

Original Article

Analysis of Surgical Procedures for Breast Cancer in Pakistan Institute of Medical Sciences: A Decade of Change

S H Waqar *
 Shahbana Jamal *
 Rakhshanda Rasheed **
 Zafar Iqbal Malik *
 Tanwir Khaliq ***
 M A Zahid ***
 Nadeem Ahmad ***
 Syed Aslam Shah***

*Assistant Professor
 **Associate Professor
 *** Professor

Dept. of General Surgery, Pakistan
 Institute of Medical Sciences,
 Islamabad

Address for Correspondence
 Dr S H Waqar
 Assistant Professor
 Department of General Surgery
 Pakistan Institute of Medical Sciences
 Islamabad.
 Email: drshwaqar@gmail.com

Objective: To assess the changing practices of surgical procedures for Breast Cancer over the last decade in a tertiary care general surgical department Pakistan Institute of Medical Sciences (PIMS), Islamabad.

Study Design: Retrospective Comparative Study

Place and Duration of the Study: Records of Breast cancer patients, who were operated in main operation theatre of PIMS Islamabad in 1999/2000 and 2009/2010

Materials and Methods: Records of Breast cancer patients, who were operated in main operation theatre of PIMS Islamabad in 1999/2000 and 2009/2010, were studied retrospectively. Comparative analysis of different primary surgical procedures was undertaken and measured against the international surgical oncology guidelines for the surgical management of breast cancer.

Results: 418 patients' records were analyzed. Over the last decade we observed a dramatic increase in incidence of surgical procedures for breast cancer (about two-fold increase), a move to less invasive surgical techniques like breast conserving surgery, as well as increased number of down-staged breast cancer patients. A completely changed pattern of primary surgical approach from lumpectomy followed by mastectomy to mastectomy or breast conserving surgery after neoadjuvant therapy was noticed. We also witnessed the introduction of immediate breast reconstruction as part of routine practice.

Conclusion: It is demonstrated that radical changes have occurred in the management of breast cancer in the last decade, in keeping with international guidelines. There is a need to continue to adapt our practice in light of emerging knowledge and best evidence.

Keywords: Breast Cancer, Surgical Oncology, Mastectomy

Introduction

Breast Cancer is the commonest female malignancy in the world and its incidence continues to rise. The Irish National Cancer Registry predicts that by 2020 there will be approximately 5000 new cases per annum in Ireland.¹ In Pakistan it is more common at a young age contrary to the West where it is more common in old age (after 60 years).² Approximately one in every nine Pakistani women is likely to suffer from breast cancer. This is one of the highest incidence rates in Asia.³

Breast cancer management has undergone a dramatic revolution in the last decade with immense benefits to patients. This change was due to revised surgical oncology guidelines which were derived in the light of some landmark breast clinical trials conducted throughout the latter part of the 20th century.⁴⁻⁹

Numerous guidelines were published in mid 1990s and advocated a less surgical therapeutic approach when combine with adjuvant radiotherapy, systemic oestrogen therapy, importance of multidisciplinary team management. Since the publication of these guidelines there has been a paradigm shift in the management of breast cancer, towards less invasive diagnostic modalities and surgical approach, which has ameliorated both the physical and psychological morbidity for women with this disease.¹⁰ The potential benefits of immediate breast reconstruction improve the aesthetic outcome. However despite of all these recent advances, the current trends in management of breast cancer are largely unknown. So it is necessary for us to see how we have kept ourselves with new developments over that time. We aim to assess the changing practices of primary surgical procedures for Breast Cancer over the last decade in a tertiary care

general surgical department Pakistan Institute of Medical Sciences (PIMS), Islamabad.

Materials and Methods

Records of Breast cancer patients, who were operated in main operation theatre of PIMS Islamabad in 1999/2000 and 2009/2010, were studied retrospectively. A comprehensive comparative analysis of different surgical procedures was undertaken. All patients operated with breast cancer in our department were identified from the collected database. Operation notes of breast cancer patients were reviewed from the operation registers and all the possible demographic characters, clinical, and histopathological records were studied. We compared all new breast cancer cases from these two 24 month periods with respect to the following parameters: incidence, age at diagnosis, histologic type, primary surgical therapeutic procedure, adjuvant therapy, and subsequent surgical procedures.

All data were analyzed using the software package SPSS 15.0 for Windows. Both the number of observations and percentages are presented to describe categorical variables. Differences in management between the groups of patients were calculated by means of two-sample t-test for all two sample comparisons, and the chi square test for binomial comparisons when appropriate. All tests were two tailed and a p-value of < 0.05 was assumed to represent statistical significance.

Results

A total of 418 patients were identified for inclusion in this study. Patients in both groups had similar demographic characteristics, including gender, and age at diagnosis Table I. The overall incidence of breast cancer for 1999/2000 was 156, compared with 262 cases in 2009/2010. This represents almost a two-fold increase over a decade.

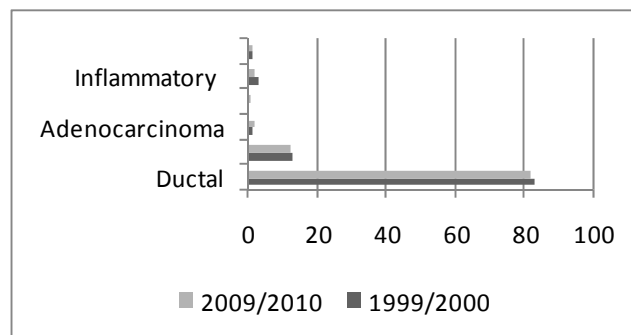


Figure 1: Invasive histological types

A recognizable change was noted in patients' primary surgical procedure Table II. In 1999/2000, 45% [$n = 70$] of patients underwent a lumpectomy as primary operation as compared to only 18% [$n = 48$] of patients in 2009/2010. The most dramatic observation was increased number of mastectomies in 2009/2010 ($n = 214$) as compared to 1999/2000 ($n = 86$). Conversely in 1999/2000, only 1.2% [$n = 02$] underwent breast conserving surgery compared to 11% [$n = 29$] of patients in 2009/2010. Mastectomy was done by most surgeons as primary operation considering the poor follow up by the patients in our setup. Management of the axilla remained the same in both periods with a formal axillary clearance for all patients.

Table II: Surgical Procedures Details

	1999/2000 (n=156)	2009/2010 (n=262)
Lumpectomy	45% (70)	18% (48)
Mastectomy after lumpectomy	31% (49)	6% (17)
Mastectomy	55% (86)	82% (214)
Breast Conserving Surgery	1% (02)	11% (29)
Sentinel Lymph node	None	None
Immediate Breast Reconstruction	None	3% (09)

None of our patient had sentinel lymph node biopsy either in 1999/2000 or in 2009/2010.

There is increasing awareness among patients for good cosmetic outcome following surgery for breast cancer, especially in the educated females of urban areas. This brought the introduction of immediate breast reconstruction in our department. During the period 2009/2010, 09 reconstructive procedures performed, the majority of which were latissimus dorsi flap reconstructions [$n = 8$]. As breast reconstruction following oncological surgery was not popular in the 1990's, nor had enough evidence to support its routine

Table I: Demographics and Tumour Details			
	1999/2000	2009/2010	P value
Total cases	156	262	
Gender: females	156 (100%)	261 (99.6%)	Not significant
Mean age (range)	44 years (28-70)	43 years (25-73)	Not significant
Tumour size (mean)	6.45 cm	5.95 cm	Not significant
Tumour type	Invasive 99.6%	Invasive 98%	Not significant
	DCIS 0.4%	DCIS 2%	Not significant

use, no reconstructions were performed in our department in 1999/2000.

According to the possible available data, there was no change with respect to stage of disease at presentation over the last decade [Table 1]. Mean tumour size did not change significantly; 6.45cm in 1999/2000 versus 5.95cm in 2009/2010 ($p=0.133$). There was no significant difference in patients presented with distant metastases in the 1999/2000 and 2009/2010 period. Although there are improvements in diagnostic radiology but still there is lack of awareness in patients of breast cancer and they present late; 16.5% [$n = 43$] compared with only 6% [$n = 9$] in 1999/2000. This likely reflects improvements in diagnostic radiology.

We observed in recent past a trend toward the use of neoadjuvant therapy for breast cancer patients. Previously almost every patient received the adjuvant chemotherapy after surgical treatment. The last decade has seen the introduction of neo-adjuvant chemotherapy in our unit for breast cancer patients and in 2009/2010, more than half of the patients 57% [$n = 148$] received preoperative chemotherapy in an attempt to facilitate less radical surgical resection, or downstage the disease.

Discussion

Surgery is considered the primary treatment for breast cancer, with many early stage patients being cured with surgery alone. The goals of breast cancer surgery include the complete resection of the primary tumor, with negative margins to reduce the risk of local recurrences, and pathologic staging of the tumor and axillary lymph nodes to provide necessary prognostic information. Several different types of operations are available for the treatment of breast cancer.

Surgical approach for each individual breast cancer patient needs an accurate preoperative diagnosis and staging of the disease. The European Society for Surgical Oncology guidelines a decade ago recommended that the majority [more than 70%] of breast cancers should receive a pre-operative diagnosis by fine needle cytology or core biopsy.⁴ Until the late 1990's the gold standard diagnostic modality in breast cancer was a surgical excision biopsy. This involved day case admission, a general anaesthetic and a surgical scar. Since the invention of automated core biopsy guns in the mid 1990s, needle core biopsy has been established as a highly accurate diagnostic modality, replacing the requirement for excision biopsy.⁶ It is more cost effective, less invasive and therefore less traumatic to the patient, requires only a local anaesthetic, and can be performed routinely in the outpatient department as part of the triple assessment protocol.^{7,8} Core biopsy is currently the gold standard diagnostic technique utilized

in our unit and show best results over the last decade in achieving a preoperative diagnosis with core biopsy.

Halsted's radical mastectomy ruled almost for a century and was the surgical treatment of choice for breast cancer, irrespective of tumour size, type or patient age.⁹ In the late 1970's, breast conserving cancer surgery was introduced with the idea of providing adequate oncological resection without compromising patient outcome or survival. Data from randomized controlled trials conducted in the late 1970's and 1980's established equivalent efficacy of breast conserving surgery, in conjunction with radiotherapy, when compared with the traditional radical mastectomy, for the treatment of patients with early stage invasive breast cancer [Stage I and II].¹⁰ Henceforth, the recommended treatment approach to early breast cancer was lumpectomy with a margin of normal breast tissue, followed by local radiotherapy. This was shown to reduce local recurrence rates, though had no effect on long term survival when compared to the traditional surgical approach.¹¹⁻¹³ These evidence set a new standard for breast cancer management. This study illustrates revolutionary changes in our approach to management of breast cancer patients in our unit over the last decade. We have witnessed a major metamorphosis in diagnostic modalities and primary therapeutic approaches, from traditional radical techniques to a less invasive approach overall.

But in keeping with this change to breast conserving surgery, we observed a completely changed pattern of surgical approach from lumpectomy followed by mastectomy to mastectomy or breast conserving surgery after neoadjuvant therapy in our department over the last ten years. Mastectomy is performed due to some factors like late presentation, advanced stage of the disease and importantly poor follow up by the patients. The sad reality of late presentation by the patients due to fear of operation or lack of knowledge force the surgeons to do mastectomy as primary procedure for breast cancer patients in our community. Further time is needed to conclude about the prognosis and survival rate.

Historically, breast cancer treatment was associated with significant psychosocial morbidity. There is growing awareness among clinicians and patients regarding the cosmetic, psychological, social and emotional outcomes following breast cancer surgery.¹⁴ Many data have shown that immediate breast reconstruction [IBR] is associated with reduced psychological and sexual morbidity, improved physical and emotional outcomes and overall improved quality of life compared to patients who undergo mastectomy without reconstruction.^{15,16} Consequently IBR following mastectomy has introduced in our unit, in appropriately selected patients requiring mastectomy as the primary therapeutic procedure, with satisfactory results.

Conclusion

This study has demonstrated that radical changes have occurred in the management of breast cancer in the last decade. Mastectomy still has been practicing by most of our surgeons considering the poor and/or lost follow up. Breast conserving surgery with adjuvant radiotherapy and immediate breast reconstruction has been shown not only to be safe and effective but also to reduce patients' associated psychosocial morbidity. There is need for continuous reviews of breast cancer literature, consequent revisions of management guidelines, and audit of practice patterns, to ensure that quality care continues to be delivered in accordance with best available evidence.

References

1. National Cancer Registry Ireland: Cancer in Ireland 1994-2005 a summary [http://ncr.ie/pubs/pubfiles/summary2007.pdf].
2. Mahmood S, Rana TF, Ahmad M. Common determinants of Ca Breast—a case control study in Lahore. *Ann King Edward Med Coll* 2006; 12:227–8.
3. Naeem M, Khan N, Aman Z, Nasir A, Samad A, Khattak A. Pattern of Breast Cancer: Experience at Lady Reading Hospital, Peshawar. *J Ayub Med Coll Abbottabad* 2008; 20(4):23-25.
4. O'Higgins N, Linos DA, Blichert-Toft M, Cataliotti L, de Wolf C, Rochard F, Rutgers EJ, Roberts P, Mattheiem W, da Silva MA, Holmberg L, Schulz KD, Smola MG, Mansel RE: European guidelines for quality assurance in the surgical management of mammographically detected lesions. *Eur J Surg Oncol* 1998, 24:96-8.
5. Benson JR: The TNM staging system and breast cancer: Overview of the TNM System. *The Lancet Oncology* 2003, 4:56-60.
6. Rakha EA, Ellis IO: An overview of assessment of prognostic and predictive factors in breast cancer needle core biopsy specimens. *J Clin Pathol* 2007, 60:1300-6.
7. Pijnappel RM, van Dalen A, Borel Rinkes IH, Tweel JG, Mali WP: The diagnostic accuracy of core biopsy in palpable and non-palpable breast lesions. *Eur J Radiol* 1997, 24:120-3.
8. Pettine S, Place R, Babu S, Williard W, Kim D, Carter P: Stereotactic breast biopsy is accurate, minimally invasive, and cost effective. *Am J Surg* 1996, 171:474-6.
9. Halsted WS: A clinical and histological study of certain adenocarcinoma of the breast: and a brief consideration of the supraclavicular operation and of the results of operations for cancer of the breast from 1889 to 1898 at the John Hopkins Hospital. *Ann Surg* 1898, 28:28557-76.
10. Helen M. Heneghan; Ruth S Prichard; Amanda Devaney; Karl J. Sweeney; C. Malone; Ray McLaughlin; Michael J. Kerin. Evolution of Breast Cancer Management in Ireland: A Decade of Change. *BMC Surgery* 2009, 9:15 doi: 10.1186/1471-2482-9-15.
11. Veronesi U, Cascinelli N, Mariani L, Greco M, Saccozzi R, Luini A, Aguilar M, Marubini E: Twenty year follow-up of a randomized study comparing breast-conserving surgery with radical mastectomy for early breast cancer. *N Engl J Med* 2002, 347:1227-32.
12. Early Breast Cancer Trialists' Collaborative Group: Effects of radiotherapy and surgery in early breast cancer: an overview of the randomized trials. *N Engl J Med* 1995, 333:1444-55.
13. Clarke M, [EBCTCG], et al.: Effects of radiotherapy and of differences in the extent of surgery for early breast cancer on local recurrence and 15-year survival: an overview of the randomized trials. *Lancet* 2005, 366:2087-106.
14. Association of Breast Surgery at BASO BAPRAS and the Training Interface Group in breast surgery: Oncoplastic breast surgery - a guide to good practice. *EJSO* 2007, 33:S1-S23.
15. Pennington D: Breast reconstruction after Mastectomy: Current State of the Art [Review Article]. *NZ J Surg* 2005, 75:454-458.
16. Al-Ghazal SK, Fallowfield L, Blamey RW: Comparison of psychological aspects and patient satisfaction following breast conserving surgery, simple mastectomy and breast reconstruction. *Eur J Cancer* 2000, 36:1938-43.