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ORIGINAL RESEARCH

Spectrum of breast cancer surgery at a secondary care center in India – FHMC experience

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Abstract

Introduction: Breast cancer is the most common malignancy in the females in most cancer registries of India. The basic tenets of breast cancer treatment remain surgery, chemotherapy, radiotherapy and hormonal therapy, used in various combinations. Considerable variations are found between the spectrum of surgeries carried out at different centres depending on numerous factors. We studied the spectrum of breast cancer surgeries performed in a single unit at a secondary care hospital in a developing country India over a period of 9 years, consisting of nearly 150 patients.

Methods: A retrospective analysis of prospective surgical oncology database was carried out and case records of all breast cancer patients who underwent surgery in a single unit between 2013 and 2022 were studied.

Results: A total of 151 patients with a mean age of 51.8 years underwent surgery for breast cancer between July 2013 and May 2022. There were 71 patients (47%) with EBC, 73 (48.3%) with LABC, 3 (1.9%) with MBC and 4 (2.6%) with recurrent breast cancer. Seventy nine (52.3%) patients underwent MRM, 3 (2%) RM, 69 (45.7%) BCT, 2 (1.3%) TM, 1 (0.7%) SM, 2 (1.3%) only ALND, 54 (35.7%) SLNB, and 32(21.2%) breast oncoplasty.

Conclusions: Many patients still present with advanced disease, and MRM remains the most common surgery performed in this group. However, now almost half of breast cancer patients are EBC and nearly 75% of EBC now undergo BCT in our unit. Sentinel lymph node biopsy and oncoplastic procedures have led to this changing trend in recent times.

Introduction

Breast cancer is a common malignancy worldwide. In India it has become the most common malignancy in the females in most cancer registries with an incidence of around 30/100,000 population [1]. It is one of the most extensively studied malignant diseases with long term results of a number of randomized controlled trials guiding the treatment. Modifications of the treatment regimens keep on occurring as new evidence presents itself. However the basic tenets of treatment remain surgery, chemotherapy, radiotherapy and hormonal therapy, used in various combinations. There is a broad spectrum of surgical procedures available to a breast cancer surgeon [2]. These includes radical mastectomy, modified radical mastectomy, breast conservation surgery and toilet mastectomy for the control of primary tumour, ALND

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and sentinel lymph node mapping for management of axilla, chest wall resections for local recurrences, and a gamut of breast oncoplastic procedures. Even though the guidelines for surgical treatment of breast cancer exist, considerable variations are found between the spectrum of surgeries carried out at different centres depending on numerous factors [3,4,5,6]. We studied the spectrum of breast cancer surgeries performed in a single unit at a secondary care hospital in a developing country India over a period of 9 years, consisting of nearly 150 patients.

Material and methods

A retrospective analysis of prospective surgical oncology database was carried out and case records of all breast cancer patients who underwent surgery in a single unit between 2013 and 2022 were studied. All surgical procedures done for the management of primary tumour, axilla, recurrent disease, toilet and reconstruction were studied.

Management of primary tumor

Modified radical mastectomy was the most common procedure used for the management of primary tumour and axilla. Axillary clearance up to level III lymph nodes is done as a standard procedure. Pectoralis minor muscle was removed, if required, for nodal clearance. The authous routinely preserve thoraco dorsal vessels along with long thoracic and thoracodorsal nerves in order to aid in later breast reconstruction by latissmusdorsi flap, if required. Wherever tumour was less than 1 cm from deep margin a cuff of pectoralis major muscle was taken as deep margin. Fascia over pectoralis major is routinely included in the mastectomy specimen. The authors routinely place one drain in axilla and none in flaps. All patients with uneventful recovery are discharged 48 hours after surgery with one drain in situ. Patients were followed up in follow-up clinic and the drain was removed when output became less than 30 ml per day.

Radical mastectomy

In patients with extensive involvement of pectoralis major muscle and in male patients with bulky disease a conventional radical mastectomy was performed. Many of these patients with large skin loss required skin cover in the form of TE flap.

Simple mastectomy

Simple mastectomy was done in patients with extensive DCIS and in recurrent cases after BCS, where axillary clearance has already been done.

Toilet mastectomy

Toilet mastectomy was done for patients with metastatic tumours with large and fungating primary. Many such patients required skin cover in the form of TE flap.

Breast conservation surgery

Breast conservation surgery was used in early stage cancer in suitable patients selected by conventional criterion. Excision types ranged from quadrantectomy to WLE. Axillary dissection was performed by same or separate incisions. Clearance was done up to level III nodes with preservation of pectoralis minor muscle. Previous lumpectomy was not a contraindication for breast conservation surgery.

Management of axilla

In modified radical mastectomy and radical mastectomy axillary clearance up to level III lymph nodes is done as a standard procedure. Pectoralis minor muscle was removed if

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required for nodal clearance. The authors routinely preserve thoraco dorsal vessels along with long thoracic and thoracodorsal nerves in order to aid in later breast reconstruction by latissmusdorsi flap, if required. Single closed suction drain is used and removed when drain output is less than 30 ml over a 24 hour period.

In breast conservation surgery also axillary clearance was done upto level III nodes but with preservation of pectoralis minor muscle. Sentinel lymph node biopsy was used in clinically node negative axilla. Peritumoral injection of methylene blue dye was used for identifying the sentinel node/s and intaoperative imprint cytology was used to detect nodal metastasis. Patients with doubtful or positive report underwent axillary dissection in the same sitting.

Management of local recurrence

Recurrent disease in chest wall after modified radical mastectomy was treated by wide local excision. Breast recurrences after breast conservation surgery were treated with simple mastectomy. Ipsilateral nodal recurrences were treated with ALND where previous surgery was inadequate for management of axilla. Contralateral nodal recurrences were treated with ALND if they were the only site of recurrence with an aim of preventing troublesome fungation.

Breast reconstruction

During the later part of study i.e. after 2018 all patients of breast conservation surgery underwent breast oncoplastic procedures. Most common procedure was level 1 oncoplasty or glandular rotation.

Results

A total of 151 patients with a mean age of 51.8 years underwent surgery for breast cancer between July 2013 and May 2022. There were 71 patients (47%) with EBC, 73 (48.3%) with LABC, 3 (1.9%) with MBC and 4 (2.6%) with recurrent breast cancer. Diagnosis was established by FNAC in 140 (92.7%), core needle biopsy in 9 (5.9%), and punch biopsy in 3 (2%).

Seventy nine (52.3%) patients underwent MRM, 3 (2%) RM, 69 (45.7%) BCT, 2 (1.3%) TM, 1 (0.7%) SM, 2 (1.3%) only ALND, 54 (35.7%) SLNB, and 32(21.2%) breast oncoplasty.

Although 10 (6.6%) patients had lumpectomy before presentation, it was not a contradiction for BCT. Seven (4.6%) patients with BCT had previous lumpectomy. Resection in BCT included wide excision in 61 (88.4%) and quadrantectomy in 8 (11.6%) patients.

All MRM patients underwent level III axillary nodal clearance. Eighty six (56.9%) patients were pathologically node positive. Of them, 46 (53.4%) had 4 or more positive nodes and 26 (30.2%) had extra nodal disease. Seven patients (9.8%) with EBC had 4 or more node positive.

SLNB was done in node negative EBC patients 54 (76%). The positivity rate was 29.1%. The sensitivity, specificity and accuracy of SLNB in predicting axillary node status were 84.2%, 100% and 91.3%, respectively.

Oncoplasty

Breast reconstruction was done for 35 (23.1%) patients. Thirty patients had breast oncoplastic procedure as part of breast conservation surgery while 5 had

large tumours with extensive skin involvement requiring TE flap cover. TE flap had a high risk of complications in this setting with 2 (28.5%) patients developing partial flap necrosis.

Overall complications were seen in 29 (19.2%) patients; seromas in 22 (14.5%), - wound infections in 3 (2%) and partial flap necrosis in 4 (2.7%) patients.

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Discussion

Surgical management of breast cancer has undergone a large change from the days of Halstead. It has now become a science in itself with a plethora of surgical options available to a breast surgeon. Some, like radical and modified radical mastectomies have been present for a long time, while others like breast conservation surgery and sentinel lymph node biopsy have now established themselves as standard management tool, still others like endoscopic axillary dissection [7] etc. remain investigational. In addition a gamut of oncoplastic procedures have made breast reconstruction an art in itself [8]. The establishment of diagnosis has also changed. FNAC has become the most common diagnostic modality. With availability of newer diagnostic tools like stereotactic biopsy and mammotome the rates of excision biopsy are decreasing everywhere [4,5]. Due to the changing nature of breast cancer treatment, considerable variation is seen in the spectrum of breast cancer surgeries in different centers [3,4,5,6].

Diagnosis

FNAC has emerged as the most commonly used diagnostic modality in our study as also reflected in other studies [4,5]. It provided tissue diagnosis in nearly 92.7 % patients. Nearly two percent patients had ulcerated lesions and a punch biopsy was obtained in them. Core needle biopsy was used in 6% patients[9]. The authors do not use excision biopsy for diagnosis. However prevalence of excision biopsy seems to be present elsewhere as we had nearly 7% patients who had undergone excision biopsy outside.

Management of the primary tumor

MRM remains the most common surgery (52.3%) performed for the management of primary tumour. However we have performed nearly same number of breast conservation surgeries(45.7%). This reflects almost equal distribution of EBC and LABC in our patient population. RM and toilet mastectomies constitute a small but constant percentage as some patients continue to present with large fungatingtumours. Breast conservation surgery has increased in both number and proportion in the recent years. EBC constitute only half of our patients but BCT rates are nearly 75% in this group, which is at par with that reported in the literature [10,11]. This is an improvement over the rates of 19.6% reported earlier from our country [12]. The authors routinely perform wide local excision with a three dimensional 1 cm margin and have found positive margins in only 1/69 patients. If positive we re-excise the margin and if again positive we do a completion mastectomy. Such an approach has been shown by Kruer et al [13,14] to be effective. Patients who have undergone excision biopsy outside are not excluded from BCT if they fulfill other criterion [15,16], and 14.4% of patients with BCT had previous excision biopsy outside. The authors routinely excise the previous biopsy scar in such cases.

Management of axilla

Nearly half of our patients have locally advanced breast cancer at presentation with heavy nodal disease burden as evidenced by the fact that eighty six (56.9%) patients were pathologically node positive. Of them, 46 (53.4%) had 4 or more positive nodes and 26 (30.2%) had extra nodal disease. Seven patients (9.8%) with EBC had 4 or more node positive. Hence the authors practice and strongly advocate level III dissection. The authors divide pectoralis minor in MRM while try to preserve it in BCT, though not at the cost of nodal clearance. The thoracodorsal pedicle is routinely preserved in order to be able to use latissmusdorsi muscle flap for later breast reconstruction, if required. Sentinel lymph node biopsy was used in clinically node negative axilla. In this setting nearly 29.1% patients had positive SLN which is similar to that reported in literature. Reported rates in literature range

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between 26 and 37% [17]. The sensitivity, specificity and accuracy of SLNB in predicting axillary node status were 84.2%, 100% and 91.3%, respectively.
The accuracy was which is acceptable. The American society of breast cancer recommends an SLNB identification rate > 95% and a false-negative rate of 5–10% to abandon axillary dissection [18]. Therefore, the SLNB identification rate of 97.1% in this cohort satisfies these recommendations. Hence we recommend SLNB in clinically node negative EBC.

Management of local recurrences
Most of the local recurrences after MRM occur in association with systemic relapse and are seldom amenable to surgical treatment alone although many patients with early recurrences after BCT also have same prognosis [19,20,21,22]. However few local recurrences that occur without any systemic relapse should be excised. The authors have performed chest wall resections for 2 such patients [23]. Recurrences in axilla were treated by ALND in 1 patient. Patients with breast recurrence after BCT were treated with mastectomy (1 patient) [19].

Breast oncoplasty
Oncoplastic procedures in breast cancer are required in two situations i.e. for providing cover after resection of large tumours with extensive skin loss and for breast reconstruction. A variety of options are available to provide cover. Split skin grafts, thoraco-epigastric flaps, latissmusdorsimyocutaneous flap, vertical or transverse rectus myocutaneous flap are all can and have been used [24]. In the authors experience thoraco-epigastric flap is a simple and fairly reliable flap. However partial necrosis of the most distal part of flap is a concern and occurred in 26.9% patients. Most of these heal by conservative means [24].
Breast reconstruction is fast becoming a much demanded procedure especially in context of young working women with breast cancers. The overall outcome of breast reconstruction is good in high volume centers and a good patient satisfaction can be expected [25]. It can be done as the time of primary surgery [26] or as a secondary procedure. Since 2019 we have been routinely performing oncoplastic breast surgery specially with breast conservation surgery.

Complications
Overall complications rate in our study was 19.2% which is comparable to published studies [28,29,30]. Wound seromas are the most important and commonest early complications [27]. Wound seromas occurred in nearly 15% patients and were managed by needle aspirations. Few technical points regarding our policy are ; we remove pectoral fascia with the mastectomy specimen, we place one drain in axilla and none in flaps, we remove the drain when the output decrease to less than 30 ml in 24 hours, we start arm exercise within 48 hours after surgery. All these approached has been validated by many authors [28,31,32,33]. Flap necrosis and wound infections were uncommon with less than 2% each [30,34,35].

Conclusion
FNAC has become the favored diagnostic modality for breast cancer. Still many patients present with advanced disease, and MRM remains the most common surgery performed in this group. However, now almost half of breast cancer patients are EBC and nearly 75% of EBC now undergo BCT in our unit. Sentinel lymph node biopsy and oncoplastic procedures have led to this changing trend in recent times. Surgeons treating breast cancer should be well versed with various oncoplastic techniques to manage breast oncoplasty in EBC and large skin defects in advanced breast cancer patients.

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