A Comparison Between Modified Radical Mastectomy and Breast-Conserving Surgery Concerning the Quality of Life in Patients with Breast Cancer Under 50 Years of Age

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ABSTRACT

Aim: To compare the quality of life in breast cancer patients, who have undergone breast-conserving surgery (BCS) to those having undergone modified radical mastectomy (MRM).

Material and Methods: Forty-four BCS and 27 MRM patients have been included in this retrospective study. All patients have completed adjuvant chemotherapies and radiation therapies. MRM patients who received breast reconstruction surgery afterwards, patients who experienced local or distant organ relapse, or patients over fifty years old have been excluded. Each patient’s quality of life has been evaluated using the Short Form 36 (SF-36), 6 months after the completion of their treatment.

Results: Between BCS and MRM groups, no significant difference of age, height, weight and body mass index was observed. While the BCS group yielded better results from the SF-36 subscales, i.e. physical functioning, physical role functioning, emotional role functioning, social role functioning, bodily pain, and general health perceptions, the only measures illustrating a significant difference were vitality and mental health, in comparison of BCS with MRM group (p= 0.043 and p= 0.023, respectively).

Conclusion: In the treatment of breast cancer, enhancing patients’ quality of life is just as essential as improving survivals. Our research demonstrates higher quality of life in BCS patients, highlighting the statistical difference of the vitality and mental health subscales of the SF-36, compared with the MRM group.

Keywords: Breast cancer, Quality of life, Mastectomy, Breast-conserving surgery

ÖZ

Amaç: Meme kanserinde karşılaştırılan modifiye radikal mastektomi (MRM) ve meme koruyucu cerrahi (MKC) uygulanmış meme kanserli hastaların yaşam kalitelerinin karşılaştırılması.

Gereç ve Yöntemler: Kırk dört MKC ve 27 MRM uygulanmış meme kanserli kadın hastaların yaşam kalitesi açısından retrospektif bir çalışmadı değerlendirilmiştir. Tüm hastalar, adjuvan kemoterapi ve radyoterapi uygulaması sonucunda, belirli bir semptom ve yaşam kalitesi ölçütü olarak Kısa Form 36 (SF-36) kullanılarak değerlendirilmiştir.

Bulgular: MKC ve MRM gruptularında yaş, ağırlık ve vücut kitle indeksi açısından anlamlı fark yoktu. SF-36 ölçeklerinden fiziksel fonksiyon, fiziksel rol güçlü, duygusal rol güçlü, sosyal rol güçlü, duygusal rol güçlü, sosyal rol güçlü ve genel sağlık algıları ölçütünde MRM group, MKC group ile karşılaştırıldığında fark bulunmuştur.
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Meme kanseri tedavisinde hastaların yaşam kalitesinin artırılması sağkalımı uzatmak kadar önemlidir. Çalışmamızda MKC meme kanseri, Yaşam kalitesi, Mastektomi, Meme koruyucu cerrahi

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MATERIAL and METHODS

The study was carried out within our Radiation Oncology Clinic retrospectively, between June 2016 and November 2018, including patients with breast cancer post-surgery, who received adequate CT and RT treatments. Among the patients, whom have accepted to take part in the study, 44 have undergone BCS and 27 have undergone MRM. Exclusion criteria were patients who had breast reconstruction after MRM, developed local recurrence/distant organ metastases, had ECOG performance status ≥2 and over 50 years of age. During the selection process of MRM, factors like patients’ decision, tumor to breast ratio unsuitable for BCS or the existence of multicentric tumors were determinant. Sentinel lymph node biopsy was performed during surgery to all of the patients in the survey.

All the patients were treated with CT followed by RT after surgery. MRM patients received 50 Gy in 25 fractions RT to chest wall whereas BCS patients received 50 Gy in 25 Gy to the whole breast followed by a 10 Gy boost in 5 fractions to the tumor bed (Varian IX, Varian Medical Systems, USA). Supraclavicular and axillary RT (50 Gy in 25 fractions) were administered if the patient had any involved lymph node.

The quality of life in the 71 patients included in the study, has been evaluated using the SF-36 roughly 12 months post-surgery, and at least 2 months after completion of CT and RT. The forms have been filled out during patients’ routine control sessions and under the supervision of their physicians. Subsequently, they have been passed on to researchers. The results have been assessed according to the surgery type, in order to show the differences in quality of life.

Our research has been approved by the ethics committee and all participants of the study included have been properly informed and asked to sign a consent form.

Statistical Analysis

All statistics have been generated using the SPSS 19.0 for Windows (SPSS Inc., Chicago, Illinois, USA) software. The numeric variables’ suitability for normal distribution has been analyzed using the Shapiro-Wilk test. The statistics illustrating the numeric variables are the arithmetic mean ± standard deviation, results in the verbal form have been expressed by numeric values and percentages. In terms of numeric variables, when comparing the two groups, a Student’s t-test has been conducted – if a parametric test hypothesis was suggested – to analyze the differences between two averages. If no hypothesis was suggested, the
Mann-Whitney U test has been used. Verbally expressed variables have been analyzed further by using the chi-square and fisher’s exact chi-square test, accepting the value of \( p<0.05 \).

**RESULTS**

All 71 participants of the study were female. 44 of them (62%) have undergone BCS and 27 (38%) MRM. The median participants’ age was 43 (range, 27-50). The median age was 44 (range, 31-50) in BCS group, however was 41 (range, 27-49) in MRM group. Stages of patients are summarized in Table 1. Out of 71 patients, 65 (91.5%) were unemployed, 50 (70.4%) were non-smokers. None of the patients have practiced alcohol. The difference in height, age, weight and body mass index between two groups was not significant (Table 2).

None of the patients had surgical complication after surgery. Grade 1 complications of radiotherapy were seen in 28 (83.6%) and 16 (59.3%), and chemotherapy in 13 (27.7%) and 6 (22.2%) of patients of BCS and MRM, respectively. Twelve (25.5%) and 6 (22.2%) patients experienced grade ≥2 toxicities due to RT (\( p=0.156 \)), and 6 (13.6%) and 4 (14.8%) patients experienced grade ≥2 toxicities due to CT (\( p=0.192 \)) in BCS and MRM groups, respectively. During the survey none of the patients had a symptom or complaint due to surgery, CT or RT.

**Table 1: Stages of the patients**

|           | BCS group | MRM group | P   |
|-----------|-----------|------------|-----|
| IA        | 3 (6.8%)  | 1 (3.7%)   | 0.088 |
| IB        | 1 (2.3%)  | 1 (3.7%)   | 0.682 |
| IIA       | 19 (43.1%)| 10 (37.1%) | 0.463 |
| IIB       | 16 (36.4%)| 12 (44.4%) | 0.127 |
| IIIA      | 5 (11.4%) | 3 (11.1%)  | 0.896 |

**DISCUSSION**

Breast cancer surgery have begun in the 1890s with radical mastectomy, then evolved to MRM in the 1960s and continued on, through the advantages provided by radiation therapy, to the BCS after the 1970s (4). As radical mastectomy has been rendered an outdated surgical technique today, BCS and MRM are the two prevailing choices of breast cancer surgery. Due to conservative surgery being performed in BCS, shape of breast can be substantially maintained. Many issues related to surgery type have been evaluated in literature, including sexual function, quality of life, etc (5,6). Side effects resulting from extensive surgery may not be an issue anymore in BCS, whereas with the addition of RT, patients may experience radiation induced side effects.

The SF-36 entails questions concerning physical functioning, physical role functioning, emotional role functioning, social role functioning, bodily pain, general health perceptions, vitality and mental health well-being, which have been addressed directly to the patients. Even though, with regards to the entirety of parameters, the BCS group yielded better results than the MRM group, only two conveyed significant differences. The following subscales in BCS group have shown no significant difference compared with MRM group: physical functioning (67.16 vs 62.59), physical role functioning (55.56 vs 47.73), emotional role functioning (46.91 vs 43.18), social role functioning (67.59 vs 67.11), bodily pain (66.67 vs 65.91) and general health perceptions (69.07 vs 62.84). However, in terms of vitality (63.33 vs 54.89) and mental health (71.70 vs 63.18), the BCS group’s scores have been significantly higher than the MRM group’s (\( p=0.043 \) and \( p=0.023 \), respectively) (Table 3).

**Table 2: Patients’ attributes**

|                | BCS group     | MRM group     | P   |
|----------------|---------------|---------------|-----|
| Median age     | 44 (31-50)    | 41 (27-49)    | 0.07|
| Employment status |               |               |     |
| employed       | 4 (9.1%)      | 2 (7.4%)      | 1.000|
| unemployed     | 40 (90.9%)    | 25 (92.6%)    |     |
| Smoking        |               |               |     |
| never          | 30 (68.2%)    | 20 (74.1%)    | 0.795|
| quit           | 14 (31.8%)    | 7 (25.9%)     |     |
| Median weight  | 71.5 (50-107) | 75 (55-114)   | 0.500|
| Median height  | 165 (153-172) | 165 (150-175) | 0.419|
| Median BMI     | 27.18 (19.72-39.9) | 27.55 (20.44-41.02) | 0.629|

**BCS:** Breast-conserving surgery, **MRM:** Modified radical mastectomy, **BMI:** Body mass index
except for the vitality and social role functioning aspects (13). Although utilizing a different survey in their research, Zanapalioglu et al.’s work underlines the argument, that BCS patients’ quality of life is superior than MRM patients’, by comparing general well-being, physical symptoms, role performance, emotional, cognitive and social role functioning, symptom control and body image in the aftermath of the two different surgery types (14).

Even though surveys specific to breast cancer patients like BR-23 survey are available (15), we used SF-36, which measures general quality of life in cancer patients. The most crucial argument to support this decision was the fact that its validity, as a measuring device, has been proven in Turkey.

As BCS is applied more often, number of MRM patients was lower than BCS patients and this was the limitation of our study.

To summarize, young patients who have undergone BCS scored higher on the quality of life measures set by the SF-36 than MRM patients, especially highlighting a significant difference in the vitality and mental health aspects.

Taking into account the similarities of our work to research that has already been published, not only in Turkey but all around the world, the general assumption would be that patients’ quality of life treated with BCS are much better than patients treated with MRM.

Table 3: Comparison of the groups’ average SF-36 scores

| Subscale                  | BCS group     | MRM group     | P      |
|---------------------------|---------------|---------------|--------|
| Physical functioning      | 67.16 ± 17.23 | 62.59 ± 18.83 | 0.299  |
| Physical role functioning | 55.56 ± 35.58 | 47.73 ± 39.92 | 0.363  |
| Emotional role functioning| 46.91 ± 28.13 | 43.18 ± 30.99 | 0.527  |
| Vitality                  | 63.33 ± 19.27 | 54.89 ± 19.90 | 0.043  |
| Mental health             | 71.70 ± 12.60 | 63.18 ± 18.13 | 0.023  |
| Social role functioning   | 67.59 ± 19.38 | 67.11 ± 28.12 | 0.881  |
| Bodily pain               | 66.67 ± 21.87 | 65.91 ± 26.01 | 0.780  |
| General health perceptions| 69.07 ± 23.45 | 62.84 ± 20.07 | 0.168  |

**BCS**: Breast-conserving surgery, **MRM**: Modified radical mastectomy

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Not applicable.

Author Contributions

Authors indicated that all contributions are equal.

Conflicts of Interest

The authors declare that they have no conflict of interest.
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Ethical Approval
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Peer Review Process
Extremely peer reviewed.

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