

# Failure of Gan CRM Overcome by Successful Semont Manoeuvre in BPPV Post Head Trauma: A Case Study

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**Abstract:** *Objective:* Benign paroxysmal positional vertigo (BPPV) is one of common peripheral vestibular problem reported that head injury is one of common cause among young age. In current situation it only treated by medication or injection by medical officer and specialist. Medication is not an optimal treatment and it only symptomatic therapy and often need chronic prescriptions if not treated properly. There are an optimum specific manoeuvre offers curative therapy in majority of BPPV cases such as Epley's manoeuvre, Gan Canal repositioning Manoeuvrer (CRM) and Semont manoeuvre. Semont manoeuvre is one of selected manoeuvre that recently done in posterior BPPV case if Epley's and Gan CRM failed, but less practice among our clinician due to less exposure.

*Case Studies:* A 22 -year-old gentleman, complain of imbalance, difficulty in walking and vertigo for the past few days. He history of moderate traumatic brain injury (left parietooccipital Epidural Haemorrhage) and surgical intervention done last 5 days ago. He also complained of reduced hearing and on off left tinnitus over left side. No prominent psychological involvement reported.

Detail physical and balance assessment done using BAL EX Foam test Modified Dix Hallpike Test (DHT) done. During the left DHT there is rotatory up beating nystagmus then it proceeds with GRM three-time, 1 session on previous day and 2 session on the current day but it was failed. Then proceed with Semont manoeuvre by specialist in vestibular rehabilitation. After 10 minutes of manoeuvre, modified DHT done and show negative result found there is no nystagmus.

**Keywords:** Gan repositioning manoeuvre, rotatory up beating, posterior SCC BPPV, Semont manoeuvre.

## INTRODUCTION

Benign paroxysmal positional vertigo (BPPV) is one of common peripheral vestibular problem reported that head injury is one of common cause among young age. Benign paroxysmal positional vertigo (BPPV) is a common occurrence attributed by dislodgment of the otoconia into one or more semi-circular canals. The otoconia displacements induce a short duration of intense spinning vertigo especially when the patients lay down, turn the head to the side or rise from a supine position. Types of BPPV based on which canal are involved such as posterior, anterior and horizontal canal. Recent head trauma, inner ear disease and degenerative process also can be the causative and triggering factor for the pathogenesis of BPPV.

In current situation it only treated by medication or injection by medical officer and specialist. Medication is not an optimal treatment and it only symptomatic therapy and often need chronic prescriptions if not treated properly. If not well treated, BPPV patient will continuously experience the positional vertigo. There are an optimum specific manoeuvre offers curative

therapy in majority of BPPV cases such as Epley's manoeuvre, Gan Canal repositioning Manoeuvrer (CRM) and Semont manoeuvre. Semont manoeuvre is one of selected manoeuvre that recently done in posterior BPPV case if Epley's and Gan CRM failed, but less practice among our clinician due to less exposure.

Few manoeuvre that specific to the posterior semi-circular canal includes Epley, Semont, Toupet, and Herdman manoeuvre. Hyperextension of the neck in Epley's manoeuvre and brisk lateral movement in Semont Liberatory Manoeuvre (SLM) is contraindicated in patient with vertebrobasilar insufficiency, cervical spondylosis, obesity, and patient with back pain. Thus, in such condition, Gan CRM is a test choice, Gan CRM is a treatment of choice compared to Epley since the recurrent rate is low in Gan CRM compare to Epley's manoeuvre. However when this manoeuvre failed, we may proceed with other manoeuver such as Semont manoeuvre where successfully done in this case Exposure to this test and manoeuvre, still less spread and that make this rarely done among our medical officer or specialist.

## CASE REPORT

A 22 -year-old gentleman, complain of imbalance, difficulty in walking and vertigo for the past few days.

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He history of moderate traumatic brain injury (left parietooccipital Epidural Haemorrhage) and surgical intervention done last 5 days ago. He also complained of reduced hearing and on off left tinnitus over left side. No prominent psychological involvement reported.

Systemic and neurological examination showed no abnormality detected with negative cerebellar signs. Detail physical and balance assessment done using BAL EX Foam test and Modified Dix Hallpike Test (DHT) done. Bal Ex foam test showed positive findings for condition 3, 4 and 6 where patient fall to the left side. During the left DHT there is rotatory up beating nystagmus then it proceeds with GRM three-time, 1 session on previous day and 2 sessions on the current day but it was failed. Then proceed with Semont maneuver by specialist in vestibular rehabilitation. After 10 minutes of maneuver, modified DHT done and show negative result found there is no nystagmus. Semont manoeuvre (Figure 1) then was carried out in this patient, note marked improvement of the symptoms.



Figure 1: Bal Exzz test Foam.

To evaluate the postural control pre and post therapy we used Bal Exzz Foam test. This Bal Exzz test having a structured scoring foam that divided into seven sections. All the finding pre and post therapy showed in the Table 1.

## DISCUSSION

Benign paroxysmal positional vertigo (BPPV) is the most common peripheral vestibular disorder and common in a woman with fourth and fifth decades. Free-floating canaliths in the semi-circular canal led to vertigo that usually complained of spinning sensation, especially with head movement or getting up from the bed. Diagnosis of BPPV is made by history and positive finding in Dix-Hallpike manoeuvre. The DHT and modified DHT manoeuvre is the confirmatory test for BPPV. A positive Dix-Hallpike test indicates the presence of nystagmus. There are several effective manoeuvres in treating vertigo due to BPPV. Some clinician even trained master student less confident to proceed with the manoeuvre.

The Epley manoeuvre, named by Dr. John Epley, is both intended to move debris or "ear rocks" out of the sensitive part of the ear (posterior canal) to a less sensitive location. It is also called as canalith repositioning maneuver or CRP. The Epley maneuver takes about 15 minutes to complete. It has a cure rate of roughly an 80% cure rate, the first time it is applied. Reported only a 47% cure rate the first time .It took them 3 manoeuvres to get to 84% cure.

Less exposure and knowledge on this manoeuvre made clinician not treats this BPPV cases. They only

Table 1: Bal Ex Scoring Foam

Level	Description	Pre therapy	Post balance rehabilitation therapy
1	Stand on the floor with arms across your chest and feet together and hold for 30 seconds (opened eyes)	Normal	Normal
2	Stand on the floor with arms across your chest and feet together and hold together and hold for 30 seconds (closed eyes)	Normal	Normal
3	Stand on the floor with arms across your chest, toe touching the other side of heel and hold for 30 seconds (opened eyes)	Normal	Normal
4	Stand on the floor with arms across your chest, toe touching the other side of heel and hold for 30 seconds (closed eyes)	Less than 3 seconds	Less than 7 seconds
5	Stand on a 3-inch-high density foam cushion with your arms crossed, feet together and hold for 30 seconds (opened eyes)	Normal	Normal
6	Stand on a 3-inch-high density foam cushion with your arms crossed, feet together and hold for 30 seconds (closed eyes)	Less than 3 seconds	Less than 6 seconds
7	Fukuda test	Negative	negative

proceed with medications with medications and injection that temporarily treatment. Previous studies reported that Epley manoeuvre is effective in reducing patient's symptoms in about 47% of the cases. Some authors noted that the recovery rate is about 63.6% after one week and increased further to 72.7% after two weeks when the patient treated with Epley manoeuvre [5]. For these two studies normally, they used similar test which is Dix Hallpike test. However, as compared to this current case, the psychological improvement is about 90% after day three post manoeuvre and 100% after one month follow up in which patient showed complete cure with no symptoms remaining.

Gans CRM can be used in curing the BPPV since Hyperextension of the neck for Epley manoeuvre and brisk lateral motion for Simon liberatory manoeuvre (SLM) were contraindicated in old age patients with vertebrobasilar insufficiency, cervical spondylosis obese or in patients having backpain patient [3]. The side-lying manoeuvre is the first step in Gans CRM. Via this technique, hyperextension of the neck in Epley manoeuvre can be avoided. Head shaking was performed in Gans CRM but not in Epley manoeuvre may be contributed to a faster effect of recovery.

The Semont manoeuvre found by Dr. Alain Semont, is another PC (posterior canal) manoeuvre intended to shift debris from posterior canal to a less sensitive location. It takes about 15 minutes to complete. It is also called the "liberatory" manoeuvre, which is meant to imply that otoconia are dislodged (i.e., knocked off) the cupula and then repositioned into the vestibule where they came from. It seems unlikely that the dislodging aspect of the manoeuvre happens very often, but it does incorporate the positions needed to treat loose ear rocks (Obrist, D., *et al.* (2016).

## CONCLUSION

This case represents fast recovery of posterior canal BPPV in only one times after 3 times of failed Gan CRM using Semont manoeuvre. In this case with severe head injury that possibly the head concussion is so strong that cause the number of otoconia dislodge is so huge that why is it not work with GAN CRM.

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