



COMPARATIVE STUDY OF MASAKO AND MENDELSON MANEUVER FOR POST STROKE DYSPHAGIA

¹D. Ganesh Ram, ²M. Ranjani,

¹Physiotherapist, ²Assistant professor

¹MGM Health care, Chennai, Tamilnadu

²School of physiotherapy, Aarupadai veedu medical college and hospital campus, VMRF, Pondy

ABSTRACT

Background and Purpose: Dysphagia is extremely common following an acute stroke. In India 45% of the patients develop dysphagia after post stroke. Common treatment for dysphagia is electrical stimulation. The manual therapy plays an important role in physical therapy were lot of exercises are taught to dysphagia patient they focus more on oropharyngeal region. Hence, the needs for the study in the present scenario, variety of exercises are there for post stroke dysphagia. Hence in this study an effort is taken with the aim to find and compare the effectiveness of masako manoeuvre and mendelsohn manoeuvre for post stroke dysphagia.

Methodology: 30 patients were selected in this study based on convenient sampling technique. Then they were explained about safety and simplicity of procedure and informed consent was obtained and randomly divided into two groups. Pre and post test values will be measured by using MD Anderson Dysphagia inventory and Functional oral intake scale. Group A received masako maneuver and group B received mendalshon maneuver. Outcome measures was used in this study are MD Anderson Dysphagia inventory and Functional oral intake scale.

Results: Statistical analysis of both Pretest and Post test values of within group analysis showed extremely statistically significant with the p test values ($P < 0.0001$) of masako maneuver and mendelsohn maneuver training group.

Conclusion: The effectiveness of masacko maneuver and the Mendelsohn maneuver showed an overall significant improvement in dysphagia where the masako maneuver showed very statistically significant than Mendelsohn maneuver of stroke subjects.

Keywords : Stroke, dysphagia, MD Anderson Dysphagia inventory, Functional oral intake scale, masako maneuver, Mendelsohn maneuver.

1.1 INTRODUCTION

Dysphagia is the medical term for the symptom of difficulty in swallowing. The word is derived from the Greek dys meaning bad or disordered, and the root phag meaning "eat". It may be sensation that suggests difficulty in the passage of solids or liquids from the mouth to the stomach.^{[23],[3]} Dysphagia is classified into three major types: Oropharyngeal dysphagia, Esophageal dysphagia,^[7] Functional dysphagia is defined in some patients as having no organic cause for dysphagia that can be found Dysphagia (difficulty eating and swallowing) is extremely common following a stroke, affecting 13% - 94% of acute stroke sufferers, with incidence relating to lesion size and location.^[15]

Dysphagia has been associated with higher rates of respiratory complications and increased risk of aspiration pneumonia, dehydration and nutritional compromise^[24]. It is also a socially penalising occurrence with a significant impact on sufferer's quality of life. In India 45% of the patients develop dysphagia after post stroke where 22.3% are in Ryle's tube (nasogastric tube).^[10] Patient in long term in Ryle's tube develops complications. The tube may enter the larynx and trachea^{[11],[16]}. This may cause a pneumothorax, the tube may coil up in patient throat, sinusitis, perforation of oesophages^{[11][16]}. There are three phases of dysphagia. Oral phase: Sucking, chewing, and moving food or liquid into the throat. Pharyngeal phase: Starting the swallowing reflex, squeezing food down the throat, and closing off the airway to prevent food or liquid from entering the airway (aspiration) or to prevent choking. Esophageal phase: Relaxing and tightening the openings at the top and bottom of the feeding tube in the throat (esophagus) and squeezing food through the esophagus into the stomach^{[25],[14]}. The first phase in dysphagia been very important stage Oropharyngeal dysphagia: Arises from abnormalities of muscles nerves or structures of the oral cavity, pharynx and upper esophageal sphincter symptoms of swallowing difficulties include difficulty controlling food in the mouth inability to control food or saliva in the mouth difficulty initiating a swallow, coughing, choking, frequent pneumonia, unexplained weight loss, gurgly or wet voice after swallowing, nasal regurgitation^{[14],[22][17]}.

Esophageal dysphagia: Arises from the body of the esophagus, lower esophageal sphincter, usually due to mechanical causes or motility problems^[17]. Patients usually complain of dysphagia and will point to the suprasternal notch or behind the sternum as the site of obstruction. If there is dysphagia to both solids and liquids, then it is most likely a motility problem^[9]. If there is dysphagia initially to solids but progresses to also involve liquids, then it is most likely a mechanical obstruction. There are various exercise there for dysphagia like Shaker exercise, effortful swallow, supraglottic swallow, jaw thrust, masako maneuver, mendelsohn maneuver and electrical stimulation^{[17][18]}. So many studies concluded that electrical stimulation given has a traditional treatment for dysphagia and its time consuming and its cost. So many maneuver are there for treating dysphagia in this mendelsohn maneuver and masako maneuver is very effectfull in oropharyngeal dysphagia. It's easily understandable, less cost and these maneuver can be continued in home. In this study we compare the effectiveness of mendelsohn maneuver and masako maneuver.

2.1 METHODOLOGY

A total of 30 samples were taken from Physiotherapy out-patient department and in-patient department at MGM Healthcare. The primary researcher was not involved in the selection and recruitment of the study. The inclusion criteria were the Subjects with post stroke dysphagia, Stroke duration 7 days from onset and the subject who is able to understand and follow simple verbal instructions while the Edantulaus, Tracheostomy, Progressive neurologic disease, Cognitive and or physical problems (which would have impeded understanding or completion of the therapeutic tasks) were excluded in this study. MD Anderson inventory and functional oral intake scale had been given to 30 patients and the patient filled it accordingly and total score was documented. Prior to the study initiation, the objectives and requirements were explained to all participants, and a written informed consent form was signed by the participants. Then the further procedure continued, samples were divided into two groups (group A & B). Group A, 15 subjects received masako maneuver, this procedure was done by patient was in sitting position and researcher demonstrate the maneuver and patient was made to softly bite the end of their tongue with their front teeth and then patient was made to maintain this posture while swallowing and this technique was repeated for 3 sessions per day and 10 repetition was done in one session by patient. Group B, 15 subjects received mendelsohn maneuver, this procedure was done by patient was in sitting position and researcher demonstrate the maneuver and patient was made to hold the base of the hyoid bone by index and thumb finger on either side of hyoid bone and maintain this while swallowing and this technique was repeated for 3 sessions per day and 10 repetition was done in one session by patient. And these techniques were done for 2 weeks treatment duration 3 sessions per day 10 repetition in one session. Two therapists along with the primary researcher were given the intervention and the outcome was evaluated by another therapist who was not involved in the study at the end of the treatment session. The following outcome measures were used for assessing the dysphagia; Functional oral intake scale and M.D.Anderson Dysphagia Inventory.

3.1 STATISTICAL ANALYSIS

Statistical analysis was done for all the collected data with mean and standard deviation. For between group analysis of the pre-test and post-test values, unpaired t-test was used. For the analysis of within group, paired t-test was used.

TABLE 3.1.1 : Group A pre and post test analysis of MDADI

Group	Group A Pre	Group A Post	T value	P value
Mean	53.07	47.07	t=12.057	p<0.0001
SD	17.13	16.49		

TABLE 3.1.2 : Group B pre and post test analysis of MDADI

Group	Group B Pre	Group B Post	T value	P value
Mean	57.60	55.40	t=7.8725	p<0.0001
SD	15.17	15.75		

TABLE 3.1.3 : Group A pre and post test analysis of FOI

Group	Group A Pre	Group A Post	T value	P value
Mean	3.20	5.47	t=9.1336	p<0.0001
SD	1.66	0.99		

TABLE 3.1.4 : Group B pre and post test analysis of FOI

Group	Group B Pre	Group B Post	T value	P value
Mean	2.60	3.40	t=5.5268	p<0.0001
SD	1.55	1.59		

TABLE 3.1.5 : Between group analysis of the post test values of group A and group B for MDADI

Group	Group A Post	Group B Post	T value	P value
Mean	62.33	43.07	t=3.5724	p=0.0013
SD	13.75	15.72		

TABLE 3.1.6 : Between group analysis of the post test values of group A and group B for FOI

Group	Group A Post	Group B Post	T value	P value
Mean	5.47	3.40	t=4.2639	p=0.0002
SD	0.99	1.59		

Figure 3.2.1: pre test and post test values of MDADI for group A

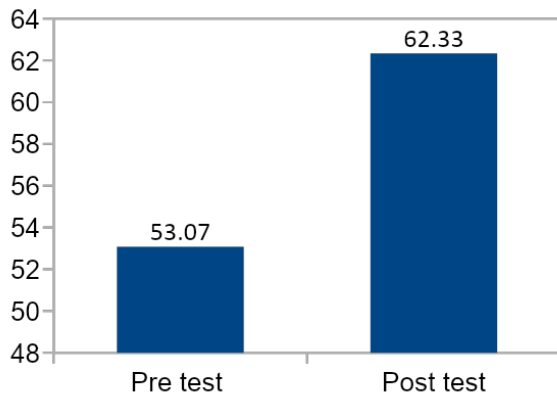


Figure 3.2.2 : Pre test and post test values of MDADI for group B

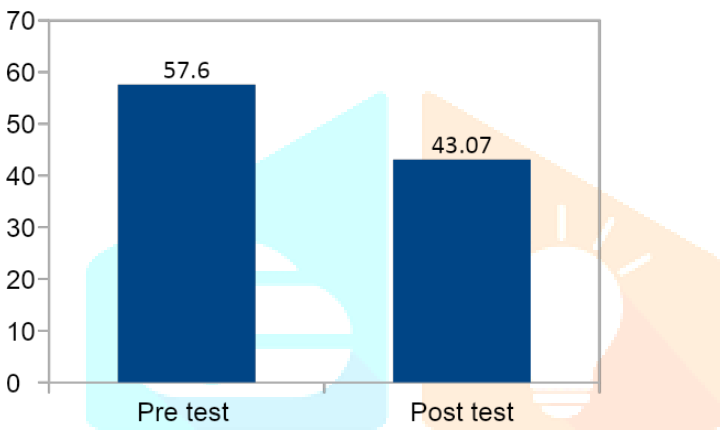


Figure 3.1.3: Pre test and post test values of FOIS for group A

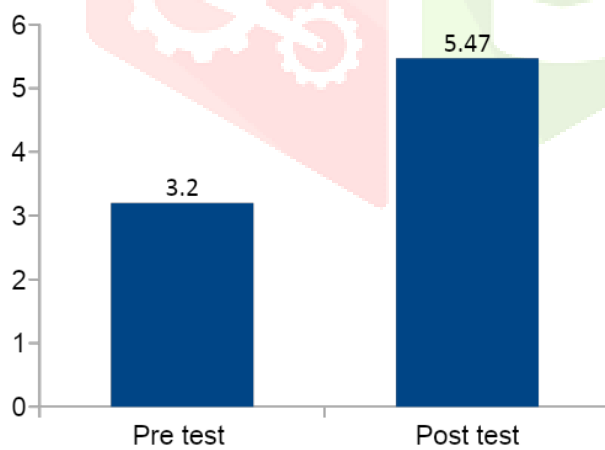


Figure 3.2.4 : Pre test and post test values of FOIS for group B

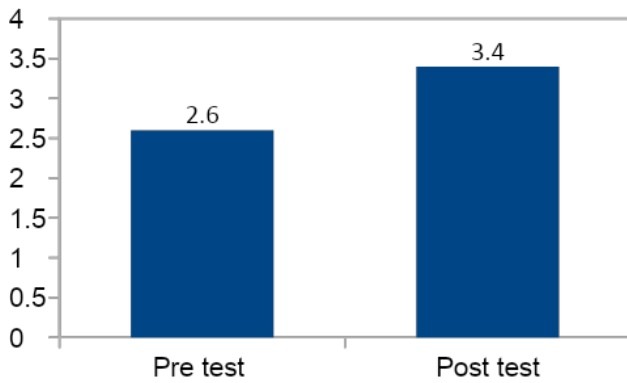


Figure 3.2.5 : Post test values of Group A and Group B for MDADI

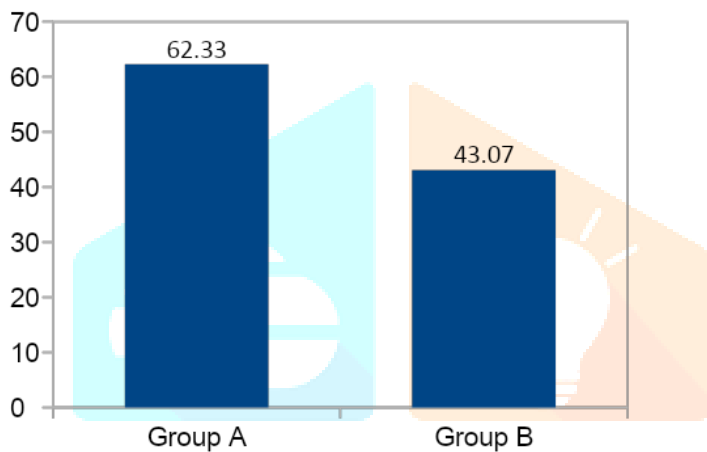
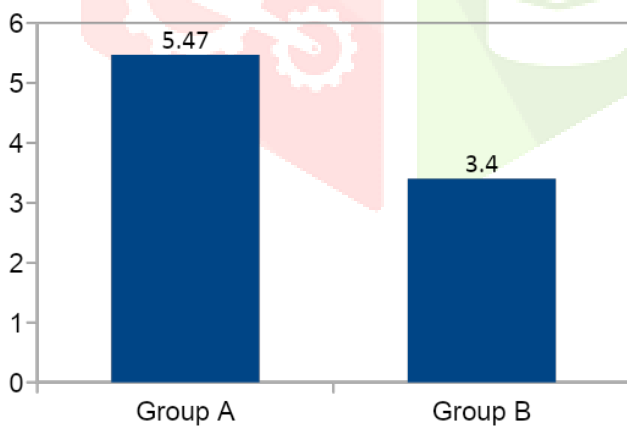


Figure 3.2.6 : Post test values of Group A and Group B for FOIS



4.1 RESULTS:

Thirty subjects were recruited into the study and fifteen subjects were allocated in each training group. All subjects completed the physical examination, and the procedure to examine the swallowing function three outcome measures were used. They are The M.D. Anderson dysphagia inventory, Functional oral intake scale. The data analysis revealed that the results of this study were statistically significant in the swallowing function of stroke subjects.

In the M.D. Anderson dysphagia inventory (MDADI), the between group analysis was done with the pre-test mean and standard deviation of group-A and group-B was 53.07(17.13) and 57.60 (15.17) respectively. The statistical analysis showed that there was no significant difference among the values ($p=0.4493$). The post-test mean and standard deviation of group-A and group-B was 62.33(13.15) and 43.07(15.72) respectively. The analysis was considered to be very statistically significant with the value ($p=0.0013$). The mean and standard deviation of pre-test and the post-test values of group A and group B of MDADI were 53.07(17.13) and 47.07(16.49) with p-value ($p<0.0001$) and 57.60(15.17) and 55.40(15.75) with p-value ($p<0.0001$) respectively. The results were considered to be extremely significant in within group analysis.

In Functional oral intake scale (FOIS), the between group analysis was done with the pre-test mean and standard deviation of group-A and group-B was 3.20(1.66) and 2.60(1.55) respectively. The statistical analysis showed that there was no significant difference among the values ($p=0.3143$). The post-test mean and standard deviation of group-A and group-B was 5.47(0.99) and 3.40(1.59) with the p-value ($p=0.0002$) respectively where the analysis was extremely statistically significant. The mean and standard deviation of pre-test and the post-test values of group A and group B of FOIS were 3.20(1.66) and 5.47(0.99) with p-value ($p<0.0001$) and 2.60(1.55) and 3.40(1.59) with p-value ($p<0.0001$) respectively. The results were considered to be extremely significant within group analysis.

5.1 DISCUSSION

This study significantly showed an improvement in the swallowing function in patients with dysphagia caused by stroke. These results agreed with the previous studies. Nearly 60% of stroke patients suffer from dysphagia and about 22% of patients who are in the mean age of years are getting affected. The masako manoeuvre and the Mendelsohn manoeuvre is the oro-pharyngeal rehabilitation swallowing exercises to enhance the function of dysphagia.

The masako manoeuvre is the swallowing exercise to rehabilitate the function of the pharynx by means of strengthening the muscles of the tongue base. It has been reported that during pharyngeal swallowing the coordination of larynx and the hyoid muscles co-contract by constricting the pharynx and thus clears the airway obstruction also.

The Mendelsohn manoeuvre is the most common technique in swallowing exercises that elevates the larynx by emptying the pharynx. These both techniques have an effect in strengthening of the swallowing muscles thereby enhancing the efficacy of increasing the resistance and endurance of muscles. Aspiration pneumonia is the most common complication that patient may face with swallowing deficit. These manoeuvres help in preventing the complication of dysphagia. This study revealed a significant result in both the intervention group. But the greater improvement in masako manoeuvre group was more statistically significant than Mendelsohn group.

Several randomized and comparisons studies had been done with a Mendelsohn manoeuvre in the generalized population and the people who suffer from swallowing difficulties that affects the oro-pharyngeal function with the significant results.

Very few comparison studies and pilot study approached with the masako manoeuvre. Masacko manoeuvre has an effect on resistance and endurance of conducting slow and fast muscle fibres. But this study had only revealed the overall functional gain in swallowing problem using the outcome measure of The M.D.Anderson dysphagia inventory and functional oral intake scale. The components of the outcomes include emotional, physical and functional. Since this inventory is well validated for self-administers designed to evaluate the quality of life in dysphagia and that had significant results. Thus, this study had a significant improvement in the physical and functional component of dysphagia in stroke subjects.

6.1 CONCLUSION

The effectiveness of the masako maneuver and the Mendelsohn maneuver showed an overall significant improvement in dysphagia where the masako maneuver showed very high statistically significant improvement than Mendelsohn maneuver of stroke subjects.

7.1 LIMITATIONS & RECOMMENDATIONS:

It was been difficult to assess and explain the procedure to the patient with comprehensive disorders and Only post stroke dysphagia selected; Mendalshon and Masako manoeuvre can be done with hands - on manoeuvre like shaker manoeuvre, supraglottic and super supraglottic manoeuvre. Further study includes other neurological conditions that can lead to dysphagia like parkinson disease, brain stem lesion, multiple sclerosis and motor neuron disease.

REFERENCES:

- 1) Smithard DG, O'Neill PA et al. The natural history of dysphagia following a stroke. *Dysphagia* 1997; pg.: 188-93.
- 2) Brady A (2008). "Managing the patient with dysphagia". *Home Health Nurse*. PMID 18158492.
- 3) "Dysphagia". University of Virginia. Retrieved 2008.
- 4) Logemann, Jeri A.(1998). *Evaluation and treatment of swallowing disorders*. Austin, Tex: Pro-Ed. ISBN 0-89079-728-5.
- 5) Smithard DG, Smeeton NC, Wolfe CD (2007). "Long-term outcome after stroke: does dysphagia matter?". *Age Ageing*. PMID 17172601.
- 6) Geissler et al nasogastric tube *Radiological Technology*.
- 7) Lohmn.O. et al (2008) Diagnosis and management of a misplaced nasogastric tube into the pulmonary pleura. *Archives of Otolaryngology, Head and Neck Surgery*; 134: pg: 547– 550.
- 8) Makay, O. et al (2008) Pyriform sinus perforation secondary to nasogastric tube insertion. *ANZ Journal of Surgery*; 78: pg: 624.
- 9) The Preferred Practice Patterns for swallowing and feeding assessment and intervention for adults are outlined in Sections 42 and 43. 1997-2016 *American Speech-Language-Hearing*.
- 10) Logemann, Jeri A. *Evaluation and treatment of swallowing disorders*. Austin, Te ProEd. ISN 00772.

- 11) Shamburek R, Farrar JT 0. Is an order of the digestive system in the elderly? N. Engl. J. Med. 22: PMI 202.
- 12) Martino R, Foley N et al dysphagia after stroke incidence, diagnosis, and pulmonary complications. Stroke. 227.
- 13) "Evaluation and Treatment of Swallowing Impairments". American Academy of Family Physicians". Retrieved 2008.
- 14) Edward Hardy and Natale Morton-Robinson; swallowing disorders treatment — Second Edition; Pro-Ed, Austin, Texas.

