

## Mastectomy versus conservative surgical treatment: the impact on the quality of life of women with breast cancer

### *Mastectomia versus tratamento cirúrgico conservador: impacto na qualidade de vida de mulheres com câncer mamário*

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#### Abstract

*Objectives: to compare the impact of mastectomy and conservative surgery on the quality of life of patients with breast cancer.*

*Methods: an assessment was made of the quality of life of patients undergoing mastectomy or segmentary mastectomy, at the Pouso Alegre Clinical Hospital, in the Brazilian State of Minas Gerais, using SF-36. The patients were grouped by age ( $\leq 50$  years and  $> 50$  years) and years of schooling ( $\leq 8$  years and  $> 8$  years). The Mann-Whitney test was used to compare the groups with regard to the age and schooling domains of SF-36.*

*Results: a significant difference between the two groups was found in the domains of "physical functioning" ( $p=0.04$ ) and "pain" ( $p=0.01$ ): with the patients undergoing a mastectomy registering the worst scores. Young patients who had undergone a mastectomy displayed the worst quality of life in terms of "physical functioning" ( $p=0.03$ ), "pain" ( $p=0.01$ ) and "social functioning" ( $p=0.01$ ); those undergoing conservative surgery aged over 50 years scored worst on "role emotional" ( $p=0.05$ ). Patients undergoing a mastectomy with lower levels of schooling scored lower in "physical functioning" ( $p=0.01$ ), "role physical" ( $p=0.05$ ) and "pain" ( $p=0.05$ ). Among those who had attended school for more than eight years, those having undergone a mastectomy scored less in the "pain" domain ( $p=0.04$ ).*

*Conclusions: patients who had undergone a mastectomy had worse results in the physical component of the evaluation of quality of life and this negative impact was more strongly felt among younger patients and those with lower levels of schooling.*

**Key words** Breast neoplasms, Mastectomy, Segmentary Mastectomy, Quality of life

#### Resumo

*Objetivos: comparar o impacto da mastectomia e da cirurgia conservadora na qualidade de vida de pacientes com câncer mamário.*

*Métodos: avaliou-se qualidade de vida de pacientes submetidas à mastectomia ou à mastectomia segmentar, no Hospital das Clínicas de Pouso Alegre, Minas Gerais, Brasil, utilizando-se o SF-36. As pacientes foram estratificadas quanto à idade ( $\leq 50$  anos e  $> 50$  anos) e escolaridade ( $\leq 8$  anos e  $> 8$  anos). Aplicou-se o teste de Mann-Whitney para comparar os grupos quanto aos domínios do SF-36, idade e escolaridade.*

*Resultados: observou-se diferença significante entre os grupos nos domínios "capacidade funcional" ( $p=0,04$ ) e "dor" ( $p=0,01$ ): as pacientes mastectomizadas com piores resultados. Pacientes mastectomizadas mais jovens apresentaram pior qualidade de vida em "capacidade funcional" ( $p=0,03$ ), "dor" ( $p=0,01$ ) e "aspectos sociais" ( $p=0,01$ ); as submetidas à cirurgia conservadora, com mais de 50 anos, resultado pior em "aspectos emocionais" ( $p=0,05$ ). Pacientes mastectomizadas com menor escolaridade apresentaram escores menores em "capacidade funcional" ( $p=0,01$ ), "aspectos físicos" ( $p=0,05$ ) e "dor" ( $p=0,05$ ). Entre as que frequentaram a escola por mais de oito anos, as mastectomizadas pontuaram menos no domínio "dor" ( $p=0,04$ ).*

*Conclusões: pacientes mastectomizadas apresentaram piores resultados no componente físico da qualidade de vida, e este impacto negativo foi mais acentuado entre pacientes mais jovens e com menor escolaridade.*

**Palavras-chave** Neoplasias da mama, Mastectomia, Mastectomia segmentar, Qualidade de vida

## Introduction

Breast cancer is an important cause of morbidity and mortality among women and, in recent years, incidence of this disease has increased progressively in Brazil.<sup>1</sup> It is estimated that in 2008 there will be more than 49,000 new cases of breast cancer among women in the country.<sup>2</sup>

Surgical treatment of breast cancer has been described for centuries. Historical analysis of this treatment reveals that the efficiency and extent of surgery has always been a source of controversy.<sup>3</sup>

In the early 20<sup>th</sup> century, Halsted established radical mastectomy as the primary method of treatment for breast cancer and this view persisted for the following seventy years.<sup>4</sup> In 1948, Patey and Dyson introduced a modified form of radical mastectomy, reducing the number of cutaneous resections and preserving the pectoralis major muscle, thereby reducing the cosmetic impact of the procedure without lowering the survival rate of patients.<sup>5</sup>

The value accorded the breasts as symbols of femininity, sensuality and maternity means that mastectomy is considered a drastic step in the treatment of breast cancer, from a psychological point of view, adversely affecting the self-esteem and body image of patients.<sup>6-8</sup> This has led to a search for alternative methods and the supremacy of Halsted's principles was gradually undermined, due to advances in radiotherapy, hormone therapy, chemotherapy and the development of anatomopathological studies allowing more accurate investigations of surgical margins and more recently of sentinel lymph nodes.<sup>9</sup>

From the 1980s on, conservative treatment of breast cancer came to be widely used around the world. This change was based on large prospective randomized studies, which showed that survival rates are not related to the type of surgery, whether radical or conservative.<sup>10-12</sup> Many patients prefer conservative surgery, because it is less mutilating.<sup>6,13</sup> Others, meanwhile, prefer radical treatment, for fear of recurrence of the disease.<sup>14</sup>

Nowadays, in an increasingly competitive health care environment, patient satisfaction has become a subject of considerable interest. An increasing number of researchers, health-care providers and patients are therefore using patient satisfaction and quality of life to assess the efficacy of medical interventions.<sup>12,15</sup>

In research involving patients, particularly those with cancer, it is important that psycho-social quality of life indicators be used by the doctors caring for these patients.<sup>16</sup> For this reason, the present study

aims to compare the impact of mastectomy and conservative surgery on the quality of life of patients with breast cancer.

## Methods

Between December 2005 and December 2006, patients who had undergone, at least one year before, a modified radical mastectomy as described by Patey & Dyson were selected consecutively from the mastology outpatients clinics of Hospital das Clínicas da Universidade do Vale do Sapucaí (UNIVÁS), Pouso Alegre, in the Brazilian State of Minas Gerais,<sup>5</sup> and these were allocated to Group I of this study, while those who had undergone conservative breast cancer surgery (quadrantectomy or sectorectomy),<sup>10</sup> were allocated to Group II. Patients undergoing surgery less than one year previously, still undergoing adjuvant treatment (chemotherapy or radiotherapy), with diagnosed recurrence or metastases, who had undergone some procedure to reconstruct the breast or who did not wish to participate in the study were excluded.

The sample was selected on the grounds of convenience, comprising all patients who fulfilled the inclusion criteria and who attended the mastology outpatients clinics for oncological follow-up in the period covered by the study. After signing the free informed consent form, the patients were evaluated as part of a cross-sectional study.

To evaluate the quality of life of patients, the Brazilian version of the Medical Outcomes Study 36-item Short-Form Health Survey (SF-36) was used.<sup>17</sup> SF-36 is a generic tool for assessing quality of life, derived initially from a questionnaire tested on more than 22,000 patients, as part of a large-scale multi-center health assessment study (The Medical Outcomes Study – MOS).<sup>18</sup> This is at present the most widely used generic tool for assessment of quality of life around the world.<sup>19</sup> SF-36 was translated, culturally adapted and validated for use in Brazil by Ciconelli *et al.*,<sup>16</sup> in 1999.

SF-36 comprises 35 items organized around ten questions dealing with eight quality of life issues (physical functioning, role physical, pain, health perception, vitality, social functioning, role emotional and mental health), and one further question comparing the current state of health with that a year previously. With the exception of the last, all questions refer to quality of life in the four years preceding the application of the questionnaire.<sup>17</sup>

To evaluate the results a score is given for each question (individual values for each item, as described by the authors of the original).<sup>18</sup> These

figures are then transformed into a scale from 0 to 100, where zero represents the worst possible quality of life for this domain and 100 the best. Each domain is analyzed separately, thereby giving rise to eight scales from 0 to 100, one for each quality of life domain studied.<sup>17</sup>

The questionnaires were applied during an interview, always conducted by the same researchers, who were not involved in the cancer treatment of the patients.

Clinical and socio-demographic data were collected from all patients and for analysis of the results, each group was stratified according to age (up to 50 years and over 50 years of age) and years of schooling (up to eight years and over eight years).

This study project was approved by the Research Ethics Committee of Universidade do Vale do Sapucaí (UNIVÁS).

Given the nature of the variables (scores) non-parametric statistics were used. The Mann-Whitney test was applied to compare the two groups with regard to the SF-36 domains, age and schooling.<sup>20</sup>

The confidence level for rejection of the null hypothesis was set at 0.05 or 5%.

## Results

Fifty-eight mastectomized patients were included and 38 who had undergone conservative breast surgery. In the mastectomy group (Group I) the mean age of patients was 50.5 years (standard deviation:  $\pm 7.4$ ) and in the conservative surgery group (Group II) 53.5 years (standard deviation:  $\pm 9.2$ ).

In Group I, 45 patients (77.6%) had received only basic education (up to eight years) and, in

Group II, 26 (68.4%).

The most frequent histological type in both groups was invasive ductal carcinoma (58.6% of patients in Group I and 78.9% in Group II). The mean interval between surgery and assessment of quality of life was 47 months for Group I and 42 months for Group II. Forty-five patients (77.6%) from Group I underwent chemotherapy and 23 patients (60.5%) from Group II. The figures for radiotherapy were 48 (82.8%) and 35 (92.1%) patients in Groups I and II respectively.

Table 1 shows the median SF-36 results and a comparison of Groups I and II. The lowest scores (domain with the worst quality of life) were found in the role emotional domain for both groups (mean 52.6 and 34.5 in Groups I and II, respectively), and the highest (domain with the best quality of life) were in health perception, also again for both groups (mean 70.7 in Group I and 79.1 in Group II).

Comparison of the two groups reveals a significant difference in the domains of physical functioning (with mean scores of 67.5 and 78.2 for Groups I and II respectively;  $p=0.04$ ) and pain (mean scores of 64.5 and 77.6 for Groups I and II;  $p=0.01$ ). In both cases, Group I had the lower scores (i.e. lower quality of life).

When the patients in the two groups are broken down by age, it can be seen that, of the mastectomized patients, those aged 50 or under had a lower quality of life in the domain of mental health (mean scores 57.8 and 72.4 for Groups I and II respectively;  $p=0.05$ ). In the other SF-36 domains there was no significant difference between the groups (Table 2).

**Table 1**

Median and variation of scores for each domain of the Medical Outcomes Study 36-item Short-Form Health Survey for patients in Groups I and II.

SF-36 domain*	Group I	Group II
	Median (min-max)	Median (min-max)
Physical functioning**	70 (0 - 100)	83 (25 - 100)
Role physical	75 (0 - 100)	75 (0 - 100)
Pain***	62 (11 - 100)	74 (31 - 100)
Health perception	77 (20 - 100)	82 (42 - 100)
Vitality	65 (10 - 100)	70 (30 - 100)
Social functioning	88 (0 - 100)	100 (25 - 100)
Role emotional	100 (0 - 100)	67 (0 - 100)
Mental health	72 (16 - 100)	72 (12 - 100)

\* SF= Short-Form Health Survey; Mann-Whitney Test: \*\* $p=0.04$ ; \*\*\* $p=0.01$ .

**Table 2**

Median scores for each domain of the Medical Outcomes Study 36-item Short-Form Health Survey for patients in Groups I and II, broken down by age.

Domain	Group I		Group II		Group I x Group II		
	≤50 years	>50 years	≤50 years	>50 years	≤50 years	>50 years	>50 years
		p*		p*			
Physical functioning	85	80	NS	70	NS	p=0.03	NS
Role physical	75	75	NS	75	NS	NS	NS
Pain	84	72	NS	62	NS	p=0.01	NS
Health perception	87	82	NS	80	NS	NS	NS
Vitality	70	70	NS	70	NS	NS	NS
Social functioning	100	75	NS	100	NS	p=0.01	NS
Role emotional	67	67	NS	100	NS	NS	p=0.05
Mental health	64	76	0,05	78	NS	NS	NS

\*Statistical comparisons: Mann-Whitney's U Test; NS = not significant.

**Table 3**

Median scores for each domain of Medical Outcomes Study 36-item Short-Form Health Survey of patients in Groups I and II broken down by years of schooling (up to 8 years and more than 8 years of schooling).

Domain	Group I		Group II		Group I x Group II		
	≤8 years	>8 years	≤8 years	>8 years	≤8 years	>8 years	>8 years
		p*		p*			
Physical functioning	50	87	0,01	85	NS	p=0.002	NS
Role physical	85	80	NS	75	NS	p=0.05	NS
Pain	62	57	NS	74	NS	p=0.05	p=0.04
Health perception	82	82	NS	82	NS	NS	NS
Vitality	70	70	NS	75	NS	NS	NS
Social functioning	100	87	NS	94	NS	NS	NS
Role emotional	67	67	NS	67	NS	NS	NS
Mental health	76	64	NS	76	NS	NS	NS

\*Statistical comparisons: Mann-Whitney's U Test; NS = not significant.

When broken down by years of schooling, the mastectomized patients who had had access only to basic education (eight years of schooling) had a mean score of 61.5 in the domain of physical functioning, which represents a statistically significant difference when compared with patients with more years of schooling (mean score 74.2;  $p=0.01$ ), as shown in Table 3.

Comparison of Groups I and II also reveal that, among younger patients ( $\leq 50$  years), there is a significant difference between the groups in the domains of physical functioning ( $p=0.03$ ), pain ( $p=0.01$ ) and social functioning ( $p=0.01$ ). In all three domains, mastectomized patients had a lower quality of life (with means scores of 64.4, 59.8 and 67.9 respectively for these three domains in Group I and 84.1, 81.3 and 88.7 in Group II). Among patients aged over 50 years, there was a difference in the domain of role emotional ( $p=0.05$ ), with the patients undergoing conservative surgery scoring lower in this domain (mean scores of 74.0 and 50.5 for Groups I and II respectively, as shown in Table 2).

Also comparing Groups I and II, mastectomized patients who had access only to basic education (up to eight years of schooling) had a lower quality of life in the domains of physical functioning ( $p=0.01$ ), role physical ( $p=0.05$ ) and pain ( $p=0.05$ ) than the patients in Group II with the same level of schooling (mean scores of 61.5, 51.0 and 68.1 respectively for the three domains in Group I and 78.3, 69.7 and 75.7 in Group II). Among patients who attended school for more than eight years, the mastectomized patients had the lower quality of life in the domain of pain, with a statistically significant difference between the two groups (means scores of 54.9 and 80.2 respectively for Groups I and II,  $p=0.04$ , as shown in Table 3).

## Discussion

The evaluation of the effects of breast cancer surgery on the quality of life of patients is becoming increasingly important in aiding decisions with regard to the type of treatment to be carried out, radical or conservative, when both are possible.<sup>11,12,21</sup> In this study, mastectomized patients had lower scores in the physical component of quality of life, compared with patients undergoing conservative surgical treatment.

The literature presents controversial results. Warm *et al.*<sup>12</sup> used SF-12, a short version of SF-36, to compare three groups of patients with breast cancer: those undergoing conservative surgery or mastectomy, with or without reconstruction of the

breast and did not observe any difference in quality of life among the groups. Curran *et al.*,<sup>6</sup> assessing satisfaction in patients undergoing conservative treatment or radical modified mastectomy, report significant benefits for conservative treatment. Parker *et al.*,<sup>11</sup> comparing patients undergoing conservative surgery or mastectomy with or without reconstruction observed, recently after the operation (up to six months) better scores for satisfaction with appearance and in the physical health quality of life domain among patients undergoing conservative surgery. However, with a longer follow-up (from six months to two years) the three groups had identical quality of life scores.

Rabin *et al.*,<sup>8</sup> investigating clinical and demographic factors that interfere in the quality of life of patients with breast cancer, observed that the worse quality of life scores in the physical and psychological domains were associated with mastectomy. Likewise, in the present study, the mastectomized patients had lower scores for aspects involving physical functioning and pain. Kenny *et al.*,<sup>22</sup> assessing 397 patients, obtained a lower score for aspects involving physical functioning in patients undergoing conservative treatment, although these reported greater satisfaction regarding body image. Irwig and Bennetts<sup>23</sup> and Janni *et al.*<sup>24</sup> also observed a more favorable body image and greater satisfaction in patients undergoing conservative treatment, without reporting differences in terms of general aspects of quality of life.<sup>24,25</sup>

It has been shown that the scores for quality of life are directly related to the results of treatment in patients with cancer, especially breast cancer.<sup>21,22</sup> Furthermore, better levels of quality of life tend to be related to a more promising prognosis and the survival rates for patients with a better quality of life (physical and mental components) tends to be higher.<sup>22</sup> Nevertheless, quality of life tools are not routinely applied to assess the results of cancer surgery.<sup>16</sup>

The age on diagnosis influences the quality of life of breast cancer patients.<sup>19</sup> Previous studies have shown differences in the impact of breast cancer on quality of life for varying age brackets.<sup>26,27</sup>

In the present study, the younger women undergoing mastectomy displayed worse mental health than those aged over 50 years. Comparison of the groups revealed that, among younger patients, there was a stronger impact of mastectomy on physical-functioning, pain and social functioning, probably because this age group includes women who are more intensively physically and socially active. Other authors<sup>28</sup> have also shown that the diagnosis

of breast cancer has a greater psycho-social impact on pre-menopausal younger patients, since this group of women is generally more vulnerable to anxieties relating to survival time and the cosmetic side-effects of surgical treatment. They also have to deal with working life, conjugal relations and motherhood, aspects of life that have usually already been resolved and stabilized in older women.<sup>28</sup> Among patients aged over 50 years, however, those undergoing mastectomies presented better results in the role emotional domain, perhaps because mastectomy is culturally related to less fear of recurrence of the disease.

No studies were found in the literature reporting quality of life indicators for level of schooling of patients with breast cancer. In the present study, when the groups were broken down by years of schooling, it was observed that the worst scores for the physical component of the SF-36 (physical functioning, role physical, pain) were to be found among patients undergoing mastectomy who had had access only to basic education. This may be attributed to the fact that women with a lower level of education generally carry out work that requires greater physical effort. Future prospective studies with larger samples are necessary to determine the influence of schooling on the quality of life of patients undergoing surgical treatment for breast cancer.

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