

# *Epley's Maneuver in Benign Paroxysmal Positional Vertigo: Series of Cases Reports*

## *Manobra de Epley na Vertigem Posicional Paroxística Benigna: Relato de Série de Casos*

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Financial sponsorship: Brazilian National Foundation for the Development of Private Education – Funadep – Scientific Initiation Scholarship.

Article received on October 18, 2010. Article approved on February 5, 2011.

### SUMMARY

**Introduction:** Benign paroxysmal positional vertigo (BPPV) is probably the most common cause of vertigo in women.  
**Objective:** To report the result of Epley's maneuver when treating BPPV patients.  
**Method:** Study of a series of 9-month-long cases of five female individuals aged between 46 and 64 with BPPV, who were submitted to Epley's maneuver at a scholar clinics, having the positive Dix-Hallpike maneuver at the first consultation as an inclusion criterion, and evaluations were repeated in a six and nine-month term.  
**Results:** Only one Epley's maneuver, as the only therapeutic procedure, was enough to eliminate nystagmus and positional vertigo in 4 patients, who did not show a positive Dix-Hallpike maneuver in the two reevaluations performed. Only one patient showed BPPV in the first reevaluation of the study term, and nystagmus reoccurred in the second evaluation only.  
**Conclusion:** Epley's repositioning maneuver proved to be a simple and effective BPPV treatment method for this study's patients at length.  
**Keywords:** vertigo, quality of life, women.

### RESUMO

**Introdução:** A Vertigem posicional paroxística benigna (VPPB) é provavelmente a causa mais comum de vertigem em mulheres.  
**Objetivo:** Relatar o resultado da manobra de Epley no tratamento de pacientes com VPPB.  
**Método:** Estudo de série de casos longitudinal de nove meses de cinco indivíduos do gênero feminino com idade entre 46 e 64 anos, com VPPB, submetidas à Manobra de Epley, em clínica escola, tendo como critério de inclusão a manobra de Dix-Hallpike positiva na primeira seção sendo reavaliada no prazo de seis e nove meses.  
**Resultados:** Apenas uma manobra de Epley, como único procedimento terapêutico, foi suficiente para abolir o nistagmo e a vertigem de posicionamento em 4 pacientes, que não apresentaram a manobra de Dix-Hallpike positiva nas duas reavaliações efetuadas. Apenas um paciente voltou a apresentar VPPB na primeira reavaliação do período de estudo, tendo a recidiva do nistagmo apenas na segunda avaliação.  
**Conclusão:** A manobra de reposicionamento de Epley demonstrou ser um método de tratamento da VPPB simples e eficaz, a longo prazo nas pacientes do estudo.  
**Palavras-chave:** vertigem, qualidade de vida, mulheres.

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## INTRODUCTION

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Whenever there is a disagreement about the integration of sensorial information responsible for postural control, dizziness appears to be a symptom of equilibrium dysfunction (1).

When rotating, dizziness is called vertigo, what is a disturbance sensation of the body equilibrium found in quite a lot of diseases, and it affects especially the elderly. In 85% of the cases, its background is associated with vestibular system disorders, and its symptomatology generally occurs when moving the head or changing postures (2-4).

Benign Paroxysmal Positional Vertigo (BPPV) is one of the most frequent alterations of the vestibular system and impairs a big percentage of the elderly (2-3). BPPV's frequent clinical characteristic is a sudden crisis, sometimes severe, sometimes short-lasting, with the symptom completely disappearing within 45 seconds, and it has typically unleashing movements, such as laying down, getting up from bed, turning around when laying down, moving head to look upward.

In general, individuals can identify the position that unleashes the crisis and start avoiding it regularly, leading to postural alterations and/or disorders that worsen the disease and increase functional inability (4, 5). Some of the interventions performed in BPPV patients are the vestibular training exercises, labyrinth sedative drugs that aggravate the symptomatology, while waiting for a natural BPPV regression; surgical ablation of the posterior semicircular canal and the repositioning maneuvers, such as: Sermont releasing maneuver and Epley canalith repositioning (6).

BPPV's diagnostic research is performed by Dix-Hallpike maneuver (6) that consists of moving the patient's head in a way to displace the endolymph and, as a result, the cupola of the posterior semicircular canal.

Canalith repositioning maneuver, presenting a high ratio of improvement or cure is the most used one to treat BPPV that impairs the posterior or anterior semicircular canal, is comprised of a range of head movements enabling the otoliths to return to utricle, where they will be absorbed or eliminated by the endolymphatic sac.

Studies show a great importance to reposition canal (8-12). In a 40-patient study, where 20 were submitted to canalith repositioning maneuver and 20 were submitted to a placebo, after a week it was noticed that all the patients showed a negative Dix-Hallpike maneuver, while only

30% of the control group showed a negativity during the aforementioned evaluation maneuver (11).

In a systematic literature's revision to assess the efficiency of releasing maneuvers in BPPV-diagnosed patients, it was concluded that kinesiotherapy through Epley's maneuver is effective to treat BPPV in comparison with placebo and/or an isolated medicamentous treatment and/or non-intervention (4).

Based on such statements, the objective of this study was to report the result of Epley's maneuver to treat patients having Benign Paroxysmal Positional Vertigo (BPPV).

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## METHOD

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5 patients with vertigo complaints participated in this study and were submitted by doctors at the Unified Health System (SUS), who performed the first evaluation between September and October 2008 in the university project to serve vertigo patients at the Phonoaudiology Clinic of the UNOPAR-PR's Health Science Center. All the studied individuals were female aged between 46 and 64. Besides, they signed a term of free and clarified agreement to participate in this research.

A study was carried out outlining the series of cases, time-length, having as an inclusion criterion the vertigo complaint with subsequent confirmation of diagnosis by performing Dix-Hallpike maneuver, where the presence of positioning vertigo and limited-time nystagmus were seen, in addition to latency and fatigability when repeating Dix-Hallpike test as described below.

In Dix-Hallpike maneuver, the patient is initially sitting with his/her head turned sideward (right or left, in accordance with the side to be tested), in approximately 45 degrees. When examiner holds the patient's head, it causes a sharp and quick lay-down movement, in horizontal dorsal decubitus. When laying down, as head is not horizontally fixed, head remains like a pendulum backward in approximately 30 degrees. Patient is immobilized in this position, with eyes open and fixed. BPPV patients have a clear nystagmus a few seconds after the stimulus (latent), which is shorter than 45 seconds (drainable) (6).

Registration of positional and positioning nystagmus by way of Dix-Hallpike maneuver was made by the video frenzel equipment (Neurograff Eletromedicina - Brazil). The images of eye movements to analyze the alterations of the Vestibular system were collected by an infrared micro camera connected to a full-thermal sealing mask at the entrance of light, increasing the sensitivity to detect rotary nystagmus.

Patients with other otoneurologic disorders did not participate in this research.

All the evaluated patients had in common the presence of 20-second long positional nystagmus with latency, as well as fatigability since repeating the maneuver caused nystagmus and vertigo to disappear.

The phonoaudiological treatment performed with the patients consisted of Epley's maneuver as the only therapeutic procedure (4), namely.

The maneuver consists of making a wide range of changes in cervical posture repositioning the crystals in the semicircular canals. Firstly, the patient is sitting in a stretcher, secondly he/she lies down in dorsal decubitus position, turns his/her head around to the side where Dix-Hallpike test is positive, next he/she rotates his/her head to the opposite side and turns decubitus around to the same side and, eventually, he/she goes back to sitting position (13). After the positioning maneuver is performed, recommendation is made to avoid sleeping with the head in an upper position with pillows and in supine, not to make harsh movements of the head, especially to the sides, upward and downward.

Case 1 – Patient E.V.O., 64-year-old female. During anamnesis, she complained about vertigo, mainly at times when waking up, for more than one year. She stated that she makes use of medicamentous treatment for vertigo, anxiety and hypothyroidism. Presence of rotary vertical nystagmus shorter than one minute, together with vertigo, when standing up to the left.

Case 2 – Patient M.L.G., 58-year-old female. During anamnesis, she complained about diabetes, vertigo, especially when changing positions, in the last 6 months, besides tinnitus. And she also declared to be under a medicamentous treatment for diabetes and vertigo. Presence of rotary vertical nystagmus, counterclockwise shorter than one minute, together with vertigo, to the right.

Case 3 – Patient M.M., 61-year-old female. During anamnesis, she mentioned diabetes, primary hypercholesterolemia, arterial hypertension and vertigo, especially when changing position, for years. She declared to use drugs to reduce the high plasma levels of total cholesterol, LDL cholesterol, as well as drugs to treat diabetes and arterial hypertension. Presence of rotary vertical nystagmus, clockwise, under one minute, together with vertigo, bilaterally.

Case 4 – Patient S.F., 46-year-old female. During anamnesis, she complained about vertigo, especially when she is nervous, in addition to tinnitus, and it has occurred for

more than one year. She declared to use drugs for cephalgia. Presence of rotary vertical nystagmus, clockwise, under one minute, together with vertigo, to the left.

Case 5 – Patient M.J.O., 48-year-old female. During anamnesis, she complained about anemia since she became menopausal. She complains about vertigo, especially when laying down and changing position in bed, for 4 months. She declared to be under a medicamentous treatment for vertigo and anxiety. Presence of rotary vertical nystagmus, counterclockwise shorter than one minute, together with vertigo, standing up to the right.

The research was submitted to appraisal by the Ethical Committee, in order to analyze research projects according to Proceeding Nº 0063/08 and it was assessed and approved by UNOPAR's Ethical Committee as per the National Council of Health's Resolution 196, as of 10/10/1996.

## RESULTS

Among the 5 evaluated patients, all of them had nystagmus obliteration found by the absence of positional and positioning nystagmus during Dix-Hallpike's maneuver and they mentioned an improvement after the first canalith positioning maneuver, and the complaint about vertigo has disappeared.

Under reevaluation 6 months after canalith repositioning maneuver, it has been found that 4 of the patients had no longer vertigo occurrences and they showed no nystagmus during Dix-Hallpike maneuver. Only one of the patients, 46-year-old S.F. returned to show BPPV, requiring canalith repositioning maneuver to be repeated.

After the 9-month term of evaluation and canalith repositioning maneuver, the 4 patients declared to be feeling well without new vertigo episodes. 46-year-old S.F. also declared that she no more had any vertigo episodes after the second canalith repositioning maneuver occurred in the last 3 months, showing a negative Dix-Hallpike.

## DISCUSSION

As BPPV is a highly prevalent nosological entity, usually underdiagnosed, applying an effective treatment is important to control its symptoms. One of the most used BPPV therapeutic options consists of mechanical vestibular rehabilitation maneuvers, such as Epley's maneuver described in 1992, regarded as the most popular one for it

presents outstanding therapeutic rates of clinical improvement (12).

Arterial hypertension and heart failure can cause hearing and vestibular alterations as a result of the peripheral and/or central impairment of the auditory and/or vestibular systems (11-14). Patient M.M. showed an arterial hypertension, associating the discovery of arterial hypertension with the time when vertiginous crisis started. Even though presenting such systemic alterations that in literature are deemed to aggravate the vestibular disease (11-14), patient showed a significant improvement only with repositioning maneuver, and she had no new crisis within the term of this study.

Cervical diseases can lead to vertebrobasilar insufficiency, due to the compression of the vertebral artery and a reduction in the blood flow of this territory, what can cause labyrinthic symptoms like vertigo to appear (1-14). This is the patient S.F.'s case, who showed BPPV disease again during reevaluation. Probably because of the cervical disease, which caused some tension in the region and restrained its movements, this patients, in the months following the first Epley's maneuver, can have BPPV reappearing in consequence of the vasoconstriction eminent in these cases.

The bibliographical revision made to perform this work and the data obtained by this study clearly show that the complex involvement of metabolic, hormonal, circulatory and even emotional alterations found in women at these patients' age, can lead to complications in a number of body parts, including the inner ear, making vertigo appear and become worse.

Since life expectation is longer and longer, a series of studies has been developed in a way to contribute to a better quality of life for the elderly, taking into consideration the importance and differences of each group with respect to what they themselves treasure in their well-being, some of these studies are focused on middle-aged individuals between 45 and 64 years of age (14, 16-18). This as well occurred with the people in this study.

In this study, as regards Epley's maneuver, patients were reevaluated in a-month term through Dix-Hallpike maneuver and daily examinations. Negative test responses were observed in 88.9% of the group submitted to the aforementioned maneuver (19).

A systematic review (12) mentions that the researched literature in the last 5 years showed that Epley's maneuver is effective and maintains the results for at least 3 months after it is used, and therefore it does not any variants or associations with other therapies to reach a good

therapeutic BPPV result. Still according to literature, approximately 75% of the patients get rid of the symptoms with only one maneuver. This percentage is raised when treatments are repeated. In this research with five patients, who improved after Epley's maneuver, only one had a new crisis within 6 months.

The right mechanism by which particles leave the utricle and fall down in SCC is not defined in most cases. The authors observed that around 50% of the cases are idiopathic, while trauma, vestibular neuritis, vertebrobasilar ischemia, post-surgical, and a long-term relaxation are the most widespread causes (11). The author also mentions a 2:1 ratio between women and men in the idiopathic BPPV group, while in the group of cases with a defined etiology, ratio is 1:111.

Since the dizziness is usually a major populational concern, especially for being associated with a higher risk of downfalls (20), it is crucial that all health professionals are aware of the symptoms and possibilities of treatment, with a view to providing this part of the population with a better quality of life.

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## CONCLUSION

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Canalith repositioning maneuver proved to be a simple and efficient long-term BPPV treatment method for four of the five patients mentioned in this study.

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## BIBLIOGRAPHICAL REFERENCES

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1. Ganança FF, Castro ASO, Branco FC, Natour J. Interferência da tontura na qualidade de vida de pacientes com síndrome vestibular periférica. *Rev Bras Otorrinolaringol.* 2004, 70(1):97-101.
2. Murray KJ, Hill K, Phillips B, Waterston J. A pilot study of falls risk and vestibular dysfunction in older fallers presenting to hospital emergency departments. *Disabil. Rehabil.* 2005, 2(9):499-506.
3. Ganança MM, Caovilla HH, Munhoz MSL, Silva MLG. Alterações da audição e do equilíbrio corporal no idoso. *Rev Bras Med.* 1999, 56(10):995-1011.
4. Teixeira LJ, Machado JNP. Manobras para o tratamento da vertigem posicional paroxística benigna: revisão sistemática da literatura. *Rev Bras Otorrinolaringol.* 2006, 72(1):130-9.
5. Resende CR, Taguchi CK, Almeida JG, Fujita RR. Reabilitação vestibular em pacientes idosos portadores de

- vertigem posicional paroxística benigna. *Rev Bras Otorrinolaringol.* 2003, 69(4):535-40.
6. Maia RA, Diniz FL, Carlesse A. Manobras de reposicionamento no tratamento da vertigem paroxística posicional benigna. *Rev Bras Otorrinolaringol.* 2001, 5(67):612-6.
7. Woodworth BA, Gillespie MB, Lambert PR. The canalith repositioning procedure for benign positional vertigo: a meta-analysis. *Laryngoscope.* 2004, 114(7):1143-6.
8. Helminski JO, Janssen I, Kotaspuikis D, Kovacs K, Sheldon P, McQueen K, et al. Strategies to prevent recurrence of benign paroxysmal positional vertigo. *Arch Otolaryngol Head Neck Surg.* 2005, 131:344-8.
9. Hansson EE, Mansson NO, Hakansson A. Benign paroxysmal positional vertigo among elderly patients in primary health care. *Gerontology.* 2005, 51(6):386-9.
10. Inukai K, Koizuka I, Takahashi S. Head-tilting stabilometry in patients with benign paroxysmal positional vertigo. *Auris Nasus Larynx.* 2008, 35(1):31-5.
11. Sridhar S, Panda N, Raghunathan M. Efficacy of particle repositioning maneuver in BPPV: a prospective study. *Am J Otolaryngol.* 2003, 24(6):355-60.
12. Ganança FF, Simas R, Ganança MM, Korn GP, Dorigueto RS. É importante restringir a movimentação cefálica após a manobra de Epley? *Rev Bras Otorrinolaringol.* 2005, 71(6):764-8.
13. Burlamaqui JC, de Campos CAH, Mesquita Neto O. Manobra de Epley para Vertigem Postural Paroxística Benigna: revisão sistemática. *Acta ORL.* 2006, 24(1):38-45.
14. Marchiori LLM, Rego Filho EA, Matsuo T. Hipertensão como fator associado à perda auditiva. *Rev Bras Otorrinolaringol.* 2006, 72(4):533-40.
15. Marchiori LLM, Rego Filho EA. Queixa de vertigem e hipertensão arterial. *Rev CEFAC.* 2008, 9(1):116-21.
16. Gazzola JM, Aratani MC, Perracini M, Ganança MM, Ganança FF. Circunstâncias e consequências de quedas em idosos com vestibulopatia crônica. *Rev Bras Otorrinolaringol.* 2006, 72(3):388-93.
17. Ganança MM, Caovilla HH, Munhoz MSL, Silva MLG, Ganança FF, Ganança CF. Lidando com a vertigem posicional paroxística benigna. *Acta AWHO.* 2005, 23(2):18-25.
18. Nishino LK, Ganança CF, Manso A, Campos CAH, Korn GP. Reabilitação vestibular personalizada: levantamento de prontuários dos pacientes atendidos no ambulatório de otoneurologia da I.S.C.M.S.P. *Rev Bras Otorrinolaringol.* 2005, 71(4):440-7.
19. Lynn S, Pool A, Rose D, Brey R, Suman V. Randomized trial of the canalith repositioning procedure. *Otolaryngol Head Neck Surg.* 1995, 113 (6):712-20.
20. Hsu LC, Hu HH, Wong WJ, Wang SJ, Luk YO, Chern CM. Quality of life in elderly patients with dizziness: analysis of the Short-Form Health Survey in 197 patients. *Acta otolaryngol.* 2005, 125(1):55-9.