

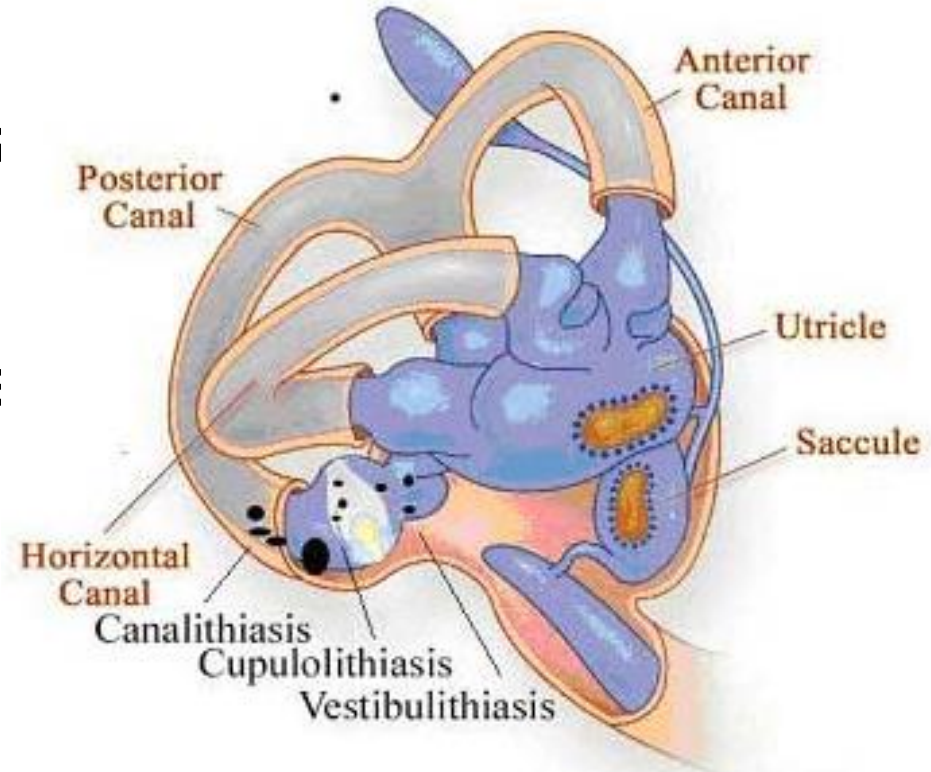
# Benign Paroxysmal Positional Vertigo (BPPV)

高雄長庚醫院耳鼻喉部

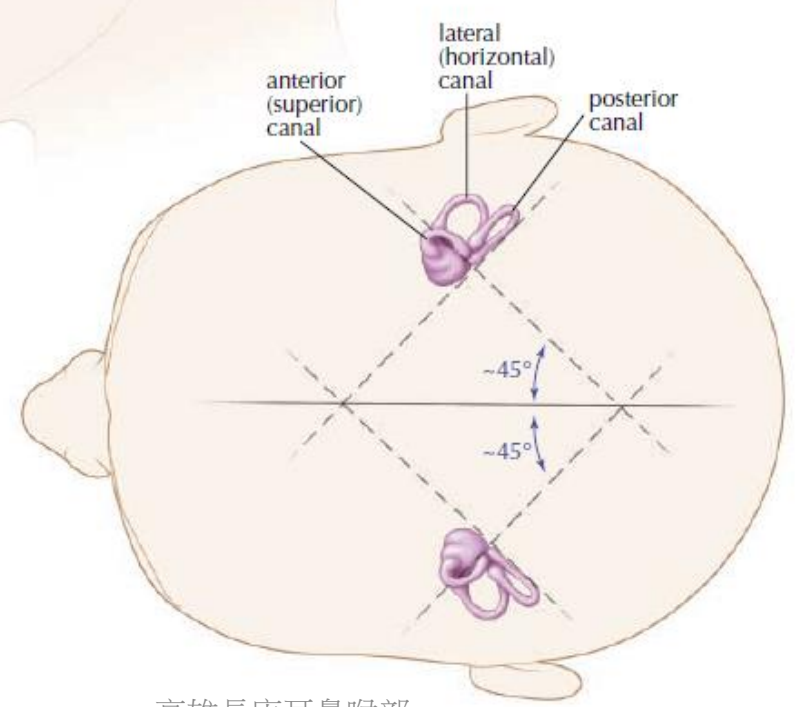
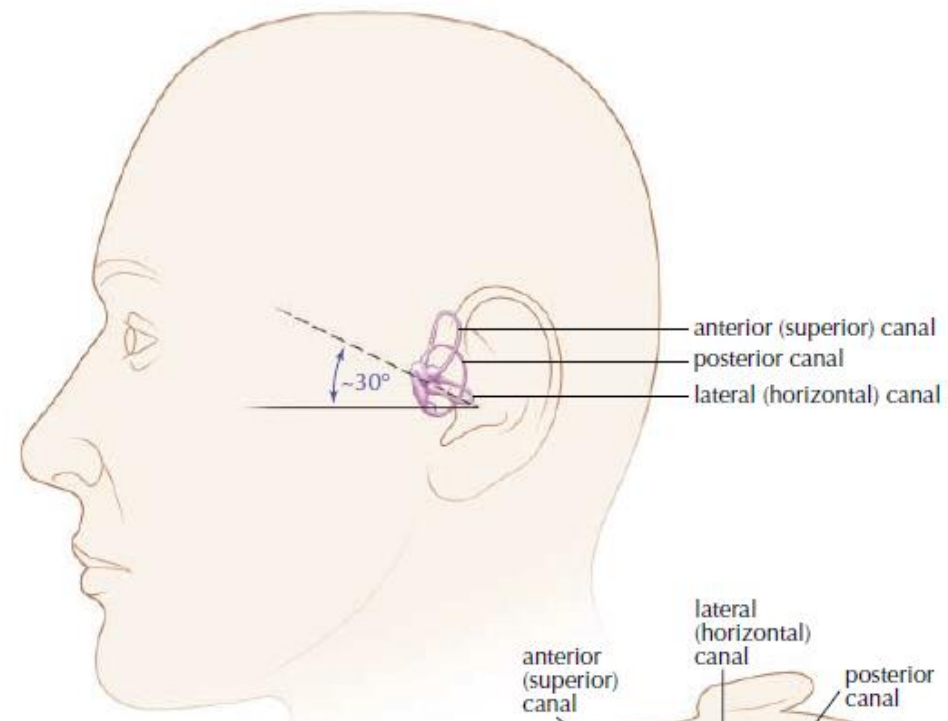
楊昭輝

# What is the BPPV

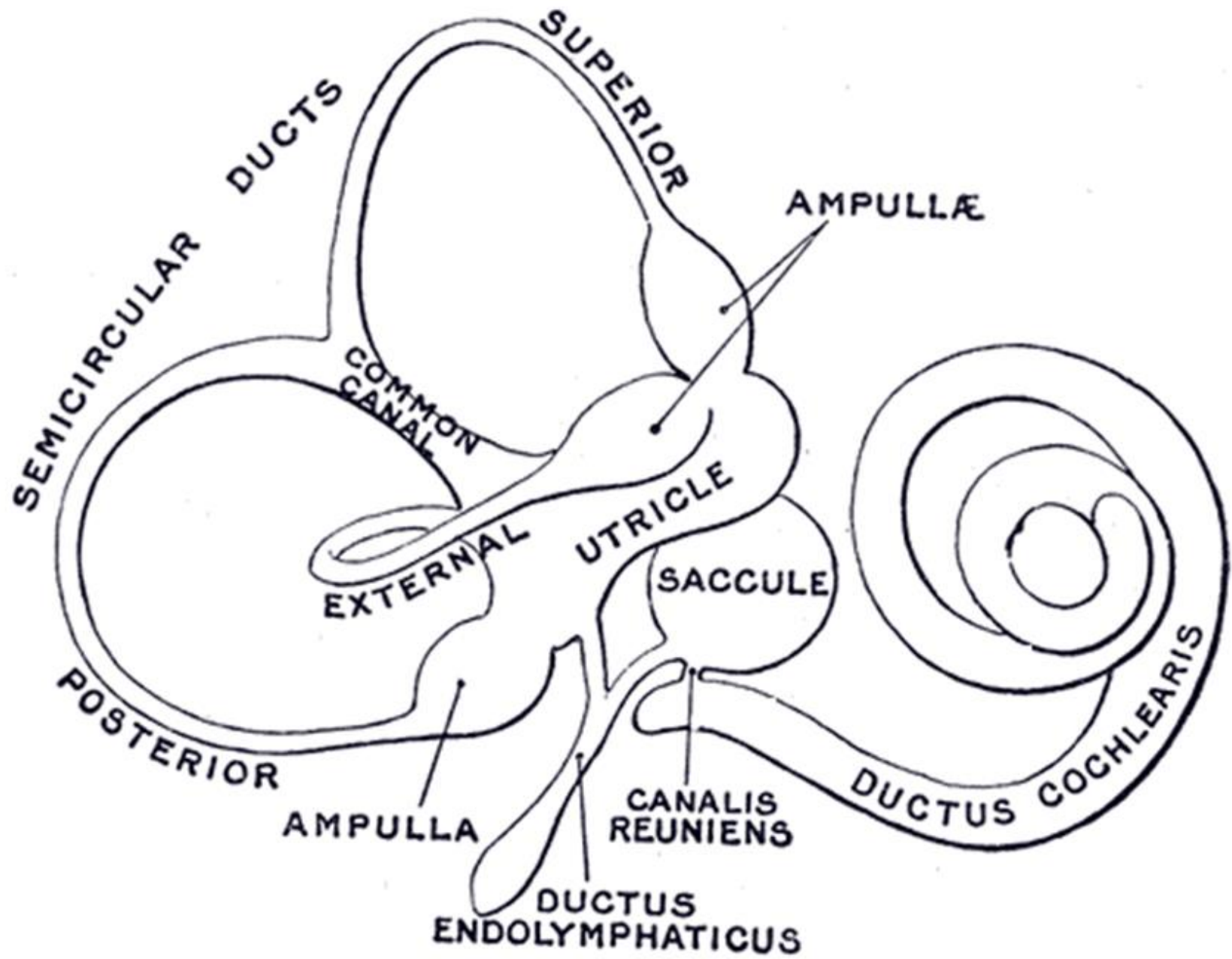
- Benign Paroxysmal Positional Vertigo
- *benign* , not a very serious or progressive condition
- *paroxysmal* , meaning sudden and unpredictable in onset
- *positional* , because it comes about with a change in head position
- *vertigo* , causing a sense of dizziness.



Under normal circumstances, otoconia are dislodged, absorbed, and renewed constantly.

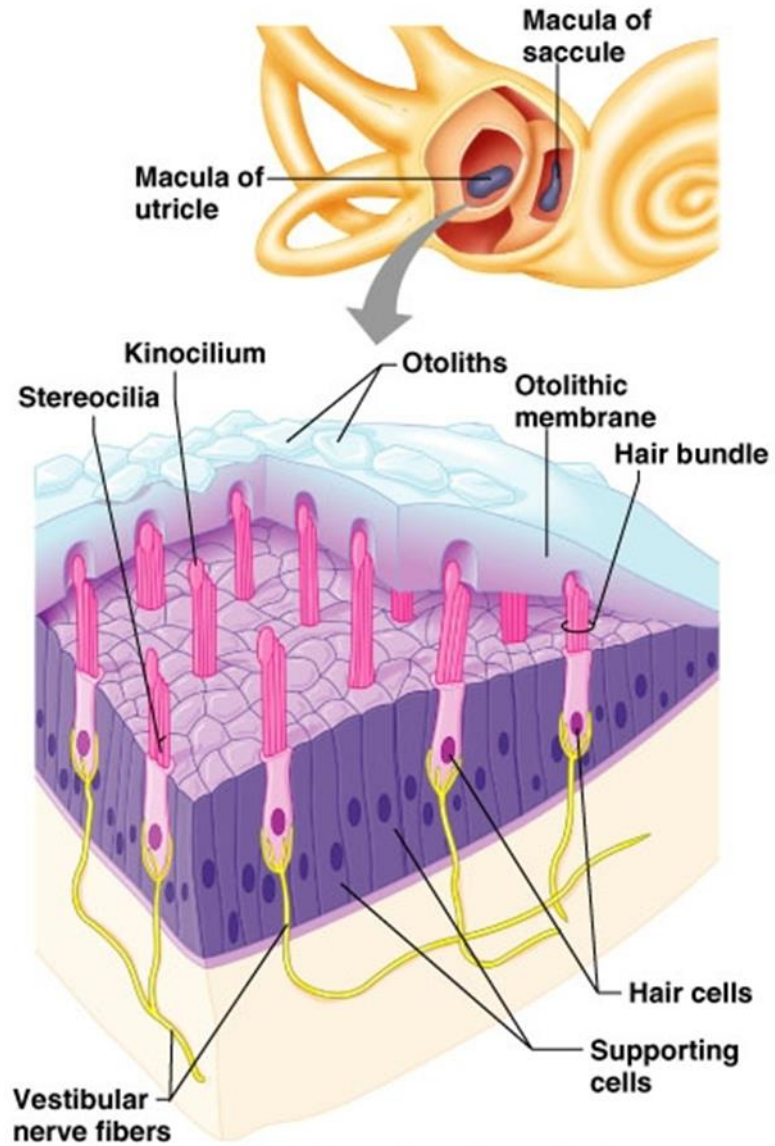


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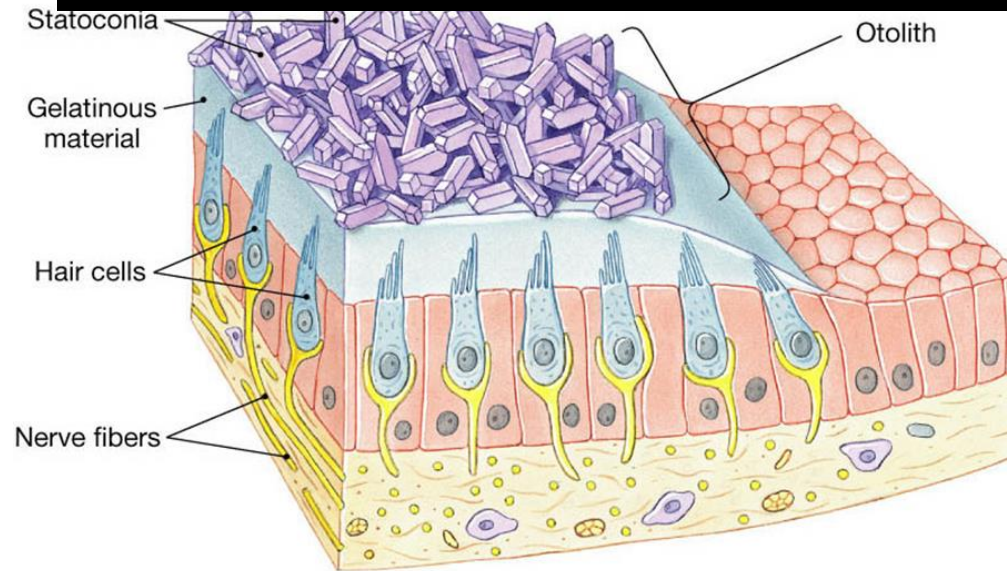
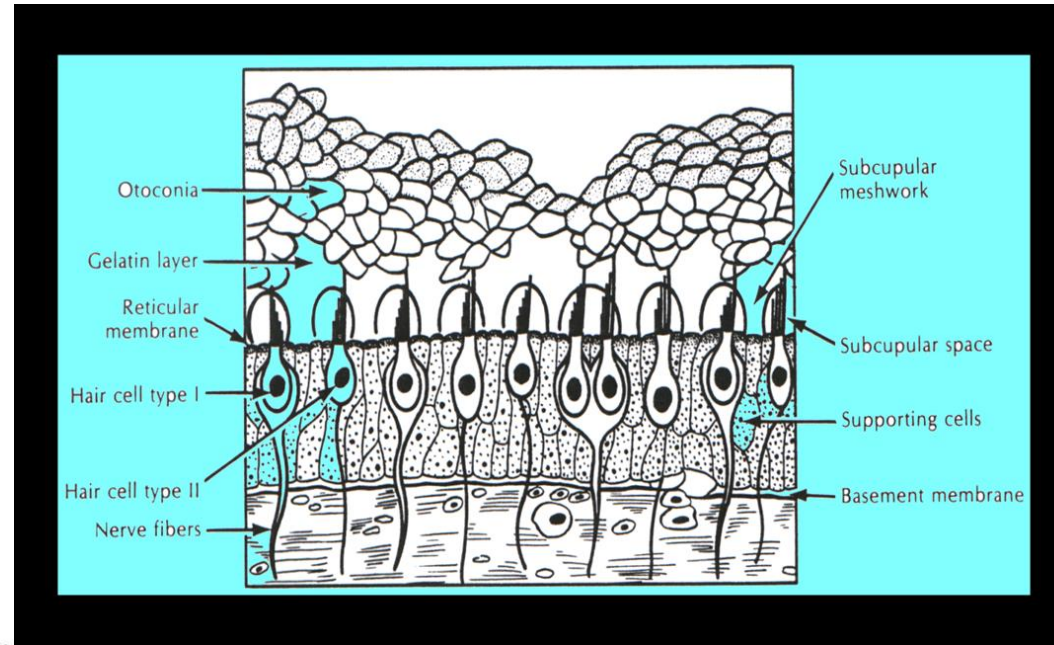


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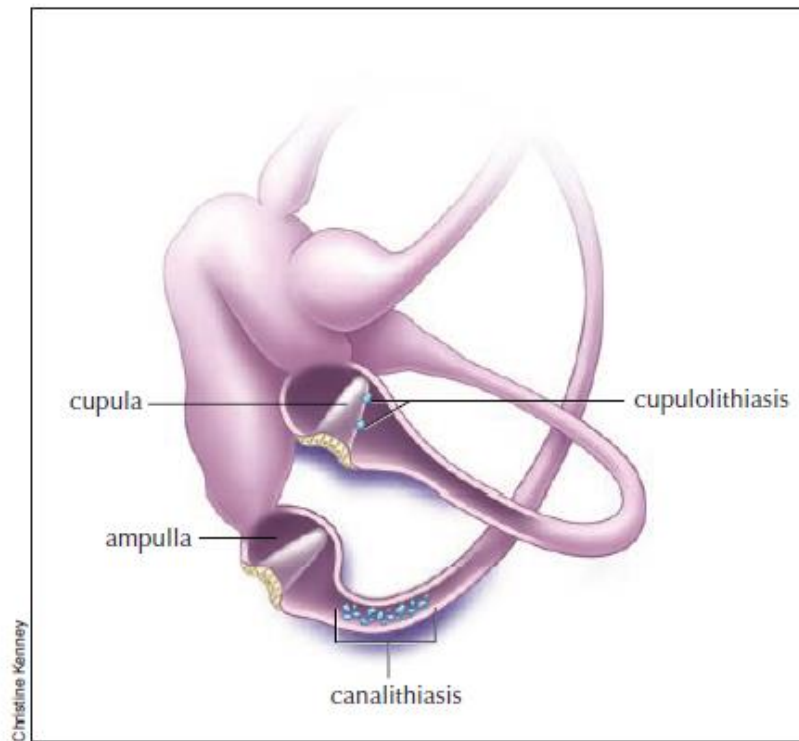


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(b) Macula and statoconia

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**Fig. 4: Left inner ear.** Depiction of canalithiasis of the posterior canal and cupulolithiasis of the lateral canal.



**Fig. 5: Sequential computer-regenerated photographs taken from an intra-operative video of a fenestrated posterior semicircular canal.** Note the single white conglomerate mass within

# BPPV causes

- Most common cause of vertigo due to peripheral vestibular disorder
- Brief episodes of vertigo when the head is moved into certain positions
- Causes
  - Occurs spontaneously in many patients
  - Head trauma
  - Labyrinthitis
  - Ischemia in the distribution of the anterior vestibular artery

■ Table 20-1

## FREQUENCY OF COMPLAINTS IN 100 CONSECUTIVE PATIENTS WITH BPPV

Complaints	Frequency (%)
Poor balance	57
Sense of rotation (vertigo)	53
Trouble walking	48
Lightheaded	42
Nausea	35
Queasy	29
Spinning inside head	29
Sense of tilt	24
Sweating	22
Sense of floating	22
Blurred vision	15
Jumping vision	13

Tusa RJ, Herdman SJ. Adapted from Canalith Repositioning for Benign Paroxysmal Positional Vertigo. *American Academy of Neurology*. 3B5.002.<sup>5</sup>

## Causes of BPPV

Primary or idiopathic (50%–70%)

Secondary (30%–50%)

- Head trauma (7%–17%)
- Viral labyrinthitis (15%)
- Ménière's disease (5%)
- Migraines (< 5%)
- Inner ear surgery (< 1%)



# Aging and BPPV

■ Table 20-3

## PERCENT OF BPPV BY AGE (DATA FROM A TERTIARY, SPECIALTY CLINIC)

Age (yrs)	# of Dizzy Patients	# Dizzy Patients with BPPV	% Dizzy Patients with BPPV
0-9	22	0	0.0
10-19	52	1	1.9
20-29	123	3	2.4
30-39	360	45	12.5
40-49	485	77	15.9
50-59	411	91	22.1
60-69	539	136	25.2
70-79	752	188	25.0
80-89	392	108	27.6
90-99	33	11	33.3

# Etiology of BPPV

■ Table 20-2

## ETIOLOGY OF BPPV

Diagnosis	# of Patients	% of Patients	
Idiopathic	287	58.0	原發的,ex aging
Post-traumatic	90	18.2	Whiplash車禍由後方撞擊造成的頸部扭傷
Vestibular neuritis	42	8.6	Affect superior branch of vestibular nerve
VBI	13	2.6	
Other	63	12.7	

495 patients (adapted from Baloh et al, 1987<sup>1</sup>; Katsarkas and Kirkham, 1978<sup>14</sup>)

VBI=Vertebrobasilar insufficiency

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# Symptoms

- Vertigo : “illusory sensation of motion of either the self or the surroundings”
- Rolling over in bed, tilting the head to look upward, bending forward
- Alternatively light-headedness, dizziness
- “Subjective BPPV without a positive Dix-Hallpike test”

# Symptoms suspected BPPV

## Before the testing....

- Spontaneous nystagmus?
- FEMALE and Male patient, elderly
- Explain: Informed possible vertigo during the testing and maneuver (prepare plastic bag)
- Wash your hand
- Cervical spine and cervical-medullary junction disorder: be caution
- Keep eye open
- Unaffected side first(depend on history)

# Benign paroxysmal positional vertigo (BPPV)

- Clinical characteristics
  - Duration < 15 seconds
  - Latency 0-15 seconds
  - Reversal torsion reverses upon sitting
  - Habituation- fatigues with repetition
- Eye movements
  - Side involved- direction of torsion
  - Canal involved-direction of beat
  - Type of BPPV - duration



# Diagnosis of BPPV

## History

- Rotatory vertigo
- Lasts < 30 seconds
- Precipitated by head movements

## Dix–Hallpike manoeuvre (posterior canal BPPV)

- Brief latency (1–5 seconds)
- Limited duration (< 30 seconds)
- Torsional nystagmus toward downmost ear
- Reversal of nystagmus upon sitting
- Fatiguability of the response

## Lateral head turns (horizontal canal BPPV)

- Geotropic nystagmus
- Apogeotropic nystagmus

## Subjective BPPV

- Classic vertigo during positioning
- No nystagmus seen — repositioning manoeuvres still effective

# Differentiate the canal-involved

■ Table 20-4

## NYSTAGMUS FEATURES BY CANAL AFFECTED IN BPPV

<b>Canal Affected</b>	<b>Initial Response in Dix-Hallpike</b>
Posterior	Upbeating and torsional (torsional toward affected ear)
Horizontal: canalithiasis	Geotropic (right-beating in head right position, left-beating in head left position)
Horizontal: cupulolithiasis	Apogeotropic (left-beating in right head position, right-beating in head left position)
Anterior	Downbeating and torsional (torsional toward affected ear)

# Posterior canal BPPV

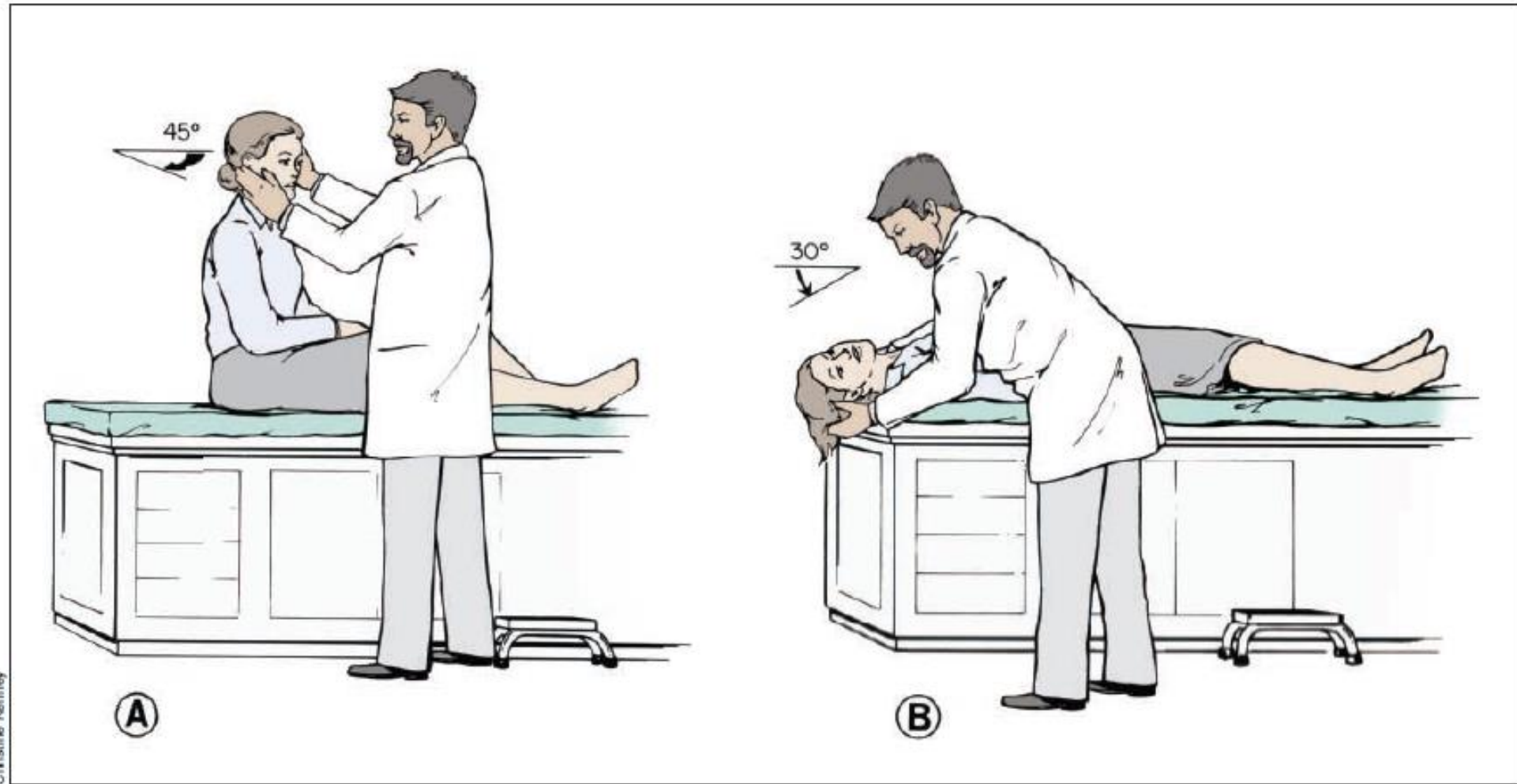
**Table 6.** Diagnostic Criteria for Posterior Canal Benign Paroxysmal Positional Vertigo.

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History	Patient reports repeated episodes of vertigo with changes in head position relative to gravity.
Physical examination	Each of the following criteria is fulfilled: <ul style="list-style-type: none"><li>• Vertigo associated with torsional (rotatory), upbeat (toward the forehead) nystagmus is provoked by the Dix-Hallpike test.</li><li>• There is a latency period between the completion of the Dix-Hallpike maneuver and the onset of vertigo and nystagmus.</li><li>• The provoked vertigo and nystagmus increase and then resolve within 60 seconds from the onset of the nystagmus.</li></ul>

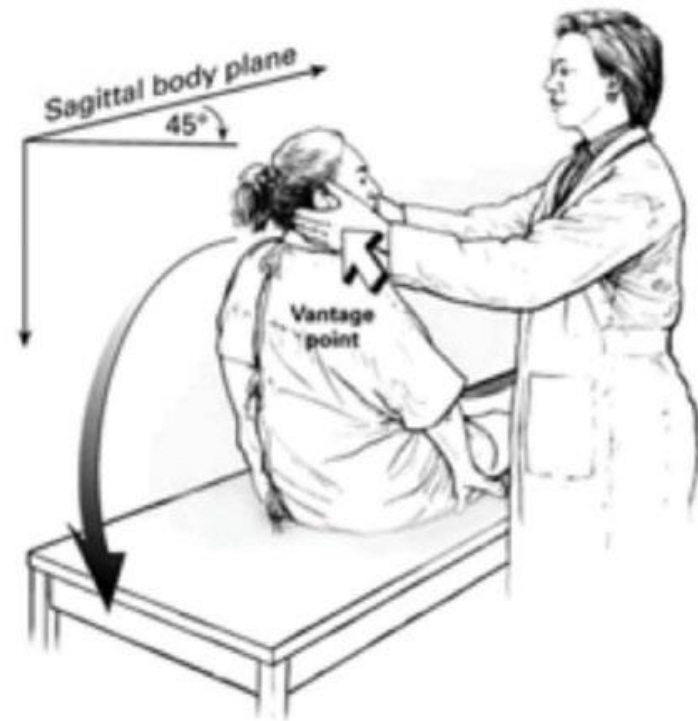
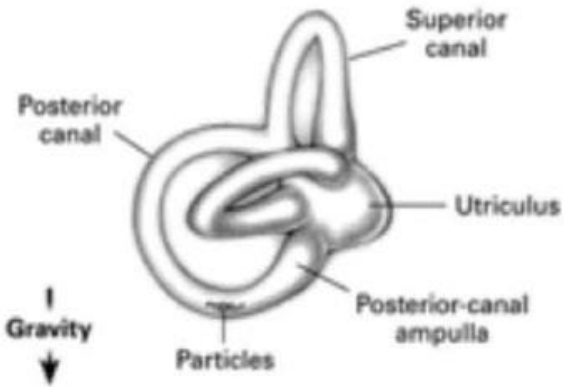
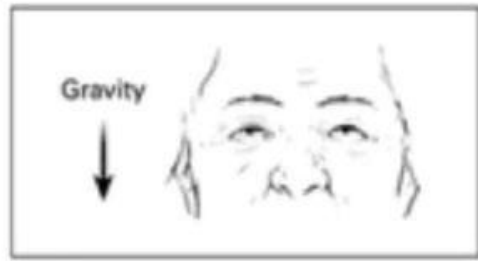
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# Dix-Hallpike

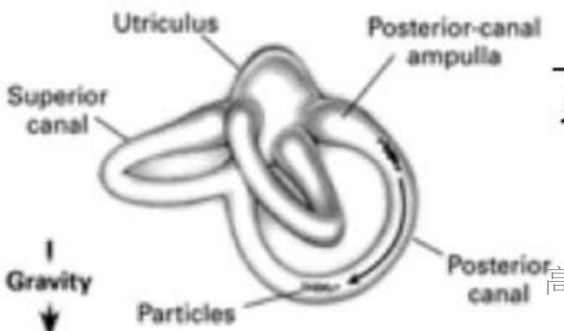
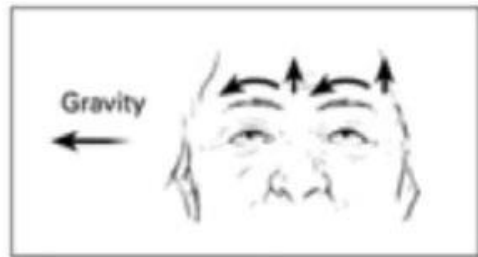




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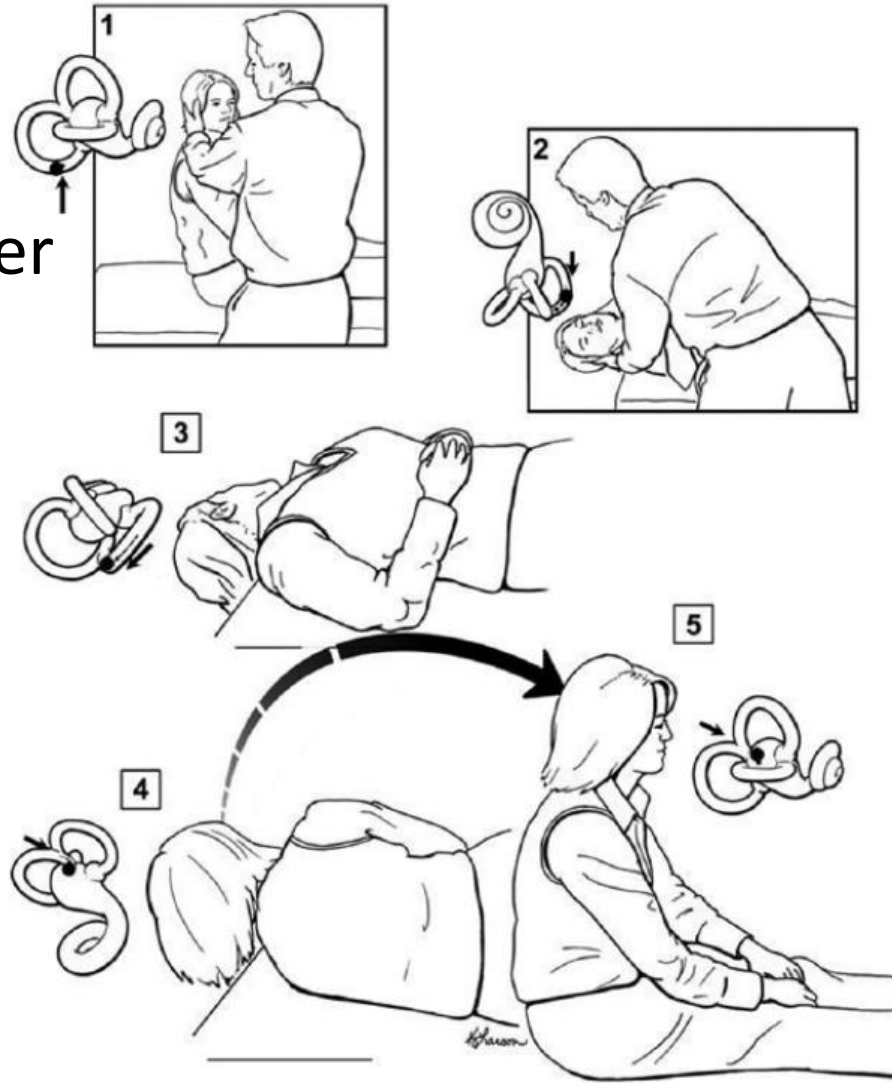


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# Epley maneuver

- Canalith reposition maneuver (CRP)

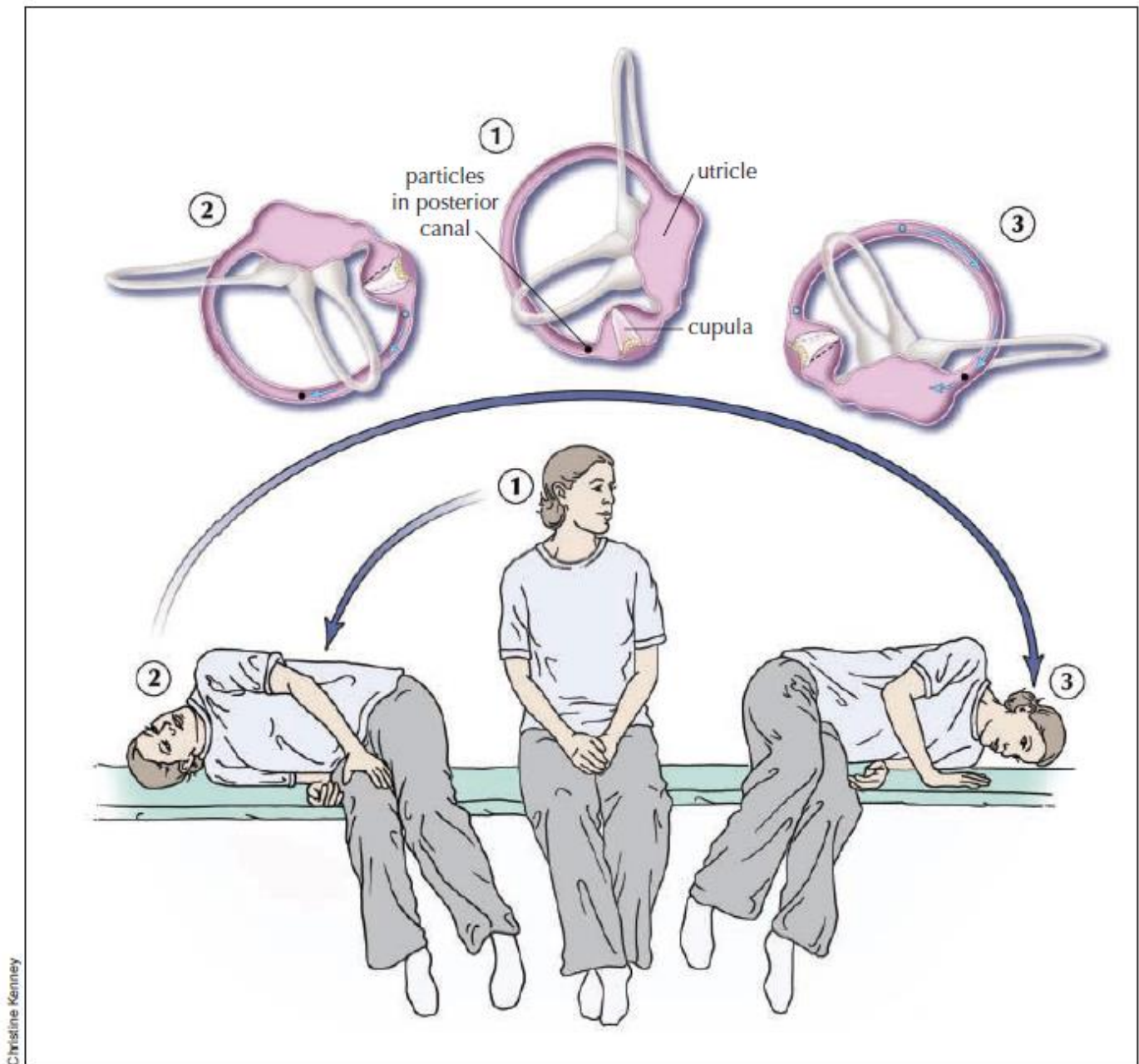


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Step	Action
1	The patient is placed in the upright position with the head turned 45° toward the affected ear (the ear that was positive on the Dix-Hallpike testing).
2	The patient is rapidly laid back to the supine head-hanging 20° position, which is then maintained for 20-30 seconds.
3	Next, the head is turned 90° toward the other (unaffected) side and held for about 20 seconds.
4	Following this, the head is turned a further 90° (usually necessitating the patient's body to also move from the supine position to the lateral decubitus position) such that the patient' head is nearly in the facedown position. This is also held for 20-30 seconds.
5	The patient is then brought into the upright sitting position, completing the maneuver.

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# Semont Liberatory Maneuver



Christine Kenney

**Fig. 7: Liberatory manoeuvre of Semont (right ear).** The top panel shows the effect of the manoeuvre on the labyrinth as viewed from the front and the induced movement of the canaliths (from blue to black). This manoeuvre relies on inertia, so that the transition from position 2 to 3 must be made very quickly.

**Table 11.** Stepwise Description of the Performance of the Semont Liberatory Maneuver (Right Ear Affected).

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Step	Action
1	Start with the patient sitting on a table or flat surface with the head turned away from the affected side.
2	Quickly put the patient into the side-lying position, toward the affected side, with the head turned up. Nystagmus will occur shortly after arriving at the side-lying position. Keep the patient in this position until at least 20 seconds after all nystagmus has ceased (some recommend up to 1-2 minutes).
3	Quickly move the patient back up and through the sitting position so that he or she is in the opposite side-lying position with the head facing down (head did not turn during the position change). Keep the patient in this position for about 30 seconds (some recommend 2-10 minutes).
4	At a normal or slow rate, bring the patient back up to the sitting position.

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Just do it !