



EPLEY, SEMONT, BRANDT DAROFF MANEUVERS IN THE TREATMENT OF BPPV

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ABSTRACT

Introduction: The particle repositioning maneuvers (PRM) are the standard of care for benign paroxysmal positional vertigo (BPPV). There are some reports about the effectiveness of the Epley maneuver, but few studies with respect to other maneuvers. **Objective:** To determine which of the therapeutic maneuvers Epley (E), Semont (S), Brandt Daroff (BD) is more effective for the resolution of vertigo in patients with BPPV.

Methods: A controlled clinical trial. Setting: Secondary Care Center. Patients included from January 2013 to January 2015.

All patients were randomly assigned to 4 treatment groups. Patients underwent therapeutic maneuvers (Epley, Semont, Brandt Daroff and placebo), according to patient randomization group. The maneuver initially assigned was carried out on their first visit and then the patient was seen to assess resolution, persistence or recurrence of vertigo in the first week, two weeks and 12 weeks.

Patients performed "Dizziness Handicap Inventory" at the first visit, at 2 weeks and 3 months.

Results: 23 patients were included. 18 women and 5 men were included. Patients were randomly assigned to 4 groups: (BD) n=4, Sham n=4, (S) n=9, (E) n=6. Dix hallpike test (DHT) was positive in all patients. In 14 patients the vertigo was resolved with the original maneuver. DHT was negative from the first week in 5/6 of patients with Epley maneuver, 4/9 with Semont, 0/4 of Brandt Daroff group and sham maneuver 0/4 (p=0.017). In the second week, all patients (n=6) assigned to the Epley maneuver had complete resolution of disease (p = 0.003), the improvement in Dizziness Handicap Inventory was also higher in patients with Epley from the first month (p =0.015). Three patients had recurrent disease (2 patients Semont group, 1 patient group brandt Daroff). Patients who showed no improvement by the second week, underwent the Epley maneuver (n=9).

Conclusion: Epley maneuver is more rapid and effective for the resolution of BPPV compared with placebo and Semont and Brandt Daroff maneuvers.

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INTRODUCTION

Benign paroxysmal positional vertigo (BPPV) is one of the most frequent vestibular disorders. It is characterized by the sudden onset of dizziness or vertigo precipitated by a specific position. Most frequently, it affects the posterior semicircular canal.

The Dix Hallpike maneuver is the gold standard test for diagnosis y elicits a characteristic benign paroxysmal positional nystagmus with vertigo at the same time.

Its treatment is fundamentally based on particle-repositioning maneuvers (PRM), aimed at removing otoconial debris from the semicircular canal to the vestibule. There are currently no studies comparing the effectiveness of these three maneuvers so it tries to find which is the most effective in the resolution of BPPV.

Little is known, more or less objectively, on the individual perception of patients with dizziness/vertigo and emotional and functional consequences.

The "Dizziness Handicap Inventory" (DHI) is a tool to quantify the impact of vertigo on the activities and daily life situations.

Among the objectives of the present study were to determine the degree of disability experienced by patients.

METHODS AND MATERIALS

23 patients were included with diagnosis benign paroxysmal positional vertigo (BPPV) treated at the Otolaryngology department of the Hospital Civil de Culiacan from January 2013 to January 2015.

This study was approved by the Ethics Committee. All patients had positive Dix-Hallpike test. Patients were randomized in 4 groups: Epley, Semont, Brandt Daroff and Sham (control) in a single blinded study. The maneuver initially assigned was carried out on their first visit and then the patient was seen to assess resolution, persistence or recurrence of vertigo in the first week, two weeks and 12 weeks.

Patients performed "Dizziness Handicap Inventory" at the first visit, at 2 weeks and 3 months.

Patients who showed no improvement by the second week, were performed the Epley maneuver. Inclusion criteria: Patients over 18 years, patients with nystagmus to the Dix Hallpike maneuver, patients with unilateral BPPV.

RESULTS

23 patients were included, 18 women and 5 men. The average age of the patients was 62.48 (+- 12.71). Patients were randomly assigned to 4 groups: (BD) n=4, Sham n=4, (S) n=9, (E) n=6 (figure 1). In 18 (78.26%) patients the right ear was involved; in the remaining 5 cases (21.73%) the left ear was affected. The average latency of nystagmus was 6.39 seconds. The average duration of nystagmus was 11 seconds. In 14 patients the vertigo was resolved with the original maneuver (figure 2). In 9 patients vertigo and nystagmus persisted after the initial maneuver, therefore an Epley maneuver was performed. DHT test was negative from the first week in 5/6 (83.3%) of patients with Epley maneuver, 4/9 (44.4%) with the Semont maneuver, 0/4 (0%) of Brandt Daroff group and sham maneuver 0/4 (0%) (p=0.017). In the second week, all patients (n=6) assigned to the Epley maneuver had complete resolution of disease (p = 0.003), the improvement in Dizziness Handicap Inventory was also higher in patients in the Epley group by the second week (p =0.015) (figure 3). Three patients had recurrent disease (2 patients Semont group, 1 patient Brandt Daroff group). Patients who showed no improvement by the second week, an Epley maneuver (n=9) was performed.

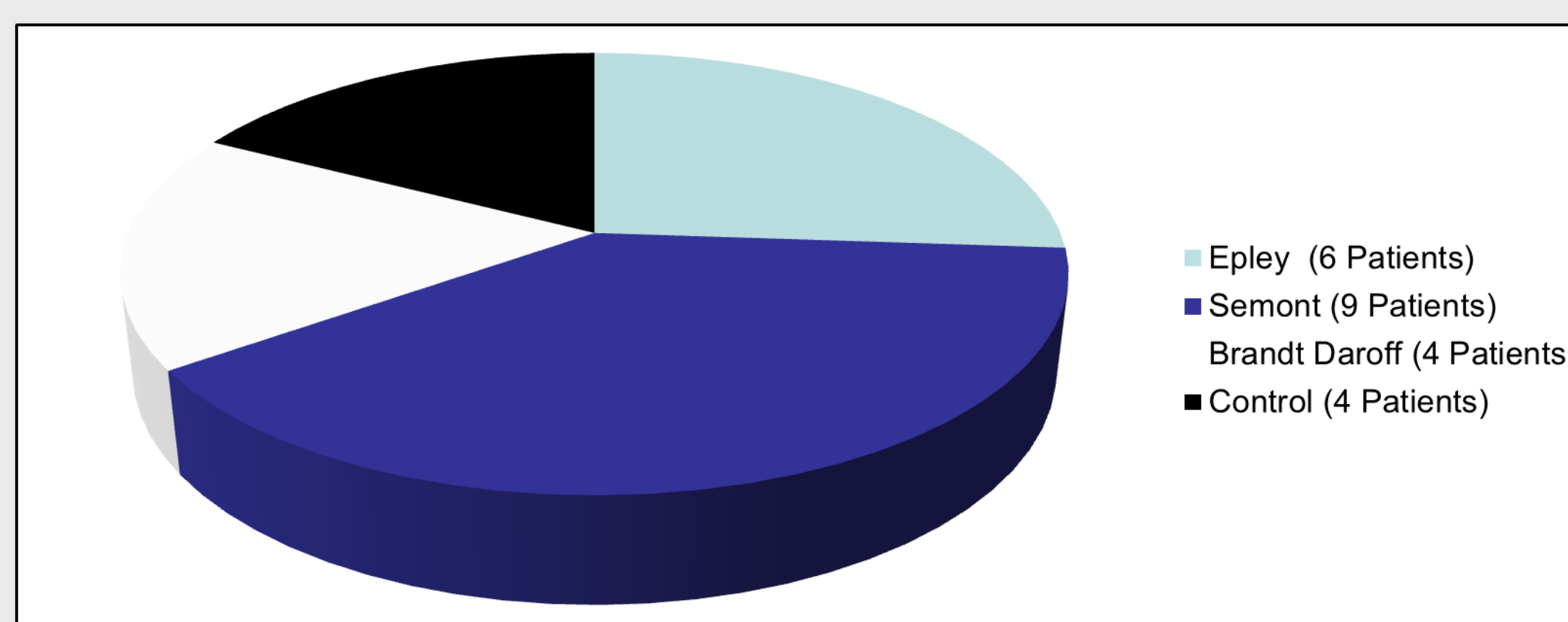


Figure 1. Number of patients randomized to each group

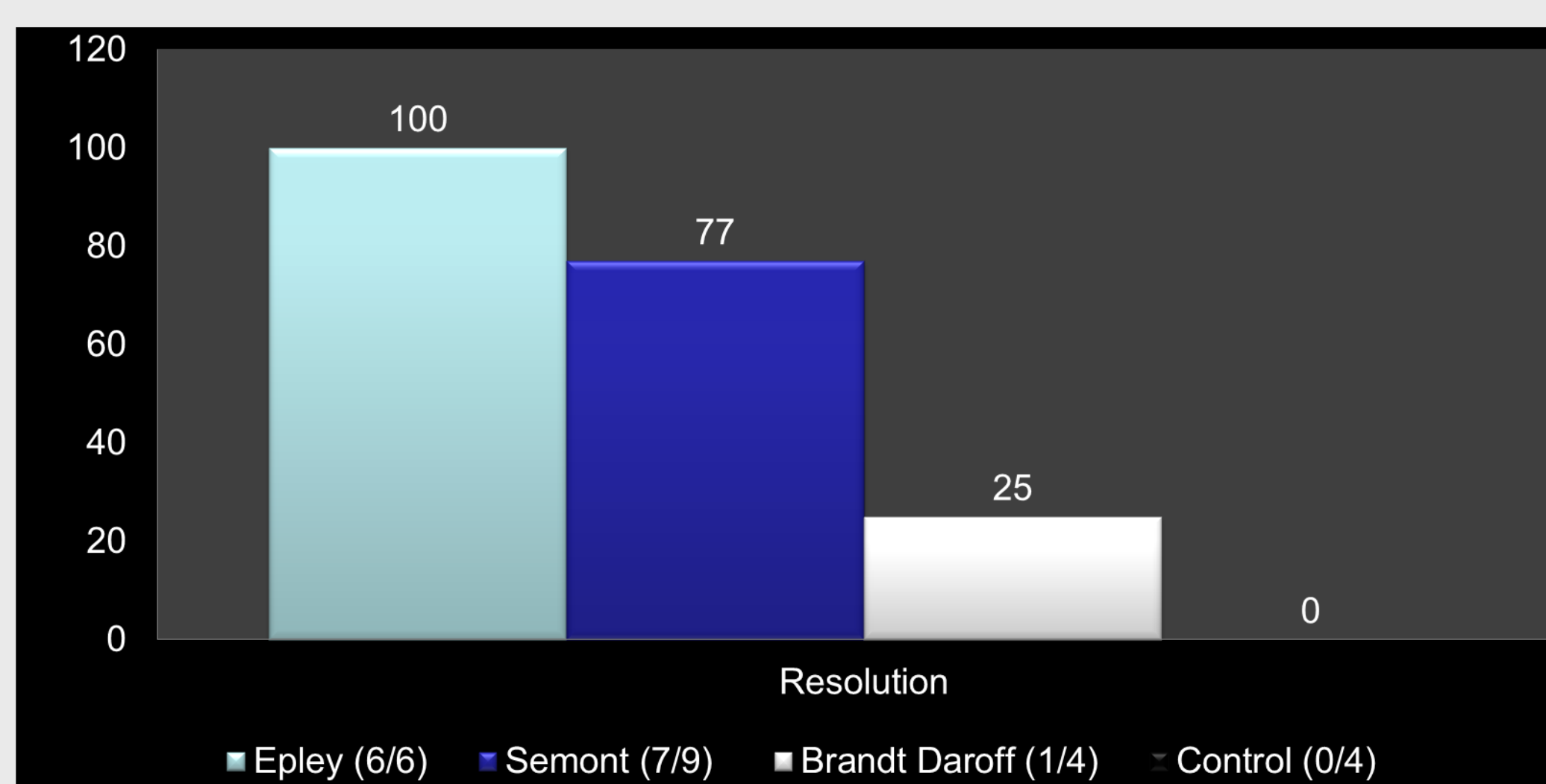


Figure 2. Percentage of patients with resolution of vertigo and nystagmus with the initial maneuver

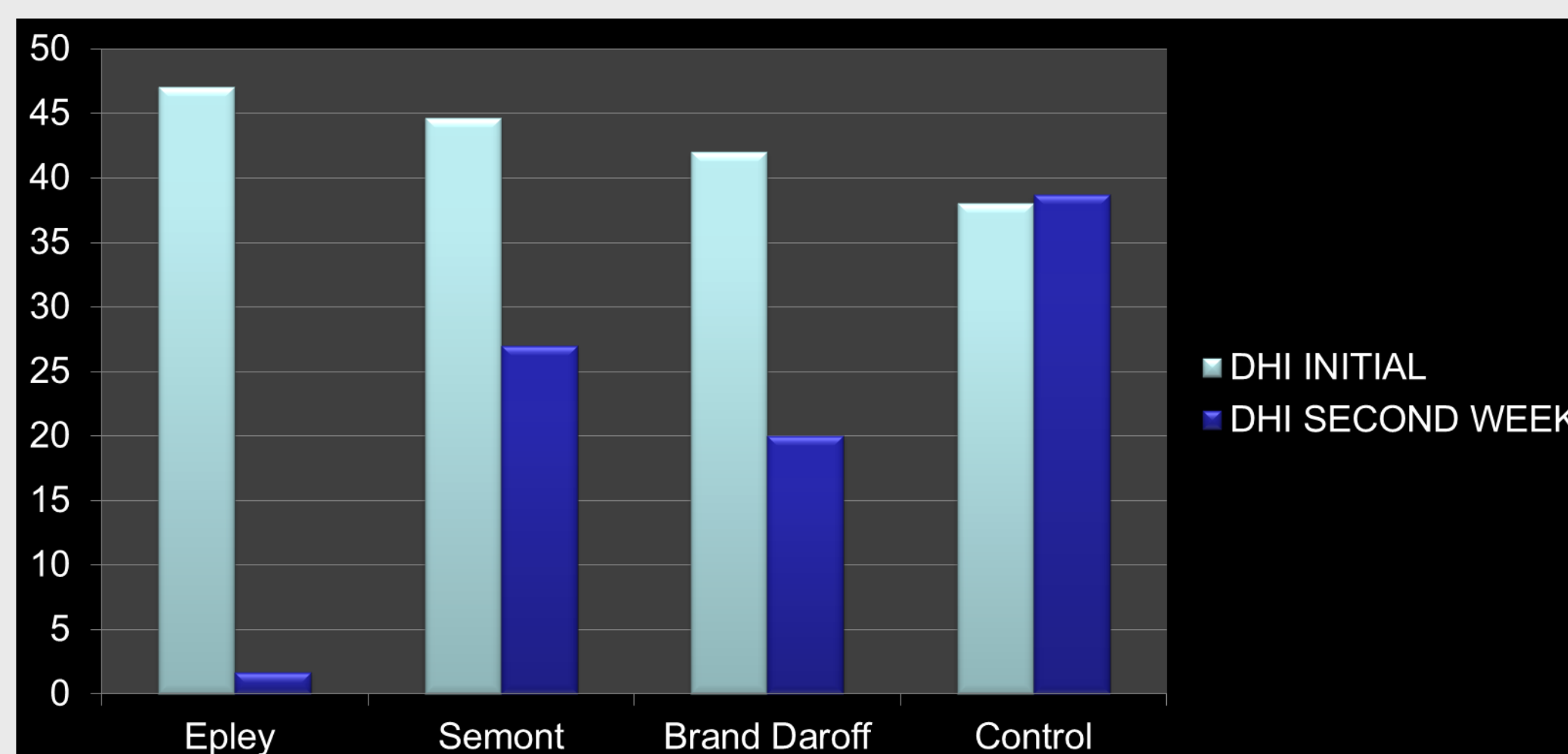


Figure 3. Dizziness Handicap Inventory score at admission and after two weeks

DISCUSSION

Several studies had previously demonstrated the superiority of PRM compared with the control maneuver to solve BPPV. Only 2 studies (4,7) comparing PRM y B-D exercise showed better results in favor of PRM. In the study by Chen et al. (3) showed the effectiveness of the Semont maneuver in 84.62% of patients treated with this maneuver on the fourth day of treatment. In the present study, patients with unilateral BPPV treated with Epley maneuver achieved clinical symptoms and positional nystagmus resolution more rapidly than those treated with other maneuvers. In our study, patients included in the Semont group required more PRM maneuvers than patients in the Epley group. (p=0.030) A minority (1/4, 25%) of the patients had a positive response to the Brandt Daroff maneuver, with only 1 patient becoming non-symptomatic in that group. It is important to note that the patients had high percentages in the DHI at study entry and after treatment with the initial maneuver percentages decreased significantly mainly in the Epley group. No patients had a positive response to the placebo maneuver in the control group, in contrast, other studies report a 10-46% of vertigo resolution (3,5,6,8,9).

Reference	PRM	Percentage and number of patients improved in the treatment group n/N (%)	Percentage and number of patients improved in the control group n/N (%)	Evaluation Time	P value
Yimtae K. 2003	Modified Epley maneuver	22/29 (75%)	13/29 (44%)	4 weeks	(= 0.03)
Chen J. 2012	Semont	55/65 (84.62%)	9/63 (14.29%)	7 days	(< 0.001)
Amor-Dorado J.C. 2012	Modified Epley's maneuver	34/41 (80.5%) 38/41 (92.7%)	-----	7 days 1 month	(< 0.001) (< 0.001)
Salvinelli F. 2004	Brandt Daroff exercise	10/40 (25%) 17/40 (42.5%)	-----	7 days 1 month	(< 0.001) (< 0.001)
Froehling D. 2000	Semont maneuver	44/52 (85%)	18/52 (34.6%)	2 months	(< 0.001)
Muñoz J.C. 2007	Flunarizine	30/52 (57.7%)	-----	-----	-----
Dispenza 2012	Epley	12/24 (50%)	5/26 (19%)	10 days	(=0.02)
Bruinjes T.J. D. 2014	Epley	30/42 (71%) 39/42(93%)	-----	7 days 3 months	(p<0.0001) (p=0.00404)
Mazoor 2011	Semont	29/36 (74%) 27/36 (77%)	-----	7 days 3 months	(<0.0001) (p=0.00404)
Von Brevem M. 2006	Brandt Daroff Exercise	6/28 (24%) 17/28 (62%)	-----	7 days 3 months	(<0.0001) (p=0.00404)
Mayoral H. 2015	Epley	13/38 (34.2%)	6/41 (14.6%)	7 days	(p=0.04)
Mayoral H. 2015	Modified Epley	21/27 (77.8%)	-----	-----	-----
Mayoral H. 2015	Semont	27/30 (90%)	-----	7 days	(P=0.23)
Mayoral H. 2015	Hibrid	26/31 (83.9%)	-----	-----	-----
Mayoral H. 2015	Epley	20/22 (91%)	10/22 (46%)	12 months	(P= 0.001)
Mayoral H. 2015	Semont	17/30 (56.6%) 21/30 (70%) 25/30 (83.3%)	-----	3 days 7 days 30 days	(p=0.26) (p=0.008) (p=0.3)
Mayoral H. 2015	Epley	19/30 (63.3%) 22/19 (86.3) 28/30 (93.3%)	-----	3 days 7 days 30 days	(p=0.26) (p=0.008) (p=0.3)
Mayoral H. 2015	Epley	16/18 (88.9%)	4/15 (26.7%)	1 month	(p<0.001)
Mayoral H. 2015	Epley	28/35 (80%)	3/31 (10%)	1 day	(p> 0.001)
Mayoral H. 2015	Epley	6/6 (100%)	-----	-----	-----
Mayoral H. 2015	Semont	7/9 (77%)	0/4 (0%)	2 months	(=0.017)
Mayoral H. 2015	Brandt Daroff	1/4 (25%)	-----	-----	-----

CONCLUSIONS

Epley maneuver is more rapid and effective for the resolution of BPPV compared with placebo, Semont and Brandt Daroff maneuvers. This study demonstrates the Epley maneuver as the best treatment option and recommends its routine application in BPPV patients.

REFERENCES

- Ceballos R, Vargas AM. Aplicación y utilidad del Dizziness Handicap Inventory en pacientes con vértigo del servicio de Otorrinolaringología del Hospital de Especialidades del Centro Médico Nacional Siglo XXI. An Med Asoc Med Hosp ABC. 2004; 49(4): 176-183.
- Bhattacharyya N, Baugh RF, Orvidas L, Barrs D, Bronston LJ, Cass S, et al. Clinical practice guideline: Benign paroxysmal positional vertigo. Otolaryngol Head Neck Surg (2008) 139: S47-S81.
- Chen Y, Zhuang J, Zhuang L, Li Y, Li Z, Zhao Z, et al. Short-Term Efficacy of Semont Maneuver For Benign Paroxysmal Positional Vertigo: A Double-Blind Randomized Trial. Otol Neurotol 2012; 33: 1127-1130
- Amor-Dorado JC, Barreira MP, Aran I, Casariego E, Llorca J, González. Particle Repositioning Maneuver Versus Brandt-Daroff Exercise for Treatment of Unilateral Idiopathic BPPV of the Posterior Semicircular Canal: A Randomized Prospective Clinical Trial With Short- and Long-Term Outcome. Otol Neurotol 2012; 33: 1401-1407
- Yimtae K, Sirompotong S, Sirompotong S, Sae P. A Randomized Trial of the Canalith Repositioning Procedure. Laryngoscope 2003; 113: 828-832
- Salvinelli F, Trivelli M, Casale M, Frits L, Di V, Greco F et al. Treatment of Benign Positional Vertigo in the Elderly: A Randomized Trial. Laryngoscope. 2004; 114: 827-831
- Soto-Varela A, Bartual Magro J, Santos Perez S, et al. Benign paroxysmal vertigo : a comparative prospective study of the efficacy of Brandt and Daroff exercises, Semont and Epley manoeuvre. Rev Laryngol Otol Rhinol. 2001;122:3:179-183.
- Froehling D, Bowen J, Mohr D, et al. The canalith repositioning procedure for the treatment of benign paroxysmal positional vertigo: A randomized controlled trial. Mayo Clin Proc. 2000; 75:695-700
- Hilton M, Pinder D. The epley (canalith repositioning) manoeuvre for benign paroxysmal positional vertigo. The Cochrane library. 2015