BPV
- 3-Pitfalls and Tricks in management of BPV
- 4-How to perform the correct Epley's, Semont,Gufoni and BBQ maneuvers

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CEPD
continuing education and professional development

Conflict of Interest Declaration: Nothing to Disclose

Presenter: Dr. Reza Golrokhian Sani_ ___

Title of Presentation: BPV and pitfalls in management

I have no financial or personal relationship related to this presentation to disclose.

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Introduction

- Vertigo is a primary complaint for 5.6 million clinic visits in the US
- BPPV: 17% to 42%
- Prevalance:10.7 to 900 per 100,000 population
- F/M= 1.5-2.2:1
- Age= 5th-7th decades of life
- Benign: true because of favorable outcome & not central
- Favorable: 20% spontaneous recovery in 1 month and 50% in 3 months
- Benign: false because it increases the risk of falling down and impair the quality of life

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Introduction

- paroxysmal: Rapid and sudden onset
- Positional: rolling over , bending over
- Vertigo: An illusionary sensation of motion
- Variants: Post>Lat.>sup. canal BPPV
- Post canal BPPV= 85%-95%
- Lateral canal BPPV= 5%-15%
- Superior canal BPPV= 1-3%

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Posterior Canal BPPV

- Hx: spinning for seconds
- PE: Dix- Hallpike Maneuver
- Bringing the patient from a upright to supine position with the head turned 45' to the side and neck 20' with the affected ear down
- Trick: Do not extend the neck in upright position
- Perform the maneuver fast
- If you do the test repeatedly, you will decrease the chance of observation of nystagmous

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Posterior Canal BPPV

- Canalolithiasis: calcium carbonate crystals are floating in the lumen of affect SCC
- Cupulolithiasis: Calcium carbonate crystals attached to the cupula so ,vertigo >1 minute

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POST BPPV Nystagmus

- Two important characteristics for nystagmous in Post BPPV:
- I-Latenct 5-20 sec.
- provoked subjective vertigo resolve after 60 sec. from the nystagmous onset
- Nystagmous is up beating torsional
- upper pole of the eye beating toward the dependent ear and vertical component beating toward forehead.
- The rate of nystagmous is gently increase then decline and resolve.

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POST BPPV Nystagmus

- Crescendo-decrescendo nystagmus
- Upright position: nystagmus reversed
- II. Fatigue,
- ANT. Canal BPPV: Downbeating vertical component + rotatory nystagmus toward dependent ear
- Down beating nystagmus DDX: brain stem & cerebellar ischemia and atrophy, Arnold-Chiari malformation, Alcoholism, Lithium toxicity.

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Dix- Hallpike Test

- RT Ear Exam: Stand in the right side of the patient and rotate the patient's head 45 degree to align the right post. SCC with sagittal plane of the body. Examiner fair quickly moves the patient from seated to supine right ear down position and **then extend the head 20 degree**. The chin is pointed upward. Ask your patient to keep his or her eyes open and observe for direction, latency and duration of nystagmus.
- Do not torture the patient, do not test for fatigability.

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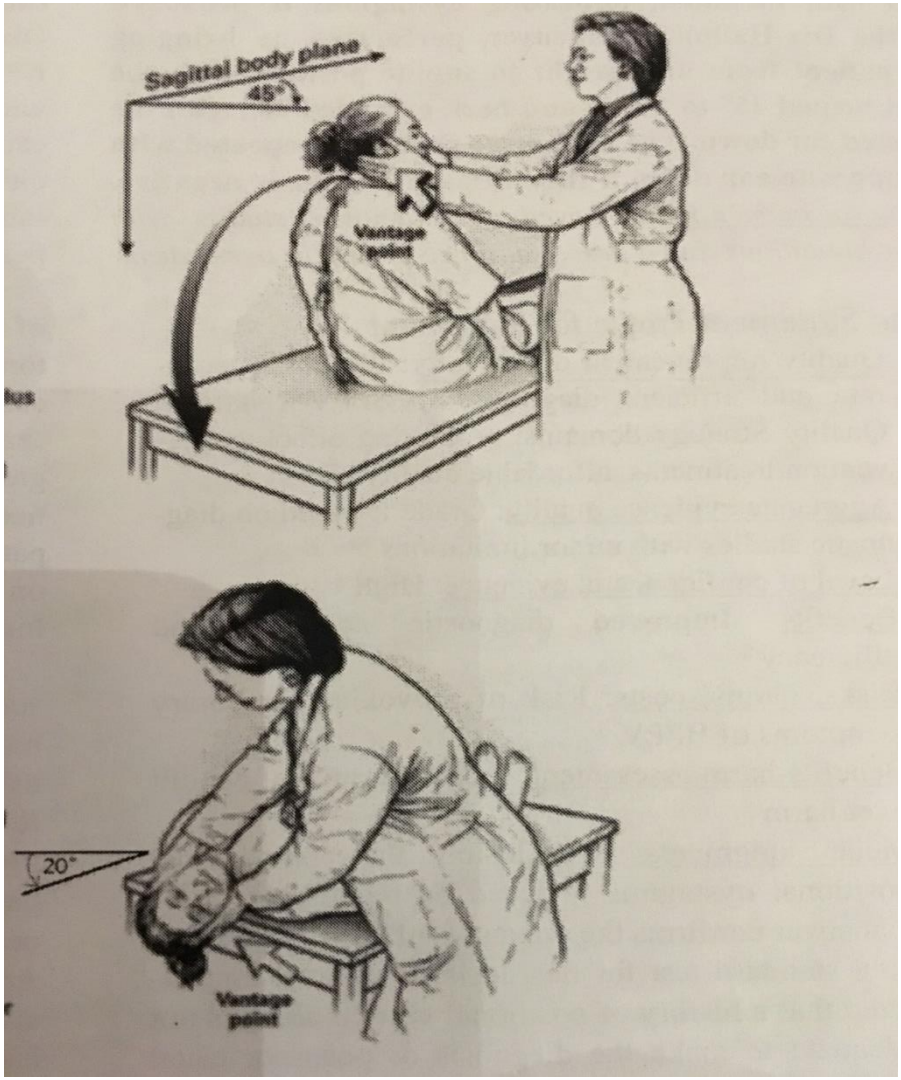
Dix-Hallpike Test



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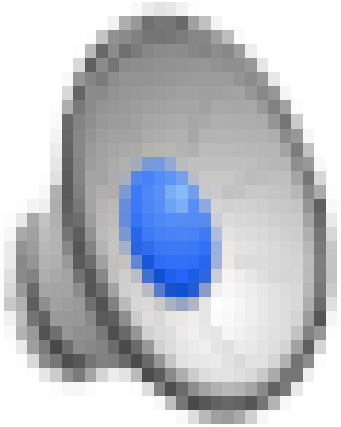
Dix-Hallpike Test



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Dix-Hallpike Test

- Accuracy of test : sensitivity 82% and specificity 71%
- positive predictive value: 83%
- negative predictive value: 52%
- Factors affect the accuracy: I. Speed, II.time of the day, III. angle of occipital plane during the test.
- Bilateral BPV is possible after head trauma.

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Dix-Hallpike Test

- Extra care in Test:

  Cervical stenosis, Severe Kyphoscoliosis, Down's sx, Severe RA, Cervical radiculopathies, Paget's disease, Ankylosing spondylitis , Spinal cord injury and morbid obesity. Retinal detachment

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Lateral Canal BPPV Facts

- Self- resolve more quickly than Post BPPV
- If Hx says BPPV, Dix-Hallpike is negative
- It can happen after Epley's maneuver = Canal conversion
- Dx: supine roll test , Horizontal nystagmus
- Vertigo evokes by roll test
- Supine Roll Test= Pagnini- Lempert Test : patient is supine head quickly rotate 90 degree to the to sides
- Direction of nystagmus changes with changing the head direction

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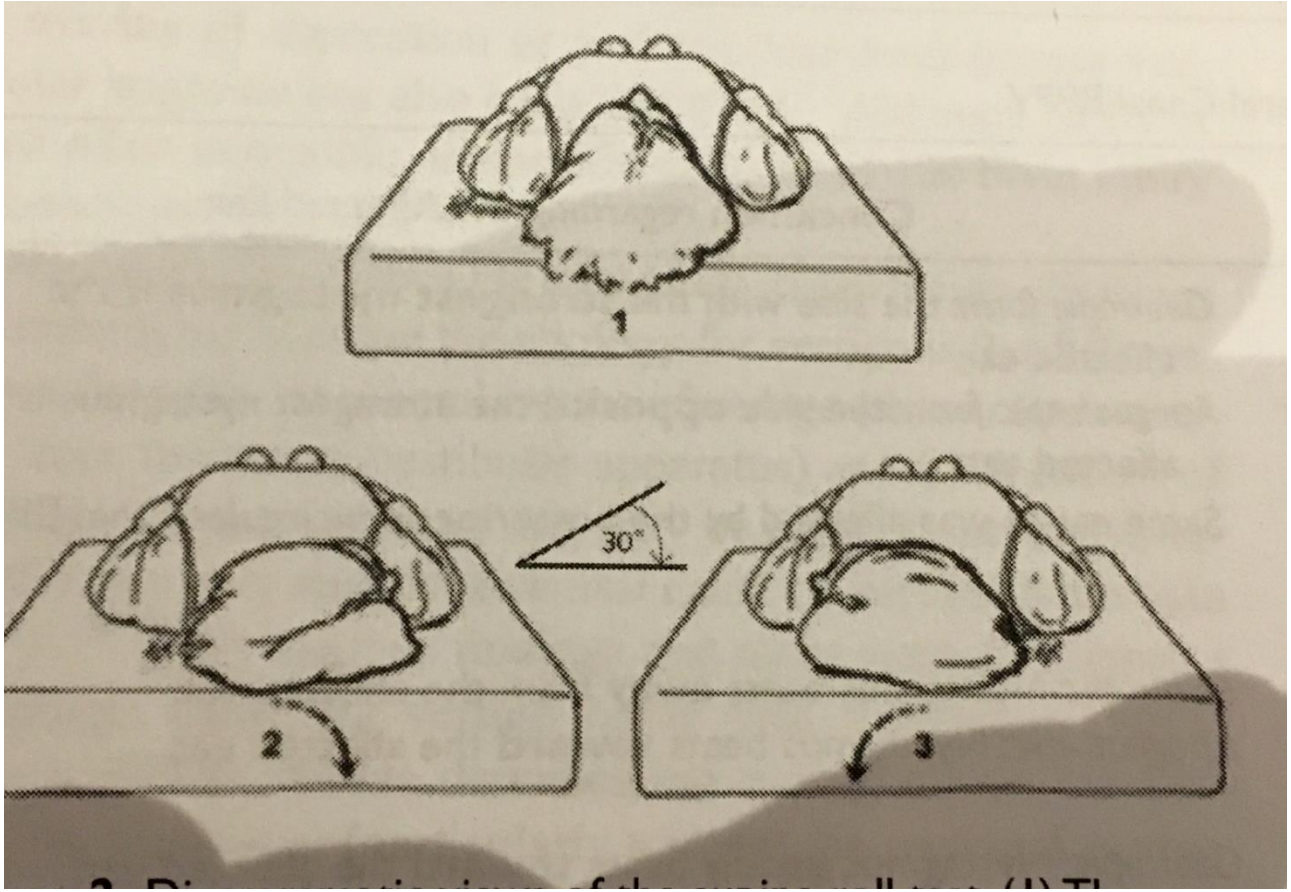
Supine Roll Test



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Supine Roll Test

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Geotropic Vs Apogeotropic Nystagmus

- Geotropic: Canalolithiasis, Ear toward affected side = intense nystagmus toward affected side
- patient roll to healthy side=less intense nystagmus toward healthy ear
- So, calcium carbonate crystals floating in the long arm of SCC

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Apogeotropic nystagmus

- Less common : nystagmus is away from earth and toward opposite ear= calcium carbonate debris are located adjacent to ampula os SCC= Cupulolithiasis
- Bow & lean test: direction of nystagmus when face is down or up

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DDX of BPPV

Otologic	Neurologic	Other Enteties
Meniere's disease	vestibular migrain	Panic disorder
vestibular neuritis	Post.circulation TIA	cervicogenic vertigo
Sup SCC dehiscence	Demyelinating disease	Medication side effect
post traumatic vertigo	CNS lesion	postural hypotension
perilymphatic fistula	vertebrobasilar insufficiency	various medical conditions, Toxic, Infectious & metabolic
inner ear lesion	Central positional vertigo	

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BPPV & Quality of life

- BPPV increases the chance of falling down
- It decrease the quality of life especially in seniors
- It makes more disability in patient with CNS imbalance
- BPPV in patients with CNS imbalance presented in Canadian Otolaryngology meeting 2013, Banff, Alberta
- Traumatic BPPV needs more CRP
- Traumatic BPPV is more refractory and more bilateral

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BPPV & Vestibular assessment

- HX is positive, PE and positive Dix Hallpike test is positive = enough
- Complementary test is just Hearing test
- No need to comprehensive vestibular test
- If Hx is positive and PE is negative, we can do video-oculographic recording. if negative, we can do comprehensive vestibular tests

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BPPV and Vestibular Pathology

- Very common in the 6th decade of life and later
- Young and very recurrent= Utricular pathology

- Golrokhian-Sani M.R., Mokhtari Amirmajdi Nematollah, Jafarzadeh Sadegh,(Dec. 2016).

  Benign Paroxysmal Positional Vertigo and Concomitant Otolithic Dysfunction,

  Otolaryngology- ENT Research

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BPPV & Vestibular pathology

- Patients with vestibular disorder + BPPV CRP improve the BPPV symptoms

Indications for comprehensive vestibular function testing in BPPV:

I. Atypical nystagmus

II. Additional vestibular pathology

III. Repeatedly failed CRP

IV. Frequent recurrence of BPPV

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Canalith Repositioning Procedure

- Post SCC BPPV:

I. Epley maneuver 1992

II. Liberatory (Semont) Maneuver

- Goal: Conversion from positive Dix-Hallpike to negative

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Epley Maneuver

- Steps:
- I. The patient is placed 45’ toward the affected ear
- II. The patent is rapidly laid back to the supine head hanging 20’ position ,20-30 sec
- III. Head is turned 90’ and patient roll over toward unaffected ear , so head is the face down position,20-30 sec.
- IV. The patient is then brought into the upright position

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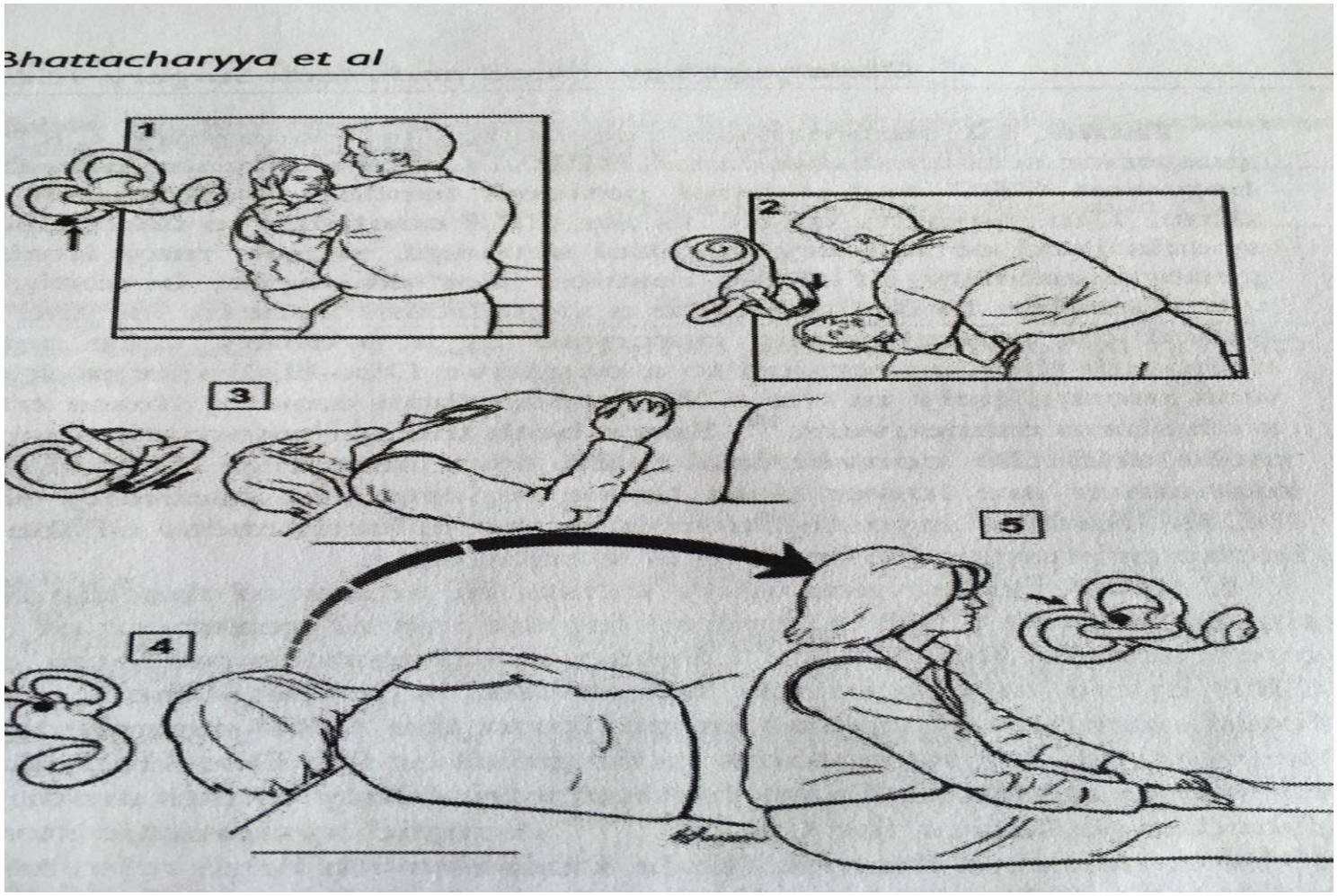
Epley Maneuver



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Epley maneuver

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Semont

- Steps:
- I. The patient is sitting in the edge of the bed
- II. Quickly put the patient to side-lying position, affected side , with the head turned up. 20 sec. nystagmus must disappear
- III. Quickly move to the patient back up and through the sitting position to side-lying, unaffected side, with the head facing down,

The patient does not change during the test ,keep the patient in this position 30 sec-10 min

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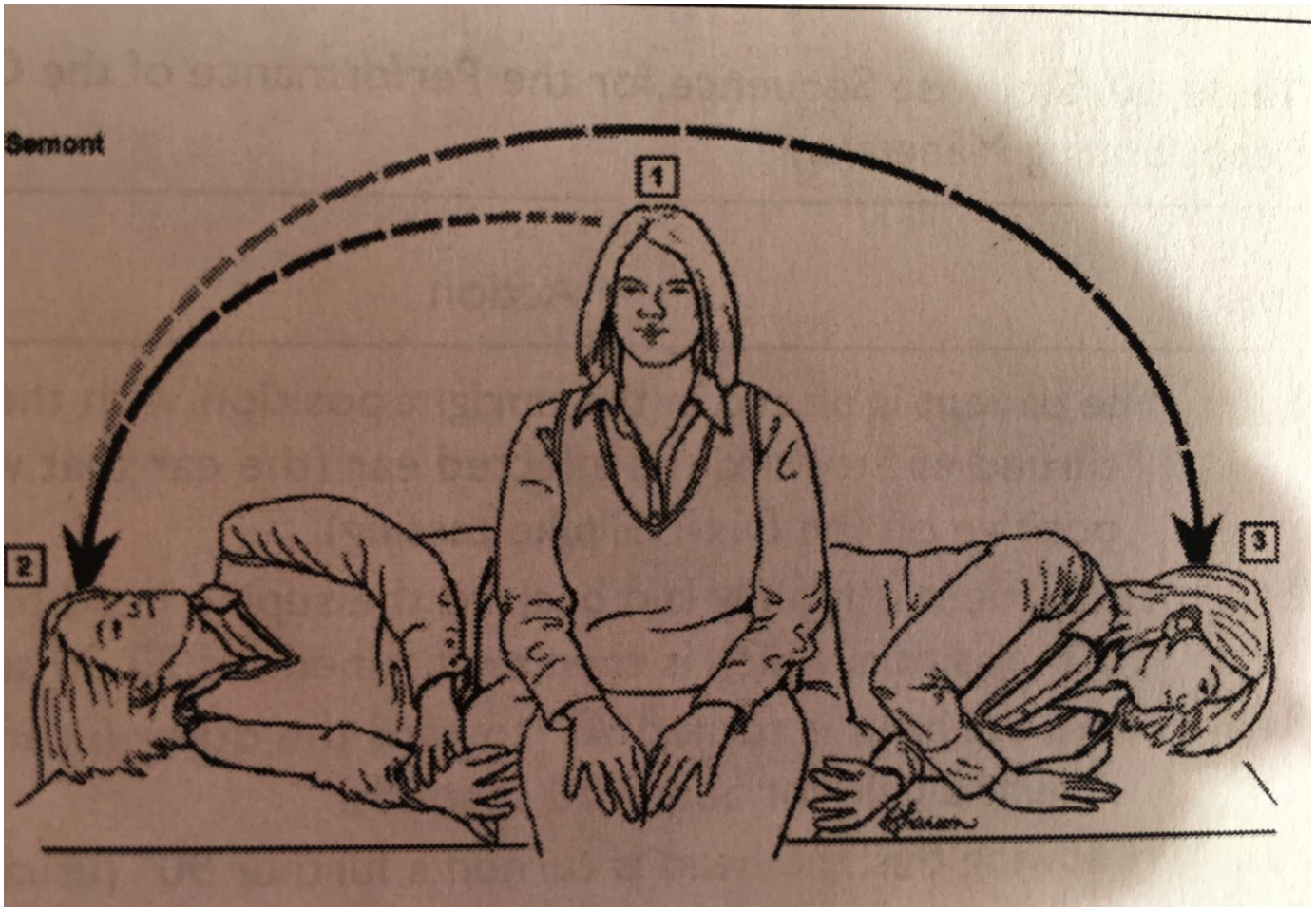
Semont Maneuver



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CRP complications

- 12% feeling of falling down till 30 min after CRP
- Nausea & Vomiting
- Fainting
- Conversion to lateral BPPV 6-7%
- postural instability for 24 Hrs.

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CRP for lateral BPPV

- Lempert 360' or BBQ roll maneuver:
- Steps:
- I. Laying down involved side
- II. roll to unaffected side
- III. Carry on when nose down or prone
- IV. Return to affected side and sit up

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BBQ Maneuver for Lateral Canal BPPV

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CRP for lateral BPPV

- Gufoni Maneuver 1998
- Steps for RT geotropic BPPV:
- I. sitting to straight side- laying position for 30 sec
- II. Quickly turn the head toward the ground 45-60' held for 1-2 min
- III. sit up with head toward left shoulder and straighten the head

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CRP for lateral BPPV

- Gufoni for Rt ear apogeotropic BPPV
- I. sitting to the straight side-lying position ,affected side, 30 sec
- II. Patient's head turn toward the ground 45-60' held for 1-2 min
- III. sit up and head toward the left shoulder

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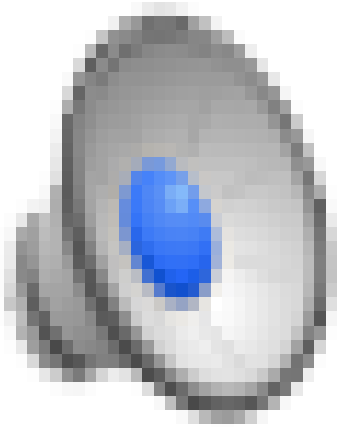
Gufoni maneuver



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Post CRP

- Some physician recommend some restrictions
- Controversies
- No restriction
- Follow up one month and one year after CRP
- Vestibular Rehabilitation

I. Cawthorne-Cooksey
II. Brandt-Daroff

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Vestibular Rehabilitation

- **Cawthorne- Cooksey exercises**:
- Series of eye , head and body movements
- These exercises fatigue the vestibular response and force CNS to compencate by habituation to the stimulus
- **Brandt and Daroff exercises:**
- Specific for BPPV and involves a sequence of rapid lateral head/trunk tilts repeated serially to promote loosen and dispersion of debris toward vestibule.

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Vestibular rehabilitation

- Brandt- Darrof exercises can help especially in recurrent BPPV & permanent imbalance after CRP or if CRP is contraindicated.
- VR is less effective than CRP
- Customized VR is the best

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Medication in BPPV

- Vestibular suppressant medication: Acute stage

I. Benzodiazepines

II. Gabapentin

III. Antihistamines: Meclizine, promethazine

IV. Anticholinergic medications: scopolamine

Just in Acute vertigo

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Follow up

- One month and one year after attack to treat recurrence.

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Surgery in recurrent BPPV

- Posterior SCC occlusion surgery