

# **Simplified Lymphatic Microsurgical Preventing Healing Approach (SLYMPHA) for Prevention of Breast Cancer-Related Lymphedema after Axillary Lymph Node Dissection**

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## **Background**

Lymphedema (LE) is a serious complication of axillary lymph node dissection (ALND) with an incidence rate of 16%. Simplified Lymphatic Microsurgical Preventing Healing Approach (SLYMPHA) is a safe and relatively simple method, which decreases incidence of LE dramatically. Our initial study showed an 88% decrease in clinical LE rate. In the initial study, we used arm circumference measurement for the diagnosis of LE and median follow up was 15 months. The aim of this study was to confirm these results after a long-term follow up period and by using bioimpedance spectroscopy (L-Dex) technology in detecting LE.

## **Methods**

All patients, undergoing ALND with or without SLYMPHA between January 2014 and November 2020 were included in the study. Patients with no postoperative L-Dex measurements were excluded. A L-Dex score outside the normal range ( $\pm 10$  L-Dex unit) or  $\geq 10$  L-Dex unit increase above patient's baseline was considered as LE. The incidence of LE was compared between patients with and without SLYMPHA.

## **Results**

194 patients were included in the study. 57% of cohort underwent SLYMPHA. Mean follow-up time was  $47 \pm 37$  months. Patients, who underwent SLYMPHA, had a significantly lower rate of LE (16% vs 32%;  $p=0.01$ ; OR 0.4 [0.2-0.8]).

## **Conclusion**

SLYMPHA is a safe and relatively simple method, which continued its efficacy after a long-term follow up period. It should be considered as an adjunct procedure to ALND for all patients during initial surgery.

**Table 1.** Comparison of descriptive parameters between groups.

		SLYMPHA		P
		No	Yes	
<b>Age (years)</b>		53 +-10	50 +-12	<b>0.043</b>
<b>Follow up (months)</b>		70 +-44	29 +-18	<b>&lt;0.001</b>
<b>Smoker</b>	<b>No</b>	58 (41)	83 (59)	0.15
	<b>Yes</b>	10 (37)	17 (63)	
	<b>Former smoker</b>	12 (63)	7 (37)	
<b>Diabetes</b>	<b>No</b>	45 (45)	55 (55)	0.99
	<b>Yes</b>	13 (45)	16 (55)	
<b>Nuclear Grade</b>	<b>1</b>	5 (71)	2 (29)	0.08
	<b>2</b>	29 (35)	54 (65)	
	<b>3</b>	41 (47)	46 (53)	
<b>Molecular subtype</b>	<b>Luminal A</b>	47 (40)	69 (60)	0.09
	<b>Luminal B</b>	8 (31)	18 (69)	
	<b>Triple negative</b>	17 (57)	13 (43)	
	<b>Her 2 type</b>	11 (61)	7 (39)	
<b>Pathologic T Stage</b>	<b>0</b>	10 (42)	14 (58)	0.75
	<b>1</b>	33 (45)	40 (55)	
	<b>2</b>	25 (38)	40 (62)	
	<b>3</b>	8 (53)	7 (47)	
	<b>4</b>	3 (60)	2 (40)	
<b>Pathologic N Stage</b>	<b>0</b>	9 (45)	11 (55)	0.62
	<b>1</b>	45 (46)	52 (54)	
	<b>2</b>	21 (37)	36 (63)	
	<b>3</b>	6 (45)	11 (65)	
<b>Number of nodes removed</b>		18.36 ±8	17.57 ±7	0.48

<b>Extracapsular invasion</b>	<b>No</b>	32 (41)	46 (59)	0.22
	<b>Yes</b>	25 (32)	54 (68)	
<b>Lymphovascular Invasion</b>	<b>No</b>	30 (37)	50 (63)	0.9
	<b>Yes</b>	23 (36)	40 (64)	
<b>Radiotherapy</b>	<b>No</b>	15 (43)	20 (57)	0.98
	<b>Yes</b>	68 (43)	89 (57)	

*Categorical values reported as n(%)*

*Continues values reported as mean  $\pm$ SD*

**Table 2. Effect of SLYMPHA on Lymphedema rate**

		<b>Lymphedema</b>		<b>P</b> univariate
		<b>No</b>	<b>Yes</b>	
<b>SLYMPHA</b>	<b>No</b>	57 (71)	27 (32)	<b>0.01</b> OR 0.4 [0.2-0.8]
	<b>Yes</b>	92 (84)	18 (16)	

*Categorical values reported as n(%)*

**Table 3. The effect of age and length of follow up on lymphedema**

		<b>Lymphedema</b>		<b>p</b>
		<b>No</b>	<b>Yes</b>	
<b>No SLYMPHA</b>	<b>Age</b>	54.09 $\pm$ 9.9	51.07 $\pm$ 8.6	0.16
	<b>Follow up</b>	72.4 $\pm$ 44.99	64.63 $\pm$ 40.95	0.44
<b>SLYMPHA</b>	<b>Age</b>	49.57 $\pm$ 12.3	51.39 $\pm$ 10.8	0.53
	<b>Follow up</b>	28.71 $\pm$ 18.5	32.56 $\pm$ 14.1	0.33

*Continues values reported as mean  $\pm$ SD*