

A Single Axillary Crease Incision for Wide Local Excision and Axillary Clearance in Early Breast Cancer

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ABSTRACT

Background: Breast cancer is the commonest malignancy in females. Despite the several surgical techniques that have been used to provide the ultimate pathological clearance and cosmetic results, the aesthetic outcome and scarring are not appreciated. Therefore, this current thesis is conducted to study a new technique to reduce this scarring. The single axillary crease approach is not currently used in Zagazig University Hospitals.

Patients and methods: An interventional Study included 30 cases with breast cancer who admitted to Zagazig University Hospitals. All patients were informed regarding this type of breast conservative surgery and the post-operative demands of the follow up.

Results: Patient age range was 35-52 and that the mean age was 43.53. The tumor size range was (0.8-4.9) and the mean tumor size was 3.24. The number of cleared lymph nodes ranged from (5-29). About 73.3% of the cleared lymph nodes tested positive by histopathological examination. About 6.7% of the cases were complicated with wound infection, 6.7% with seroma and 6.7% with wound dehiscence. The range of patient satisfaction was (5-10) while the mean patient satisfaction was 8.26. There were no significant difference between complicated and non complicated cases with regard to age, tumor size and number of cleared lymph nodes. There was a significant difference between complicated and non complicated cases regarding patient satisfaction.

Conclusion: The single incision approach in breast conserving surgery has a high success rate in its implementation, for lumpectomy. Patients operated on using this procedure presented greater satisfaction with both the breast and with the informational process compared with standard surgery.

Keywords: Axillary Crease Incision; Breast Cancer; Axillary Clearance

INTRODUCTION

Breast cancer is the most common cause of death in middle-aged women, approximately one and a half million new cases were diagnosed worldwide. Aetiological factors for breast cancer include age, gender, genetics, diet, endocrinal factors and previous radiation. A significant proportion of patients diagnosed with breast cancer will undergo surgery, mostly as the first means of treatment (1). While there had been some exploration of modifications to the procedure, such as sparing of the pectoralis muscles, as well as further dissection with removal of the internal mammary nodes, the surgical approach to breast cancer remained relatively static for more than eighty years (2).

Breast Conserving Surgery (BCS) has become the standard of care for early breast carcinoma, with equivalent rates of local control, overall survival and lower complication rates than mastectomy in large trials. Similarly, sentinel lymph node

biopsy (SNB) has been proven to be as effective as axillary node dissection for evaluating nodal involvement in large randomized control trials. As such, current management of early invasive breast cancer includes BCS and SNB and adjuvant therapy as first line treatment for many patients (3).

The standard breast conserving surgery and sentinel node biopsy approach yields 2 scars, which are often impractically close and associated with cutaneous devascularization and distortion of breast tissue that adversely affects the cosmetic outcome. This study will discuss a single incision approach for the standard breast conservative surgery to resect breast carcinomas, specially on the efficiency of local control of the breast carcinoma as well as the cosmetic outcomes among patients treated with a single-incision approach (4).

The goal of this study is to assess the single axillary crease incision approach regarding tumor excision with a safety margin while still maintaining good cosmetic post-operative results.

PATIENTS AND METHODS

An interventional Study included 30 cases with breast cancer who admitted to Zagazig University Hospitals. All patients were informed regarding this type of breast conservative surgery and the post-operative demands of the follow up. They were consented to conduct this study.

Inclusion criteria:

All Patients admitted to Zagazig University Hospitals with breast cancer, and were eligible for breast conservative surgery: monocentric tumors that can be localized. Tumors that did not exceed the level of T2 and tumor size not more than 5 cm.

Exclusion criteria:

Women who did not have large centrally placed tumors. Women who did not have multifocal tumors. When the size of the breast precludes adequate excision by wide excision. Women showing skin manifestations with breast cancer e.g peau d'orange or carcinoma en cuirasse.

Pre-operative evaluation:

Demographic data including name, age, residence, occupation, marital status, special habits of medical importance, menstrual and obstetric history for females. Careful history taking of the condition regarding onset, course, and duration as well as co-morbidities. Past history of previous operations as well as postoperative events, complications or problems with anesthesia. Clinical examination including general and breast examinations for the localization of the breast mass size and site. The clinical investigation as breast ultrasonography, mammogram and pathological examination of a breast biopsy (core biopsy of the suspicious mass to prove the malignant diagnosis). Base-line laboratory tests including: CBC, liver and kidney functions, and coagulation profile, random blood sugar and hepatitis B and C markers.

Operative Assessment:

Patients were seen the evening before surgery for planning of the operation. Planning and marking was performed with the patient sitting in bed with her arms fully abducted for proper exposure of the axilla. The incision was marked in a transverse plane over a suitable axillary crease. General anesthesia was inducted and prophylactic antibiotic was given then the incision was made over the previously

marked line. Following a localization procedure, lumpectomy was proceeded by medial advancement of dissection to reach beyond the mass to obtain the proper safety margin all around the tumor. Then the lump was excised with the surrounding safety margin. Laterally, axillary lymph node dissection was performed by lateral advancement until the axillary hollow was reached. After completion of axillary lymph node excision and insurance of hemostasis, the wound was closed after inserting a two limb drain one limb in the tumor bed and the other in the axillary hollow.

Post-operatively evaluation:

Ambulation and oral intake was started when the patient regained full consciousness, followed by a soft diet. Patients' vitals were monitored closely for alarming symptoms e.g. hypotension, tachypnea, fever, reactionary hemorrhage or rising leukocytic count within the first 24 hours. Moreover, the drain was followed up. Then, when the patients stabilized, they were discharged after 24 hours with instructions.

Follow-up:

Patients were reviewed as outpatients weekly for 1 month for early post-operative complications as wound infections, seromas, and nerve injury. Patients are also seen at the outpatient clinic instantly if they developed any symptoms between their follow-up visits.

Statistical analysis:

Data analyzed using Microsoft Excel software. Data were then imported into Statistical Package for the Social Sciences (SPSS version 20.0) software for analysis. According to the type of data qualitative represent as number and percentage , quantitative continues group represent by mean \pm SD, difference and association of qualitative variable by Chi square test (X^2). Differences between quantitative independent groups by t test or Mann Whitney, multiple by ANOVA or Kruskal Wallis, correlation by Pearson's correlation or Spearman's . P value was set at <0.05 for significant results & <0.001 for high significant result.

RESULTS

The present study showed that the patient age range was (35-52) and that the mean age was 43.53 (± 4.95 SD)(**Table 1**). The tumor size range was (0.8-4.9) and the mean tumor size was 3.24 (± 0.97 SD)(**Table 2**).

The number of cleared lymph nodes ranged from (5-29)(**Figure 1**). About 73.3% of the cleared lymph nodes tested positive by histopathological examination (**Figure 2**). About 6.7% of the cases were complicated with wound infection, 6.7% with seroma and 6.7% with wound dehiscence(**Table 3**). The range of patient satisfaction was (5-10) while the mean patient satisfaction was 8.26 (± 1.46 SD)(**Figure 3**). There were no significant difference between complicated and non complicated cases with regard to age, tumor size and number of cleared lymph nodes. There was a significant difference between complicated and non complicated cases regarding patient satisfaction(**Table 4**).

Table (1): Age distribution among studied group

Age	
30-40 years old patients	6 patients
40-50 years old patients	18 patients
50+ years old patients	6 patients
Mean± SD	43.53±4.95
Median (Range)	43.0 (36-52)

Table (2): Tumor size distribution among studied group

Tumor Size	
Tumor Size <1	1 Patient
Tumor Size >1 and <2	1 Patient
Tumor Size >2 and <3	10 Patients
Tumor Size >3 and <4	10 Patients
Tumor Size >4 and <5	8 Patients
Mean± SD	3.24±0.97
Median (Range)	3.5 (0.8-4.9)

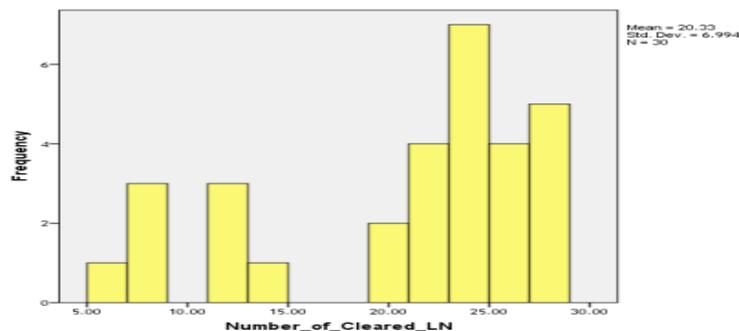


Figure (1): Number of Cleared lymph nodes among studied group

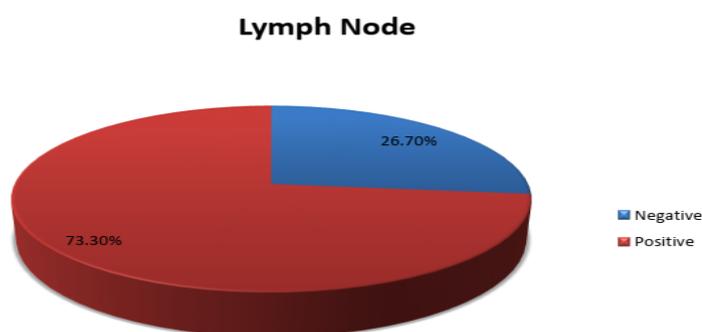


Figure (2): Distribution of Cleared lymph nodes among studied group

Table (3): Complication distribution among studied group

		N	%
Bleeding	No	30	100.0
	Yes	0	0.0
Nerve injury	No	30	100.0
	Yes	0	0.0
Wound Extension	No	28	93.3
	Yes	2	6.7
Seroma	No	28	93.3
	Yes	2	6.7
Wound Healing	Good	28	93.3
	Wound dehiscence	2	6.7
Overall complication	No	24	80
	Yes	6	20
	Total	30	100.0

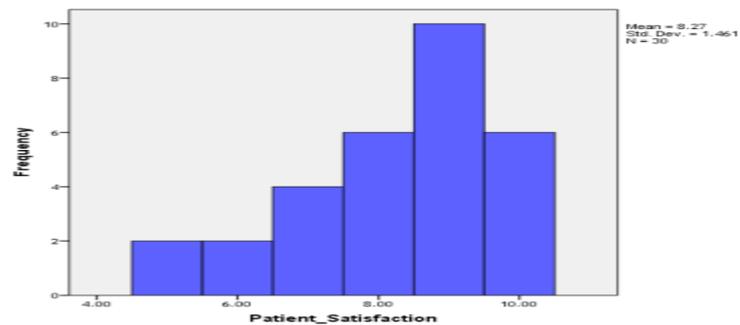


Figure (3): Patient Satisfaction distribution among studied group

Table (4): Relation between age, tumor size, lymph node clearance and patient satisfaction with overall complication

		Non Complicated	Complicated	t/ X ²	P	
Age		43.14±4.89	49.50±0.70	1.806	0.082	
Tumor Size		3.17±0.96	4.40±0.14	1.762	0.089	
Number of Cleared Lymph Nodes		21.22±5.69	23.8±1.63	0.523	0.589	
Patient Satisfaction		8.50±1.20	5.0±0.0	4.052	0.00**	
Lymph Nodes	Negative	N	8	0	0.77	0.37
		%	26.7%	0.0%		
	Positive	N	20	2		
		%	66.7%	6.7%		
Total		N	28	2		
		%	100.0%	100.0%		

DISCUSSION

Most surgeons now would only perform mastectomy in cases of large centrally placed tumors, multifocal tumors, or when the size of the breast precludes adequate excision by wide local excision. Many would now offer immediate or delayed reconstruction, with the Mayo clinic performing this in over one-third of the patients undergoing mastectomy. The operation of diagnostic excision biopsy is becoming less common as the facilities for fine-needle aspiration biopsy become more widespread and reliable; however, this reduction in biopsy for 'peace of mind' is counteracted by an increase in the number of women attending for wire-localisation biopsy from the screening unit (5).

There has also been a change in the incisions made in the breast itself. In general scars that are made parallel to the predominant orientation of the collagen fibers in the skin are quickest to heal, and heal with the least deformation and keloid formation. The classical drawings of Langer have been updated, taking into account more recent experimental observations. There is no place for radial incisions which are at right-angles to the predominant curvature of the breast, and are cosmetically unacceptable. The most obvious approach to surgery is therefore with a circumferential incision of some description (6).

Circumferential incisions over the tumor give the best access; however, circumareolar incisions give the best cosmetic result as they lie at the junction of two colors of epithelial surface. Lengthy circumareolar incisions may denervate or devascularise the nipple, particularly if they are placed lateral to the nipple (7).

The goal of this study is to evaluate the use of a novel single incision approach for surgical resection of breast carcinoma, particularly focusing on oncologic efficacy for local control and surgical outcomes among patients treated with a single-incision approach.

In our study, 30 patients underwent this trial in Zagazig University hospitals. They were diagnosed with breast cancer and underwent breast conservative surgery using the single axillary crease incision.

With regards to age, our study showed that the median age was 43.0 with a range of 36 to 52 years. This was slightly different from the age groups in other studies on breast conservative surgeries like **Bromberg et al. (8)** study who used the inferior mammary, axillary and periareolar approaches. They showed that the median age was 55 years with a range of 26 to 87 years. There is a significant difference between the age groups of our studies due to multiple types of tumors due to their multiple choice of approaches for breast conservative surgery. Their study involved tumors in all quadrants of the breast which allowed them to encounter a broader range of tumor types which affects a broader range of ages.

The tumor sizes we encountered over the duration of our study ranged from 0.8 cm to 4.9 cm with a mean tumor size of 3.2 cm. According to **Nebril et al. (9)** revealed the range of the tumor size they operated on was 1.3 cm to 6.3 cm with a mean of 4.5 cm. This difference is due to reduction mammoplasty as an approach to breast conservation. This approach allowed them better access to the tumor mass which in turn allowed them a wider range of patients as candidates for their study. Their patients were still within the criteria of early breast cancer as they did not present with local or metastatic infiltration. Our choice of a single novel incision confined us to choose patients with smaller tumor sizes because access to bigger tumors was limited and complete excision of a bigger tumor with a proper safety margin would be a challenge.

Following up on the topic of lymph node status, 8 of our patients (26.7%) tested negative for lymph nodal involvement. Our study included patients who had tumors in the upper outer quadrant of the breast which is mostly drained by the axillary lymph nodes. Also, patients with early stage breast cancer were selected for our approach which justifies the percentage of negative results as the nodal excision was done before malignant infiltration. This goes in agreement with **Nebril et al. (9)** operated on cases of early breast cancer, but with a different approach. Their study showed that (31.4%) of the excised lymph nodes tested negative for malignancy. They performed a level II axillary clearance in patients who presented with tumors in the upper outer quadrant or at the junction between the upper and lower quadrants of the breast.

During the course of our study, 6 out of the total 30 selected patients (20%) showed post operative consequences to surgery in the form of seromas or wound dehiscence. None of the cases required reoperation for excessive post operative bleeding or showed signs of nerve injury after surgery.

A study by **Lovasik et al. (10)** used a very similar approach to breast conservative surgery showed similar results. They encountered complications in 10 out of their total operated 48 cases in the form of seromas as well as superficial soft tissue infection. In both studies a single incision was used minimizing the need for excessive dissection, which resulted in a fewer post-operative rate of seromas compared to standard breast conserving surgery. This less invasive technique reduces the risk of other well-known complications as cutaneous devascularization which results with excessive skin undermining or loss of sensation in the nipple areolar complex.

CONCLUSION

The single incision approach in breast conserving surgery has a high success rate in its implementation, for lumpectomy. Patients operated on using this procedure presented greater satisfaction with both the breast and with the informational process compared with standard surgery.

Further multi-centric controlled trials and long-term follow-up are needed to prove this incision as a safe and practicable technique.

No Conflict of interest.

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