Rev. Otorrinolaringol. Cir. Cabeza Cuello 2026; 86: 59-62
doi: 10.4067/S0718-4816202600011568 CLINICAL CASE

Concurrent ipsilateral anterior and posterior canal benign paroxysmal positional vertigo: unmasking by sequential canalith repositioning

Vértigo posicional paroxístico benigno concurrente del canal anterior y posterior ipsilateral: desenmascaramiento mediante el reposicionamiento secuencial

Ajay Kumar Vats[1], Sudhir Kothari[2], Ramesh Rohiwal[3], Shreya Vats[4]

Abstract

Benign paroxysmal positional vertigo (BPPV) that simultaneously involves the ipsilateral anterior and posterior semicircular canals is extremely rare. We report a case in which diagnostic maneuvers initially revealed anterior canal BPPV (AC-BPPV), while posterior canal BPPV (PC-BPPV) became apparent only after an enhanced straight head-hanging test that incidentally repositioned the anterior semicircular canalolithiasis. This case illustrates the diagnostic challenges posed by overlapping nystagmus vectors and emphasizes the importance of retesting after each maneuver. A comprehensive literature review, detailed video-oculography recordings, and illustrative figures are included to enhance clinical understanding.
Keywords: BPPV; anterior semicircular canal; posterior semicircular canal; multicanal BPPV; canalith repositioning maneuver; nystagmus.

Resumen

Vértigo posicional paroxístico benigno (VPPB) que afecta simultáneamente a los canales semicirculares anterior y posterior ipsilaterales es extremadamente raro. Presentamos un caso en el que las maniobras diagnósticas revelaron inicialmente VPPB del canal anterior (VPPB-CA), mientras que el VPPB del canal posterior (VPPB-CP) se hizo evidente solo después de una prueba de suspensión de la cabeza en línea recta mejorada que, incidentalmente, reposicionó la canalolitiasis del canal semicircular anterior. Este caso ilustra los desafíos diagnósticos que plantean los vectores de nistagmo superpuestos y subraya la importancia de repetir la prueba después de cada maniobra. Se incluye una revisión exhaustiva de la literatura, grabaciones detalladas de videooculografía y figuras ilustrativas para facilitar la comprensión clínica.
Palabras clave: *VPPB; canal semicircular anterior; canal semicircular posterior; Vértigo posicional paroxístico benigno multicanal; maniobra de reposicionamiento de canalitos; nistagmo.*

[1]Department of Medicine and Neurology Shantiraj Hospital, Udaipur, Rajasthan, India.
[2]Neurology Department, Poona Hospital, Pune, Maharashtra, India.
[3]ENT Hospital and Vertigo Clinic, Care Ciigma Hospital, Chatrapati Sambhajinagar, Maharashtra, India.
[4]Otoneurology Centre, 6-A, B-Block, Shkiarbadi, Goverdhan Villas, Udaipur, Rajasthan, India.

The authors declare no conflicts of interest.

Received 15 September 2025.
Accepted 24 November 2025.

Corresponding author:
Ajay Kumar Vats
Department of Medicine and Neurology Shantiraj Hospital, Udaipur, Rajasthan, India
Email: vatsneuro@gmail.com

Introduction

Benign paroxysmal positional vertigo (BPPV) is the most common cause of peripheral vertigo. Posterior semicircular canal involvement predominates, whereas anterior canal BPPV is rare (< 2%)[1]. Simultaneous ipsilateral involvement of anterior and posterior canals has been documented only in isolated reports (AC, and PC)[2,3]. Overlapping torsional and vertical nystagmus vectors may mask one canal's involvement, complicating diagnosis. This report presents a rare case of simultaneous AC- and PC-BPPV, unmasked only after sequential canalith repositioning[4,5].

ISSN 0718-4816 versión en línea - ISSN 0716-4084 versión impresa

Case Presentation

A 33-year-old woman presented with a two-day history of positional vertigo. The right Dix–Hallpike test elicited transient right torsional downbeating nystagmus, consistent with right anterior canal benign paroxysmal positional vertigo (AC-BPPV). An enhanced straight head-hanging test reproduced the identical nystagmus pattern but concurrently treated the anterior canal variant. Because this maneuver resolved the right AC-BPPV, the subsequent right side-lying test evoked right torsional upbeating positional nystagmus lasting less than one minute, which was diagnostic of coexisting right posterior canal BPPV (PC-BPPV). This sequential unmasking confirmed same-side dual-canal (anterior and posterior) involvement, with the anterior semicircular canalolithiasis initially masking the posterior semicircular canalolithiasis (**Figure 1A-C**).

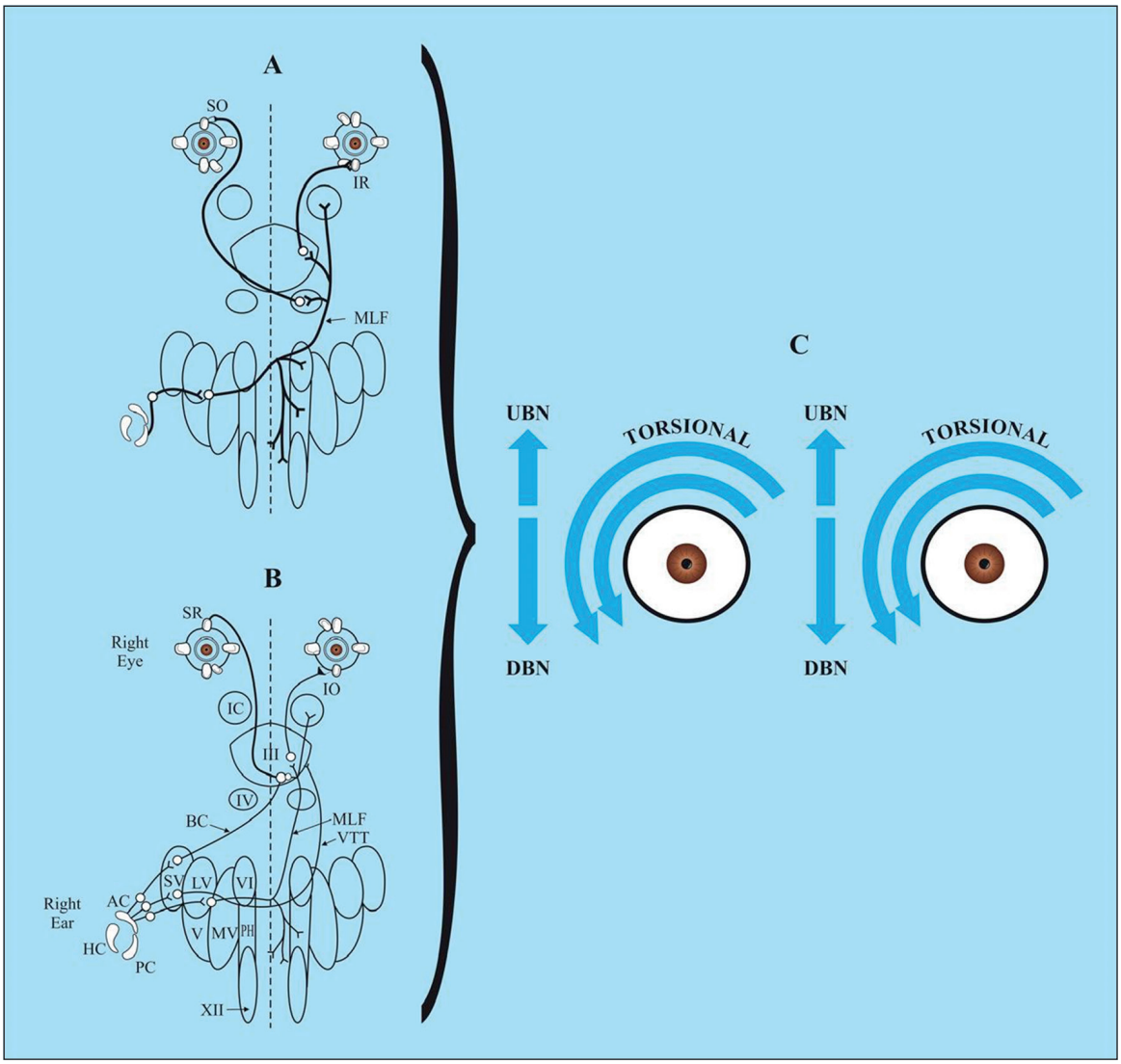

Figure 1. Nystagmus Vectors. **1A:** Excitatory projections of the right posterior canal. **1B:** Excitatory projections of the right anterior canal. **1C:** Summated torsional nystagmus showing masking of PC-BPPV by dominant AC-BPPV vertical component.

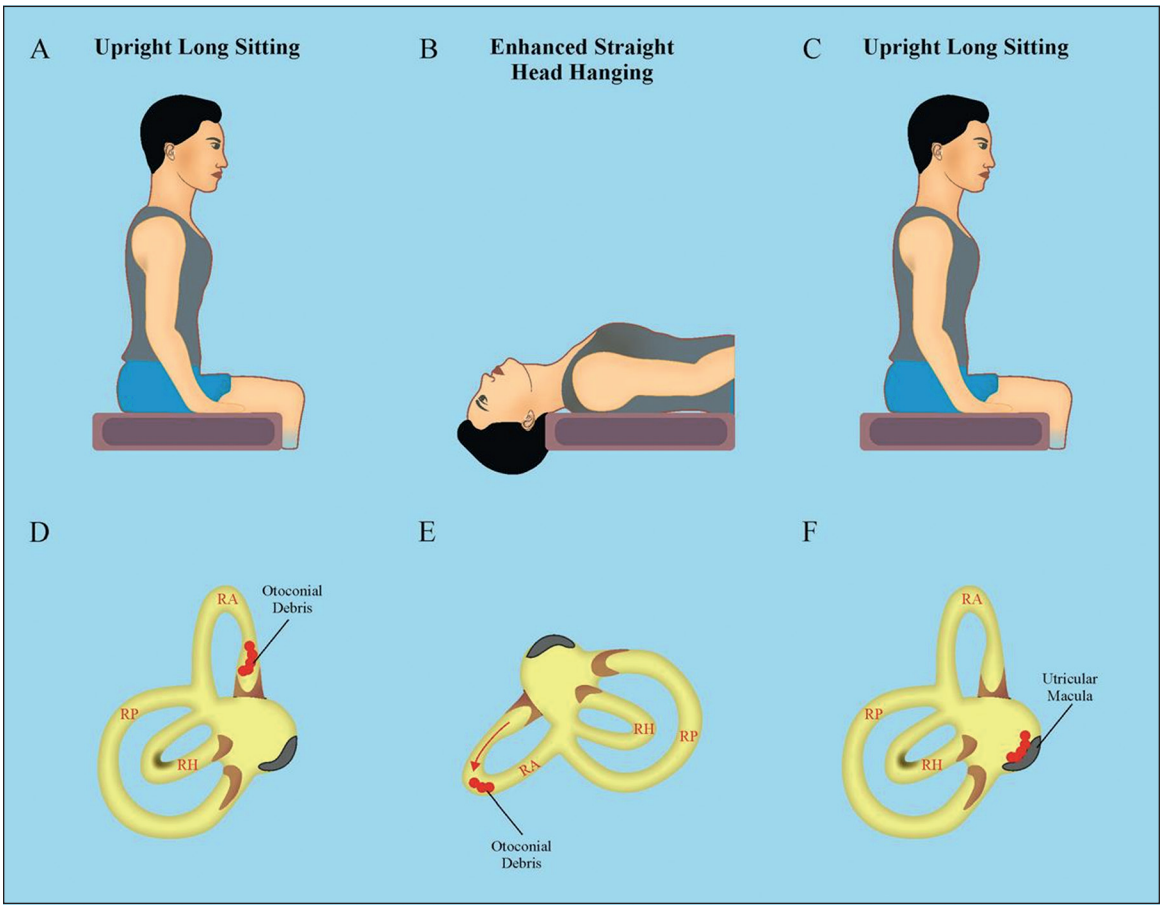

Figure 2. Maneuver Sequence and Otoconial Movement **A:** Upright sitting. **B:** Enhanced Straight Head Hanging. **C:** Return to sitting. **D-F:** Otoconial movement through right anterior canal toward the utricle.

Mechanism and Maneuvers

Figures 2A–F illustrate otoconial debris movement during the enhanced straight head-hanging test. The maneuver confirmed AC-BPPV and simultaneously caused otoconial debris migration from the ampullary arm of right anterior semicircular canal to the utricular macula, allowing PC-BPPV to be unmasked during retesting[5].

Discussion

Simultaneous ipsilateral anterior and posterior canal BPPV poses diagnostic challenges due to vector interactions. The stronger downbeating vertical component of AC-BPPV can mask the upbeating vertical component of PC-BPPV in standard positional maneuvers. Literature reports multicanal involvement in 5-15% of BPPV cases[6]. AC to PC canal conversion is reported in 12% of anterior canal cases[7]. Immediate retesting after repositioning is essential to identify unmasked or newly converted canalolithiasis[8, 9]. The complete video sequence of diagnostic oculomotor responses can be accessed online by clicking the weblink[10].

Conclusion

This case demonstrates that sequential positional testing may unmask hidden multicanal

BPPV. Clinicians should retest immediately after diagnostic and therapeutic maneuvers, especially when nystagmus vectors appear atypical or incomplete.

Acknowledgments

The authors acknowledge Mr. Renith Kurian for video recording of diagnostic and therapeutic maneuvers and accurately documenting the nystagmus during the entire diagnostic and treatment period. The authors also extend thanks to Mr. Ashraf Hussain for creating Figures 1 and 2 using CorelDraw graphics suite 2019.

Research involving Human Participants and/or Animals

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee (Neurology Centre, Udaipur, IRB no. NC/Aug/2025/01) and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors.

Informed consent

Informed consent was obtained from all individual participants included in this study.

References

1. Korres S, Balatsouras DG, Kaberos A, Economou C, Kandiloros D, Ferekidis E. Occurrence of Semicircular Canal Involvement in Benign Paroxysmal Positional Vertigo. *Otology & Neurotology.* 2002;23(6):926-932. doi: 10.1097/00129492-200211000-00019.
2. Lopez-Escamez JA, Molina MI, Gamiz MJ, et al. Multiple positional nystagmus suggests multiple canal involvement in benign paroxysmal positional vertigo. *Acta Oto-Laryngologica.* 2005;125(9):954-961. doi: 10.1080/00016480510040146.
3. Califano L, Montanaro SC, Capparuccia PG, Di Maria D, Villari G. Case report: ipsilateral association of posterior and anterior canalolithiasis. *Acta Otorhinolaryngol Ital.* 2002;22(6):376-9.
4. Shim DB, Song CE, Jung EJ, Ko KM, Park JW, Song MH. Benign Paroxysmal Positional Vertigo with Simultaneous Involvement of Multiple Semicircular Canals. *Korean J Audiol.* 2014;18(3):126. doi: 10.7874/kja.2014.18.3.126
5. Balatsouras DG, Koukoutsis G, Ganelis P, Korres GS, Kaberos A. Diagnosis of Single- or Multiple-Canal Benign Paroxysmal Positional Vertigo according to the Type of Nystagmus. *International Journal of Otolaryngology.* 2011; 2011:1-13. doi: 10.1155/2011/483965.
6. Traboulsi H, Teixido M. Qualitative analysis of the Dix-Hallpike maneuver in multi-canal BPPV using a biomechanical model: Introduction of an expanded Dix-Hallpike maneuver for enhanced diagnosis of multi-canal BPPV. *World j otorhinolaryngol-head neck surg.* 2017;3(3):163-168. doi: 10.1016/j.wjorl.2017.01.005.
7. Park S, Kim BG, Kim SH, Chu H, Song MY, Kim M. Canal Conversion Between Anterior and Posterior Semicircular Canal in Benign Paroxysmal Positional Vertigo. *Otology & Neurotology.* 2013;34(9):1725-1728. doi: 10.1097/mao.0b013e318294227a.
8. Wu Y, Song N, Ling X, et al. Canal switch in benign paroxysmal positional vertigo: Clinical characteristics and possible mechanisms. *Front Neurol.* 2022;13. doi: 10.3389/fneur.2022.1049828.
9. Scotto di Santillo L, Califano L. Canal switch: a possible complication of physical therapeutic manoeuvers for posterior canal benign paroxysmal positional vertigo. *Acta Otorhinolaryngol Ital.* 2023;43(1):49-55. doi: 10.14639/0392-100x-n2016.
10. Vats AK. Co-occurring Right Anterior and Posterior Semicircular Canal BPPV. 2025; mp4. figshare. Media. https://doi.org/10.6084/m9.figshare.30052906.v1