



RESEARCH ARTICLE

Complications Post-Axillary and Breast Surgery in the Management of Early Breast Cancer

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ABSTRACT

Background: Advanced surgical procedures for axillary staging of early breast cancer are less invasive. Many patients, however, continued to experience side effects such as infections, hematomas, seromas, paresthesia, shoulder stiffness, and arm swelling, which delayed adjuvant therapy and lowered and degraded their overall health.

Aim: The research aimed to assess complications and arm morbidity post-axillary and breast surgery when treating early breast cancer.

Patient and method: A prospective observational study was carried out on 110 women undergoing sentinel lymph node biopsy, or sentinel lymph node biopsy plus lower axillary sampling, who underwent ductal carcinoma in situ surgery and invasive carcinoma from March 1, 2021, to April 1, 2022, at Smart Health Tower Hospital and Soma General Surgical Hospital in Sulaimani, Iraq. The study tools included a structured interview questionnaire and an observational checklist. It includes seven parts. Socio-demographic features, history of present illness, clinical examination of the breast and axilla, investigations (breast screening), surgical and non-surgical treatments, and surgical technique to obtain a sentinel lymph node biopsy. The following items are on the observational checklist: wound infection, seroma, hematoma, paresthesias, limited upper extremity range of motion, and lymphedema.

Results: The complication rates (infections, hematomas, seromas, paresthesia) in patients with sentinel lymph node biopsy plus lower axillary sampling were higher than in patients with sentinel lymph node biopsy alone. A significant association exists between decreased shoulder range of motion and axillary surgery ($p = 0.03$). ALND and lymphedema have a very strong correlation ($p = 0.001$).

Conclusion: Despite improvement in axillary surgery for axilla staging in early breast cancer, some patients experienced such complications, which delayed adjuvant therapy and decreased their life quality of life.

Keywords: Complications, Breast Cancer, Axillary surgery, Breast Surgery



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INTRODUCTION

According to cancer statistics, the most prevalent cancer worldwide is female breast cancer (2.26 million cases) (Jacques Ferlay et al., 2021).

Surgery for breast cancer has evolved and now involves rudimentary breast site surgery and surgical staging of the axilla (Magnoni F. & Corso G., 2022). To assess the stage of the disease, axillary surgery is needed (Mátrai, Z. et al., 2022). Sentinel lymph node biopsy (SLNB) is a minimally invasive technique (Cykowska A. et al., 2020); it has long been essential to the staging of cancer and is crucial to early-stage cancer treatment (Nottegar A. et al., 2016; Bromham et al., 2017; Magnoni F. et al., 2020; Chen MY & Gillanders WE, 2021).

For women with clinically node-negative operable breast cancer, lower axillary sampling (LAS) is a reliable alternative to whole-axillary clearance and is equally accurate as SNB at predicting axillary lymph node (LN) status (Parmar V et al. 2013).

Many early-stage breast cancer patients are candidates for breast-conserving surgery (BCS) with radiation or mastectomy. (Moo TA, et al., 2018).

Axillary lymph node dissection (ALND) is no longer required for patients with nodal illness because today's surgical techniques for diagnosing and staging the axilla are less invasive and have lower morbidity (Lymphedema, restricted shoulder motion, and arm numbness). (Goyal A. et al., 2008; Roses DF. et al., 1999; Park, KO UnPark KO UnCaudle, 2018)

Macro-metastatic (>2 mm), isolated tumour cells (ITC), and micro-metastatic (<2 mm) are the terms used to describe nodal involvement. The IBCSG 23-01 (Galimberti V. et al., 2013) and the AATRM 048 (Sola M. et al., 2013) trials state that ALND does not improve survival in those with micro-metastatic nodal illness. However, it is the standard of care for patients with macro-metastatic illness with fewer than 3 positive SLNs but more than 2 mm of additional nodal extension (Lyman GH et al., 2005; Gooch J. et al., 2014).

Breast or axillary procedures have been linked to up to 30% of postoperative problems (wound infection, seroma formation, and hematoma), all of each can be caught early (McNeely ML et al., 2012; Rizvi FH et al., 2020).

The division of sensory nerves is largely responsible for the sensory sequelae of both SLNB and ALND (Gabriel et al., 2021). In the first three months following surgery, sensory morbidity diminishes; occasionally, it persists for one year (Temple LK et al., 2002).

Limitation in shoulder range of motion (ROM), with SLNB showing reduced impairment compared to ALND in randomized trials. Studies show that shoulder range of motion (ROM) increases quickly with time (Gabriel A et al., 2021).

Seroma develops during axillary and breast surgery due to persistent lymphorrhea, which results in a protracted healing period and a higher risk of infection (Radu MA. et al., 2021).

Hematoma rates for breast reduction procedures range from 1.0 to 9.3%. After a breast reduction, intraoperative hypotension may increase the chance of hematoma (Daar DA et al., 2021). It is typical for wound-related issues to arise after breast surgery. Inadequate cosmesis might result from delayed wound healing (Iqbal FM et al., 2020).

Removal of the axillary lymph nodes results in a mechanical obstruction that causes a lymph fluid backup and upper limb oedema (Dayan JH. et al., 2020). About 10% of patients experience ALND adverse effects of infection or cellulitis of the arm, chest wall, or breast. Repeated infections increase the risk of developing lymphedema (Gabriel et al., 2021).

Millions of breast cancer patients worldwide are affected by lymphedema (Vassard D. et al., 2010; Pusic AL. et al., 2013; Wiser I et al., 2020). It causes poor physical function, negative psychological impacts, and social effects (A.L. Pusic et al., 2013; National Guideline Alliance (UK), 2018).

Lymphedema is diagnosed through clinical examination. Historically, lymphedema could be diagnosed with a 10% change in limb volume. Heaviness, temporary swelling, and discomfort symptoms come before swelling (Wiser I et al., 2020). Patient-reported incidence of moderate or severe lymphedema at 12 months was lower with SLNB than ALND (5% vs. 13%) in the ALMANAC trial of SLNB versus SLNB/ALND (Goyal A. et al., 2008), and measurable lymphedema at 5 years after SLNB versus ALND was lower with SLNB than ALND (5% vs. 16%, respectively) in a careful prospective study (McLaughlin SA. et al., 2008).

Lymphedema can be managed with various elastic compression garments, compression pumps, bandaging, physical activity, and sophisticated physiotherapy (Markkula SP. 2019).

This research aimed to track the occurrence, prevalence, and early and late types of problems following breast and axillary surgery in women with early breast cancer. Much like the rest of the world, this region of Iraq has seen an upsurge in the number of women with breast cancer in recent years. They need medical attention to recover from the illness. This requires a study on the consequences following breast and axillary surgery, essential for enhancing life quality and increasing disease survival.

METHOD

A prospective observational study was carried out on women with early breast cancer and negative axillary nodes undergoing sentinel lymph node biopsy or sentinel lymph node biopsy with lower

axillary nodes who needed surgery for invasive carcinoma and ductal carcinoma in situ from March 1, 2021, to April 1, 2022, at Smart Health Tower Hospital and Soma General Surgical Hospital in Sulaimani, Iraq. They offer an operating room for SLNB procedures and serve as the study's setting. One hundred ten samples were selected using a purposeful, convenient sampling technique. The study tools included a structured interview questionnaire and an observational checklist. It includes seven parts. Part One: Socio-demographic features; Part Two: History of the 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, or 1% isosulfan, into parenchyma cells beside the tumour peritumoral or subareolar area or periareolar. Part seven: Postoperative complications (observational checklist) include wound infection, seroma, hematoma, paresthesias/numbness, reduced Range of motion in the upper extremities, and lymphedema.

Inclusion criteria were axillary lymph nodes that were clinically negative in early-stage breast cancer patients. The research excluded advanced breast cancer, recurrence of breast cancer, and death from the Coronavirus or other causes during follow-ups.

Information was collected from the patients and the patient's records. A questionnaire was constructed, and the following data were recorded: sociodemographic characteristics of the patients (age, marital status, ethnic group, level of education, occupation, address, and living status); history (the presenting complaint, previous breast disease history, previous history of breast operations, history of taking contraceptive pills, family history of ovarian and breast cancer); the practice of self-examination of the breast, history of screening mammography Researcher perform: Arm circumferences were measured with a manual tape measure, 10 cm above and below the elbow on the operated arm. Local breast examination (quadrant of the breast where the mass was located, nodal status of the axilla)

Ultrasonography, mammography, and MRI findings A Core biopsy was performed for the breast masses under ultrasonography control and local anaesthesia 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. A fine needle aspiration was performed for patients whose axillary lymph nodes appeared enlarged on ultrasonography.

SLNB and SLNB plus LAS were performed on 110 patients under general anaesthesia. It used methylene blue (MB) and isosulfan as tracer dyes. (Masannat Y. et al. 2006). Methylene blue, 5 ml (0.3 mg), and 1% isosulfan were injected into the

breast parenchyma around the breast tumour (peritumoral) 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 and blue lymphatics or by carefully palpating the area for palpable lymph nodes not visualized by the dye.

The wound is completely closed; no drain has been inserted. For those who have had a mastectomy, a drain has been placed. Prior to the breast procedure, the SLNB (1- 4 nodes removed) alone or the SLNB plus LAS (5-13 nodes removed) is performed for all patients, and surgery for the breast tumour is done (either a BCS basic or a mastectomy). A single oblique incision is used for most of the mastectomy, and SLNB alone or plus sampling can be completed quickly through the axillary end of the incision before starting the mastectomy. SLNB was performed with sampling, and the tumour with resection margins was sent for histological diagnosis and other pathological findings.

Regarding axillary surgery after SLNB and LAS, 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 characterized as the lack of tumour cells in lymph nodes, the presence of isolated tumour cells (0.2 mm), or the presence of micrometastasis (0.2-2 mm) (Edge S. et al., 2009) (Galimberti V. et al., 2013) (Reimer T. et al., 2017) (Naidoo K. 2017) (Zhu Y. et al., 2018).

Postoperative morbidity was noted in the first 30 to 60 days following surgery. Patients were examined in clinics on postoperative days 3 (dressing change) and 10–12 (remove suture and drain if inserted) and then 4-7 weeks after surgery (starting adjuvant therapy). Early outcome parameters were seen, such as seroma development and wound infection. Upper extremities were evaluated for a range of motion (pain or stiffness during shoulder joint abduction) and swelling.

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

The patients were supposed to have follow-up appointments every three months for two years, every six months for three years, and once a year for the rest of their lives.

RESULTS

Complications Post-Axillary

The 110 patients were all women. Their age ranged from 25 to 77 years (mean 46.9 SD 9.7). They were 94 patients (85.5%) Kurds, married 95 patients (86.4%), multiparous 92 patients (83.6%), homemakers 78 patients (70.9%), illiterate 39 patients (35.5%), able to read and write 36 patients (32.7%), of moderate socioeconomic status 81 patients (73.6%), nonsmokers 103 patients (93.6%), nonalcoholic 109 patients (99.1%), practising regular exercise 3 patients (2.7%), and living in Sulaimaniyah governorate 63 patients (57.3%). Dietary habits: vegetarian in 2 patients (1.8%). Their BMI (mean 30.12 SD 5.12) was as follows: 42 patients (38.2%) were overweight, and 53 patients (48.2%) were obese. Psychological status: nervousness in 51 patients (46.4%), depression in 69 patients (62.7%), and anxiety in 76 patients (69.1%) (Table 1).

Table (2) showed that most patients (100 patients, 90.9%) presented with a chief complaint of breast mass; 44 patients (40.0%) presented with breast pain; 15 patients had nipple discharge (13.6%); 15 patients had nipple retraction (13.6%); and 9 patients had nipple ulceration (8.2%). Eighteen patients had breast enlargement (16.4%), 29 patients had breast asymmetry (26.4%), and skin changes occurred in 4 patients (3.6%). The duration of the chief complaint ranged from less than 1 month to more than 6 months.

Table 3 showed that 73 patients who underwent BCS had 14 (19.2%) postoperative wound infections, 19 (26.0%) seromas, 6 (8.2%) hematomas, 11 (15.1%) paresthesias, 16 (21.9%) decreasing ROMs, and 3 (4.1%) cases of lymphedema. The table also reveals that out of 17 patients who underwent simple mastectomy surgery, 5 patients (29.4%) developed postoperative wound infections; 3 patients (17.6%) developed seroma; 2 patients (11.8%) developed hematomas; 1 patient (5.9%) experienced paresthesia; and 5 patients (29.4%) had decreased range of motion (ROM). The data also reveals that of the 19 patients who underwent modified radical mastectomy (MRM), 5.3% had postoperative wound infections, 36.8% had seromas, and 10.5% had hematomas. Five patients (26.3%) reported paresthesia, five

(26.3%) had decreased Range of motion, and one (5.3%) had lymphedema.

* **Wound infections** are characterized by localized aches or soreness, localized oedema, erythema, heat, and purulent discharge (CDC, 2023).

* **Seroma** is an abnormal buildup of serous fluid in a dead area that contains lymphatic and plasma fluid (Agrawal A. et al., 2006).

* **Hematoma** is a collection of blood outside of blood vessels. Hematomas are typically brought on by damage to the blood vessel wall (Siamak N, 2022).

* **Paresthesia** caused by intercostobrachial nerve (ICBN) division is a complication of axillary lymph node dissection (Taira N et al., 2014).

* **Range of motion (ROM)** The shoulder's typical Range of motion is 180 degrees for flexion and abduction and 90 degrees for external rotation (Walker-Bone K et al., 2004)

* **Lymphedema** Is tissue swelling caused by decreased lymphatic outflow and increased interstitial fluid retention (Grada AA, Phillips TJ, 2017).

Table 4 shows 36 patients who underwent SLNB and breast surgery. Five patients (13.9%) had postoperative wound infections, 8 (22.2%) seromas, 3 (8.3%) hematomas, 4 (11.1%) paresthesia, 10 (27.8%) decreasing ROMs, and 1 (2.8%) cases of lymphedema. Fourteen patients (20.6%) developed postoperative wound infections after SLNB with LAS and breast surgery; 18 patients (26.5%) developed seroma; 6 patients (8.8%) developed hematomas; 12 patients (17.6%) experienced paresthesia; and 13 patients (19.1%) had decreased Range of motion (ROM); there was 1 (1.5%) case of lymphedema. The data also reveals that of the 6 patients who underwent ALND, 2 (33.3%) had postoperative wound infections, 4 (66.7%) had seromas, and 2 (33.3%) had hematomas. One patient (16.7%) reported paresthesia; 4 (66.7%) had decreased Range of motion; and 2 (33.3%) had lymphedema.

Table 1.: Sociodemographic Characteristics

Sociodemographic		Frequency	%
Age	Mean ± SD	46.9 ± 9.7	
	25 - 45 Years	51	46.4%
	46 - 65 Years	54	49.1%
	66 - 77 Years	5	4.5%
Blood group	A	36	36.0%
	AB	6	6.0%
	B	26	26.0%
	O	32	32.0%
Marital status	Married	95	86.4%

	Unmarried	7	6.4%
	Widow or divorce	8	7.3%
Parity	Multiparous	92	83.6%
	Nulliparous	17	15.5%
Ethnicity	Kurds	94	85.5%
	Arabs	13	11.8%
	Turkmans	3	2.7%
Occupation	Unemployed	4	3.6%
	Housewife	78	70.9%
	Teacher	15	13.6%
	Worker	2	1.8%
	Employee	7	6.4%
	Retired	2	1.8%
	Others	2	1.8%
Education	Illiterate	39	35.5%
	Able to read and write	36	32.7%
	Intermediate	9	8.2%
	Secondary	8	7.3%
	Institute	10	9.1%
	College Graduate	8	7.3%
Living status	Moderate	81	73.6%
	Low	29	26.4%
Address	Governorate	63	57.3%
	Qadha	34	30.9%
	Nahya	11	10.0%
	Village	2	1.8%
Smoking	Yes	7	6.4%
	No	103	93.6%
Alcohol	Yes	1	0.9%
	No	109	99.1%
Exercise	Yes	3	2.7%
	No	107	97.3%
Dietary habit	Non- vegetarian	32	29.1%
	Semi- vegetarian	75	68.2%
	Vegetarian	2	1.8%
BMI	Mean \pm SD	30.12 \pm 5.12	
	Normal (< 25)	13	11.8%
	Overweight (25 - 29.99)	42	38.2%
	Obese (\geq 30)	53	48.2%
Nervousness	Yes	51	46.4%
	No	58	52.7%
Depression	Yes	69	62.7%
	No	40	36.4%
Anxiety	Yes	76	69.1%
	No	33	30.0%
Total		110	100.0%

Table 2: Patients' complaints and present illness history

Patient complaint		Frequency	%
Mass	Yes	100	90.9%
	No	10	9.1%
Pain	Yes	44	40.0%
	No	66	60.0%
Nipple discharge	Yes	15	13.6%
	No	95	86.4%
Nipple retraction	Yes	15	13.6%
	No	95	86.4%
Nipple ulceration	Yes	9	8.2%
	No	101	91.8%
Breast enlargement	Yes	18	16.4%
	No	92	83.6%
Breast asymmetry	Yes	29	26.4%
	No	81	73.6%
Skin changes	Yes	4	3.6%
	No	106	96.4%
Duration	< 1 month	21	19.1%
	1 - 3 months	53	48.2%
	4 - 6 months	17	15.5%
	> 6 months	13	11.8%
Total		110	100.0%

Table 3: Relationship between type of breast surgery and postoperative complications

Complications / Type of surgery		Breast conservative surgery	Simple mastectomy(MRM)	Modified radical mastectomy	Total	P value
Wound infection	Yes	14 (19.2%)	5 (29.4%)	1 (5.3%)	20 (18.3%)	0.17
	No	59 (80.8%)	12	18 (94.7%)	89 (81.7%)	
Seroma	Yes	19 (26.0%)	3 (17.6%)	7 (36.8%)	29 (26.6%)	0.42
	No	54 (74.0%)	14 (82.4%)	12 (63.2%)	80 (73.4%)	
Hematoma	Yes	6 (8.2%)	2 (11.8%)	2 (10.5%)	10 (9.2%)	0.88
	No	67 (91.8%)	15 (88.2%)	17 (89.5%)	99 (90.8%)	
Paresthesia's	Yes	11 (15.1%)	1 (5.9%)	5 (26.3%)	17 (15.6%)	0.24
	No	62 (84.9%)	16 (94.1%)	14 (73.7%)	92 (84.4%)	
Decrease ROM	Yes	16 (21.9%)	5 (29.4%)	5 (26.3%)	26 (23.9%)	0.78
	No	57 (71.8%)	12	14 (73.7%)	83 (76.1%)	
Lymphedema	Yes	3 (4.1%)	0 (0%)	1 (5.3%)	4 (3.7%)	0.66
	No	70 (95.9%)	17 (100%)	18 (94.7%)	105 (96.3%)	
Total		73 (100%)	17 (100%)	19 (100%)	109 (100%)	

Table 4: Complications associated with the SLNB, SLNB plus LAS, and ALND groups.

Complications / Type of LN		SLNB	SLNB & LAS	ALND	Total	P value
Wound infection	Yes	5 (13.9%)	14 (20.6%)	2 (33.3%)	21 (19.1%)	0.47
	No	31 (86.1%)	54 (79.4%)	4 (66.7%)	89 (80.9%)	
Seroma	Yes	8 (22.2%)	18 (26.5%)	4 (66.7%)	30 (27.3%)	0.08
	No	28 (78.8%)	50 (73.5%)	2 (33.3%)	80 (72.7%)	
Hematoma	Yes	3 (8.3%)	6 (8.8%)	2 (33.3%)	11 (10.0%)	0.15
	No	33 (91.7%)	62 (91.2%)	4 (66.7%)	99 (90.0%)	
Paresthesia's	Yes	4 (11.1%)	12 (17.6%)	1 (16.7%)	17 (15.5%)	0.68
	No	32 (88.9%)	56(82.4%)	5 (83.3%)	93 (84.5%)	
Decrease ROM	Yes	10 (27.8%)	13 (19.1%)	4 (66.7%)	27 (24.5%)	0.03
	No	26 (72.2%)	55 (80.9%)	2 (33.3%)	83 (75.5%)	
Lymphedema	Yes	1 (2.8%)	1 (1.5%)	2 (33.3%)	4 (3.6%)	< 0.001
	No	35 (97.2%)	67 (98.5%)	4 (66.7%)	106 (96.3%)	
Total		36 (100%)	68 (100%)	6 (100%)	111 (100%)	

DISCUSSION

Regarding sociodemographic characteristics, the outcomes of the current study (Table 1) were consistent with the retrospective study findings by Huang (2021). They discovered that 5788 of the 6,304 additional breast cancer instances were in people aged 45 and older. Furthermore, Zekrullah B. et al. (2021) presented data indicating that the average age of Afghan women with breast cancer was 45.8, and the mean age was 45 in India "between" 2015 and 2017.

Regarding illiteracy among breast cancer women, the results of the present study were similar to a study by Balekouzou A. et al. (2017). Breast cancer and illiteracy were significantly related in Bangui, Central Africa (p 0.001). Additionally, a statistically significant link was found between education level and breast cancer (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). According to Bellanger (2018), the mortality rate from breast cancer is disproportionately greater for women in developing nations, and breast cancer cases rise with income at any age.

In terms of lifestyle, regular exercise, and a healthy diet, the current study found that the majority of participants did not exercise regularly, and only two were vegetarians, which concurs with the results of studies done by Arthur (Aunes D et al., 2012; Wu Y et al., 2013; Arthur RS et al., 2020) and bolsters the idea that leading a generally healthy lifestyle may lessen the effect of genetic variables on the chance of developing invasive breast cancer.

By lowering the reabsorption of estrogen and androgens in the colon, the ideal amount of physical activity is expected to reduce risk by 3% for every 180 minutes of moderate-intensity exercise weekly, with a 5% risk reduction for every additional 10 g of fibre per day.

The current investigation discovered that most patients weren't smokers, and almost all weren't alcoholics. Investigations into epidemiological studies have revealed inconsistent findings about the association between smoking and breast cancer. Some findings even imply that smoking may offer protection against the development of breast cancer (Chaturvedi, P. 2003). According to Jones ME et al.'s 2017 study, smoking was connected with a slight but statistically significant greater likelihood of developing breast cancer, especially in female smokers who started when they were young or premenopausal. Smoking increases the risk of breast cancer in women who have a family history of the condition.

Breast cancer risk is predicted to rise by 2% to 12% with every additional 10 g of alcohol used each day (one unit, such as 284 mL of 4% strength beer or cider, 25 mL of 40% strength spirits, or 80 mL of 12% strength wine) (Scoccianti C et al., 2014).

The majority of patients were overweight or obese, according to the current study. This is in line with other research that found a connection between obesity and the occurrence of estrogen receptor-positive breast cancer in postmenopausal women. The local synthesis of estrogens in the breast adipose tissue is thought to play a significant role in the initiation and progression of breast cancer and in mediating

resistance to endocrine therapy (Bhardwaj P et al., 2019; Brown KA, 2021).

Our findings support research by Wang YH et al. (2020), which found that anxiety and depression raise the chance of developing breast cancer. Overall, depression and anxiety were linked to a significantly higher risk of developing cancer (adjusted RR: 1.13, 95% CI: 1.06-1.19), dying from cancer (1.21, 1.16-1.26), and dying from all causes among cancer patients (1.24, 1.13-1.35). About cancer incidence, the estimated absolute risk increases (ARIs) linked to depression and anxiety were 34.3 events per 100,000 person-years (15.8–50.2) and 28.2 events per 100,000 person-years (21.5–34.9), respectively.

According to this study (Table 2), most women recommended for breast cancer surgery suffer from mass (90.9%), while only 40.0% complain of breast pain. The most frequent symptoms that women with breast cancer present with are breast lumps (Koo MM, 2017). According to a study done in Mexico, lumps (71.7% of cases) were 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 0.4% had breast pain (Dave et al., 2022).

The majority of participants in this study underwent oncoplastic BCS and, in some cases, mastectomy. Perform a mastectomy due to multicentric and multifocal tumour focality, small breast size, or the patient's preference. They fear cancer recurrence (Hassan Ali S. et al., 2019).

Similarly, a retrospective study in India reported that the rate of BCS increased for women who presented with early breast cancer. 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, although the 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 feared their cancer might return. There is no significant relationship between the type of breast surgery and postoperative complications ($p > 0.05$). Table (3).

As is presented in Table 4, some participants had one or more complications post-operatively. The results of the current study show that patients who had SLNB plus LAS had a higher rate of complications (infection, seroma, hematoma, and paresthesia) than those who had SLNB alone. Also, the present study's findings revealed a statistically significant association between a decreased range of motion and axillary surgery ($p 0.03$) and a highly significant association between lymphedema and ALND ($p < 0.001$). Table (4).

The results of the present study were similar to a prospective study that revealed that only a

minority of patients were at high risk of lymphedema (4%) and 6% with ALND (Rafn BS et al., 2022). After ALND, most patients develop lymphedema months or years later; 80% develop some fibrofatty accumulation, and one-third of patients have more fat than fluid in their limbs (Dayan JH et al., 2020).

A study (Snyder A. et al., 2014) found lymphedema development in 7 (6.9%) out of 101 cases constituting the study group. Lymphedema lasted within 3 months of surgery. They then had arm physiotherapy (Gillespie TC. et al., 2018). Managing lymphedema with physiotherapy, massage, and lifetime compression might be difficult. Despite complete compliance, lymphedema frequently worsens. A third of patients experience cellulitis, which can spread quickly and cause sepsis (Wiser et al., 2020).

Seroma is the most frequent postoperative complication following mastectomy and axillary surgery (incidence of 3% to 85%). Infection risk is increased by prolonged drainage from seromas (Srivastava 2012; Onesti MG 2017). Clinical Trials Registry India (Prajapati S. et al., 2021) found that 9% of patients in the study's control group had seroma, compared with 42% in the ALND group, with paresthesia and seroma being the most common.

CONCLUSIONS

Several complications still harm patients despite developments and breakthroughs in axillary surgery for staging the axilla in early breast cancer, such as infections, hematomas, seromas, paresthesia, shoulder stiffness, and arm swelling, which delayed adjuvant therapy and decreased quality of life.

Ethical Approval Statement

This research study, titled "**Complications Post-Axillary and Breast Surgery in the Management of Early Breast Cancer**" conducted by [Kwestan Mohammed Rahim , Nizar Mohammad Tawfeeq Hamawandi], has received ethical approval from the the [The Ethics Committees of College of medicen] at [the University of Sulaimani].

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AUTHOR'S CONTRIBUTIONS

All authors contributed equally to the conception and design of the study, data collection, and analysis, and drafted the initial manuscript. All authors critically reviewed and edited the manuscript. All authors approved the final version of the manuscript for submission..

DISCLOSURE STATEMENT:

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Complications Post-Axillary

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