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Original Research Article

Initial experience with breast conserving surgery in Jos

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ABSTRACT

Background: Breast conserving surgery is the treatment of choice in the surgical management of early-stage breast cancer in developed countries, while mastectomy has remained the most practiced surgical treatment in developing countries. The aim of the study was to describe the outcomes of a cohort of patients who had breast conserving surgery in a developing country.
Methods: The study is a retrospective review of patients who were offered breast conserving surgery between January 2018 and December 2020 at the Jos University Teaching Hospital and FOMAS Hospital.
Results: A total of 110 female patients had surgery for breast cancer in the study period. Of this number, eleven (10%) patients whose ages ranged from 28-70 years with a mean age of 53.5 years (SD=12.9 years) had breast conserving surgery, while 99 (90%) had mastectomy. A painless lump on self-breast examination was the most common reason for presentation in those who had breast conserving surgery. Most of the patients who had breast conserving surgery presented with tumor stage T2N1M0. Quadrantectomy was done in 7 (63.6%) patients while 4 (36.4%) had wide local excision. No patient developed any postoperative complication. No patient required re-excision due to positive margins. Three (27.3%) patients had only adjuvant hormonal therapy. Eight (72.7%) patients had radiotherapy following surgery, while 3 (27.3%) patients had only breast conserving surgery for loco-regional control. All patients had a minimum follow up of 2 years with no recurrence or mortality.
Conclusions: Breast conserving surgery can be safely practiced as an alternative to mastectomy in carefully selected patients with early breast cancer with good outcomes.

Keywords: Breast, Conserving, Surgery, Cancer, Outcome

INTRODUCTION

The surgical treatment of breast cancer has evolved from radical mastectomy introduced by Halsted which lasted for almost a century to various forms of breast conserving surgery.[1,2] Breast conserving surgery with radiation therapy has gained wide acceptance and has emerged as the treatment of choice in the surgical management of early-stage breast cancer in developed countries.[3,4] It is particularly attractive to women because the breast is preserved while offering similar survival advantage as mastectomy.[5-7] It also aims to provide a cosmetically acceptable breast and a low rate of recurrence in the treated breast. The aim of surgical treatment of breast cancer is complete resection of the primary tumor with negative margins to reduce the risk of local recurrence and pathological staging of the tumor and axillary lymph nodes to provide necessary prognostic information, which is achievable with breast conserving surgery. The current indication for breast conserving surgery is a diagnosis of breast cancer clinically assessed as resectable with clear margins and with an acceptable cosmetic result. Therefore, breast conserving surgery is appropriate for majority of women with stage I and II breast cancer.[8] Its use has extended to patients with large operable breast cancer and locally advanced breast cancer following down staging

with neoadjuvant chemotherapy.[9-11] Achieving a balance between good oncologic outcome and cosmetic outcome can be an arduous task and recent oncoplastic techniques allows excision of more breast tissue without compromising cosmetic outcome, further increasing the range of patients who can be offered breast conserving surgery.[12,13]

However, not all patients with early disease can be offered breast conserving surgery. The contraindications include multicentric tumor involving 2 or more quadrants of the breast, history of previous radiation therapy to the area of treatment, diffuse malignant/indeterminate microcalcification, first or second trimester of pregnancy and persistent positive margins following repeated attempts at conservation.[14] Relative contraindications include history of collagen vascular disease and inappropriate tumor- breast ratio.[15] In developing countries however, mastectomy has remained the most practiced surgical treatment for breast cancer. The reasons for this include late presentation, limited resources, poor access to radiation facilities, surgeon's bias, and patients' misconceptions.

The aim of the study was to describe the outcomes of a cohort of patients with breast cancer who had breast conserving surgery.

METHODS

This study was a retrospective review carried out at the Jos University Teaching Hospital and FOMAS hospital, both of which are tertiary health care centers located in the city of Jos, Plateau State, Nigeria. These facilities receive breast cancer referrals from five neighboring states in addition to Plateau state.

Inclusion criteria

Patients who were offered breast conserving surgery for breast cancer between January 2018 and December 2020 were included in the study. Patients were followed up for a minimum of two years. We reviewed the medical records for the inclusion criteria, and the project team performed a review of charts for data elements.

Exclusion criteria

Patients who had breast conserving surgery and were lost to follow-up.

Procedure

All patients underwent triple assessment for their breast lumps. Patients were then staged using the TNM staging system and patients had a metastatic workup comprising a skeletal survey, ultrasound, and chest radiograph. Patients were educated about the disease and treatment options available. Patients who opted for breast conserving surgery were educated about the need for radiotherapy and informed consent was taken for breast conserving surgery from those deemed suitable for the procedure.

The procedure is done under general anesthesia or local anesthesia in the supine position with the patients arm abducted at 90 degrees and sterilely draped into the operative field. Prophylactic antibiotics are given prior to induction of anesthesia. An elliptical incision is made on the skin above the tumor to incorporate the biopsy tract. This incision is deepened down to the pectoral fascia and the tumor with a less than 2 cm concentric margin of healthy tissue is excised and the tissue gap approximated with sutures. A quadrantectomy entails removing 2-3cm of healthy tissue surrounding a tumor and approximately one-fourth of the breast. A separate incision is made in the axilla and en block axillary dissection is carried out to level 2 axillary nodes. A closed drain is then placed in the axilla. The specimen of breast tissue is oriented by the surgeon using sutures, labeled appropriately, and submitted for assessment of the margins. The patients were subsequently admitted for 72 hours and then discharged with the drain left in place. The drain was removed on a future clinic visit. If sentinel lymph node biopsy is to be done, dilute methylene blue is injected peri-lesionally prior to the start of the procedure. An incision is then made close to the anterior axillary fold, which is then developed and dissection carried out to identify the blue-stained lymphatic channels which are then followed to the sentinel node or nodes. The node is then removed and the wound is closed in layers. A wide local incision and sentinel lymph node biopsy was done as a day case for all our patients. Patients were then referred to one of the centers for radiotherapy when the wound had healed.

Statistical analysis

Data were entered into a pre-designed proforma and analyzed on the SPSS 21 Chicago, Illinois. We applied descriptive statistics to the demographic data and clinical information of patients which included the reason for presentation, age, sidedness of tumor, tumor histology, receptor status, stage of tumor at presentation, type of surgery, postoperative complication, duration of hospital stays, follow up findings and whether radiotherapy was received.

RESULTS

A total of 110 female patients with a mean of 48.5years (SD=11.20) had surgery for breast cancer in the study period. The fifth decade was the most common decade of presentation of breast cancer. The age distribution of breast cancer is shown in Figure 1 and the sidedness of tumor presentation is shown in Figure 2. Eleven (10%) patients whose ages ranged from 28-70 years with a mean age of 53.5 years (SD=12.9 years) had breast conserving surgery, while 99 (90%) patients had mastectomy. A painless lump on self-breast examination was the most common reason for presentation in those who had breast conserving surgery. Most of the patients who had breast

conserving surgery presented with tumor stage T2N1M0. Quadrantectomy was done in 7 (63.6%) patients while 4 (36.4%) had wide local excision. No patient developed any postoperative complication. No patient required re-excision due to positive margins. Three patients had only adjuvant hormonal therapy. Eight (72.7%) patients had radiotherapy following surgery in a nearby center, while 3 (27.3%) patients had only breast conserving surgery for loco-regional control. All patients had a minimum follow up of 2 years with no recurrence or mortality. The summary is represented in Table 1.

Table 1: Summary of results.

S. no	Age (years)	Presentation	Sidedness	Receptor status	Type of surgery	Adjuvant therapy	Radiotherapy	Stage	Histology	Hospital stay (days)
1	54	Painless lump	L	ER+	Quadrantectomy and ALND	Chemotherapy/hormonal	Yes	T2N1M0	Invasive ductal carcinoma	3
2	58	Painless lump	L	ER+	Quadrantectomy and ALND	Chemotherapy/hormonal	Yes	T2N1M0	Invasive ductal carcinoma	3
3	57	Painless lump	L	ER+	Quadrantectomy and ALND	Chemotherapy/hormonal	Yes	T2N1M0	Invasive ductal carcinoma	3
4	52	Painless lump	R	ER+	Quadrantectomy and ALND	Chemotherapy/hormonal	Yes	T2N1M0	Invasive ductal carcinoma	3
5	28	Painless lump	R	ER+/PR+	Quadrantectomy and ALND	Chemotherapy/hormonal	Yes	T3N1M0	Invasive ductal carcinoma	3
6	51	Painless lump	L	HER2+	Quadrantectomy and ALND	Chemotherapy/targeted	Yes	T3N1M0	Invasive ductal carcinoma	3
7	48	Painless lump	R	Triple -	Quadrantectomy and ALND	Chemotherapy	Yes	T2N1M0	Invasive ductal carcinoma	3
8	66	Painless lump	L	ER+/PR+	Wide Local Excision and SLNB	Hormonal	No	T1N0M0	Colloid carcinoma	Day case
9	68	Painless lump	R	ER+/PR+	Wide Local Excision and SLNB	Hormonal	No	T1N0M0	Invasive ductal carcinoma	Day case
10	70	Mammography detected	R	ER+/PR+	Wide Local Excision and SLNB	Hormonal	No	T1N0M0	Invasive ductal carcinoma	Day case
11	36	Painless lump	L	ER+/PR+	Wide Local Excision and ALND	Chemotherapy/hormonal	Yes	T2N1M0	Invasive ductal carcinoma	3

Note: SLND-Sentinel lymph node biopsy; ALND- axillary lymph node dissection; L- left, R- right.

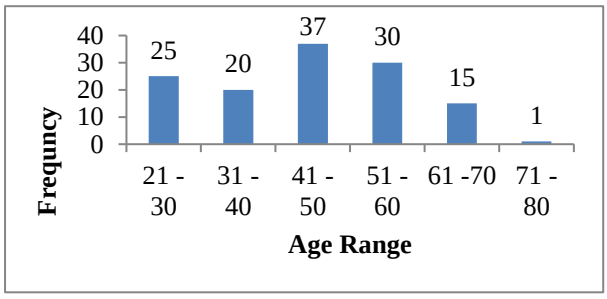

Figure 1: Age group distribution of breast cancer.

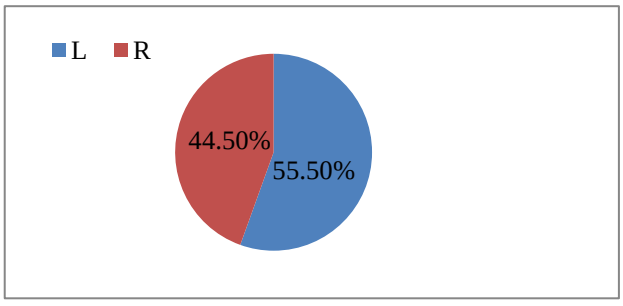

Figure 2: Percentage sidedness of breast cancer.

DISCUSSION

The surgical treatment offered for breast cancer depends on several factors including availability of specialist breast units, surveillance imaging such as mammography/magnetic resonance imaging, patient preferences, demographic factors such as the availability and distance to the nearest radiotherapy facility and tumor stage at presentation. Over the study period, most of the breast cancer surgeries were mastectomies while there were very few breast conserving surgeries. This study contrasts with studies from high income countries that show high rates of breast conserving surgeries.[16] One of the reasons for the low percentage of breast conserving surgeries in developing countries is limited access to radiotherapy, a necessary component of breast conserving therapy for most patients. In Nigeria, there are few radiotherapy centers spread across the country serving the huge population and as such the machines are overstretched, frequently breaking down and resulting in long waiting lists. Consequently, many patients are unable to access radiotherapy services which may result in a reluctance among surgeons to perform breast conserving surgeries.

In almost all our patients who had breast conserving surgery, the reason for presentation was a painless lump felt on breast self-examination which in most cases was not done regularly prior to noticing the lump. This is typical of the presentation of early breast cancer in low- and middle-income countries and contrasts with the large proportion of cancers detected by mammographic screening in high income countries.[16] In resource poor countries with limited access to mammography which detects breast cancer at preclinical and earlier stages, there is a heavy dependence on regular breast self- examination as a means of early detection, despite controversies about its effectiveness in reducing mortality.[17] However, the knowledge and practice of breast self-examination has been rather poor, though educated females are more likely to practice it.[18,19]

Breast self-examination represents a feasible and practical way of early detection of breast cancer and should be encouraged in women. Most of the patients with early breast cancer who had breast conserving surgery were clinically assessed with T2N1M0 stage. However, studies from developed countries show that a large percentage of breast conserving surgeries are offered to patients with TO/T1 stages[16,20] which is reflective of the stage at which breast cancer is diagnosed in those settings. This underscores the need for wide spread mammographic services in resource poor settings if earlier stages are to be detected. Two patients with T3 tumors were offered neoadjuvant chemotherapy to down stage and following marked reduction in size were offered breast conserving surgery. Studies have showed that breast conserving surgery can be still be offered with good outcomes to patients with stage 3 tumors following downstaging with chemotherapy[9,10] which was the finding in this study.

The paucity of postoperative complication in these series enabled early commencement of adjuvant therapy. Although both breast conserving surgery and mastectomy are relatively low morbidity procedures and have low early postoperative complications, breast conserving surgery has fewer postoperative complications.[21,22]

In our study, quadrantectomy was done in 7 patients while 4 had wide local excision. A quadrantectomy is designed to remove an anatomic segment of breast tissue (duct-lobular system). It has the advantage of greater surgical curability than other conserving techniques in cases with ductal spread, because breast cancer arising in the terminal duct often spreads in the duct-lobular system.[23] However due to the large volume of breast tissue removed, it has a poorer cosmetic outcome than wide local excision and studies have not shown a significant decrease in ipsilateral breast tumor recurrence with more widely clear margins.[24] The margin status may however be positive more frequently in wide excision than in quadrantectomy because of the smaller volume of breast tissue excised.[25,26] It is worthy to note that there is no universal agreement on the optimal width of the tumor free margin.[27] Of utmost importance is the fact that the surgical technique used for each patient achieves a compromise between local curability and cosmetic results.

None of our patients required a re-excision. The main disadvantage of breast conserving surgery is the risk of positive resection margin that necessitates additional surgery by either further breast conserving surgery or mastectomy. Re-excision is associated with greater morbidity, patient anxiety, poorer cosmetic outcome, and delayed initiation of adjuvant therapies and increased medical costs. Some studies have shown high rates of re-excision due to positive margins.[25,28] Our zero rate of re-excision may not be unconnected with the fact that most of our patients had quadrantectomy which entails excising a wider margin of apparently normal breast tissue.

In this study, most of the patients had postoperative radiotherapy despite having negative margins which is supported by results from a study by Schnitt et al.[29] This practice is premised on the fact that a negative margin does not entirely rule out residual tumor in the breast, but suggests that the residual tumor burden is low enough to be controlled with adjuvant radiotherapy. Likewise, radiotherapy cannot compensate for inadequate surgery, instead it serves to sterilize the operative field of microscopic residual disease. The greatest concern following breast conserving surgery remains the local recurrence. Studies in which breast conserving surgery was done without radiotherapy, showed a high local recurrence rate[30-33] and guidelines recommend the use of radiotherapy as a necessary follow up to surgery. However, women over 65years with hormone positive cancer may be safely treated without radiation[34,35] and 3 of the elderly patients in this study with hormone positive cancers were managed without radiation. Most of the local recurrences following breast cancer surgeries occur within

the first two years. There was no local recurrence in any of our patients with a minimum follow up of two years.

Limitations

Breast conservation is a relatively new concept in our practice owing to the late presentation of breast cancer, not giving room for sufficient number of patients to benefit from it. This has resulted in the low number of patients in this series, making it difficult to reach reasonable conclusions. The follow up duration for this series is short (2 years). A longer follow up duration will be more appropriate.

CONCLUSION

This study shows that breast conserving surgery can be safely practiced as an alternative to mastectomy in carefully selected patients with early breast cancer with good outcomes.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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