The Role of Sentinel Lymph Node Biopsy in the Management of Early Breast Cancer with Negative Axillary Lymph Node

Kwestan Mohammed Rahim[1], Nizar Mohammad Tawfeeq[2]
[1]PhD student, Assist. Lecturer, MSc Postoperative wound infection, Adult Nursing Department, College of Nursing, University of Sulaimani
[2]Assist. Professor, Nizar Mohammad Tawfeeq, MBChB, HD(Plast), AAAMD, HDS,CABS, Surgery Department, College of Medicine, University of Sulaimani,
*Corresponding author: Kwestan Mohammed Rahim, Email Address:
Email: Kwestan.rahim@univsul.edu.iq
Phone number: 07701531137
Email: nizar.tawfeeq@univsul.edu.iq

Abstract
Background: pathological examination of the axillary lymph nodes continue to stay a gold method to determine metastatic disease to the axilla in early breast cancer. Biopsy of a sentinel lymph node is less invasive and reduces disruption of lymphatic channels than axillary sampling or axillary dissection. Aim: the purpose of the study was to describe the role of sentinel lymph nodes in the treatment of early breast cancer with negative axillary nodes.Patients & method: An observational descriptive study was carried out on women undergoing sentinel lymph node biopsy from 1st of March 2021 to 1st April 2022 at Smart Health Tower Hospital in Sulaimani, Iraq. (41) Samples were selected using a purposeful, convenient sampling technique. The study tools included a structured interviewing questionnaire, and an observational checklist. It includes 7 parts. Part one: Socio-demographic feature, Part two: History of present illness, Part three: clinical examination of the breast and axilla, Part four: Investigations (Breast screening). Part five: Surgical and non- surgical treatment. Part six: surgical technique for sentinel lymph node biopsy (injection of blue dye methylene 0.079g/ml (0.3mg diluted in 5 ml distal water), the dye is injected into parenchyma cells beside the tumor peritumoral or in to subareolar area or perareola. Part seven: Post -operative complications. Results: The identification rate of sentinel node was 97.56%. Pathology results: 57.50 % did not have metastatic disease (node negative), 42.50% had metastasis disease (positive node in axilla). 9.75% (patients with 3 or > positive lymph node metastasis with macrometastasis >2mm) underwent a second operation to remove the metastatic axillary lymph node (p= 0.000).Conclusion: Biopsy of a sentinel lymph node through Methylene blue injection remains an effective and reliable way to determine whether axillary lymph nodes have metastatic disease, and to make decisions regarding adjuvant systemic therapy
Keywords: Sentinel lymph node biopsy, Brest Cancer, Negative axilla, adjuvant therapy

1. Introduction

Recently, according to cancer statistics, female breast cancer (ca) was most prevalent kind of cancer worldwide (2.26 million cases) (Jacques Ferlay et al., 2021). Most types of breast ca are invasive ductal and lobular carcinoma. Ductal carcinoma in situ (DCIS) is the most prevalent kind of noninvasive breast ca and may lead to invasive breast cancer. (Biganzoli, 2020).

For patients with early breast ca, axillary surgery is necessary for assessment and estimating stage of disease (Mátrai et al., 2022). It has a basic role in the treatment of the early stage of cancer. Axillary surgery gives information to instruct adjuvant therapy and preventing local recurrence of cancer (Bromham et al., 2017).

Today's screening imaging program and the advance of surgery techniques used for diagnosis and staging axilla are less invasive for patients with early stage of cancer undergoing axillary surgery to remove axillary lymph nodes. It helps clinicians obtain the same facts about staging of axilla with reduced morbidity (lymphedema, chronic pain, sensory deficit).

Performing axillary lymph node dissection (ALND) for controling and staging of axilla has been tested again and understanding that it is not necessary for doing major axillary surgery for patients with nodal disease (Park, Ko UnPark & Ko UnCaudle, 2018).

Sentinel lymph node biopsy (SLNB) has evolved the basis of care in the management of axilla and prognosis of early breast cancer. A meta-analysis trial discovered SLNB precisely mapped the sentinel node in 96% of patients with an estimmate false negative rate of 7.3% (Chen & Gillanders, 2021). Recognition of sentinel lymph nodes, through radioisotope, or visual dye is based on the principle that primary tumors drain to one or more lymph nodes before they spread widely. The negative

doi.org/10.31838/hiv23.02.118 Received: 14.10.22, Revised: 16.11.22, Accepted: 19.12.22.

lymph node means that the tumor is still in its location (Durre Sabih, 2022).

An important predictor of survival of breast cancer, and decision making for treatment depends on the number and the level of involvement of axillary lymph nodes for the disease. When the identified lymph nodes are removed and are clear of metastatic, the remaining of the axilla is likely to be negative. (Fischer, 2019).

An ultrasound-guided fine needle aspiration (FNA) may be beneficial for patients with a clinically suspicious axilla to find out if there has been metastatic dissemination to the axilla. It facilitates evaluation of patients with an equivocal physical examination. For a clinically negative axilla, SLNB should be planned at the time of surgery with a decision about further management of the axilla, if any, pending the results of the SLNB (Thanh & William, 2017).

Less intrusive treatment methods in local therapy, such as surgery and radiotherapy, allow patients to maintain cognitive capability and general well-being that are the main clinical advantages (Watase et al., 2021).

In spite of upgrading of the techniques that are used for the SLNB procedure in most of the developed countries, we still use blue dye (BD) for this procedure. The SLNB procedure in our surgical hospital begins with localization of the SLN through injection of methylene blue dye 0.079g/ml (0.3mg diluted in 5 ml distal water), into the parenchyma, subareolar, or periareolar regions of the breast close to the underlying breast cancer. There is a breast massage. Stain nodes are surgically excised through an axilla incision or the lateral portion of a mastectomy after 20 minutes of injection.

The aim of this study is to describe the role of sentinel lymph node biopsy in the management of early invasive breast cancer negative axillary lymph nodes. This is the first time that research has been conducted on SLNB in the Kurdistan region of Iraq. In recent years, the number of women in this part of Iraq who have breast cancer has increased, much like in the rest of the world. These women require medical care and recovery from the disease.

For that, we need to do such a study on axillary lymph nodes management, which is crucial in determining whether to use adjuvant systemic medication and also survival from the disease. In Sulaimani Hewa cancer hospital/ Kurdistan Region of Iraq, for continuing adjuvant systemic therapies in the management of early breast cancer, it depends on the result of SLNB and gene expression profiles.

2. Material and Methods

A prospective observational descriptive analysis was designed, to assess the role of sentinel lymph node biopsy in the management of clinically node negative early breast cancer, using methylene blue color as a tracer. The study was done at Smart Health Tower Hospital, Sulaimani/ Kurdistan region/Iraq. The study was done over a period of one year between 1st of March 2021 to 1st April 2022. During this period entirety of 41 early breast cancer patients with clinically node negative axilla had breast surgery and SLNB.

Inclusion criteria were early-stage breast cancer women with clinically negative axillary lymph nodes. Exclusion criteria include early-stage cancer females who have clinically positive axillary lymph nodes, patients with ductal carcinoma in situ, patients receiving neoadjuvant chemotherapy before surgery and patients with lobular carcinomas.

Data was collected from the patients and from the patient's records. A questionnaire was constructed and the following data were recorded: sociodemographic characteristics of the patients (including age, marital status, ethnic group, level of education, occupation, address and living status), history (the presenting complaint, past history of breast diseases, past history of breast operations, history of taking contraceptive pills, family history of ovarian and breast cancer), practice self-examination of the breast, history of screening mammography. Arm circumferences were assessed with a manual label measure.

Local breast examination (side of the breast affected, quadrant of the breast where the mass was located, nodal status of the axilla), ultrasonography, mammography and MRI finding.

Core biopsy was performed for the breast masses under ultrasonography control and under local anesthesia and sent for a routine pathological examination that included hematoxylin and eosin (H&E) staining, as well as HER2 immunohistochemistry, progesterone receptor, and estrogen receptor identification.

For patients whose axillary lymph nodes appeared enlarged on ultrasonography, a fine needle aspiration was performed.

Under general anesthesia, sentinel lymph node biopsy procedures were carried out on all 41 patients. It used methylene blue (MB), as tracer dye. When in solution, the dark green crystalline component MB becomes dark blue. (Masannat Y. et al. 2006). Methylene blue 5 ml (0.3mg), was injected into the breast functional tissues around the breast tumor (peritumeral) and subareolar region (Teal CB. Et al., 2005). Breast massage is performed for 5 minutes. SLNB is done through a small 1.5-2 cm transverse skin line incision in the lower axilla. Dissection started and SLN was identified either by finding blue lymph nodes, blue lymphatics or by careful palpation of the area for palpable lymph nodes not visualized by the dye. The wound is completely closed, no drain has been inserted.

Prior to the breast procedure, the SLNB is performed for all patients, surgery for the breast tumor is done (either basic mastectomy or breast conservation surgery). A single oblique incision is used for the majority of the mastectomy, and SLNB can be completed quickly through the axillary end of the incision before starting the mastectomy. SLNB, and the tumor with resection margins were sent for

histological diagnosis and other pathological findings.

Regarding axillary surgery after SLNB, according to the ACOSOG Z0011 study's recommendations, axillary lymph node dissection (ALND) was not carried out if metastases were only discovered in one or two sentinel lymph nodes (SLNs); however, ALND was carried out if metastases were discovered in three or more sentinel lymph nodes (Jung J. et al. 2019) (Giuliano AE.et al., 2011). Macrometastasis (>2.0 mm) was used to determine nodal metastasis (node-positive); nodal negativity was stated as the absence of tumor cells in lymph nodes, the presence of isolated tumor cells (0.2 mm), or the presence of micrometastasis (0.2-2 mm).. (Reimer T. et al., 2017) (Naidoo K. 2017) (Zhu Y. et al., 2018) (Galimberti V. et al., 2013) (Edge S. et al 2009)

Adjuvant chemotherapy and hormonal therapy were provided for the patients at Hewa Oncology Hospital. Radiation therapy was provided at Zhiyanawa Radiation Oncology Hospital, according to those hospital protocols.

The patients were supposed to have follow-up appointments each 3 months for two years, each 6 months for three years, and once a year for the rest of their lives. During this period, time to go back to work and postoperative complications were recorded.

Setting of the study

Smart Health Tower Hospital/ Sulaimani/ Kurdistan region /Iraq

Ethical approval

All of the study's participants provided their informed consent. The University of Sulaimani, College of Medicine's Ethical Committee gave the study their approval.

Statistical analysis

SPSS, version 24.0, was used to conduct the statistical analysis (IBM SPSS Statistical Package for the Social Sciences).Variables that are descriptive and qualitative were frequently explored. A chi-squared statistical test was employed to ascertain the frequency distinction between the two groups of SLNB and ALND, and a double-sided p-value of 0.05 or less was considered statistically significant.

3. Results

The 41 patients were all women. Their age ranged 26-61 years (mean 43.95 SD 7.759), were Kurds 34 patients (82.9%), married 34 patients (82.9%), multiparous 32 patients (78%), housewife 29 patients (70.7%), illiterate 15 patients (36.6%), of moderate socioeconomic status 29 patients (70.7%), nonsmokers 39 patients (95.1%), all were nonalcoholic, practiced regular exercise 2 patients (4.9%) and living in Sulaimaniyah governorate 22 patients (53.7%), Kurdistan Region, Iraq

Table (1): participants' characteristics

Sociodemographic		Frequency	%
Age	Mean ± SD	43.95 ± 7.759	
Marital status	Married	34	82.9%
	Unmarried	5	12.1%
	Widow or divorce	2	4.8%
Parity	Nulliparous	9	21.9%
	One or more children	32	78 %
Ethnicity	Kurds	34	82.9%
	Arabs	6	14.6%
	Turkmans	1	2.4%
Occupation	Employee	4	9.7%
	Housewife	29	70.7%
	Teacher	7	17%
	Retired	1	2.4%
Education	Illiterate	15	36.6%
	Primary	10	24.3%
	Intermediate	6	14.6%
	Institute	7	17%
	College graduate	3	7.3%
Smoking	Nonsmokers	39	95.1%
	Smokers	2	4.8%
Alcoholic	Nonalcoholic	41	100%
Address	Governorate	22	53.7%
	Qadha	15	36.5%
	Nahya	3	7.3%
	Village	1	2.4%
Total		41	100.0%

Most patients, 35 patients (85.4%), presented with a chief complaint of breast mass and 6 patients (14.6%) presented with breast pain. Duration of the chief complaint ranged from 1 week to 2 years (means 3.6 months. SD 7.8.8). Past history of breast diseases showed mastalgia in 4 patients (9.8%), fibroadenoma in 1 patient (2.4%), nipple discharge in 1 patient (2.4%) and nipple eczema in 1 patient (2.4%). Past

history of breast operations included, 1 patient (2.4%) had an operation for removal of painful adenoma, and 16 patients (39%) were taking oral contraceptive pills. Fourteen patients (34.10%) have a history of breast cancer in their family, 6 patients (14.60%) had ovarian cancer in their family. Nine patients (22%) practiced self-breast examination. A few patients, 3 patients (7.31%) had mammography screening irregularly every 1-2 years.

On examination, in 35 patients (85.4%), there was palpable mass and in 6 patients (14.6%) there was lumpiness on examination. The masses and lumpiness were found in 22 patients' right breasts (53.7%) and in 19 patients' left breast (46.3%). 21 patients (51.2%) had the mass in the upper outer part; 9 patients (22.2%) had it in the upper inner part; 6 patients (14.6%) had it in the lower outer part; and 5 patients (12.2%) had it in the lower inner part. The size of the mass ranged from 1.4-3.1 cm (mean 2.176 SD 0.561). Twelve patients (29.3%) were T1 and 29 patients (70.7%) were T2. No bilateral tumors. No clinically enlarged axillary LN.

Ultrasonography was done for all patients, 18 patients (43.90%) showed suspicious mass, irregular shape, high intensity with obscured indistinct irregular margins, the Breast Imaging Reporting and Data System in visual form (BIRADs) 4 (Eghtedari M. 2021). Fourteen patients (34.15%) showed highly suspicious mass, irregular shape, speculated margin, high density mass and some of them having suspicious clusters of micro calcification, picture of BIRADs V. There were 3 patients (7.31%) with multicentric disease and 6 patients (14.60%) with multifocal disease. The axilla showed benign looking enlarged axillary lymph nodes in 5 patients (12.19%).

Mammography was done on 24 patients (58.50%). 13 patients (31.70%) showed focal asymmetrical density with suspicious clusters of micro calcifications, a picture of BIRADs IV. Nine patients (21.94%), showed highly suspicious lesion, with irregular speculated margin, high density, with some suspicious clusters of micro calcifications, picture of BIRADs V.

MRI was done for 22 patients (53.64%). 9 patients (21.95%), were with proven malignancy and known biopsy results, a picture of BIRADs VI, is sent mainly for determination of the extent of the disease. Eight patients (19.51%) showed irregular mass, irregular margins, strong enhancement, with type 2 and type 3 time intensity dynamic curves, some associated with near no mass enhancement, picture of BIRADs V.

Core biopsy was performed for the breast masses under ultrasonography control and under local anesthesia. Histopathology type showed that all 41 patients who had invasive ductal carcinoma (patients with lobular carcinoma, ductal carcinoma in situ, and neo-adjuvant chemotherapy) were omitted from the study samples). 23 patients (56.09%), were tumor grade 2, 14 patients (34.14%) were grade 3, 4 patients (9.75%) were grade1. Lymph vascular invasion was present in 11 patients (26.82%) and not seen in 30 patients (73.81%). The majority of patients, 31 patients (75.60%) were ER+, PR+ and HER negative.

Fine needle aspiration was done for 5 (12.19%) patients whose axillary lymph nodes seemed swollen on ultrasound, but none of them contained cancer cells.

All 41 patients underwent sentinel lymph node biopsy under general sedative. SLNB was stained in 40 (97.6%) patients and not stained in one (2.4%) patient, with an identification rate of (97.56%).

Out of the 40 patients with stained sentinel lymph nodes, each patient had between one and four sentinel lymph nodes stained (mean 1.93. SD 1.104). One stained sentinel lymph node was found in 17 of the patients (41.50%), two were found in 12 of the patients (29.30%), three were found in 5 of the patients (12.20%), and four were found in 6 of the patients (14.60%).

The histopathology result of SLNB showed that out of the 40 patients with stained SLNB, there were no metastases in 23 patients (57.50%) and there were metastases to the axillary lymph nodes in 17 patients (42.50%).

Out of those 17 patients (42.50%) with metastasis to the axillary lymph nodes, 10 patients (58.82%) had metastasis in 3 and > lymph nodes, 7 (41.17%) patients had metastasis in < 3 lymph nodes.

Those 10 patients (58.82%) with metastasis to 3 or > axillary lymph nodes, 3 of them (30%) had macrometastasis, 2 patients (20%) had micrometastasis, 5 patients (50%) had isolated metastasis.

Regarding axillary surgery, those patients with 3 or > positive lymph node metastasis with macrometastasis (>2mm), had undergone ALND. Also, that patient whose SLNB was not visualized had ALND, making the total number of patients undergoing ALND 4 patients (9.75%) in our study (Giuliano AE. Et al., 2011) (P Veronesi, 2019).

Because there were no SLNB metastases in the 23 patients (57.50%), axillary lymph node dissection was omitted., in those 2 patients with 3 or > positive lymph node metastasis with macrometastasis (<2mm), and those 5 patients with 3 or > positive lymph node metastasis with isolated tumor metastasis and in those 7 patients (41.17%) having metastasis to < 3 lymph nodes, making the total number of the patient not undergoing ALND 37 patients (90.25%) out of the 41 patients.

Axillary lymph node dissection was done on 4 patients. During ALND 11-15 lymph nodes (mean 13.25 SD 1.708) were removed. The histopathology of axillary lymph nodes obtained by ALND done for the 4 patients, showed two patients (50%) had metastases in the local lymph nodes (PN2), and two patients (50%) had no metastasis in the local lymph nodes (PN0).

In relation to breast surgery, which was done for all 41 patients, breast conserving surgery in 32 patients (78.04%), and simple mastectomy in 9 patients (9.75 %).

Adjuvant systemic therapy after breast surgery was given to 32 patients (78%), hormonal therapy to 37 patients (90.2%) in Hewa Oncology Hospital and radiation therapy was given to 38 patients (92.7%) in Zhiyanawa Radiation Oncology Hospital, according to their practice protocol.

The time to go back to work ranged from 1 – 6 weeks (mean 1.517 SD1.246)

All patients were scheduled for follow up each 3 months for two years, each 6 months for three years, and once a year for the remainder of their lives. During the 1st 3 months of follow up, the following complications were recorded in the (table 2)

Table (2): Postoperative complications of SLNB and ALND of the participants

Complications of SLNB and ALND				
Complications	Both SLNB & ALND	SLNB	ALND	P value
Wound infection	5 (12.19%)	4 (10.81%)	1 (25%)	0.245
Seroma	10 (24.39%)	8 (21.62%)	2 (50%)	0.303
Hematoma	2 (4.87)	1 (2.70%)	1 (25%)	0.128
Parasthesia	5 (12.19%)	4 (10.81%)	1 (25%)	0.666
Decrease range of Movements	10 (24.39%)	7 (18.91%)	3 (75%)	0.015
Lymphedema	2 (4.87%)	0 (00.00%)	2 (50%)	0.000
Total number of patients	41	37	4	

4. Discussion

The outcomes of the current investigation (Table 1) were consistent with retrospective study findings by (Huang, 2021) in terms of sociodemographic characteristics. They revealed that from a total of 6304, 5788 of the new cases of breast cancer were in people aged 45 and older. Moreover, the study's findings are supported by (Zekrullah B. et al., 2021) presented data showing that the average age of Afghan women with breast cancer was 45.8, the mean age was 45, in India "between" 2015-2017. Regarding illiteracy among breast cancer women, the findings of the current study were comparable to a study done by (Balekouzou A., et al., 2017). Breast cancer and lack of education appeared significantly correlated in Bangui, Central Africa ($p < 0.001$).

Additionally, the relationship between education level and breast cancer was statistically significant ($p < 0.001$). Breast cancer risk was discovered to be 1.9 times higher among the illiterate population (OR = 1.9, 95%CI: 1.28-2.83). (Zekrullah B. et al., 2021).

Bellanger, 2018 observed that women in the poorest nations experience a disproportionately larger burden of breast cancer mortality and that breast cancer occurrences rise with higher levels of income at any age.

According to this study, the majority of individuals who are recommended for breast cancer surgery suffer mass (85.4%), while (14.6%) complain of breast pain because there was lumpiness on examination, with the duration ranging from 1 week to 2 years. The most frequent symptoms that women with breast cancer present with are breast lumps (Koo MM, 2017). According to a study done in Mexico, lump (71.7%) was the most prevalent symptom among women who came with breast complaints to PHC clinics (González-Pérez, 2013). Also, a prospective study in the UK presented that among women who were visiting a breast cancer diagnostic clinic, 5% of women had breast cancer, as indicated by lumps, nipple discomfort, and other symptoms, while with breast pain was (0.4%) (Dave, et al. 2022).

In the assessment of risk factors for breast cancer among patients, the study found an association between using oral contraceptives (OC), being obese, and having a family history of breast cancer. However, no connection was discovered between drinking alcohol and smoking and the risk of breast cancer. This is in line with a meta-analysis of 42 case-control studies conducted between 2009 and 2020 that found a statistically significant link between OC and an elevated risk of breast cancer (OR = 1.15, 95% CI: 1.01 to 1.31, $p = 0.0358$). It also found that the risk was significantly higher in individuals who had a family history of breast cancer (Barańska, 2021).

In pertaining to breast cancer screening, this study's findings showed that ultrasonography was performed for all patients, and mammography with MRI was performed for most of them. The screening results showed a suspicious mass, an irregular shape, high intensity with obscured indistinct irregular margins. The majority of patients had masses and lumpiness in the right breast's upper outer quadrant (UOQ). Previous studies confirmed that the ultrasound (US) detected early breast cancer and lumpiness in most women who were visiting a diagnostic and treatment clinic for breast cancer. The percentage of invasive carcinomas found in the US that are node negative exceeded 80% in 15 of 19 studies and 90% in eight of 19 investigations, according to (Berg WA., 2012). A retrospective database review between "2003- 2011", revealed that most breast cancers (81%) were detected at the US screening (Bae MS., 2014). This study, which was supported by a cross-sectional study carried out in Saudi Arabia (2017–2019), discovered that women who reported breast lumps had a higher likelihood of having a breast mass revealed on ultrasound (AlShamlan NA., 2021). In a multicenter retrospective investigation with a 7-year follow-up of 501 women with US-found cancer, (Kim et al. 2017) revealed that excellent results for malignancies detected at supplemental screening in the US had been recorded. They had 98% 5-year disease-free survival. In a study involving 203 females, (Gharekhanloo et al., 2018) found that the UOQ was the most typical site for both benign and malignant

breast tumors found on ultrasound, according to a study by (AlShamlan NA., et al., 2021) overlapping lesions were the most frequent location of breast masses, followed by the UOQ.

When used in conjunction with mammography, breast ultrasonography finds extra early-stage, invasive breast cancers (Vourtsis A., 2019).

The histopathology type of the presented study showed that all patients having invasive ductal carcinoma, the majority of them were tumor grade 2 with ER+, PR+ and HER negative. Similarly, an Azizun-Nisa, et al. study revealed that the majority of cases were grade 2, with ER+, PR+.

As a tracer for SLNB, MB alone was used in the presented study, the identification (IR) rate was 97.56%. Similarly, SLN identification rates were 97.4% (MB) in an Indian randomized control trial study. The findings suggested using MB for SLNB as the preferred technique in low-resource settings (Seenu V. et al., 2019). When MB was utilized alone, the IR in a meta-analysis research "2000 to 2017" was 91%.These rates adhere to the suggested norms for SLNB, according to the American Society of Breast Surgeons (ASBrS) (Li J, et al., 2018). MB is a safe tracer that can be used in clinical practice where access to other tracers is limited (Guo, et al., 2018), this is the common tracer, and has been used widely, either alone or in combination with other tracers (Liu, et al., 2021).

Numerous analytical investigations have suggested an association between BCS and mastectomy in breast cancer surgery, although these studies have produced conflicting findings (Javed N. et al., 2021). Aretrospective study concluded that (75%) of BCS have favorable outcomes. Additionally, the findings of a cohort analysis showed that BCS was strongly connected with favorable prognostic aspects, but they also came to the conclusion that the proportion of Asian nations with a high mastectomy rate remained. According to the study, 2245 women overall (63%) had mastectomy, whereas 36% had BCS (Sinnadurai et al., 2018).

The majority of participants in this study underwent oncoplastic BCS. One of the BCS was multicentric tumor focality. They did mammoplasty (donate incision, bilateral reduction), and some of them did mastectomy. The reason for deciding to have a mastectomy by a treating surgeon was multicentric & multifocal tumor focality, small size of breast, or the patient's preference. They are fearful of cancer recurrence (Hassan Ali S., & SP, S. 2019). Similarly, a retrospective study in India reported that recently, for women who presented with early breast cancer, the rate of BCS increased. According to a (Masannat Y. et al., 2006) study, breast conservation is safe for patients with multifocal and multicentric breast cancer (when it is physically possible and as long as it is possible to have good cosmetic outcomes). Furthermore, despite the fact that (Kadam S. et al., 2022) study found that 68 MRM were performed on female breasts out of 86 breast surgeries, patients chose to have MRM because they were afraid their cancer might return.

The findings of this study demonstrate that not all patients received chemotherapy or radiotherapy after breast surgery. According to the protocols of Hewa Oncology Hospital and Zhiyanawa Radiation Oncology Hospital, the decision to administer adjuvant chemotherapy and radiotherapy depends on the pathological results of the SLNB and Ki67 marker, fish (fluorescence in situ hybridization) & oncotype DX test for patients with primary breast cancer undergoing BCS or mastectomy.

The study's other primary variable is postoperative complications after breast & axillary surgery. Postoperative complications include bleeding, infection, Seroma, nerve injury (Paresthesia), decreased range of movements, lymphedema. As is presented (table 2), some participants had one or more complications post- operatively. The present study's findings indicate a statistically significant association between decreased range of motion and SLNB ($P < 0.015$), and a high significant association between lymphedema and ALND (P=0.000) (Table 2). Lymphedema lasted within 3 months of surgery. At that time, they had physiotherapy for their arms. Lymphedema is one of the negative results of breast cancer management. It occurs in nearly 1 in 5 patients that take treatment for breast cancer (Gillespie TC. Et al., 2018). Clinical Trials Registry India, (Prajapati S. et al., 2021) found that 9% of patients in the study's control group had seroma. The prevalence of unfavorable side effects following ALND is also 42%, with paresthesia and seroma being the most common (Abass M. et al., 2018) study reports.

5. Conclusion

Sentinel lymph node biopsy with the blue dye methylene blue injection is still an effective and reliable way to determine whether or not axillary lymph nodes have metastatic disease and to decide whether or not to administer adjuvant systemic therapy.

Acknowledgments

The study's participants are thanked by the author.

Conflicts of interests: Said they had no conflicting interests.

Financial support and sponsorship: No financial support

References

Catherine C. Parker, Senthil Damodaran ، Kirby I. Bland, and Kelly K., Kirby I. Bland, and Kelly, (2019) Schwartz's Principles of Surgery, 11th ed., volume 1, McGraw-Hill Education, New York, P. 541, 563

Jacques Ferlay, Murielle Colombet, Isabelle Soerjomataram, Donald M. Parkin, Marion Piñeros, Ariana Znaor, Freddie Bray, (2021), Cancer statistics for the year 2020: An overview, CANCER EPIDEMIOLOGY, Int. J. Cancer. 2021; 149:778–789

Biganzoli, L., Cardoso, F., Beishon, M., Cameron, D., Cataliotti, L., et al., (2020). The requirements of a

specialist breast centre. Breast (Edinburgh, Scotland), 51, 65–84.
Mátrai, Z., Kelemen, P., Kósa, C., Maráz, R., Paszt, A., et al., (2022). Modern Breast Cancer Surgery 1st Central-Eastern European Professional Consensus Statement on Breast Cancer. Pathology oncology research: POR, 28, 1610377.
Bromham, N., Schmidt-Hansen, M., Astin, M., Hasler, E., & Reed, M. W. (2017). Axillary treatment for operable primary breast cancer. The Cochrane database of systematic reviews, 1(1), CD004561.
Park, Ko UnPark, Ko UnCaudle, Abigail, (2018). Management of the Axilla in the Patient with Breast Cancer, Surgical Clinics of North America, https://doi.org/10.1016/J.SUC.2018.04.001, article, Surg Clin N Am 98 (2018) Elsevier 747–760
Chen, M. Y., & Gillanders, W. E. (2021). Staging of the Axilla in Breast Cancer and the Evolving Role of Axillary Ultrasound. Breast cancer (Dove Medical Press), 13, 311–323.
Norman S. Williams, P. Ronan O'Connell and Andrew W. McCaskie, (2018) Bailey & Love's SHORT PRACTICE of SURGERY, 27 th ed. , CRC Press Taylor & Francis Group, P871
Fischer, Josef E., E. Christopher Ellison, Gilbert R. Upchurch Jr., J. Michael Dixon, (2019), FISCHER'S MASTERY OF SURGERY, 7th ed.,volume 1-2, Wolters Kluwer, P.1871
Thanh U. Barbie and William E. Gillanders, (2017), breast disease, In: Michael W. Mulholland, Greenfield's SURGERY Scientific Principles & Practice, 6thed, Philadephia, P.2068-2069
Watase, C., Shiino, S., Shimoi, T., Noguchi, E., Kaneda, T., Yamamoto, Y., & Suto, A. (2021). Breast Cancer Brain Metastasis—Overview of Disease State, Treatment Options and Future Perspectives. Cancers, 13(5), 1078.
Huang J, Wang S, Wu Y, Hai J, Mao J, Dong X, Xiao Z., (2021) Conventional suture with prolonged timing of drainage is as good as quilting suture in preventing seroma formation at pectoral area after mastectomy. World J Surg Oncol. 2021 May 12; 19(1):148. doi: 10.1186/s12957-021-02257-8. PMID: 33980267; PMCID: PMC8117557
Zekrullah Baset, Jamshid Abdul-Ghafar, Yasmin Nadeem Parpio, Ahmed Maseh Haidary, (2021), risk factors of breast cancer among patients in a tertiary care hospitals in Afghanistan, 21, Article number: 71 (2021) https://bmccancer.biomedcentral.com › articles
Balekouzou A, Yin P, Afewerky HK, Bekolo C, Pamatika CM, Nambei SW, et al., (2017) Behavioral risk factors of breast cancer in Bangui of Central African Republic: A retrospective case-control study. PLoS ONE. 2017; 12(2):e0171154.
Bellanger, M., Zeinomar, N., Tehranifar, P., & Terry, M. B. (2018). Are global breast cancer incidence and mortality patterns related to country-specific economic development and prevention strategies? Journal of global oncology, 4, 1-16.
Picon-Ruiz M, Morata-Tarifa C, Valle-Goffin JJ, Friedman ER, Slingerland JM. Obesity and adverse breast cancer risk and outcome: Mechanistic insights and strategies for intervention. CA Cancer J Clin. 2017 Sep; 67(5):378-397. doi: 10.3322/caac.21405. Epub 2017 Aug 1. PMID: 28763097; PMCID: PMC5591063.
Park, Y. M. M., White, A. J., Nichols, H. B., O'Brien, K. M., Weinberg, C. R., & Sandler, D. P. (2017). The association between metabolic health, obesity phenotype and the risk of breast cancer. International journal of cancer, 140(12), 2657-2666.
Kadam, S. S., Tripathi, P., Jagtap, R., Kapoor, R., Kadam, T., Bhandarkar, P., & Shimpi, S. (2022). Modified Radical Mastectomy vs Breast-Conserving Surgery: Current Clinical Practice in Women with Early Stage Breast Cancer at a Corporate Tertiary Cancer Center in India. Indian Journal of Surgical Oncology, 13(2), 322-328.
Hassan Ali, S., & SP, S. (2019). Rate of breast-conserving surgery vs mastectomy in breast cancer: a tertiary care centre experience from South India. Indian Journal of Surgical Oncology, 10(1), 72-76.
Bleicher, R. J., Ruth, K., Sigurdson, E. R., Daly, J. M., Boraas, M., Anderson, P. R., & Egleston, B. L. (2016). Breast conservation versus mastectomy for patients with T3 primary tumors (> 5 cm): A review of 5685 medicare patients. Cancer, 122(1), 42-49.
Mazor, A. M., Mateo, A. M., Demora, L., Sigurdson, E. R., Handorf, E., Daly, J. M. & Bleicher, R. J. (2019). Breast conservation versus mastectomy in patients with T3 breast cancers (> 5 cm): an analysis of 37,268 patients from the National Cancer Database. Breast cancer research and treatment, 173(2), 301-311.
Dave RV, Bromley H, Taxiarchi VP, Camacho E, Chatterjee S, Barnes N, Hutchison G, Bishop P, Hamilton W, Kirwan CC, Gandhi A. No association between breast pain and breast cancer: a prospective cohort study of 10 830 symptomatic women presenting to a breast cancer diagnostic clinic. Br J Gen Pract. 2022 Mar 31; 72(717):e234-e243. doi: 10.3399/BJGP.2021.0475. PMID: 34990395; PMCID: PMC8869188
Port ER, Patil S, Stempel M, Morrow M, Cody HS 3rd. Number of lymph nodes removed in sentinel lymph node-negative breast cancer patients is significantly related to patient age and tumor size: a new source of bias in morbidity assessment? Cancer. 2010 Apr 15; 116(8):1987-91. doi: 10.1002/cncr.24964. PMID: 20151427.
Costa OF Neto, Castro RB, Oliveira CV, Feitosa TVN, Alves JJ Júnior, Cavalcante FP, Lima MVA. Predictive factors of axillary metastasis in patients with breast cancer and positive sentinel lymph node biopsy. Rev Col Bras Cir. 2017 Jul-Aug; 44(4):391-396. Portuguese, English. doi: 10.1590/0100-69912017004014. PMID: 29019543
Prajapati S, Ramasamy S, Vats M, Neogi S, Kantamaneni K, Tudu SK. Effect of Octreotide on Lymphorrhea in Patients after Modified Radical Mastectomy for Carcinoma Breast: A Randomized Controlled Trial. Cureus. 2021 Nov 3; 13(11):e19225. doi: 10.7759/cureus.19225. PMID: 34877203; PMCID: PMC8642125.

Abass, M. O., Gismalla, M. D., Alsheikh, A. A., & Elhassan, M. M. (2018). Axillary lymph node dissection for breast cancer: efficacy and complication in developing countries. Journal of global oncology, 4, 1-8.

Barańska, A.; Błaszczuk, A.; Kanadys, W.; Malm, M.; Drop, K.; Polz-Dacewicz, M. Oral Contraceptive Use and Breast Cancer Risk Assessment: A Systematic Review and Meta-Analysis of Case-Control Studies, 2009–2020. Cancers 2021, 13, 5654. https://doi.org/10.3390/cancers13225654

Berg WA, Zhang Z, Lehrer D et al. (2012) Detection of breast cancer with addition of annual screening ultrasound or a single screening MRI to mammography in women with elevated breast cancer risk. JAMA 307:1394–1404.

Kim SY, Han BK, Kim EK et al. (2017) Breast Cancer Detected at Screening US: Survival Rates and Clinical-Pathologic and Imaging Factors Associated with Recurrence. Radiology 284:354–364

Vourtsis A, Berg WA. Breast density implications and supplemental screening. Eur Radiol. 2019 Apr; 29(4):1762-1777. doi: 10.1007/s00330-018-5668-8. Epub 2018 Sep 25. PMID: 30255244; PMCID: PMC6420861.

Bae MS, Moon WK, Chang JM, Koo HR, Kim WH, Cho N, Yi A, Yun BL, Lee SH, Kim MY, Ryu EB, Seo M. Breast cancer detected with screening US: reasons for nondetection at mammography. Radiology. 2014 Feb; 270(2):369-77. doi: 10.1148/radiol.13130724. Epub 2013 Nov 6. PMID: 24471386.

Gharekhanloo F, Haseli MM, Torabian S. Value of ultrasound in the detection of benign and malignant breast diseases: a diagnostic accuracy study. Oman Med J. 2018; 33(5):380–386. doi: 10.5001/omj.2018.71

González-Pérez B, Salas-Flores R, Sosa-López ML, et al. Female breast symptoms in patients attended in the family medicine practice. Rev Med Inst Mex Seguro Soc. 2013; 51(5):558–561.

Koo MM, von Wagner C, Abel GA, McPhail S, Rubin GP, Lyratzopoulos G. Typical and atypical presenting symptoms of breast cancer and their associations with diagnostic intervals: evidence from a national audit of cancer diagnosis. Cancer Epidemiol. 2017; 48:140–146. doi: 10.1016/j.canep.2017.04.010

AlShamlan NA, AlOmar RS, Almukhadhib OY, Algarni SA, Alshaibani AK, Elmaki SA, Al Shammari MA, Sebiany AM. Characteristics of Breast Masses of Female Patients Referred for Diagnostic Breast Ultrasound from a Saudi Primary Health Care Setting. Int J Gen Med. 2021 Mar 3; 14:755-763. doi: 10.2147/IJGM.S298389. PMID: 33688246; PMCID: PMC7937368.

Azizun-Nisa, Bhurgri Y, Raza F, Kayani N. Comparison of ER, PR and HER-2/neu (C-erb B 2) reactivity pattern with histologic grade, tumor size and lymph node status in breast cancer. Asian Pac J Cancer Prev. 2008 Oct-Dec; 9(4):553-6. PMID: 19256737.

Li J, Chen X, Qi M, et al. Sentinel lymph node biopsy mapped with methylene blue dye alone in patients with breast cancer: A systematic review and meta-analysis. PLoS One 2018; 13:e0204364. 10.1371/journal.pone.0204364

Guo BL, Li T, Liu YH, et al. Sentinel lymph node biopsy expert consensus and technical operation guidelines for early breast cancer (2018 edition). Chinese Journal of Practical Surgery 2018; 38:855-8.

Liu HJ, Sun MS, Liu LY, Yu ZH, Chen XX, Liu Q, Cheng YJ, Xu L, Liu YH, Ye JM. The detection rate of methylene blue combined with another tracer in sentinel lymph node biopsy of early-stage breast cancer: a systematic review and network meta-analysis. Transl Cancer Res. 2021 Dec; 10(12):5222-5237. doi: 10.21037/tcr-21-1239. PMID: 35116372; PMCID: PMC8798807.

Seenu V, Suhani S, Srivastava A, Parshad R, Mathur S, Kumar R. Optimization of sentinel lymph node identification techniques in the Indian setting: A randomized clinical trial. Indian J Cancer. 2019 Apr-Jun; 56(2):114-118. doi: 10.4103/ijc.IJC_163_18. PMID: 31062728.

(Durre Sabih, 2022) https://emedicine.medscape.com/article/1890647-overvie

Masannat Y, Shenoy H, Speirs V, Hanby A, Horgan K. Properties and characteristics of the dyes injected to assist axillary sentinel node localization in breast surgery. Eur J Surg Oncol. 2006; 32 (4):381±4. https://doi.org/10.1016/j.ejso.2006.01.010 PMID: 16515852.

Edge S, Byrd D, Compton C, Fritz AG, Greene F, Trotti A. AJCC Cancer Staging Manual. 7th ed. New York: Springer; 2009.

P. Veronesi1, 2,* and G. Corso1, 2. Standard and controversies in sentinel node in breast cancer patient. The breast. 2019

Giuliano AE, Hunt KK, Ballman KV, Beitsch PD, Whitworth PW, Blumencranz PW, et al. Axillary Dissection vs No Axillary Dissection in Women with Invasive Breast Cancer and Sentinel Node Metastasis. JAMA 2011; 305:569–575.

Jung, J.; Han, W.; Lee, E.S.; Jung, S.-Y.; Han, J.H.; Noh, D.-Y.; Kim, Y.; Choi, H.J.; Lee, J.E.; Nam, S.J.; et al. Retrospectively validating the results of the ACOSOG Z0011 trial in a large Asian Z0011-eligible cohort. Breast Cancer Res. Treat. 2019

Reimer, T.; Stachs, A.; Nekljudova, V.; Loibl, S.; Hartmann, S.; Wolter, K.; Hildebrandt, G.; Gerber, B.Restricted axillary staging in clinically and sonographically node-negative early invasive breast cancer (C/IT1-2) in the context of breast conserving therapy: First results following commencement of the intergroup-sentinel-mamma (INSEMA) trial. Geburtshilfe Frauenheilkd. 2017, 77, 149–157.

Naidoo, K.; Pinder, S.E. Micro- and macro-metastasis in the axillary lymph node: A review. Surgeon 2017, 15, 76–82.

Zhu, Y.; Zhou, W.; Jia, X.H.; Huang, O.; Zhan, W.W. Preoperative axillary ultrasound in the selection of patients with a heavy axillary tumor burden in early-stage breast cancer: What leads to false-positive

results? J. Ultrasound Med. 2018, 1357–1365
Galimberti, V.; Cole, B.F.; Zurrida, S.; Viale, G.; Luini, A.; Veronesi, P.; Baratella, P.; Chifu, C.; Sargenti, M.; Intra, M.; et al. Axillary dissection versus no axillary dissection in patients with sentinel-node micrometastases (IBCSG 23-01): A phase 3 randomised controlled trial. Lancet Oncol. 2013, 14, 297–305.
Teal CB, Slocum JP, Akin EA. Evaluation of the benefit of using blue dye in addition to radioisotope for sentinel lymph node biopsy in patients with breast cancer. Breast J 2005; 11: 391–393.
Giuliano AE, Ballman KV, McCall L, Beitsch PD, Brennan MB, et al. (2017) Effect of axillary dissection vs no axillary dissection on 10-year overall survival among women with invasive breast cancer and sentinel node metastasis: the acosog z0011 (alliance) randomized clinical trial. JAMA 318: 918-926
Mohammad Eghtedari et al. Current Status and Future of BI-RADS in Multimodality Imaging, From the AJR Special Series on Radiology Reporting and Data Systems. AJR Am J Roentgenol. 2021 Apr; 216(4):860-873.
Sinnadurai S, Kwong A, Hartman M, Tan EY, Bhoo-Pathy NT, Dahlui M, See MH, Yip CH, Taib NA, Bhoo-Pathy N. Breast-conserving surgery versus mastectomy in young women with breast cancer in Asian settings. BJS Open. 2018 Oct 18;3(1):48-55. doi: 10.1002/bjs5.50111. PMID: 30734015; PMCID: PMC6354186.
Javed N, Rehman B, Iqbal E, Afzal S, Jamal A, Parvaiz MA. Breast conservation surgery (BCS) for breast cancer in a resource limited country - Are we upto the challenge! J Pak Med Assoc. 2021 Dec; 71(12):2748-2754. doi: 10.47391/JPMA.1784. PMID: 35150532.
Gillespie TC, Sayegh HE, Brunelle CL, Daniell KM, Taghian AG. Breast cancer-related lymphedema: risk factors, precautionary measures, and treatments. Gland Surg. 2018 Aug;7(4):379-403. doi: 10.21037/gs.2017.11.04. PMID: 30175055; PMCID: PMC6107585.
Allen Gabriel, et al., 2021, Spear's Surgery of the Breast PRINCIPLES AND ART 4th ed. , Wolters Kluwer, Philadelphia.