



NIGHT TIME SLEEVE (MOBIDERM) VERSUS TRADITIONAL COMPRESSION SLEEVE IN POST MASTECTOMY LYMPHEDEMA

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ABSTRACT

Background: Breast cancer-related lymphedema (BCRL) is a frequent and also debilitating complication. It is still a major health issue, despite advances in therapy. Pain, infections, diminished function, lower quality of life, altered body image, as well as anxiety are all possible consequences of edema.

Purpose: The purpose of this research was to compare the effectiveness of the Mobiderm sleeve as well as the traditional compression sleeve in minimizing lymphedema after a mastectomy.

Patients and Methods: Sixty women patients having secondary lymphedema after unilateral mastectomy were enrolled in the study. The patients were divided into two groups at random **Group (A)** they were given Mobiderm sleeve to be worn daily at night for a total of three weeks, along with (manual lymphatic drainage therapy one session per day for 30 min, exercise therapy and skin care). and **Group (B)** they were given traditional compression sleeve daily for 3 weeks at day time for 15 hours as the entire duration of treatment, along with (manual therapy one session per day for 30 min, exercise therapy and skin care).

Results: Size of lymphedema did not differ significantly among groups at post I ($p > 0.05$), while there was a significant decrease in lymphedema size at metacarpal, wrist, mid forearm, below elbow, elbow, above elbow, mid arm and axillary levels of group (A) compared with that of group (B) at post II ($p < 0.05$). There was a significant increase in shoulder ROM of group A contrasted with that of group B at post I ($p < 0.05$) and post II ($p < 0.001$). There was a significant increase in elbow flexion and extension, supination and pronation ROM of group A contrasted with that of group B at post I ($p < 0.05$) and post II ($p < 0.001$). There was a significant improvement in wrist flexion and extension, radial as well as ulnar deviation ROM of group (A) contrasted with that of group (B) at post I ($p < 0.05$) and post II ($p < 0.001$) except for radial deviation, no significant difference at post II ($p > 0.05$).

Conclusion: Nighttime Mobiderm sleeve produced objective significant improvement in post mastectomy secondary lymphedema more than the traditional compression sleeve.

Key words: Nighttime Mobiderm sleeve, traditional compression sleeve, Breast cancer- related lymphedema, post mastectomy lymphedema.

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INTRODUCTION

The negative consequences of treatment for breast cancer is the breast cancer related lymphedema as the incidence range from 24.8% to 90.4%. Where the lymphedema is associated with several factors after conservative treatment such as tumor size, tumor location, breast surgery, adjuvant therapy, breast size, body mass index (BMI).¹

Lymphedema is a chronic condition characterised by dysfunction of the lymphatic transport, and it can have either a primary or secondary cause. Most cases of secondary

lymphedema in the West are caused by upper-limb lymphedema due to breast cancer.²

Lymphedema treatment focuses on reducing limb volume while also alleviating symptoms, improving patients' quality of life, as well as decreasing or preventing complications like recurrent infections.³

The main standard management of lymphedema is the complete decongestive therapy which is very efficient and composed of compound approach which are the proper skin care routine, manual lymphatic drainage, exercise and daily compressive bandaging. The 2 phases for the CDT

are: The first one being for the intensive phase and the latter for the maintenance phase.⁴

In order to keep the results which is obtained from the initial phase, the maintenance phase is utilized by low resistance short - stretch layered bandages. Although there is limited lymphatic system, function in this stage the purpose is to enter the lymphedema latency stage as to show normal lymphatic drainage with therapeutic compression ranged by dynamic compression therapy.⁵

The majority of patients in the maintenance phase will use day stockings (95.1) or bandages (12.3 %). Nighttime compression therapy is used by 45.2% of patients, while 21.1% of patients do not use any bandage compression at all during sleep.⁶

As the bandages are not easy for wearing during the maintenance phase so it requires assistance and specific education for practicing. Beside to enhance the maintenance treatment as well as Improve the satisfaction of the patient's compliance and to provide the breast cancer related lymphedema patients through using a low-stretch night device that is simple to use, safe, and highly effective. Because of this, the short stretch arm sleeve can be made to fit the patient comfortably even if their measurements change over time, making it easier to put on and take off. However, patients' compliance as well as quality of life are not improved by these bulky bandages due to the multiple layers of inelastic as well as short stretch materials.⁷

Currently there is no common standard protocol regarding the optimal rehabilitation program of cases of post mastectomy lymphedema in the literatures, therefore this study would be carried out to determine which approach is more effective in reducing post mastectomy lymphedema, is it the Nighttime Mobiderm sleeve or the traditional compression sleeve?

PATIENTS AND METHODS

Participants:

Sixty female patients with unilateral post mastectomy lymphedema after minimum two years from the surgery selected from Al Kasr El Aini Hospital in Cairo, Egypt (Department of Surgery). Their age ranged from 35-55 years.

Ethical Approval:

Each patient participated in this study only after signing an informed consent form in which their rights were fully explained. The study was conducted after receiving approval from the Institutional Review Board of the Faculty of Physical Therapy at Cairo University (No. P.T. REC/012/003075). The current study was conducted in accordance with the principles outlined in the Declaration of Helsinki on the treatment of human research subjects.

Study design:

A prospective, parallel – group, randomized controlled trial a 1:1 allocation ratio was performed from April 2022 to May 2022. Patients with unilateral post-mastectomy secondary lymphedema were selected from AL kasr EL Aini Hospital in Cairo, Egypt, after at least a year had passed since surgery. After receiving and signing an informed consent form, the patients took part in the study.

Patients were eligible if they were between the ages of 35 and 55, had secondary lymphedema after a year from surgery, and were free of any pathological conditions which might affect the results. Hemodynamically unstable patients, those with mental or psychological disorders, those with any systemic disease that might interfere with the study's objectives, and those with a history of cardiac abnormalities, diabetes, skin diseases, cellulitis, pregnancy, lactation, and malignancy were all excluded.

Patients' participation in this randomized trial was completely at random. To randomly assign patients, we first had physical therapists at AL Kasr EL Aini, Cairo University, report all of their patients who met the study's inclusion criteria. Second, after receiving medical counseling, patients were randomly assigned to either **Group (A)**: Nighttime Mobiderm sleeve (n=30) who were received Night time Mobiderm sleeve therapy, daily for 3 weeks or **Group (B)**: Traditional compression sleeve (n=30) therapy, daily for 3 weeks. Patients' full names, ages, addresses, and phone numbers were recorded during the history-taking process. They were also questioned about whether or not they had undergone any surgeries in the past. The current surgical procedure and the patient's medical history, including the medications actually administered, were thoroughly analyzed. The physical examination comprised general examination as well as local examination of breast as well as upper limb. A complete blood count and other routine laboratory tests were performed. Every patient was fully briefed on the diagnostic and therapeutic tools being used on them. Patients were asked to report any adverse reactions they experienced during treatment.

Record measurements by means of the lymphedema girth measurement form Mild 1.5-3.0 cm; Moderate 3.1-5.0 cm; Severe > 5.0 cm.⁸

Goniometer measurement for the ROM of the shoulder, elbow, as well as wrist joints were quantitated with the established techniques of goniometry. Prior to the randomization process, ROM was quantified.⁹

Therapeutic procedures:

Manual lymphatic drainage (MLD): is a mild form

of massage that is widely used as a part of decongestive treatment.¹⁰

Technique:

- Performed for 30 min per session.
- The majority of these procedures require the patient to be lying down.
- Started with deep diaphragmatic breathing.
- Lymph nodes and areas of the body that are not

affected were treated first.

- Moved proximally to distally to drain the affected areas.
- Movements were slow as well as rhythmical.
- Used light pressure – the pressure was too great, blood flow was increased, the skin turned red, and additional fluid was prompted to enter the tissues.
- Ended with deep diaphragmatic breathing



Fig.(1): Application of the manual lymphatic drainage on upper limb lymphedema patient.

MLD might be performed daily (or sometimes Two times a day) or three times weekly. Treatment plans typically consist of weekly sessions for three weeks or longer, with subsequent sessions spaced out three months to a year apart. The optimal course frequency and duration for MLD has yet to be determined. (**Shao and Zhong ., 2017**)¹¹.

Nighttime Mobiderm sleeve:¹²

This garment uses the patented Mobiderm technology consisted of foam blocks in soft adherent webbing. It generates, on and below the skin, zones of differentiated pressure among the foam blocks as well as their perimeter permitting a local mobilization to ease edema fluid evacuation (**Chohan A et al .,2019**)¹³. It's a regular low-stretch garment made to exert 15 mmHg of pressure.



Fig.(2) Pretreatment application of the night time mobiderm garment on upper limb lymphedema



Fig.(3) Post treatment application of the night time mobiderm garment on upper limb lymphedema



Fig.(4) Pretreatment application of night time mobiderm garment on upper limb lymphedema.



Fig.(5) Post treatment application of the night time mobiderm garment on upper limb lymphedema.

Traditional compression sleeve: ¹⁴
Flat –knit garments were designed to be used in the

maintenance stage of lymphedema treatment, following the reduction stage.

The range was recommended for patients presenting:

- Moderate to severe lymphedema.
- Non-regular limb shape with skin folds.
- Spreading to fingers.
- Large limb circumference.

Containment: a short-stretch and robust technical knit allows to garments to apply a high working pressure

and a low resting pressure on the limb.

- The flat knitted technology allows to vary the number of stitch loop on each row based on the precise patient measurements.
- Class 2 (23 – 32 mmHg), class 3 (34 – 46 mmHg)

Fig. (6) Pretreatment application of the traditional compression sleeve on upper limb lymphedema



Fig (7): Post treatment application of the traditional compression garment on upper limb lymphedema

Statistical analysis

Ages were compared between groups using an unpaired t test. The data were tested for a normal distribution by using Shapiro-Wilk procedure. The homogeneity of the groups was tested using Levene's test for homogeneity of variances. 2 x 3 mixed MANOVA was performed to contrast the impact of time (pre, post I & post II) as well as the impact of treatment (between groups), as well as the interaction between treatment as well as time on mean values of lymphedema size as well as ROM. For further multiple comparison, post-hoc tests with

the Bonferroni correction were performed. All statistical tests were performed at the p 0.05 level of significance. All statistical analyses were conducted in SPSS for Windows, version 19. (IBM SPSS, Chicago, IL, USA).

Results:

Participant characteristics:

Sixty female patients with unilateral post mastectomy lymphedema took part in this study. The mean \pm SD age of group A was 44.2 ± 4.67 years, having maximum value of 55 years as well as

minimum value of 35 years. The mean \pm SD age of group B was 44.46 ± 3.92 years, having maximum value of 51 years as well as minimum value of 36 years. There was no statistically significant difference in mean ages between the groups. ($p = 0.81$).

Effect of treatment on lymphedema size and ROM:

Mixed MANOVA showed that there was a substantial interaction of treatment as well as time ($F = 47.77$, $p = 0.001$, $\eta^2 = 0.99$). There was a substantial main impact of time ($F = 57.81$, $p = 0.001$, $\eta^2 = 0.99$). There was a substantial main impact of treatment ($F = 6.71$, $p = 0.001$, $\eta^2 = 0.8$).

Within group comparison

There was a substantial decline in lymphedema size at metacarpal, wrist, mid forearm, below elbow, elbow, above elbow, mid arm as well as axillary levels at post I contrasted with pre treatment ($p < 0.05$) and a significant decrease at post II contrasted with pre treatment as well as post I for both groups ($p < 0.05$). (table 1).

There was a substantial improvement in shoulder, elbow as well as wrist ROM at post I contrasted with pre treatment ($p < 0.05$) as well as a substantial improvement at post II contrasted with pre treatment as well as post I for group A ($p < 0.05$). (table 2-3).

There was a substantial improvement in shoulder flexion, extension, internal as well as external rotation, elbow flexion, extension, as well as supination at post I contrasted with pre treatment ($p < 0.05$) also a substantial improvement at post II contrasted with pre treatment as well as post I for group B ($p < 0.05$), whereas there was no substantial

difference in shoulder abduction, adduction as well as pronation among pre & post I ($p > 0.05$) with substantial improvement at post II contrasted with pre treatment as well as post I ($p < 0.05$). (table 2).

There were no substantial changes in wrist flexion as well as ulnar deviation, no substantial difference in extension as well as radial deviation among pre & post I ($p > 0.05$). There was a substantial improvement in wrist extension as well as radial deviation at post II contrasted with pre treatment as well as post I ($p < 0.05$). (table 3).

Between group comparison

Comparison pre treatment showed a non-substantial difference among groups ($p > 0.05$).

Size of lymphedema did not differ significantly between groups at post I ($p > 0.05$), whereas there was a substantial decline in lymphedema size at metacarpal, wrist, mid forearm, below elbow, elbow, above elbow, mid arm as well as axillary levels of group A contrasted with that of group B at post II ($p < 0.05$). (table 1).

There was a substantial improvement in shoulder ROM of group A contrasted with that of group B at post I ($p < 0.05$) as well as post II ($p < 0.001$). (table 2).

There was a substantial improvement in elbow flexion & extension, supination & pronation ROM of group A contrasted with that of group B at post I ($p < 0.05$) as well as post II ($p < 0.001$). (table 3).

There was a substantial improvement in wrist flexion & extension, radial & ulnar ROM of group A contrasted with that of group B at post I ($p < 0.05$) as well as post II ($p < 0.001$) except no substantial difference in radial deviation at post II ($p > 0.05$). (table 3).

Table 1. Pre treatment, post I and post II mean values of lymphedema size of group A and B.

Lymphedema size (cm)		Pre	Post I	Post II	Pre vs post I	Pre vs post II	Post I vs post II
		Mean ± SD	Mean ± SD	Mean ± SD	MD (% of change)	MD (% of change)	MD (% of change)
Metacarpal	Group A	23.4 ± 1.91	22.25 ± 1.87	19.93 ± 1.34	1.15 (4.91%)*	3.47 (14.83%)*	2.32 (10.43%)*
	Group B	23.7 ± 2.39	22.58 ± 1.60	21.95 ± 1.62	1.12 (4.73%)**	1.75 (7.38%)*	0.63 (2.79%)*
	<i>p-value</i>	0.59	0.46	0.001			
Wrist	Group A	22.98 ± 2.06	21.9 ± 1.94	20.02 ± 1.57	1.08 (4.7%)*	2.96 (12.88%)*	1.88 (8.58%)*
	Group B	23.11 ± 1.55	22.58 ± 1.54	22.28 ± 1.55	0.53 (2.29%)*	0.83 (3.59%)*	0.3 (1.33%)**
	<i>p-value</i>	0.77	0.13	0.001			
Mid Forearm	Group A	35.73 ± 4.37	33.83 ± 4.15	28.27 ± 5.77	1.9 (5.32%)*	7.46 (20.88%)*	5.56 (16.44%)*
	Group B	36.07 ± 3.36	34.67 ± 3.43	33.08 ± 4.07	1.4 (3.88%)*	2.99 (8.29%)*	1.59 (4.59%)*
	<i>p-value</i>	0.74	0.4	0.001			
Below Elbow	Group A	38.68 ± 4.44	36.47 ± 3.96	31.85 ± 3.45	2.21 (5.71%)*	6.83 (17.66%)*	4.62 (12.67%)*
	Group B	39 ± 3.05	37.87 ± 2.86	36.52 ± 3.39	1.13 (2.9%)*	2.48 (6.36%)*	1.35 (3.56%)*
	<i>p-value</i>	0.75	0.12	0.001			
Elbow	Group A	37.45 ± 3.94	35.40 ± 3.77	30.72 ± 2.88	2.05 (5.47%)*	6.73 (17.97%)*	4.68 (13.22%)*
	Group B	37.03 ± 3.26	35.67 ± 3.42	34.82 ± 3.48	1.36 (3.67%)*	2.21 (5.97%)*	0.85 (2.38%)*
	<i>p-value</i>	0.65	0.77	0.001			
Above Elbow	Group A	42.02 ± 4.69	40 ± 4.52	34.90 ± 4.57	2.02 (4.81%)*	7.12 (16.94%)*	5.1 (12.75%)*
	Group B	41.70 ± 3.86	40.30 ± 3.91	39.05 ± 4.60	1.4 (3.36%)*	2.65 (6.35%)*	1.25 (3.1%)*
	<i>p-value</i>	0.77	0.78	0.001			
Mid Arm	Group A	46.10 ± 4.96	42.5 ± 4.38	38.92 ± 4.90	3.6 (7.81%)*	7.18 (15.57%)*	3.58 (8.42%)*
	Group B	44.37 ± 4.93	42.83 ± 5.01	41.87 ± 5.05	1.54 (3.47%)*	2.5 (5.63%)*	0.96 (2.24%)*
	<i>p-value</i>	0.18	0.78	0.02			
Axillary	Group A	48.53 ± 5.23	44.7 ± 4.55	41.28 ± 4.03	3.83 (7.89%)*	7.25 (14.94%)*	3.42 (7.65%)*
	Group B	46.42 ± 4.62	44.9 ± 4.08	43.87 ± 3.83	1.52 (3.27%)*	2.55 (5.49%)*	1.03 (2.29%)**
	<i>p-value</i>	0.1	0.85	0.01			

SD, Standard Deviation; MD, Mean difference; p value, Probability value; *, Significant p < 0.001; **, Significant p < 0.01.

Table 2. Pre treatment, post I and post II mean values of shoulder ROM of group A and B.

Shoulder ROM (degrees)		Pre	Post I	Post II	Pre vs post I	Pre vs post II	Post I vs post II
		Mean ± SD	Mean ± SD	Mean ± SD	MD (% of change)	MD (% of change)	MD (% of change)
Flexion	Group A	123.83 ± 4.49	133.67 ± 7.76	157.17 ± 9.89	-9.84 (7.95%)*	-33.34 (29.92%)*	-23.5 (17.58%)*
	Group B	125.2 ± 5.28	128.1 ± 6.49	131.87 ± 8.39	-2.9 (2.32%)**	-6.67 (5.33%)*	-3.77 (2.94%)*
	<i>p-value</i>	0.28	0.004	0.001			
Extension	Group A	27 ± 8.57	38.5 ± 11.61	55.5 ± 12.27	-11.5 (42.59%)*	-28.5 (105.56%)*	-17 (44.16%)*
	Group B	30 ± 9.47	32.33 ± 10.14	34.83 ± 11.3	-2.33 (7.77%)**	-4.83 (16.1%)*	-2.5 (7.73%)*
	<i>p-value</i>	0.2	0.03	0.001			
Abduction	Group A	153.67 ± 10.58	164 ± 8.94	173.5 ± 7.56	-10.33 (6.72%)*	-19.83 (12.9%)*	-9.5 (5.79%)*
	Group B	157.17 ± 7.73	158.33 ± 8.44	160.83 ± 7.88	-1.16 (0.74%)*	-3.66 (2.33%)*	-2.5 (1.58%)*
	<i>p-value</i>	0.14	0.01	0.001			
Adduction	Group A	45.83 ± 4.93	48.16 ± 4.04	50.5 ± 2.73	-2.33 (5.08%)**	-4.67 (10.19%)*	-2.34 (4.86%)**
	Group B	44 ± 4.43	44.5 ± 4.42	46.23 ± 4.88	-0.5 (1.14%)*	-2.23 (5.07%)*	-1.73 (3.89%)*
	<i>p-value</i>	0.13	0.001	0.001			
Internal rotation	Group A	52.17 ± 4.09	61.33 ± 5.07	71.5 ± 6.97	-9.16 (17.56%)*	-19.33 (37.05%)*	-10.17 (16.58%)*
	Group B	53.17 ± 4.45	55.33 ± 4.34	57 ± 5.96	-2.16 (4.06%)**	-3.83 (7.2%)*	-1.67 (3.02%)*
	<i>p-value</i>	0.36	0.001	0.001			
External rotation	Group A	60.33 ± 4.14	69.17 ± 4.56	77.33 ± 5.98	-8.84 (14.65%)*	-17 (28.18%)*	-8.16 (11.8%)*
	Group B	60.67 ± 7.51	63.67 ± 6.55	65.16 ± 6.49	-3 (4.94%)*	-4.49 (7.4%)*	-1.49 (2.34%)*
	<i>p-value</i>	0.83	0.001	0.001			

SD, Standard Deviation; MD, Mean difference; p value, Probability value; *, Significant p < 0.001; **, Significant p < 0.01.

Table 3. Pre treatment, post I and post II mean values of elbow and wrist ROM of group A and B.

		Pre	Post I	Post II	Pre vs post I	Pre vs post II	Post I vs post II
		Mean ± SD	Mean ± SD	Mean ± SD	MD (% of change)	MD (% of change)	MD (% of change)
Elbow ROM (degrees)							
Flexion	Group A	134.33 ± 5.37	140.5 ± 4.61	143 ± 3.61	-6.17 (4.59%)*	-8.67 (6.45%)*	-2.5 (1.78%)*
	Group B	134.83 ± 6.36	135.83 ± 6.31	138.5 ± 5.27	-1 (0.74%)*	-3.67 (2.72%)*	-2.67 (1.97%)*
	p- value	0.74	0.002	0.001			
Extension	Group A	8.06 ± 0.74	9.53 ± 0.68	10.2 ± 0.61	-1.47 (18.24%)*	-2.14 (26.55%)*	-0.67 (7.03%)*
	Group B	8.1 ± 0.88	8.56 ± 0.82	9.26 ± 0.78	-0.46 (5.68%)*	-1.16 (14.32%)*	-0.7 (8.18%)*
	p- value	0.87	0.001	0.001			
Supination	Group A	67.66 ± 6.12	77 ± 6.1	82.83 ± 5.36	-9.34 (13.8%)*	-15.17 (22.42%)*	-5.83 (7.57%)*
	Group B	68.5 ± 8.11	70.33 ± 8.5	72.5 ± 8.06	-1.83 (2.67%)*	-4 (5.84%)*	-2.17 (3.09%)*
	p- value	0.65	0.001	0.001			
Pronation	Group A	68 ± 6.1	75.66 ± 6.78	83.33 ± 7.35	-7.66 (11.26%)*	-15.33 (22.54%)*	-7.67 (10.14%)*
	Group B	69.5 ± 9.59	70.83 ± 9.83	73.16 ± 9.23	-1.33 (1.91%)*	-3.66 (5.27%)*	-2.33 (3.29%)*
	p- value	0.47	0.03	0.001			
Wrist ROM (degrees)							
Flexion	Group A	51.16 ± 4.29	61.33 ± 4.9	71.16 ± 8.37	-10.17 (19.88%)*	-20 (39.09%)*	-9.83 (16.03%)*
	Group B	52.83 ± 5.67	53 ± 5.66	54.66 ± 6.93	-0.17 (0.32%)*	-1.83 (3.46%)*	-1.66 (3.13%)*
	p- value	0.21	0.001	0.001			
Extension	Group A	43.5 ± 5.74	54.66 ± 6.68	64.5 ± 9.59	-11.16 (25.66%)*	-21 (48.28%)*	-9.84 (18%)*
	Group B	-1 (2.27%)*	-2.5(5.68%)*	-1.5 (3.33%)*	-1 (2.27%)*	-2.5(5.68%)*	-1.5 (3.33%)*
	p- value	0.79	0.001	0.001			
Radial deviation	Group A	18.86 ± 1.99	19.56 ± 0.82	19.93 ± 0.25	-0.7 (3.71%)*	-1.07 (5.67%)*	-0.37 (1.89%)*
	Group B	18.6 ± 2.04	18.63 ± 2.02	19.9 ± 0.54	-0.03 (0.18%)*	-1.3 (6.99%)*	-1.27 (6.82%)*
	p- value	0.61	0.02	0.76			
Ulnar deviation	Group A	27.33 ± 3.41	31.5 ± 2.67	32.83 ± 2.52	-4.17 (15.26%)*	-5.5 (20.12%)*	-1.33 (4.22%)*
	Group B	28.67 ± 5.07	29 ± 4.23	29.5 ± 4.61	-0.33 (1.15%)*	-0.83 (2.9%)*	-0.5 (1.72%)*
	p- value	0.36	0.008	0.001			

SD, Standard Deviation; MD, Mean difference; p value, Probability value; *, Significant p < 0.001; **, Significant p < 0.01; ***: Significant p < 0.05.

DISCUSSION:

In maintenance phase of lymphedema treatment, Compression stockings are recommended. The amount of pressure exerted on the skin's surface is used to determine the level of compression (gradient must be done from distal to proximal). Variety styles can be used, either personalized or standard. Personalization is especially important for deformed limbs. If you wash them every day, they will retain their elasticity for longer.

The recent research was performed to examine the impact of applying the nighttime sleeve (Mobiderm) versus the traditional compression sleeve in after mastectomy lymphedema. The findings of this research revealed that the Mobiderm group was enhanced than the traditional group with (p < 0.05) and the explanations would be as follows:

As far as the author is aware, there was no preceding investigations contrasted the effects of the night sleeve (Mobiderm) versus the effect of the traditional compression sleeve in post mastectomy lymphedema. The main outcome of the current study was that the Mobiderm night sleeve improved the upper limb volume and the functional activities in patients after mastectomy lymphedema.

The results of the research that the night time Mobiderm garment has a significant effect in postmastectomy lymphedema were in accordance with those described by Sezgin Ozcan et al., (2018) ; Pertsch, (2018) ; Todd et al., (2018)

; Grabsch, (2018) ; Toccafondi et al., (2017) ; Benhamou et al., (2017) ; Mestre et al., (2016) ; Quere et al., (2014) ; Riccioni et al., (2014).

Sezgin Ozcan et al (2018)¹⁵ observed an 8.9% decrease in absolute upper limb volume in BRCL patients after three weeks of intensive phase CDT (including manual lymphatic drainage, exercise, as well as compression bandages). Also, it was looked at how the patients' excess volume changed over the course of 15 days of bandaging, and we found that it decreased substantially with both compression regimens. However, patients who used the Mobiderm garment reduced their volume by a significantly higher percentage (57.3%) than the control group (25.1 %).

Pertsch, (2018)¹⁶ evaluated the mobiderm product using a longitudinal observational study with 91 participants, describing continuous variables alongside the absolute number of observations. Mean, standard deviation, percentage, as well as frequency were used to characterise nominal or ordinal values, but no statistical analysis was conducted. The majority of participants who provided feedback indicated that they slept well while using the product. 75% reported that wearing a mobiderm garment at night reduced their oedema symptoms "a lot" or "great deal," and 94% said they were satisfied with the product, giving it either a "good" or "very good" rating. When compared to the previous study, this one also monitored for

tolerability and skin problems related to the device, finding that 79% of participants did not experience itching and 85.75% did not experience pressure marks. Once again, patients who experienced either did not have to stop treatment.

Toccafondi et al., (2017)¹⁷ studied 145 people having breast cancer-related lymphedema in a retrospective study to evaluate the effectiveness of the Mobiderm created night-time compression sleeve at reducing and maintaining volume. As is customary when comparing limb volumes, we compared the affected arm to the unaffected arm. There was a statistically significant ($p < .001$) correlation between limb volumes before and after 6 months of treatment with night-time compression. The authors found that patients with lymphedema who had been diagnosed for less than 6 months responded better to nighttime compression, resulting in a greater lessening in limb volume (56.6 % to 49.6 % vs. 50.6 % to 49.3 %).

The results of the study that the traditional compression sleeve has a significant effect in postmastectomy lymphedema were in accordance with those described by Ochalek et al., (2019); Chohan et al., (2019); Johnstone et al., (2006); Vignes et al., (2007).

Ochalek et al., (2019)¹⁸ proposed that one as well as two years after surgery, lymphedema was obvious in 17% & 15% of those wearing compression sleeves, respectively, compared to 27% as well as 29% of those not wearing compression sleeves. Finding effective strategies to prevent secondary lymphedema is crucial for women having breast cancer, and the results of this study recommend that using compression in addition to daily mobility exercises could be an efficient form of prevention. Compression therapy is the gold standard for treating BCRL, and it has been linked to significant gains in patient health as well as quality of life.

Chohan et al., (2019)¹⁹ showed that traditional compression garments improved tissue health by decreasing oedema, increasing blood flow, decreasing venous stasis, as well as increasing tissue oxygenation. Tests of tissue oxygenation were conducted on 28 subjects before, during, as well as after 20 minutes of use of the device for each scenario also for each of three positions: chair sitting, long sitting, as well as supine. Improved tissue oxygenation was proved substantially in chair sitting during wearing the compression garment. Reduced compression devices like these have been shown to increase blood flow, which has important implications for the treatment of oedema with a mixed aetiology or in cases where full compression therapy is contraindicated.

Johnstone et al., (2006)²⁰ advocated wearing compression garments continuously, even while sleeping, while others advocated only wearing them while awake or while exercising. In this

research, 88.1% of patients were instructed to wear the garments throughout the day, every day.

On the other hand the results of the studies disagree with the traditional compression garment which reported by Longhurst et al., (2018) ; Mu`ezzinler and Karayurt, (2013) ; Ridner et al., (2011) ; Vignes et al., (2007) ; Johansson et al., (2003).

Longhurst et al., (2018)²¹ investigated the factors related with compression garment wear in women having BCRL, and found that 21% of patients stopped wearing them due to discomfort, which mirrors our findings. Those with mild to moderate swelling, as well as those who have suffered from swelling for more than 5 years, were more likely to stop wearing compression garments altogether, according to the authors.

Compression garment use as recommended was more common among patients who had a modified radical mastectomy (MRM) than among those who had breast-conserving surgery (BCS) in this study, suggesting that patient preferences for surgical approaches play a role. Patients' concerns about their appearance most strongly influenced their decision to undergo BCS (44%), while concerns about their likelihood of survival or recurrence were most strongly associated with MRM, according to a review of studies on surgical as well as adjuvant systemic treatment preferences for early breast cancer (46 %). Thus, it is possible that patients made similar decisions when selecting compression garments to wear. In this research, the explanation for wearing compression garments was described as "It maintains the shape of the arm as well as the lymphedema stability " as well as "willing to follow the doctor's advice" by 71.4% of the patients.

In the same way, **Longhurst et al., (2018)** stated most frequent explanations for wearing compression garments as "It maintains the arm shape as well as the lymphedema stability " (79.3%) as well as "to follow the advice of the health professional" (61.4%).

However in another study **Mu`ezzinler and Karayurt, (2013)**²² reported that women with BCRL who wore compression garments reported a decrease in lymphedema-related symptoms; however, they also reported a number of challenges associated with compression garment use, including increased attention from curious onlookers, discomfort wearing the garment during warmer months, increased susceptibility to infection due to garment contamination from repeated washings, and a lengthy drying time after washing.

The MOBIDERM used in this research increased wear time at night by applying a low compression level (10-15mmHg). In addition to the compression effect, the MOBIDERM technology incorporated into this garment actively encourages the movement of lymphatic fluid. During the

maintenance phase also as part of the overall strategy, this garment is meant to be worn in addition to their daily compressive strategy (sleeve, bandage, combination of sleeve as well as bandage, etc.). The findings of this study are interesting, as they indicate that the addition of this night garment may help patients achieve stability in their lymphedema as well as a trend toward volume reduction during the maintenance phase.

Final findings: In light of what has been said so far about these findings, as well as other researchers' findings in the field that are relevant to this one, it can be claimed that management of lymphedema with mobiderm nighttime sleeve applied exhibited continued improvement and a better control of edema than the traditional compression sleeve since it is effective to reinforce the effect of the therapy during the day and helps keep the edema from growing again. Where it is ease of use to improve the patient's autonomy as well as self – management, as well as it is a single garment to dress in.

In addition to Comfortability which is Unintrusive as well as discreet treatment, don't wake up whoever is sleeping, No blusters under the garments.

And very comfort for mastectomy patient with orthopedic injuries (Supraspinatus tear, frozen shoulder and Labrum tear).

The improvements may be based on that it promotes edema mobilization and evacuation since it's meant to use a variety of pressures on the skin in concert with movable muscle, encourages microcirculation within the tissues by applying soft pressure, added that it facilitate lymphatic drainage and the easing of scar tissue. Where the garment can be adjusted to fit a wide range of body shapes and sizes. Because it is constructed out of foam blocks that are held together by a sticky soft webbing. As well it is simple alternative that the patients can implement themselves and control their own treatment.

Conclusion:

The results of this research provide additional evidence that usage of the Nighttime Mobiderm sleeve produce objective improvement in upper limb lymphedema more than the usage of the traditional compression sleeve. But both are regarded as gold standard therapeutic tools in the treatment of lymphedema in the upper limbs after a mastectomy.

Potential conflict of Interest

No potential conflict of interest relevant to this article was reported.

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