A PROSPECTIVE COMPARATIVE STUDY BETWEEN MODIFIED RADICAL MASTECTOMY AND BREAST CONSERVATION SURGERY IN EARLY BREAST CANCER

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Abstract

Background: The improvement in the treatment of breast cancer is due to early diagnosis, better understanding of the natural history of this disease and therapeutic improvements over the years. There is a gradual shift away from radical surgery advocated by Halsted to the breast conservative surgery during the last few decades all over the world mainly influenced by the results of several large trials of lesser surgical procedures.

Methods: Hospital based descriptive study was conducted on patients with Early Breast Cancer presenting to the Department of General Surgery in Guru Gobind Singh Medical College & Hospital, Faridkot.

Results: Mean blood loss of the subjects of the BCS group was observed to be 44.07 ± 15.76 ml as compared to 94.36 ± 31.50 ml in the subjects of the MRM. Mean operative time of the subjects of the BCS group was observed to be 46.03 ± 8.68 minutes as compared to the mean operative time of 64.03 ± 16.56 minutes in the subjects of the MRM group. Mean VAS score on day-1 in BCS group and in MRM group was 5.3 ± 1.98 and 6.73 ± 1.70 respectively. Mean VAS score on day-3 in BCS group and in MRM group was 4.46 ± 1.50 and 5.1 ± 1.56 respectively. Mean VAS score on day-5 in BCS group and in MRM group was 2.96 ± 0.76 and 2.96 ± 1.06 respectively. Seroma Formation was observed in 3.33 % cases in BCS group and 16.67 % in MRM group. Flap necrosis was observed in 0 % in BCS group whereas 10.00 % of the patients had flap necrosis in MRM group. Positive margins were absent in both BCS group and MRM group. Wound infection was observed in 6.67% of the patients in the BCS group and 20.00% in the MRM group. Quality of life score for BCS and MRM was 108.53 ± 14.62 and 95.26 ± 14.70 respectively.

Conclusion: Breast conservation surgery should be the preferred treatment for Stage-I and Stage-II Breast cancer disease due to its lesser post-operative pain, shorter duration of surgery, lesser blood loss and short hospital stay thus helping in early returning to normal activity. Breast conservation surgery has better outcomes compared with Modified radical mastectomy.

Keywords: BCS, MRM, Breast surgery

Introduction

The improvement in the treatment of breast cancer is due to early diagnosis, better understanding of the natural history of this disease and therapeutic improvements over the years. The surgical treatment provides a reasonable chance of curing for most of the early breast cancers. It mainly aims at dealing with potentially curable cancer confined to the breast and regional lymph nodes.¹

The approach to operable breast cancer changed dramatically over the past century and so is the use of adjuvant therapy and presentation of the disease. Due to increasing awareness and improved diagnostic techniques and screening modalities breast cancer is nowadays diagnosed at an earlier stage.²

During the 1970s, the Fisher propagated the idea that the disease in the majority of patients has already disseminated sub clinically at an early stage before diagnosis. The Fisher attitude put an emphasis on systemic therapy than extensive surgery². There is a gradual shift away from radical surgery advocated by Halsted to the breast conservative surgery

during the last few decades all over the world mainly influenced by the results of several large trials of lesser surgical procedures.³

Conservative procedures refer to various treatment strategies that leave the breast largely intact with or without postsurgical radiation therapy and with or without axillary dissection. Several randomised studies compared different aspects of modified radical mastectomy and breast conservative surgery.^{4,5} They all confirmed almost identical survival after these two treatment options.

Material and Methods

Study Setting: Guru Gobind Singh Medical College & Hospital, Faridkot in Department of General Surgery from March 2018 to August 2019.

Study Population: Patients with Early Breast Cancer presenting to the Department of General Surgery in Guru Gobind Singh Medical College & Hospital, Faridkot.

Inclusion Criteria

Stage 1 or 2 breast cancer
Tumour size <5cm

Exclusion Criteria

Stage > 2
Tumour size > 5 cm
Clinically positive lymph nodes
Inflammatory Breast Carcinoma
Fixity to chest wall
Multicentric lesion
Contra-lateral Breast involvement
Previous Radiotherapy

Study Design: Hospital based Descriptive study.

Sample Size: 60 consecutive patients were included and using randomisation software were divided in to two groups Group-A and GROUP-B.

Group-A Included patients undergoing Modified Radical Mastectomy

Group-B Included patients undergoing Breast Conservative Surgery

Data was collected and compared, and analysed for Post-op complications, outcome and psychosocial effects.

Statistical Analysis

Statistical testing was conducted with the statistical package for the social science system version SPSS 17.0. Continuous variables were presented as mean $\pm$ SD or median if the data was unevenly distributed. Categorical variables were expressed as frequencies and percentages. The comparison of normally distributed continuous variables between the groups was performed using Student's t-test. Nominal categorical data between the groups were compared using Chi-squared test or Fisher's exact test as appropriate. Non-normal distribution continuous variables were compared using Mann Whitney U test. For all statistical tests, a p-value less than 0.05 were taken to indicate a significant difference

Result**Table 1: General characteristics**

	Group-A	Group-B
Age	47.90 $\pm$ 13.197 years	51.73 $\pm$ 10.06 years
Socio-economic status (low : High)	16 : 14	23 : 7
Tumor size	2.87 $\pm$ 1.15 cm	3.60 $\pm$ 0.97 cm
Right breast : Left breast	13 : 17	10 : 20

Mean age of the study subjects of the BCS group and MRM group was 47.90 $\pm$ 13.197 years and 51.73 $\pm$ 10.06 years respectively. Mean tumor size in BCS was 2.87 $\pm$ 1.15 cm and in MRM group was 3.60 $\pm$ 0.97 cm. Left breast was involved in 61.7 % of the patients. Left breast was involved in both BCS and MRM group in 53.7% and 66.7% of the patients respectively.

Table 2: Outcome

	Group-A	Group-B
Intra operative blood loss	44.07 $\pm$ 15.7610 ml	94.36 $\pm$ 31.501 ml
Intra operative time	46.03 $\pm$ 8.684	64.03 $\pm$ 16.569
VAS at day 1	5.3 $\pm$ 1.98	6.73 $\pm$ 1.70
VAS at day 3	4.46 $\pm$ 1.50	5.1 $\pm$ 1.56
VAS at day 5	2.96 $\pm$ 0.76	2.96 $\pm$ 1.06
Seroma formation	1(3.33%)	5(16.67%)
Flap necrosis	0	3(10.00%)
Wound infection	2(6.67%)	6(20.00%)
Quality of life (average : good : very good)	1:7:22	3:16:11

Mean blood loss of the subjects of the BCS group was observed to be 44.07 $\pm$ 15.76 ml as compared to 94.36 $\pm$ 31.50 ml in the subjects of the MRM. Mean operative time of the subjects of the BCS group was observed to be 46.03 $\pm$ 8.68 minutes as compared to the mean operative time of 64.03 $\pm$ 16.56 minutes in the subjects of the MRM group. Mean VAS score on day-1 in BCS group and in MRM group was 5.3 $\pm$ 1.98 and 6.73 $\pm$ 1.70 respectively. Mean VAS score on day-3 in BCS group and in MRM group was 4.46 $\pm$ 1.50 and 5.1 $\pm$ 1.56 respectively. Mean VAS score on day-5 in BCS group and in MRM group was 2.96 $\pm$ 0.76 and 2.96 $\pm$ 1.06 respectively. Seroma Formation

was observed in 3.33 % cases in BCS group and 16.67 % in MRM group. Flap necrosis was observed in 0 % in BCS group whereas 10.00 % of the patients had flap necrosis in MRM group. Positive margins were absent in both BCS group and MRM group. Wound infection was observed in 6.67% of the patients in the BCS group and 20.00% in the MRM group. Out of total 60, 0 % of patients fell in the category of score 1-26 and 27-52 graded as very poor and poor respectively in both the study groups. Numbers of patients showing WHOQOL score of 53-78 graded as Average were 3.3 % in BCS and 10 % in MRM group. Numbers of patients showing WHOQOL score of 79-104

graded as Good were 23.3 % in BCS and 53.3 % in MRM group. Numbers of patients showing WHOQOL score of 105-130 graded as Very good were 73.3 % in BCS and 36.7 % in MRM group. Mean Quality of life score for BCS and MRM was 108.53 ± 14.62 and 95.26 ± 14.70 respectively.

Discussion

In the present study, the range of the operative time was observed to be 30- 60 minutes for the BCS and 61-90 minutes for the MRM group in 100 % and 63.3 % patients respectively. Mean operative time of the subjects of the BCS group was observed to be 46.03 ± 8.68 minutes as compared to the mean operative time of 64.03 ± 16.56 minutes in the subjects of the MRM. The results were consistent with Zhenhong Chen⁶ and Jian-xui Cui. Study⁷

In the present study, the range of the blood loss was observed to be 0-50 ml in 83.3 % of the BCS group and 101-150 ml 50% of the MRM group. Mean blood loss of the subjects of the BCS group was observed to be 44.07 ± 15.76 ml as compared to 94.36 ± 31.50 ml in the subjects of the MRM. This study is in concordance with the study conducted by Jian-xiu Cui⁶ and Zhenhong Chen.⁷

In present study mean VAS score on day-1 in BCS group and in MRM group was 5.3 ± 1.98 and 6.73 ± 1.70 respectively. Mean VAS score on day-3 in BCS group and in MRM group was 4.46 ± 1.50 and 5.1 ± 1.56 respectively. Mean VAS score on day-5 in BCS group and in MRM group was 2.96 ± 0.76 and 2.96 ± 1.06 respectively

Post-operative complications In the present study, Seroma Formation was observed in 3.33 % cases in BCS group and 16.37 % in MRM group. Flap necrosis was observed in 0 % in BCS group whereas 10.00% patients had flap necrosis in in MRM group. Positive margins were negative in both MRM group and BCS group. Wound infection was observed in 6.7% patients in BCS group and 20% in MRM group. The results were in concordance with the study conducted by Mahesh Vishwakarma suggesting that Complications were present in 20% of MRM group (3 out of 15 cases), while they were absent in 80% (12 out of 15). However, in the BCS [3-5] group, complications were present in 6.66% cases only (1 out of 15 cases), while they were absent in 93.33% (14 out of 15). P value by statistical analysis being 0.283, the difference being statistically insignificant.⁸

In a study conducted by Esmat Hashemi the results of multivariate logistic regression analysis indicated that only the surgical type was significantly associated with seroma formation. Of patients with BP, 10 of 43 (23%) developed seroma, while those who underwent MRM 45 of 115 (39%) developed seroma.⁹

In present study, 73.3 % patients of BCS group has WHOQOL score of 105- 130, 23.3 had score of 79-104 and 3.3 % had score of 53-78. Whereas in MRM group 53.3 % of the patients had score of 79-104, 36.7 % had score of 105-130 and 10 % had a score of 53-78. Mean Quality of life score

for BCS and MRM was 108.53 ± 14.62 and 95.26 ± 14.70 respectively. Most patients who underwent Breast conservation surgery in our study were happy due to breast preservation as compared to Modified radical mastectomy.

Dorval M, et al evaluated the effect of the surgical procedure upon QoL in ¹⁰ breast cancer survivor after a postoperative mean 8.8 years of follow-up at 1998. They performed a Psychiatric Symptom Index survey focusing on psychiatric stress experienced by the patients in their study (n=47 for partial mastectomy and n=77 for total mastectomy). They could not find any statistically significant relationship between surgical procedure and QoL scores.⁸⁹ Janni W et al. investigated the effect of breast-conserving surgery and total mastectomy on QoL by using the EORTC QLQ-C30 questionnaire at 46 months after surgery. An additional 7 questions were asked to patients in order to get information about the applied surgery. It was found that there was not any statistical difference between the two groups in terms of the EORTC QLQ-C30 questionnaire dimensions. However, it was found that mastectomy had a worse cosmetic outcome, caused bigger stress in social well-being, and made a major difference in the outlook of patients than breast-conserving surgery with the additional questions.¹¹

In study conducted by Irwig and Bennetts it was concluded that apart body image it is unclear whether breast conservation or mastectomy results in better psychosocial outcomes.¹²

Conclusion

Breast conservation surgery should be the preferred treatment for Stage-I and Stage-II Breast cancer disease due to its lesser post-operative pain, shorter duration of surgery, lesser blood loss and short hospital stay thus helping in early returning to normal activity. Breast conservation surgery has better outcomes compared with Modified radical mastectomy.

Further Modified radical mastectomy is a more debilitating surgery and preservation of breast after Breast conservation surgery boosts psychological well-being of the patient thus improving quality of life. Hence we recommend routine use of Breast Conservation Surgery where patients are motivated to undergo Breast conservation surgery.

References

1. Ferlay J, Soerjomataram I, Dikshit R, Eser S, Mathers C, Rebelo M, et al. Cancer incidence and mortality worldwide: Sources, methods and major patterns in GLOBOCAN 2012. *Int J Cancer*. 2015; 136:359–86.
2. Asthana S, Chauhan S, Labani S. Breast and cervical cancer risk in India: An update. *Indian J Public Health*. 2014; 58:5–10.
3. Dikshit R, Gupta PC, Ramasundarahettige C, Gajalakshmi V, Aleksandrowicz L, Badwe R, et al.

- Cancer mortality in India: A nationally representative survey. *Lancet*. 2012; 379:1807–16.
4. Khokhar A. Breast cancer in India: Where do we stand and where do we go? *Asian Pac J Cancer Prev*. 2012; 13:4861–6.
 5. Parker SL, Tong T, Bolden S, Wingo PA. Cancer statistics, 1997, *CA Cancer. J Clin*. 1997;47:5-27
 6. 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; 92:1143-50.
 7. de Haes JC, van Ootram MA, Welvaart K. The effect of radical and conserving surgery on quality of life of early breast cancer patients. *Eur J Surg Oncol*. 1986;12:337–42
 8. Hashemi E, Kaviani A, Najafi M, Ebrahimi M, Hooshmand H, Montazeri A. Seroma formation after surgery for breast cancer. *Worl J Surg Onc*. 2004; 2(44):1-5.
 9. Kaviani A, Sodagari N, Sheikhabaei S, Eslami V, Nejad NH, Safavi A, et al. From Radical Mastectomy to Breast-Conserving Therapy and Oncoplastic Breast Surgery: A Narrative Review Comparing Oncological Result, Cosmetic Outcome, Quality of Life, and Health Economy. *ISRN Oncology*. 2013; 1-6.
 10. Janni W, Rjosk D, Dimpfl TH, Haertl K, Strobl B, Hepp F, et al. Quality of life influenced by primary surgical treatment for stage I-III breast cancer-long-term follow-up of a matched-pair analysis. *Ann Surg Oncol*. 2001; 8:542–8.
 11. Arriagada R, Le MG, Guinebretiere JM, Dunant A, Rochard F, Tursz T. Late local recurrences in a randomised trial comparing conservative treatment with total mastectomy in early breast cancer patients. *Ann Oncol*. 2003;14:1617–22.
 12. Irwig L, Bennetts A. Quality of life after breast conservation or mastectomy: a systematic review. *Aust N Z J Surg*. 1997; 67:750-4.