



**ORIGINAL RESEARCH PAPER**

**Breast Surgery**

**A PROSPECTIVE STUDY ON THE INCIDENCE OF LYMPHOEDEMA IN CA BREAST FOLLOWING AXILLARY LYMPH NODE DISSECTION**

**KEY WORDS:**

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**ABSTRACT**

**Introduction:** One of the most important prognostic indicators in breast cancer is the axillary node status, and it determines the choice of adjuvant therapies. Axillary Node Dissection has been the standard surgical technique for the assessment of nodes. And its serious side effect is lymphoedema. Lymphoedema is the retention of lymphatic fluid in the arm caused by the disruption of arm lymphatic drainage when axillary lymph nodes are removed. When the lymphoedema is moderate to severe, the affected arm can be painful, and heavy. The disrupted lymph flow will prevent a normal immune response making the arm more susceptible to infection. And on long term, lymphoedema is accompanied by subcutaneous and lymphatic fibrosis.

**Objectives:**

1. To study the incidence of lymphoedema in patients with carcinoma breast undergoing axillary lymph node dissection.
2. To study the relationship between various risk factors and the incidence of lymphoedema.

**Materials And Methods:** First fifty patients who underwent surgical management for carcinoma breast in the Institute of General Surgery, Rajiv Gandhi Government General Hospital, Chennai from the beginning of May 2022 to April 2023 were included in our study. The recorded data included patient demographics, T staging of tumour, level of axillary lymph node dissection, number of positive lymph nodes, axillary irradiation, cellulitis of the operated arm, preoperative and postoperative arm circumference. **Results** Out of fifty patients studied, twenty developed lymphoedema. Increasing age ( $p=.0005$ ), cellulitis to the operated arm ( $p=.015$ ), increased BMI ( $p.0015$ ), lymph node positivity ( $p=.0007$ ) and radiotherapy to axilla ( $p=.0004$ ) were significant risk factors

**1. INTRODUCTION**

One of the most important prognostic indicators in breast cancer is the axillary node status, and it determines the choice of adjuvant therapies. Axillary Node Dissection has been the standard surgical technique for the assessment of nodes. And its serious side effect is lymphoedema. Lymphoedema is the retention of lymphatic fluid in the arm caused by the disruption of arm lymphatic drainage when axillary lymph nodes are removed. When the lymphoedema is moderate to severe, the affected arm can be painful, and heavy. The disrupted lymph flow will prevent a normal immune response making the arm more susceptible to infection. And on long term, lymphoedema is accompanied by subcutaneous and lymphatic fibrosis.

Axillary radiation after axillary lymph node dissection carries a higher risk of causing tissue fibrosis, and chronic lymphoedema by constricting lymphatic channels.

The primary aim of our study is to determine the incidence of lymphoedema in patients with carcinoma breast undergoing axillary lymph node dissection. The secondary aim of the study was to ascertain the relationship between various risk factors and the incidence of lymphoedema.

**2. PATIENTS AND METHODS**

First fifty patients who underwent surgical management for carcinoma breast in the Institute of General Surgery, Rajiv Gandhi Government General Hospital, Chennai from the beginning of May 2022 to April 2023 were included in our study.

This is an observational study which is a single institution prospective analysis that studied the incidence of lymphoedema in carcinoma breast patients undergoing axillary lymph node dissection with or without axillary radiation in the period from the beginning of May 2022 to April 2023, where patients were observed from POD1 until the end of April 2023 with a median follow up period of 7.5 months (range 3-12 months).

The data was collected from our records in our Institute of

General Surgery where informed consents were obtained from patients regarding procedures, surgeries, and researchers.

The recorded data included patient demographics, T staging of tumour, level of axillary lymph node dissection, number of positive lymph nodes, axillary irradiation, cellulitis of the operated arm, preoperative and postoperative arm circumference.

Arm measurement was done using a tape, by applying minimal pressure in order to avoid the compression over the arm soft tissues. All the patients had their arms measured 10 cm below and 15 cm above the olecranon. For hand measurements, patients were asked to make a fist with thumb on the outside and then measuring the widest point circumference.

**The outcome and follow-up:**

Patients were followed up daily during their post operative hospital stay till they were discharged and then every third month until the end of follow-up period for the detection of lymphoedema. Subjective questions and clinical assessment for cellulitis and lymphoedema were done in the follow-up.

**Statistical technique:**

The collected data were analyzed with IBM SPSS Statistics for Windows, Version 23.0. (Armonk, NY: IBM Corp). To describe about the data descriptive statistics frequency analysis, and percentage analysis was used for categorical variables, and the mean & S.D were used for continuous variables.

To find the significant difference in the multivariate analysis the Kruskal Walli's test was used. To find the significance in qualitative categorical data Chi-Square test was used similarly if the expected cell frequency is less than 5 in 2x2 tables then Fisher's Exact was used. In all the above statistical tools the probability value .05 is considered a significant level.

**3. RESULTS**

50 women with complete data were analysed. Out of 50

patients studied, 20 patients developed lymphoedema. Patient demographics shown in table 1. Lymphoedema was defined in our study as >10 % increase in any circumference in the operated arm compared to the preoperative values of the same.

**Table 1: Patient demographics**

variables	mean ± SD
age	50.18 ± 9.49
BMI	29.12 ± 4.28

The mean age of incidence in the study population was 50.18 ± 9.49 and the mean BMI was 29.12 ± 4.28

**Table 2: Risk factors for lymphoedema**

Variables		P value
T staging	T1	>0.999
	T2	0.530
	T3	>0.999
Age	<51	<0.0001
	52-61	0.185
	62-71	0.0005
BMI	NORMAL	0.0675
	OVERWEIGHT	0.0742
	OBESE I	0.0015
	OBESE II	>0.999
Radiotherapy		0.0004
Positive nodes	0	0.0003
	1-3	0.4161
	4+	0.0007
Level of dissection		0.1317
cellulitis		0.0150

Table 2 shows risk factor analysis. Increasing age (p=.0005), cellulitis to the operated arm (p=.015), increased BMI (p.0015), lymph node positivity (p=.0007) and radiotherapy to axilla (p=.0004) were significant risk factors

**4. DISCUSSION:**

There is no proper definition for lymphoedema. This is partly due to different measurement techniques such as arm circumference measures, and volume estimates from circumference, volume measurements by water displacement or infrared scanning and lastly use of bioelectrical impedance. For choosing a technique, its accuracy must be compared with its ease of use. We used arm circumference measures, in our study, as it is a quick procedure that can be done with minimal expense on time or equipment, in a clinical setting. We adopted the protocol from IBCSG 10-9316 which used 3 measurement sites for detection of LO. Volume measurement by water displacement or infrared techniques are more accurate. But they require specialised equipment.

Some patients with lymphoedema will have swelling in only one part of their arm and using a threshold increase at any single point enables detection of this. And its better using a percentage increase rather than an absolute measure. It is important to choose the threshold level at which a patient will be said to have lymphoedema. Following are some definitions of lymphoedema found in the review of literature using arm circumferences:

1. ≥2cm difference in any circumference
2. ≥5% increase in circumference at any sites (sensitivity 91%)
3. ≥10% increase in circumference at any site (sensitivity 49%)
4. 5% difference in the sum of arm circumferences
5. >10% difference in the sum of arm circumferences

Tewari et all compared the volume displacement method with serial arm measurements and found out that there is a very high correlation (p<0.0001) between these two methods

and recommended serial arm measurements for detection of LO. 10% increase in arm volume have been used by Bland KL et al. to define LO. In our own data, a ≥10% increase in circumference at any site, appeared to be the most reasonable cut-off when the data were first examined, so this was used for the bulk of the analyses.

**5. CONCLUSION:**

Increasing age, cellulitis, and radiotherapy to axilla are some of the significant risk factors predisposing to lymphoedema. Hence these patients should be screened intensively for development of lymphoedema, and treatment should be started as early as possible. A ≥10% increase in any arm circumference can be readily used as a screening modality for detection of lymphoedema. Its sensitivity can be increased by combining it with subjective questions.

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