International Surgery Journal
Sajikumar NR et al. Int Surg J. 2019 Jul;6(7):2405-2410
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: http://dx.doi.org/10.18203/2349-2902.isj20192964

Original Research Article

Proportions and reasons for breast conservation surgery and modified radical mastectomy in early breast carcinoma

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Received: 18 January 2019
Revised: 03 May 2019
Accepted: 06 May 2019

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ABSTRACT

Background: Breast cancer is a common cancer among women in India and its incidence is increasing in an alarming rate. There is a paradigm shift in the management of early breast cancer with more emphasis given to breast conservation treatments. This study aimed to assess the proportion of patient underwent breast conservation surgery and reasons to choose breast conservation surgery or modified radical mastectomy in early breast cancer.
Methods: Information of 41 patients with early breast carcinoma who attended the institute during the study period and who can choose either modified radical mastectomy or breast conservation surgery depending on their wish are included in the study group and the data thus obtained was entered in MS Excel data sheet and analysed using SPSS 16 software.
Results: It was observed that the proportion of women selecting breast conserving therapy increased with improved literacy status. Similarly, menstrual status and location of tumor do have an influence in choosing breast conserving surgery with significant statistical correlation. However, unlike the previous studies we did not find any statistically significant association between age and surgical decision. Similarly, place of residence, and employment status of the patient does not influence the decision to undergo breast conservation surgery.
Conclusions: We have to create awareness in the society about the safety of breast conservation treatment to popularize this modality of treatment there by more and more organs can be preserved.

Keywords: Breast conservation surgery, Early breast cancer, Modified radical mastectomy

INTRODUCTION

Breast Cancer is a common cancer among women in India and its incidence is increasing in alarming rate. Breast cancer accounts for 19-34% of all cancer cases among women in India.[1-3] Data from National Cancer Registries and various Regional Cancer Centers (1984 to 2002) also demonstrate that there is an increase in the incidence of breast cancer and found to be gradually overtaking cancer of the cervix.[2-4] Because of better patient awareness and wide spread use of imaging, early detection of breast malignancy is an achievable target and there is a paradigm shift in the overall survival of breast cancer.

Surgical option described by Halsted in 1894, the radical mastectomy, represents a milestone in the treatment of breast cancer.[5] More radical approaches, the extended or super-radical mastectomies introduced later by Jerome Urban and Wangensteen with extended dissection proved to be of little benefit.[6-8] The management of localized breast cancer has changed dramatically in the past three decades. Until the mid 1980s, the treatment for stage I or II breast cancer was Modified radical mastectomy (MRM). Then an alternative surgical management for

early breast cancer has emerged, named as breast conserving surgery (BCS), where instead of removing the entire breast, only the tumour with a cuff of normal tissue all around is removed.[9-12] The contour and cosmetic appearance of the breast is preserved. Axillary nodes are addressed through a separate axillary incision. As an adjunct to this surgical option, radiotherapy is added to decrease the local recurrence.[13]

Many modern, prospective, randomized clinical trials including the studies by pioneers in this field Umberto Veronesi of Milan and Bernard Fisher of United States, directly comparing BCS with mastectomy.[14-18] and an overview of all completed trials have shown equivalent survival between the two treatment approaches.[19]

Since there is a choice of treatment options between BCS and MRM patients are often being asked to play a more active role in decision making process regarding the selection of surgical treatment.[20] With the present evidence of outcomes well documented, many women are now in a position of having a choice between these two surgical interventions.

However, there are substantial regional variations in types of surgery for breast cancer.[21] It would then seem that surgeons and patients' views could help explain such variations. The acceptance of BCS in India is different from that in the developed world. In United States proportion of women treated with mastectomy decreased from 40.8% in 2000 to 37% in 2006.[22] In United Kingdom, the rate of breast conservation in 2002 is 58% and a recent study from Europe analyzing the trends from multi- institutional European database (EUSOMA-European Society Of Breast cancer Specialty) demonstrated a statistically significant decrease in mastectomy rate from 2005 to 2010 and current breast conservation rate is 73.3%.[9,23] In India reports from various centers including major institutes like SGPGIMS, Lucknow and TMH, Mumbai has shown an upward trend in the proportion of patients undergoing breast conserving surgery from 12.6% in 1997 to 60% in 2001, but overcall number of patients opted for breast-conserving surgery (BCS) in India is only10 to 12%.[24,25,27,28]

The majority of women, who underwent MRM, stated that they did in fact have their minds clearly made up to have a mastectomy regardless of what information the surgeon gave them. Majority of patient with breast cancer stated that they believe that the affected breast is diseased and MRM would offer better protection from recurrence than BCS. Moreover they are more familiar with this traditional form of surgery than the newer modality. Those patients who had received BCS described, reaching the decision jointly with their surgeon once all the options had been described and discussed.

In our institute, modified radical mastectomy remains the common surgical procedure performed for early breast cancer. This study aimed to identify, the proportion of patient selecting breast conservation surgery and modified radical mastectomy in early breast cancer and factors associated with this selection process at the Dept. of General Surgery, Government T.D. Medical College. Alappuzha. Kerala, a tertiary care centre in south India.

METHODS

The study was conducted in patients with early breast cancer attending the out-patient and in-patient wing of Department of General Surgery, Government T.D. Medical College Hospital Alappuzha over a period of eighteen months from January 2012 to June 2013. This was a descriptive study.

Inclusion criteria

Patients with stage 1 and stage II carcinoma breast.

Exclusion criteria

Patients with early breast cancer with extensive insitu component.

Study procedure

There were 47 patients with early breast carcinoma attended the institute during the study period and their data entered into the pre structured proforma. Among those 47 patients, only 41 had a choice to undergo either BCS or MRM as per the tumor and patient characters and they constitute the final study group. The remaining 6 patients, surgeon took the decision of MRM due to relative contraindications like (i) Small breast with large tumour (2 patients), (ii) Medical disease contraindicating Irradiation (1 patient), (iii) Central location (3 patients). The patients were re-evaluated with a questionnaire regarding the preference for the procedure.

Analysis of data

The data thus obtained were entered in MS excel and analysis was done using Statistical Package for Social Sciences version 16. Chi-square was applied to test the difference in surgical decision by education status, by employment status, menstrual status, location of tumours and age.

RESULTS

Total number of patients treated in our institute with early breast cancer during the study period was 47. When we analyzed these patients 70% (n=33) of patients underwent modified radical mastectomy (MRM) while 30% underwent breast conservation surgery BCS (Table 1). Youngest patient in our series was 28 years old and the oldest was aged 63 years. Maximum number of patients belonged to 41 to 50 years age group (48.7%) (Table 2).

Among the 41 patients, who had the choice to undergo either procedure 27 selected MRM as their surgical procedure. When we analyzed the reason for not preferring BCS by this group, 85% (n= 23) had fear of recurrence, 59% (n=16) expressed fear of irradiation and 11% (n=3) selected MRM because they were not familiar with the new procedure (Figure 1).

Table 1: Distribution of study group as per age group.

Age group (in years)	Total count	MRM	BCS
21-30	1	1	0
31-40	7	4	3
41-50	20	13	7
51-60	11	7	4
61-70	2	2	0

Table 2: Relationship of education status of study group with surgical decision.

Education status	BCS		MRM		x^2 value	P value
	Count	Percentage	Count	Percentage		
Graduates	9	64	5	19	8.58	<0.05
Non graduates	5	36	22	81		

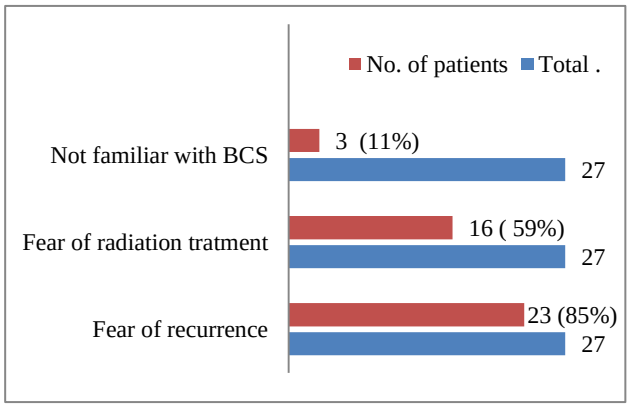

Figure 1: Reasons expressed for opting MRM in the study group.

When we compare the education status, in the BCS group sixty four percent (n=9) had graduation or above education status group only thirty six percent (n=5) were below graduation whereas education status. In MRM group 81% (n=22) were non graduates and only 19% (n=5) had graduation as education status. There is a statistically significant association present between Graduation status and surgical decision. (Chi-Square value=8.58, p≤0.05) (Table 3). Similarly on the aspect of menstrual status 57% (n=8) of patients were in premenopausal status and 43% (n=6) postmenopausal stage in the BCS group where as in MRM group 11.2% (n=3) were premenopausal and 88.8% (n=24) were postmenopausal There is a statistically significant association present between menopausal status and Surgical decision. (Chi-Square value =9.95, p≤0.05) (Table 4). Forty nine percentage (n=20) of lesions were located in upper outer quadrant of the breast. When we compare the location of the lesion with surgical decision there is a statistically significant association present between site of the lesion in breast and Surgical decision (Chi-Square value = 4.36, p≤0.05) (Table 5).

Table 3: Relationship of menopausal status of study group with surgical decision.

Menopausal status	BCS		MRM		x^2 value	P value
	Count	Percentage	Count	Percentage		
Premenopausal	8	57	3	11.2	9.951	<0.05
Postmenopausal	6	43	24	88.8		

Table 4: Relationship of location of the lesion in breast with surgical decision.

Location of the lesion	BCS		MRM		x^2 value	P value
	Count	Percentage	Count	Percentage		
Upper outer	10	71	10	37	4.36	<0.05
Other quadrants	4	29	17	63		

When we compare the age group of the study group with the surgical decision, in the BCS group 21.4% (n=3) were below 40 years age group and 78.6% (n=11) above 40 years. In MRM group 18.5% (n=5) were below 40 years age group and 81.5% (n=22) above 40 years There is statistically insignificant association present between age group and Surgical decision (Chi-square value=0.497, p= >0.05) (Table 6). In the BCS group 57% (n=8) were employed and 43 % (n=6) were non employed, where as in MRM group 77.7% (n=21) were employed and 22.3% (n=6) were non employed. There is statistically insignificant association present between employment status and surgical decision (Chi-square value =1.89, p= >0.05) (Table 7). In the BCS group 57% (n=8) were residing in rural area and 43% (n=6) were from urban area. In MRM group 70.3% (n=19) were residing in rural

area and 29.7% (n=8) were from urban area .There is statistically insignificant association present between place of residence and surgical decision (Chi-square value=0.717, p=>0.05) (Table 8).

Table 5: Relationship of age of study group with surgical decision.

Age group.	BCS		MRM		x^2 value	P value
	Count	Percentage	Count	Percentage		
<40 years	3	21.4	5	18.5	0.497	>0.05
>40 years	11	78.6	22	81.5		

Table 6: Relationship of status of employment of the study group with surgical decision.

Occupation status	BCS		MRM		x^2 value	P value
	Count	Percentage	Count	Percentage		
Employed	8	57	21	77.7	1.89	>0.05
Unemployed	6	43	6	22.3		

Table 7: Relationship of residential status of study group with surgical decision.

Residential status	BCS		MRM		x^2 value	P value
	Count	Percentage	Count	Percentage		
Rural	8	57	19	70.3	0.717	>0.05
Urban	6	43	8	29.7		

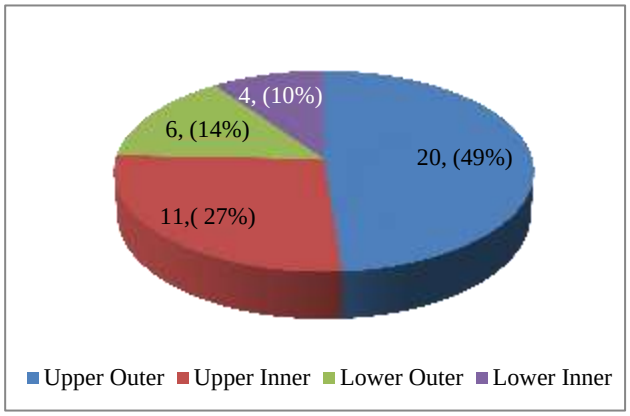

Figure 2: Distribution of lesion according to location in breast.

Invasive ductal carcinoma is the predominant lesion (n=37, 90%). Invasive lobular carcinoma constitute 7.5% (n=3) and one patient presented with medullary carcinoma.

DISCUSSION

In this study early breast cancer is common in fifth decade of life. This is comparable with studies from United States and Japan.[29] Common location of the tumor is upper outer quadrant and major histological type is invasive ductal carcinoma. In our set up proportions of breast conservation surgery in early breast carcinoma is very small. Fear of recurrence and radiation therapy are the major concerns expressed for not selecting breast conserving therapy. These findings are similar to Canadian study by Walsh Dicks.[30] Similarly the proportion of women who were selecting breast conserving therapy increased with improved literacy status and also related to menstrual status. Location of tumor do have an influence in choosing breast conserving surgery as the surgical procedure with significant statistical correlation.[30] Older women and those in the rural areas tend to undergo modified radical mastectomy more often than their younger and urban counterparts However, we did not find any statistically significant association between age, place of residence, and whether employed or not with decision to undergo breast conservation procedure, contrast to the previous study.[30]

CONCLUSION

In this study early breast cancer is common in fifth decade of life. Common location of the tumor is upper outer quadrant and major histology type is invasive ductal carcinoma. Fear of recurrence and radiation therapy are two major concern expressed for not selecting breast conserving therapy. The reason for opting for either kind of surgery was based on surgeon's recommendation or concern about recurrence. Body image was not an issue amongst majority. Literacy status menstrual status and location of tumor do have an influence in choosing breast conserving surgery with significant statistical correlation. However, we did not find any statistically significant association between age, place of residence, and whether employed or not with decision to undergo breast conservation procedure.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Nandakumar A. National Cancer Registry Programme, Indian Council of Medical Research, Consolidated report of the population based cancer registries, New Delhi, India; 1990-96.
2. National Cancer Registry Programme. Ten year consolidated report of the hospital based cancer registries 1984-1993. An assessment of the burden and care of cancer patients. New Delhi: Indian Council Med Res; 2001.
3. National Cancer Registry Programme. Consolidated report of the population based cancer registries 1990-1996. New Delhi: Indian Council Med Res; 2001.
4. Sen U, Sankaranarayanan R, Mandal S, Ramanakumar AV, Parkin DM, Siddiqi M. Cancer patterns in eastern India: the first report of the Kolkata cancer registry. Int J Cancer. 2002;100:86-91.
5. Halsted WS. The results of radical operations for the cure of carcinoma of the breast. Ann Surg. 1907;46(1).
6. Livingston SF, Arlen M. The extended extrapleural radical mastectomy: its role in the treatment of carcinoma of the breast Ann Surg. 1974;179(3):260-5.
7. Arhelger SW, Lewis FJ, Wangensteen OH. The extended or super-radical mastectomy for carcinoma of the breast. Surg Clin North Am. 1956:1051-63.
8. Veronesi U, Valagussa P. Inefficacy of internal mammary nodes dissection in breast cancer surgery. Cancer. 1981;47(1):170.
9. Houssami N, Macaskill P, Marinovich ML, Morrow M. The association of surgical margins and local recurrence in women with early-stage invasive breast cancer treated with breast-conserving therapy: a meta-analysis. Ann Surg Oncol. 2014;21(3):717-30.
10. Moran MS, Schnitt SJ, Giuliano AE, Harris JR, Khan SA, Horton J, et al. Society of Surgical Oncology-American Society for Radiation Oncology consensus guideline on margins for breast-conserving surgery with whole-breast irradiation in stages I and II invasive breast cancer. Ann Surg Oncol. 2014;21(3):704.
11. Buchholz TA, Somerfield MR, Griggs JJ, El-Eid S, Hammond ME, Lyman GH, et al. Margins for breast-conserving surgery with whole-breast irradiation in stage I and II invasive breast cancer: American Society of Clinical Oncology endorsement of the Society of Surgical Oncology/American Society for Radiation Oncology consensus guideline. J Clin Oncol. 2014;32(14):1502-6.
12. Bodilsen A, Bjerre K, Offersen BV, Vahl P, Amby N, Dixon JM, et al. Importance of margin width in breast-conserving treatment of early breast cancer. J Surg Oncol. 2016;113(6):609-15.
13. Morrow M, Strom EA, Bassett LW, Dershaw DD, Fowble B, Giuliano A, et al. Standard for breast conservation therapy in the management of invasive breast carcinoma. CA Cancer J Clin. 2002;52(5):277.
14. Blichert-Toft M, Rose C, Andersen JA, Overgaard M, Axelsson CK, Andersen KW, et al. Randomized trial comparing breast conservation therapy with mastectomy: six years of life-table analysis. Danish Breast Cancer Cooperative Group. J Natl Cancer Inst Monogr. 1992;(11):19-25.
15. Van Dongen JA, Voogd AC, Fentiman IS, Legrand C, Sylvester RJ, Tong D, et al. Long-term results of a randomized trial comparing breast-conserving therapy with mastectomy: European Organization for Research and Treatment of Cancer 10801 Trial. J Natl Cancer Inst. 2000;92(14):1143.
16. Fisher B, Anderson S, Bryant J, Margolese RG, Deutsch M, Fisher ER, et al. Twenty-year follow-up of a randomized trial comparing total mastectomy, lumpectomy, and lumpectomy plus irradiation for the treatment of invasive breast cancer. N Engl J Med. 2002;347(16):1233.
17. Veronesi U, Cascinelli N, Mariani L, Greco M, Saccozzi R, Luini A, et al. 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(16):1227.
18. Scarth H, Cantin J, Levine M, Clinical practice guidelines for the care and treatment of breast cancer: mastectomy or lumpectomy? The choice of operation for clinical stages I and II breast cancer (summary of the 2002 update). Steering Committee on Clinical Practice Guidelines for the Care and Treatment of Breast Cancer. CMAJ. 2002;167(2):154.
19. Clarke M, Collins R, Darby S, Davies C, Elphinstone P, Evans E, et al. Early Breast Cancer Trialists' Collaborative Group (EBCTCG) .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 randomised trial. Lancet. 2005;366(9503):2087.
20. Katz SJ, Lantz PM, Janz NK, Fagerlin A, Schwartz K, Liu L, et al. Patient involvement in surgery treatment decisions for breast cancer. J Clin Oncol. 2005;23(24):5526.
21. Nattinger AB, Gottlieb MS, Veum J, Yahnke D, Goodwin JS. Geographic variation in the use of breast-conserving treatment for breast cancer. N Engl J Med. 1992;326(17):1102.
22. Habermann EB, Abbott A, Parsons HM, Virnig BA, Al-Refaie WB, Tuttle TM. Are mastectomy rates really increasing in the United States. J Clin Oncol. 2010 Jul 20;28(21):3437-41.
23. Garcia-Etienne CA, Tomatis M, Heil J, Friedrichs K, Kreienberg R, Denk A, et al. Mastectomy trends for early-stage breast cancer: a report from the EUSOMA multi-institutional European database. European J Cancer. 2012;48(13):1947-56.

24. Agarval G, Ramakant P, Forgach ER, Rendon JC, Chaparro JM, et al. Breast cancer care in developed countries. World J Surg. 2009;33:2069-76.
25. Dinshaw KA, Badrukkar AN, Chinoy RF, Sarin R, Badwe R, Hawaldar R. Profile of prognostic factors in 1022 Indian women with early stage breast cancer treated with breast conserving therapy. Int J Radiat Oncol Biol Phys. 2005;63:1132-41.
26. Narendra H, Roy S. Breast conserving surgery for breast cancer: Single institutional experience from Southern India. Indian J Cancer. 2011;48:415-22.
27. Kuraparthy S, Reddy KM, Yadagiri LA, Yukla M, Venkata PB, Kadainti SV. Epidemiology and pattern of care for invasive breast carcinoma at a community hospital in South India. Wold J Sug Oncol. 2007;5:56.
28. Agarval S, Goel AK, Lal P. Participation in decision making regarding type of surgery and treatment-related statics in North Indian women with early breast cancer. J Can. Res Ther. 2012;8:222-5.
29. Matsuno RK, Anderson WF, Yamamoto S, Tsukuma H, Pfeiffer RM, Kobayashi K, et al. Early- and late-onset breast cancer types among women in the United States and Japan. Cancer Epidemiol Prevention Biomarkers. 2007;16(7):1437-42.
30. Walsh Dicks EL. Surgery for breast cancer in ST. John's: the statistics, the surgeons' view; 1999.

Cite this article as: Sajikumar NR, Syamsunder S, Pinheiro C. Proportions and reasons for breast conservation surgery and modified radical mastectomy in early breast carcinoma. Int Surg J 2019;6:2405-10.