



18th WORKSHOP ON NEUROTOLOGY and MEDICAL AUDIOLOGY in KOLKATA

29th Nov to 1st Dec 2019



Canal switch and re-entry phenomenon as cause of persistence or recurrence of BPPV

Francesco Dispenza MD PhD

What is BPPV Recurrence?

- the patient could manifest symptoms immediately after the treatment
- the patient could come back to the doctor after some days
- the patient could come back to the doctor after some months
- the patient has a persistent disease

Recurrence of BPPV

- may be linked to systemic factors
- may be due to persistence of otolith debris into canals
- may be due to reflux of otolith into canal already treated
- may be a “new” disease

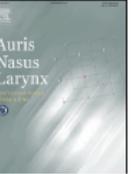
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Auris Nasus Larynx

journal homepage: www.elsevier.com/locate/anl



A multicenter observational study on the role of comorbidities in the recurrent episodes of benign paroxysmal positional vertigo 

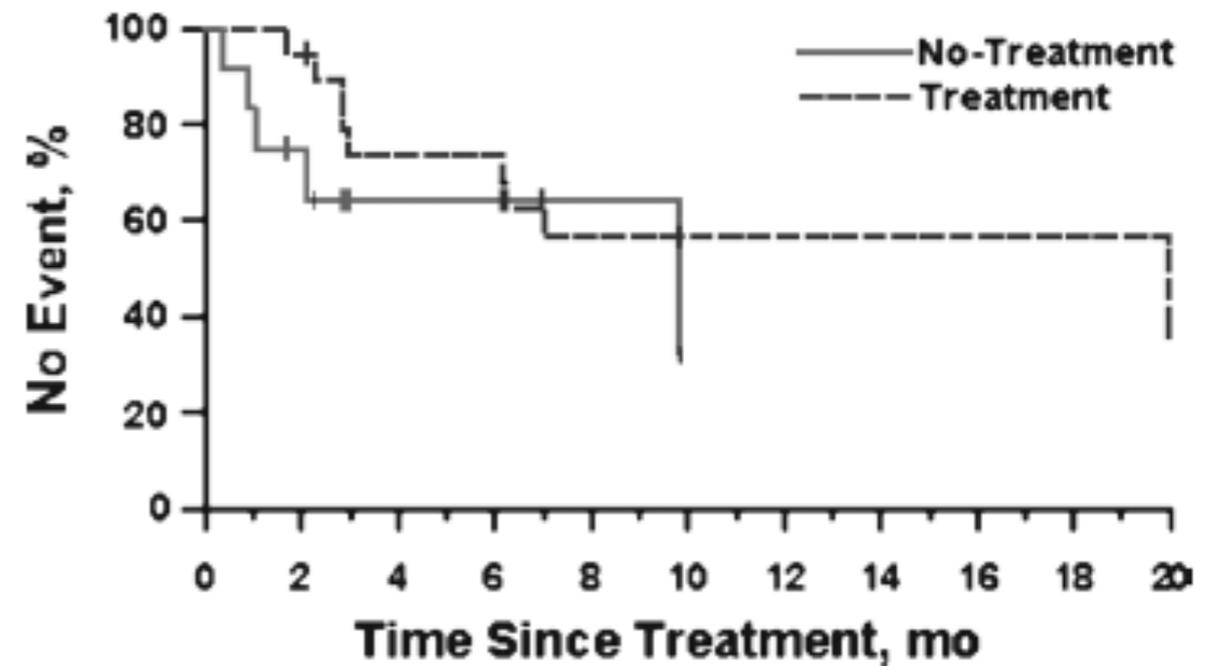
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Table 4
 HODo risk groups predicting BPPV recurrence.

Risk group	Comorbid disorder	Risk of relapse
Group A	BPPV +0 comorbidity	Low risk
Group B	BPPV +1 comorbidity (H, O, D)	Medium risk (>2)
Group C	BPPV +2 or 3 comorbidities (H±O±D)	High risk (>4)
Group D	BPPV +4 comorbidities (H+O+D+o)	Highest risk (>6)

The treatment does not prevent recurrence

- treatment
- daily exercise
- drugs
- postural restriction



Otology & Neurology
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Daily Exercise Does Not Prevent Recurrence of Benign
Paroxysmal Positional Vertigo

*Janet Odry Helminski, †Imke Janssen, and ‡§||Timothy Carl Hain

Persistence of otolith debris into semicircular canals

- the persistence of some debris into canal may cause a residual dizziness or a “immediate” recurrence

Table II. Comparison between patients with and without persistence of dizzy symptoms after treatment; numbers of manoeuvres and recurrence were predictive of persistent dizziness.

		Residual dizziness Yes	Residual dizziness No	P-value
		85 (%) 57.4%	63 (%) 42.6%	
Gender	Male	24 (42.9%)	32 (57.1%)	0.005
	Female	61 (66.3%)	31 (33.7%)	
Age	Average	57 S.d. (14,41)	47 s.d. (10,78)	0.000001
Previous BPPV	None	29 (45.3%)	35 (54.7%)	0.01
Numbers of manoeuvres	More than one	56 (66.7%)	28 (33.3%)	0.000004
	One	34 (41%)	49 (59%)	
	More than one	51 (78.5%)	14 (21.5%)	
Liberatory Ny	No	26 (68.4%)	12 (52.6%)	0,1
	Yes	59 (28.2%)	51 (71.8%)	
Canal reentry	No	80 (56.7%)	61 (43.7%)	0.7
	Yes	5 (71.4%)	2 (28.6%)	
Success of manoeuvres	No	4 (100%)	0 (0%)	0.1
	Yes	81 (56.3%)	63 (43.7%)	
	No	68 (52.3%)	62 (47.7%)	
Recurrence	Yes	17 (94.4%)	1 (5.6%)	0.0005

ACTA OTORHINOLARYNGOLOGICA ITALICA 2019;39:347-352; doi: 10.14639/0392-100X-2247

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VESTIBOLOGY

Observational study on risk factors determining residual dizziness after successful benign paroxysmal positional vertigo treatment: the role of subclinical BPPV

Studio osservazionale sui fattori di rischio che causano residual dizziness dopo il trattamento della vertigine parossistica posizionale benigna: il ruolo della VPPB subclinica

F. DISPENZA¹, W. MAZZUCCO², S. MAZZOLA³, F. MARTINES⁴

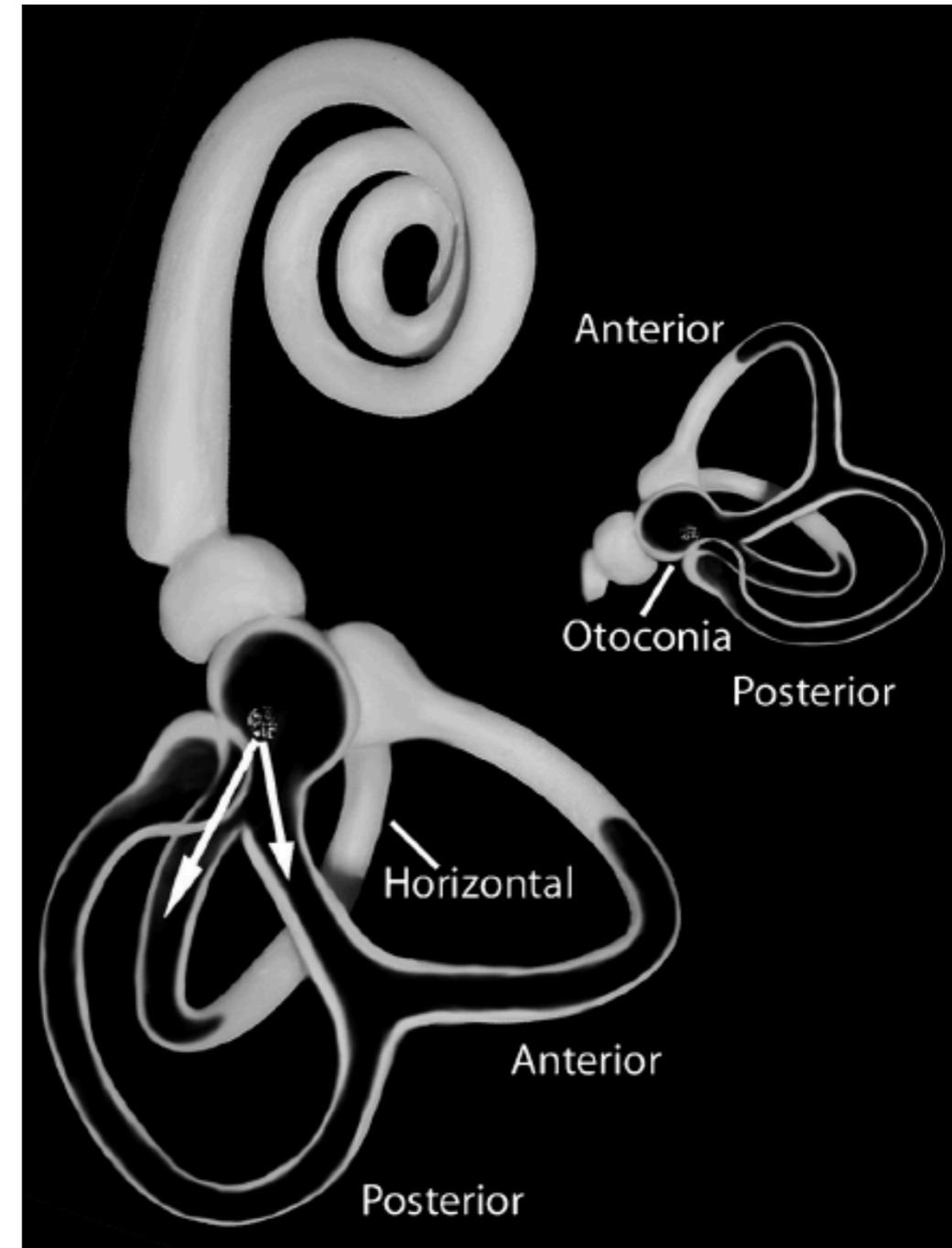
Why the otolith can re-entry into canals?

- after repositioning the debris are in the utricular space, a Dix-Hallpike retest may cause immediate reflux
- some movement of the patient in the period after maneuver may cause re-entry of otolith into one of the vestibular opening of the canals

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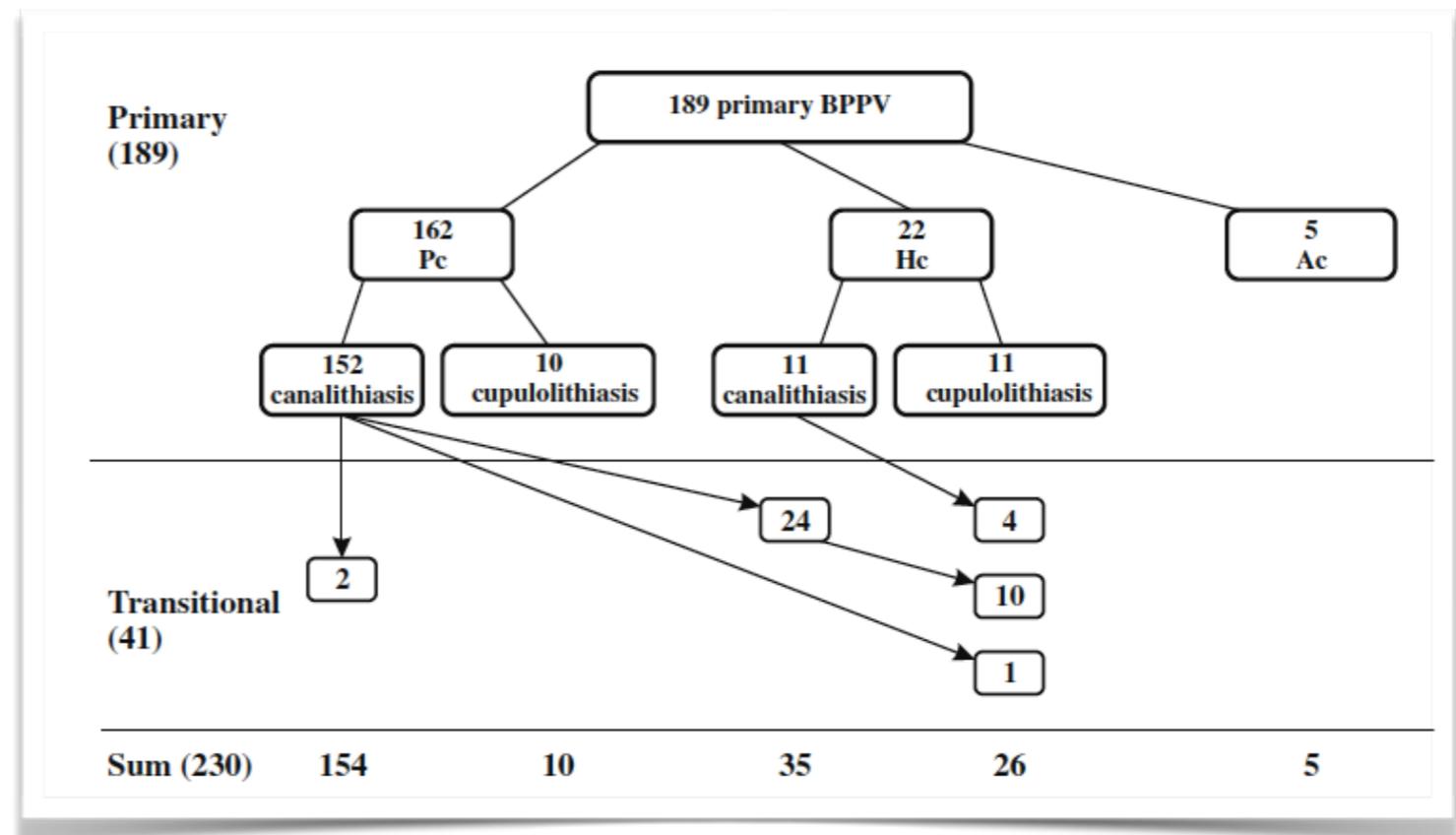
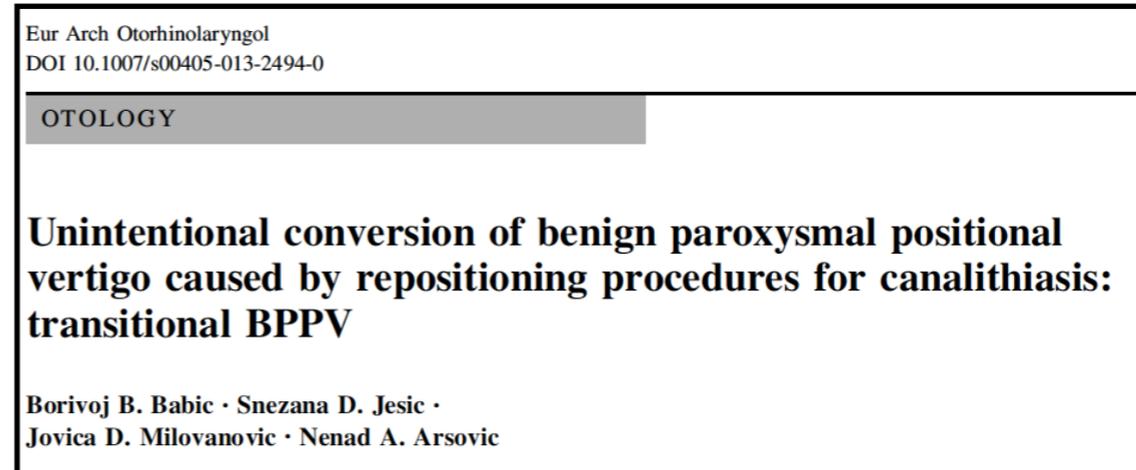
Canal Conversion and Reentry: A Risk of Dix-Hallpike During Canalith Repositioning Procedures

*†Carol A. Foster, †Kathleen Zaccaro, and †Darcy Strong



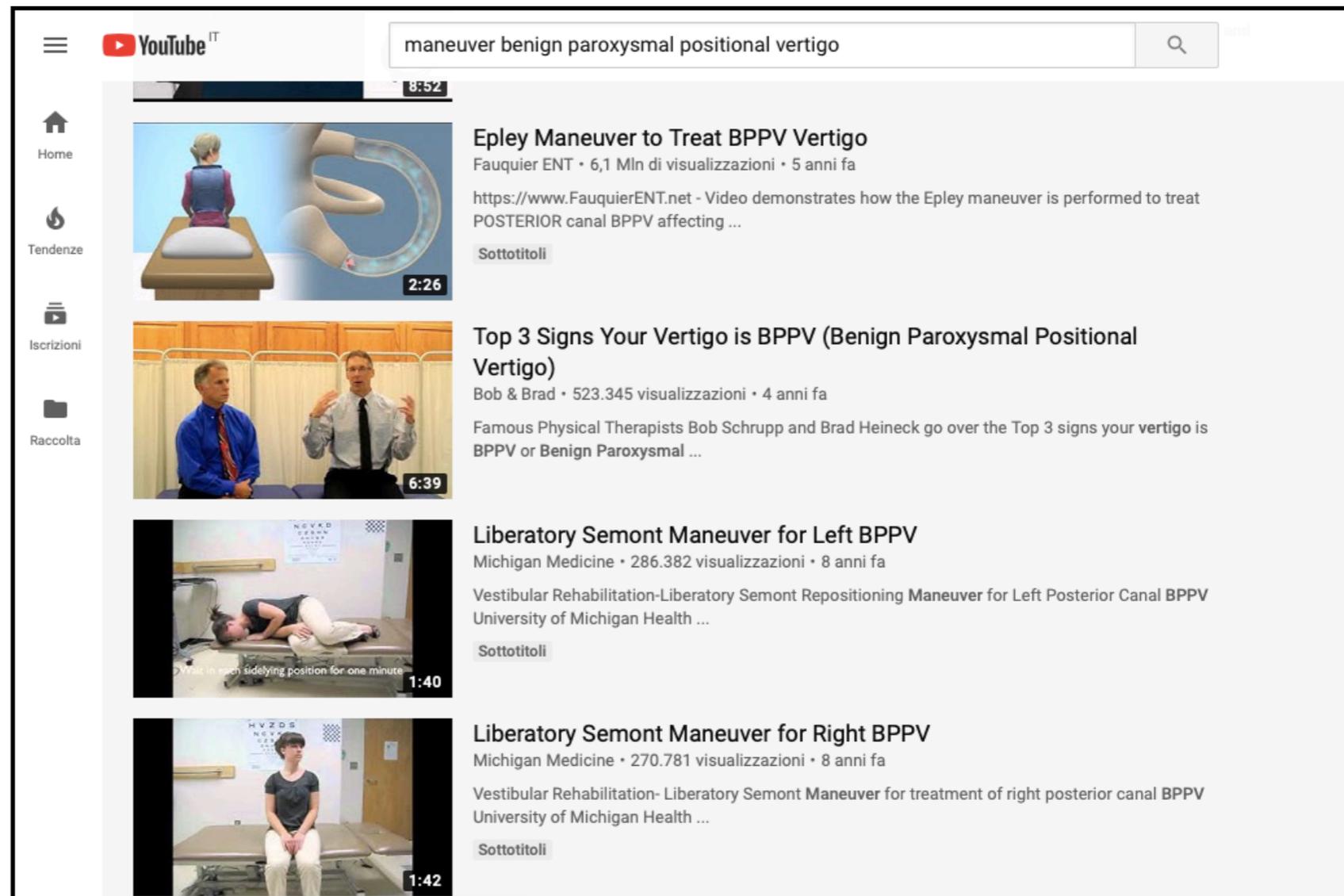
“Transitional Nystagmus”

- means appearance of some BPPV form different from primary already treated (immediate or delayed)
- accidental product of repositioning maneuver (including retest Dix-Hallpike or Head Yaw Test)



“Self-administered” maneuver

- several patients search for quick solution on media available
- the self-administered maneuver is without nystagmus control
- the right diagnosis isn't always simple

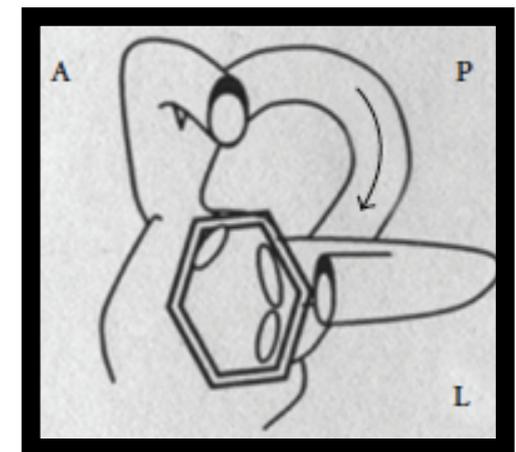
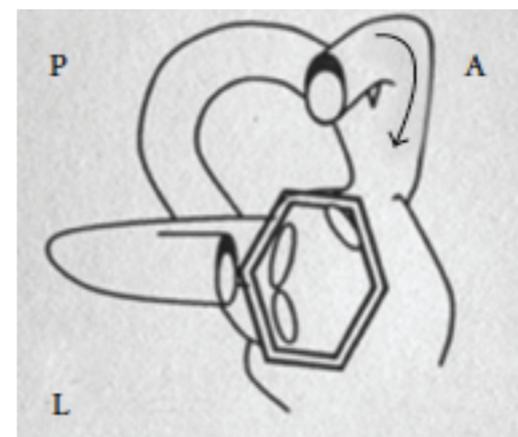
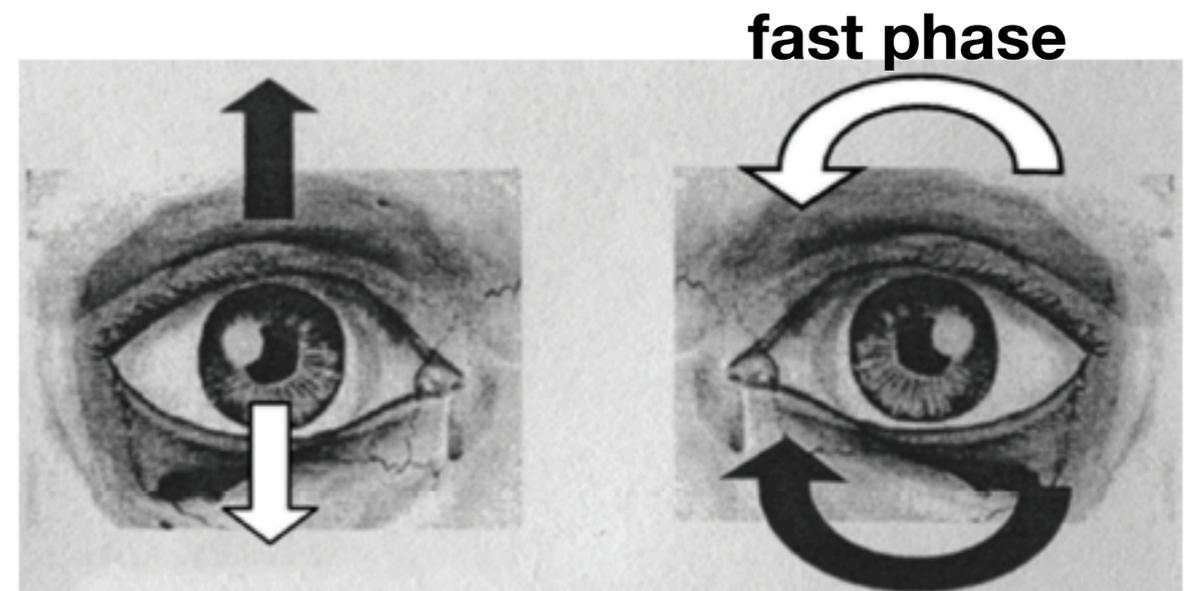


The screenshot shows a YouTube search interface with the query "maneuver benign paroxysmal positional vertigo". The search results are as follows:

- Epley Maneuver to Treat BPPV Vertigo**
Fauquier ENT • 6,1 Mln di visualizzazioni • 5 anni fa
<https://www.FauquierENT.net> - Video demonstrates how the Epley maneuver is performed to treat POSTERIOR canal BPPV affecting ...
Sottotitoli
- Top 3 Signs Your Vertigo is BPPV (Benign Paroxysmal Positional Vertigo)**
Bob & Brad • 523.345 visualizzazioni • 4 anni fa
Famous Physical Therapists Bob Schrupp and Brad Heineck go over the Top 3 signs your vertigo is BPPV or Benign Paroxysmal ...
- Liberatory Semont Maneuver for Left BPPV**
Michigan Medicine • 286.382 visualizzazioni • 8 anni fa
Vestibular Rehabilitation-Liberatory Semont Repositioning Maneuver for Left Posterior Canal BPPV
University of Michigan Health ...
Sottotitoli
- Liberatory Semont Maneuver for Right BPPV**
Michigan Medicine • 270.781 visualizzazioni • 8 anni fa
Vestibular Rehabilitation- Liberatory Semont Maneuver for treatment of right posterior canal BPPV
University of Michigan Health ...
Sottotitoli

What is the clinical sign of immediate reflux into common crus?

- in Dix-Hallpike maneuver done after repositioning session inversion of Ny with prevalent down-beating component
- the Ny pattern may mimic a contralateral ASC canalithiasis
- the repetition of maneuver for PSC in the same session or in further sessions (suggested) is the clinical prove of the otolith position



VESTIBOLOGY

Canal switch and re-entry phenomenon in benign paroxysmal positional vertigo: difference between immediate and delayed occurrence

Conversione canalare e fenomeno del rientro nella vertigine parossistica posizionale benigna: differenze tra forma immediata e ritardata

F. DISPENZA¹, A. DE STEFANO², C. COSTANTINO³, D. RANDO¹, M. GIGLIONE¹, R. STAGNO¹, E. BENNICI¹

- early verification of treatment success with Dix-Hallpike may be related to immediate canal reflux

Table III. Influence on re-entry phenomenon of the timing to repeat the diagnostic manoeuvre after treatment.

Minutes waited before last Dix-Hallpike test	Canal Re-entry			p-value	Canal Re-entry		p value
	None	Delayed n (%)	Immediate		No n (%)	Yes	
- 5	29 (70.7)	2 (4.9)	10 (24.4)	> 0.001	29 (70.7)	12 (29.3)	> 0.001
- 10	41 (95.3)	2 (4.7)	0 (0.0)		41 (95.3)	2 (4.7)	
- 15	42 (97.7)	1 (2.3)	0 (0.0)		42 (97.7)	1 (2.3)	

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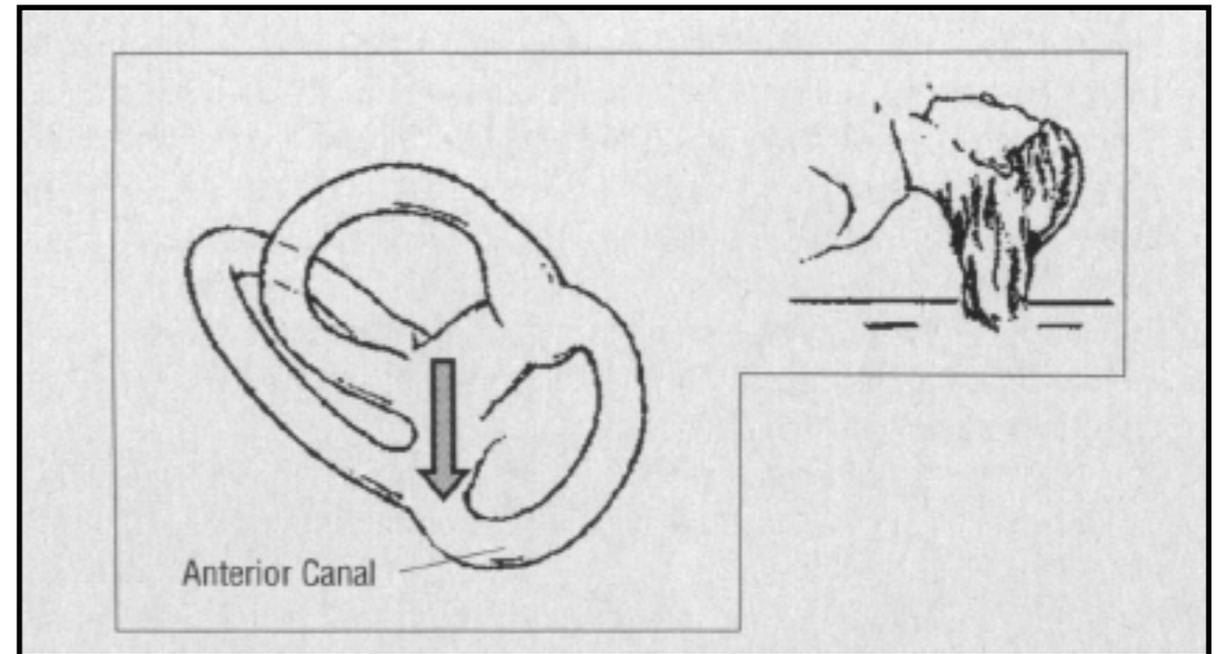
- the high number of maneuver may disperse fragment into canals

Table II. Patients with delayed canal re-entry had more than two manoeuvres in the same session to treat BPPV.

PSC (n = 97)	None	Immediate n (%)	Canal Re-entry		No n (%)	Yes n (%)
			Delayed			
Number of manoeuvres in a single session						
- 1	62 (92.5)	5 (7.5)	0 (0.0)		62 (92.5)	5 (7.5)
- 2	18 (90.0)	2 (10.0)	0 (0.0)		18 (90.0)	2 (10.0)
- 3	5 (71.4)	0 (0.0)	2 (28.6)		5 (71.4)	2 (28.6)
- 4	0 (0.0)	0 (0.0)	1 (100.0)		0 (0.0)	1 (100.0)
- 5	0 (0.0)	0 (0.0)	2 (100.0)		0 (0.0)	2 (100.0)

What is the clinical sign of reflux into anterior canal?

- very rare eventuality
- the patient may return with light positional symptoms in the days after repositioning maneuver
- a down-beating with slight rotatory (to the undermost ear) component is noticeable under video-Frenzel



ORIGINAL ARTICLE

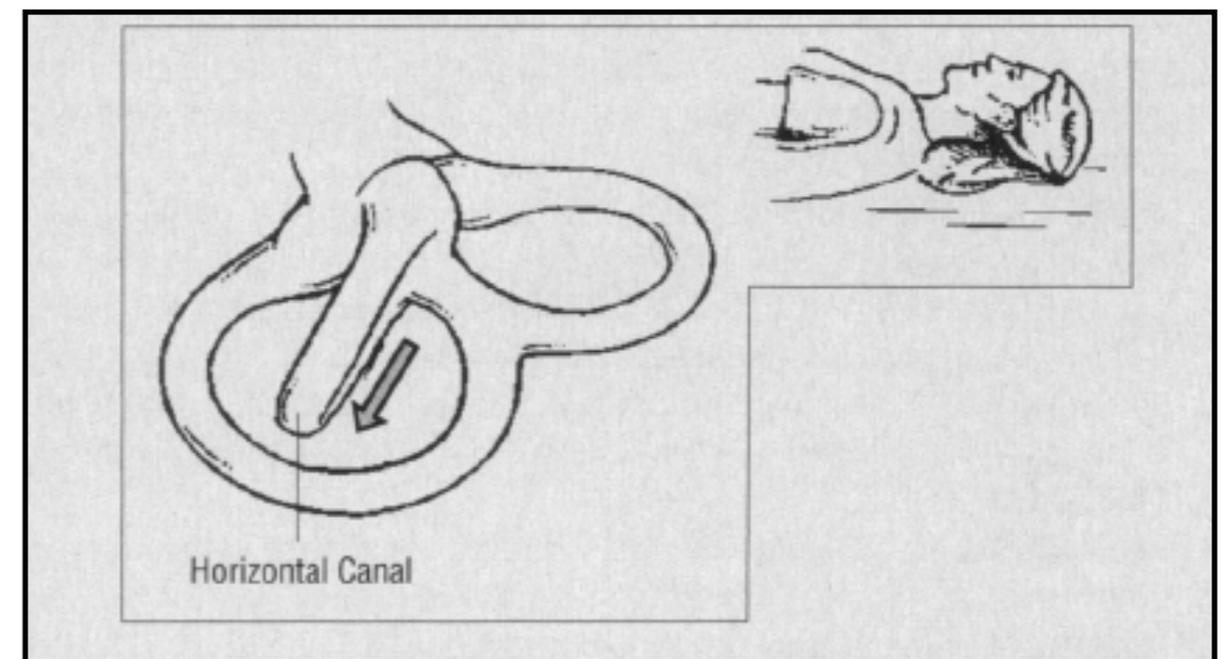
Complications of the Canalith Repositioning Procedure

Susan J. Herdman, PhD, Ronald J. Tusa, MD, PhD

(Arch Otolaryngol Head Neck Surg. 1996;122:281-286)

What is the clinical sign of reflux into horizontal canal?

- the patient have a geotropic horizontal nystagmus in both side Dix-Hallipke position in the period after maneuver, more intense on the same side of treated PSC BPPV
- the eventuality of a new disease in a short time lapsed after maneuver is very unlikely
- sensitive to maneuver for HSC or forced prolonged position



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- recurrent symptoms in the period after treatment may be due to re-entry of otoliths

Table IV. Relationship between re-entry phenomenon and recurrence of BPPV.

Recurrence	Canal Re-entry		p value
	Yes	No	
	n (%)		
- Yes	11 (55.0)	9 (45.0)	> 0.001
- No	4 (3.7)	103 (96.3)	

- Canal Switch BPPV from right PSC to right HSC (geotropic)
- the patient refused further maneuvers
- resolution after forced prolonged position on left side



Key point in conclusion

- always follow the Nystagmus rather than apply only the schematic procedure for each semicircular canal BPPV
- delay or avoid retest if the Nystagmus had proper characteristics of freeing the canals
- recurrence may be due to a persistence of otolith or dispersed fragment into canals

Thank you!



Opera Theaters of Palermo

