

## **The Efficacy of Repositioning Maneuver in the Management of Benign Paroxysmal Positional Vertigo**

Abdul Aziz J Ashoor, Fach Arzt fuer Hals Nasen Ohren (HNO)\*

**Background:** Benign Paroxysmal Positional Vertigo (BPPV) is a very common vestibular disorder. It is characterized by short lasting positional vertigo. Different etiology may be responsible for it. The diagnosis is based on history and on the nystagmus findings. Treatment of choice is the repositioning maneuver after Epley and/or Semont.

**Objective:** To assess the efficacy of the Repositioning Maneuver (RM) in the management of Benign Paroxysmal Positional Vertigo (BPPV).

**Setting:** ENT Clinics, Al-Khobar, Saudi Arabia.

**Design:** Prospective study.

**Method:** Fourteen patients complaining of vertigo from May 2007 to May 2009 were included in the study. All patients were seen, examined and treated by the author. After a detailed history, audiological and vestibular tests were performed. The patients either been subjected to Epley and/or the Semont maneuver.

**Result:** Fourteen patients aged 30-64 years (mean 49 years), 8 males and 6 females were included in the study. All were complaining of acute short lived positional vertigo. Examination of patients showed positive Dix-Hallpike test (DHT), some canal paresis, abnormal gait test and sensorineural hearing loss. Thirteen patients were free of symptoms after the maneuvers. One showed no improvement. Patients with dizziness have to be rehabilitated. Mean follow up was 3 months.

**Conclusion:** Epley and Semont maneuvers are very effective procedures to treat benign paroxysmal positional vertigo. In this study, eleven out of fourteen patients were relieved of their symptoms. The recommended time for follow up is 3 months and for reassessment one month.

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Benign Paroxysmal Positional Vertigo (BPPV) is the most common vestibular disorder<sup>1</sup>. It is characterized by various degrees of acute vertigo attacks, paroxysmal in nature, lasting seconds to minutes and elicited by changes in head positioning<sup>2</sup>.

The incidence of the disease has been reported to be 10 per 100,000, although there is no general agreement. Nevertheless, BPPV is the most frequently observed pathology in oto-

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\* Professor and Consultant ENT Surgeon  
Prof. Abdul Aziz Ashoor ENT Clinic  
Dhahran Street – Al-Khobar, KSA  
E-mail:ashoorabdul@Gmail.com

neurological clinical practice<sup>3</sup>. The usual age of onset is 50-60 year, the incidence increasing with age. Women are more affected than men, 2:1 ratio<sup>3</sup>.

The etiology of BPPV may be idiopathic, post traumatic, post infection, post prolonged bed rest or due to vascular disorder<sup>4</sup>. In addition, patients with Vestibular neuronitis, Meniere's disease and vestibulopathy may develop BPPV<sup>4</sup>.

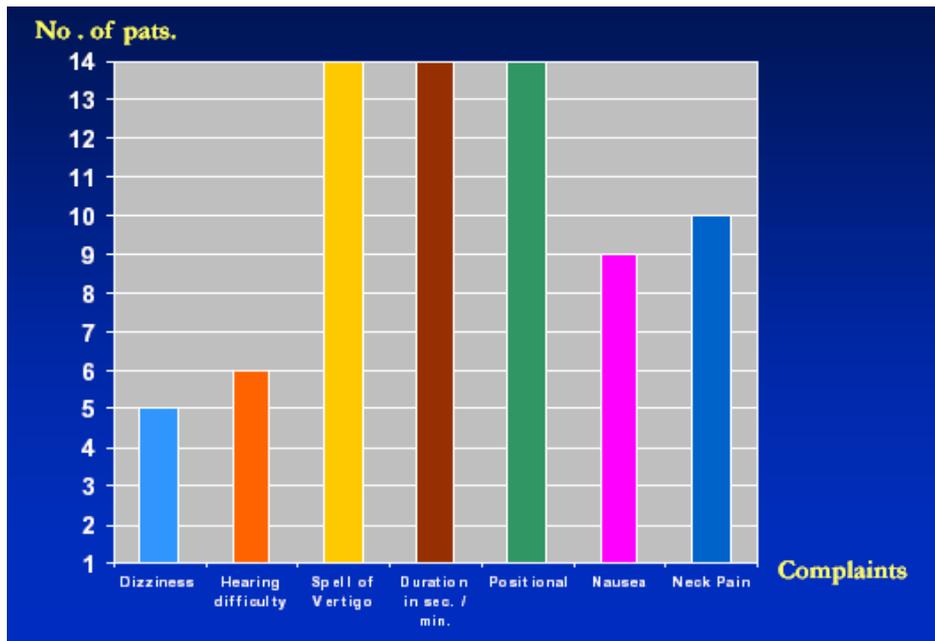
The underlying mechanism is almost generally accepted that it is due to endolymph particles in the posterior semicircular canal, which cause most cases of benign paroxysmal positional vertigo (BPPV). Recent pathological findings suggest that these particles are otoconia, probably displaced from the otolithic membrane in the utricle<sup>5</sup>. The diagnosis is made based on the typical history of the vertigo and the findings on examination of Nystagmus<sup>6</sup>. The treatment of choice is the canalith repositioning procedure referred to as the Epley Maneuver and Semont Maneuver<sup>5-7</sup>.

## **METHOD**

Prospective study performed on 14 patients seen in the ENT clinics from May 2007 to May 2009, included 8 males and 6 females. All patients were seen and treated by the author. All Patients suffered from vertigo and dizziness. A detailed history was taken followed by a complete Audiological, Oto-neurological and Vestibular testing, which included: pure tone audiometry, spontaneous nystagmus (NY), positional NY induced by the Dix-Hallpike (DH) maneuver before and after treatment and caloric test using the Frenzel glass-Hallpike procedure, Gait test, Romberg and Underberg test. Patients were treated by the Epley and/or Semont maneuver twice with 10 minutes time interval in between. The improvement of patients symptoms were assessed subjectively through the relieve of symptoms and objectively through either the disappearance of vertigo and/or nystagmus during the DH procedure. Patients were seen one month after the repositioning maneuver (RM) for reassessment of treatment, then three monthly for the rest of the year.

## **RESULT**

Fourteen patients aged 30-64 years (mean 49 years), 8 male and 6 female were included in the study. Patients were complaining of acute short lived vertigo during turning the head to left or right or rolling their body from side to side or when looking up or down or when performing prayer; it is often associated with nausea or vomiting. Other complaints were dizziness, hearing difficulty and neck pain (Figure 1). Examination of patients revealed some of the following: no spontaneous nystagmus, the presence of nystagmus and/or no nystagmus but vertigo during the DH test, canal paresis during the Hallpike Caloric test, abnormal Romberg test, abnormal Gait test and bilateral/unilateral high tone sensorineural hearing loss (Figure 2). After Epley maneuver, twelve patients were free of vertigo and showed very good improvement of their symptoms. One patient did not show any improvement with Epley maneuver, but showed excellent improvement with Semont maneuver. One patient had radical mastoidectomy; he did not show any response to any of the repositioning maneuvers. This patient and the ones who continued to be slightly dizzy but not having true vertigo have been put on rehabilitative exercise after Cawthorne. The follow up period ranged from 1-12 months with a mean of 3 months.



**Figure 1: Patients Complaints**

Vestibular - Neurological Audiological Tests	Number of Patients			
	Present Nystagmus	Absent Nystagmus	Normal	Abnormal
Spontaneous Nystagmus		14		
Romberg Test			7	7
Gait Test			9	5
Finger Nose Test			14	
Dix- Hallpike Test	6			8
Caloric Test			9	5
Hearing Test			8	6

**Figure 2: Investigations**

## DISCUSSION

Canalithiasis of the posterior semicircular canal is the most frequent cause of BPPV and is diagnosed by the Dix-Hallpike Maneuver<sup>6</sup>. The lateral semicircular canal is involved in less than 17% of the cases and can be detected by the supine roll test (Lempert Maneuver)<sup>8</sup>. The therapy of BPPV includes a variety of repositioning maneuvers (RM), such as, the Epley, the Semont or the Lempert Maneuver<sup>8-10</sup>.

We recorded a subjective and objective improvement rate of 93% using either Epley or Semont maneuver. The successful treatment outcomes for the repositioning maneuver are measured

subjectively by symptoms resolution and objectively by the conversion of Dix-Hallpike test to negative as recommended by Woodworth et al and Teixeira et al<sup>11,12</sup>. Epley and Semont et al reported a success rate of 80-100% and a relapse rate of 5-20% as a response to the repositioning maneuver<sup>9,10</sup>.

Yimtae et al reported a similar efficacy rate of 95% for subjective and objective improvement using the repositioning maneuver<sup>13</sup>. Magliulo et al registered 75% success rate after the first repositioning maneuver and 100% after the second maneuver<sup>14</sup>. There are considerable variations of the number of times the repositioning maneuver have to be applied for the initial treatment of BPPV. Some investigators perform only one RM at the initial treatment, whereas others repeat a fixed number of cycles or perform the RM repeatedly until the vertiginous symptoms are relieved or the Dix-Hallpike is converted to negative<sup>13-16</sup>.

In this study, the repositioning maneuver was performed twice with a time interval of 10 minutes and the patients asked to come after one week for reposition if they are not relieved. Magliulo et al reported a success rate of 100% after two repositioning maneuvers within 9 months<sup>14</sup>.

Di Girolamo et al treated all his patients with the Epley repositioning maneuver once only<sup>17</sup>. All his patients reported a full recovery after two days and no recurrence was observed within six months.

The ideal time for reassessment of treatment response to repositioning maneuver had been discussed at length in the literature and no consensus was reached, but a recommendation of one month was made<sup>11-12</sup>.

In this study, the patients were reassessed for the success or failure of treatment one month after the repositioning maneuver, then three monthly for the rest of the year. Woodworth et al and Chang et al advised a follow up assessment of treatment response to be after one month, whereby Bruno et al reassessed their patients for the presence of vertigo and/or nystagmus after 3 days, 1, 3 and 12 months<sup>11,18,19</sup>. Stambolieva et al advised to assess the success of treatment one week after the repositioning maneuver<sup>20</sup>. The successful response to the repositioning maneuver does not necessarily correspond to an absence of symptoms in the patients as stated by Magliulo et al, Yardley and Yardley et al<sup>14,21,22</sup>.

In this study, the positive response to the RM in patients with dizziness did not improve their symptoms. Therefore, to improve their quality of life, the patients were offered the Cawthorne and Cooksey vestibular exercise with good outcome<sup>23</sup>. Our patients mean age was 49 year with a similar sex distribution. Magliulo et al reported a similar age and sex distribution, whereby Bruno et al reported an average age of 50-60 year with incidence increasing with age and woman dominance<sup>14,19</sup>.

## CONCLUSION

**Epley and Semont Maneuvers are effective procedures for the treatment of benign paroxysmal positional vertigo once the right diagnosis is made. The recommended time for follow up is 3 months and for reassessment one month.**

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