

## CLINICAL SCIENCE

# Depression and conservative surgery for breast cancer

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**BACKGROUND:** Depression is prevalent among women and associated with reduced quality of life, and therefore it is important to determine its incidence in adult women, especially in those with breast cancer.

**OBJECTIVE:** To determine the occurrence of depression in women who underwent conservative surgery for breast cancer with or without breast reconstruction.

**METHODS:** Seventy-five women aged between 18 and 65 years were enrolled. Patients had undergone conservative surgery for breast cancer with immediate breast reconstruction (n = 25) or without breast reconstruction (n = 25) at least one year before the study. The control group consisted of 25 women without cancer, but of similar age and educational level distribution as the other two groups. The Beck Depression Inventory was used to measure depression. The collected data were assessed using analysis of variance and the  $\chi^2$  test.

**RESULTS:** There were no significant differences between groups in age (p = 0.72) or educational level (p = 0.20). A smaller number of patients had undergone the menopause (p = 0.02) in the control group than in other groups. There were no significant differences in occurrence of depression between groups ( $\chi^2 = 9.97$ ; p = 0.126).

**CONCLUSION:** Conservative surgery for breast cancer did not affect the occurrence of depression in women, regardless of whether breast reconstruction was performed.

**KEYWORDS:** Breast neoplasms; Segmental mastectomy; Plastic surgery; Depression; Quality of life.

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## INTRODUCTION

Breast cancer is the second most common cancer throughout the world, and the most common cancer in women, according to the World Health Organization (WHO).<sup>1</sup> Every year, more than one million women are diagnosed with breast cancer, corresponding to 23% of all cancer cases in women and 10% of new cancer cases. According to estimates from the Brazilian National Cancer Institute (Instituto Nacional do Câncer (INCA)) 49,400 new cases are expected to be reported in 2010–2011 (51 new cases per 100,000 women).<sup>3</sup> The incidence of breast cancer has a profound psychosocial impact and is considered a public health problem.<sup>4</sup>

Since the results of large randomized clinical trials confirmed that the type of surgical procedure (radical or conservative) has no effect on the survival time of women

with stage I and II breast cancer, breast-conserving surgery has been used world wide.<sup>5,6</sup> Although conservative surgery has been considered the best option and its use is associated with less aesthetic sequelae, a large number of patients complain about breast asymmetry in the post-operative period. Despite this, breast reconstruction is not routinely offered to the patients.<sup>7-9</sup>

Technological advances, and new diagnostic methods and therapies have resulted in a prolonged survival of patients with breast cancer and, as a consequence, there is an increasing interest in the assessment of the quality of life of these patients.<sup>10,11</sup> Quality of life is an important factor that needs to be considered and that may help the medical team and patient to choose the best treatment. Assessment of quality of life considers the subjective perception of the patient as an important step towards a more comprehensive and humanistic approach to cancer treatment.<sup>12</sup>

Anxiety and depression, which are among the most prevalent psychological disorders in patients with cancer, are important variables in studies that assess quality of life, particularly in patients with breast cancer.<sup>11,13-15</sup> Advances in plastic surgery techniques in recent years have provided satisfactory results that meet the aesthetic and

psychological expectations of the patient by minimizing the trauma caused by mutilating surgery.<sup>8,16,17</sup>

Therefore, the aim of this study was to assess the occurrence of depression in women who had undergone conservative surgery with or without breast reconstruction.

## METHODS

The study was approved by the institutional ethics committee, and was performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki. Written informed consent was obtained from all patients before their inclusion in the study.

This study was carried out in the gynecology, breast care and plastic surgery outpatient clinics of a university hospital (Hospital das Clínicas Samuel Libânio, UNIVÁS).

A total of 75 women aged between 18 and 65 years were consecutively selected and distributed into groups as follows: group I, 25 patients who had undergone conservative surgery for breast cancer with immediate breast reconstruction; group II, 25 patients who had undergone conservative surgery for breast cancer, but without breast reconstruction; and group III, 25 patients who did not have breast cancer, matched for age and educational level. Patients with breast cancer were referred for a plastic surgery consultation whenever the breast surgeon judged, preoperatively, that the patient would undergo major aesthetic sequelae, and breast reconstruction was performed in patients who desired it.

The inclusion criterion for groups I and II was patients who had undergone breast conservative surgery at least 1 year before the study. Pregnant women or those who gave birth less than 1 year before the study, who were receiving adjuvant treatment, who had diagnosis of recurrence or metastasis, who had undergone breast operations (breast reduction, mastopexy, breast implants), and who had a history of any psychiatric disorder were excluded from the study. In group III, patients undergoing investigation of breast symptoms were also excluded.

Depression was evaluated using the Beck Depression Inventory (BDI).<sup>18</sup> The original BDI consists of 21 items, each corresponding to a specific category of symptoms and

attitudes, scored on a range from 0 to 3. Items include sadness, pessimism, sense of failure, dissatisfaction, guilt, expectation of punishment, self-dislike, self-accusations, suicidal ideas, crying, irritability, social withdrawal, indecisiveness, body image change, work difficulty, insomnia, fatigue, loss of appetite, weight loss, somatic preoccupation, and loss of libido. For patients with affective disorder, the Center for Cognitive Therapy<sup>19</sup> recommends the following cut-off scores: <10 points, no or minimal depression; 10–18 points, mild to moderate depression; 19–29 points, moderate to severe depression; 30–63 points, severe depression.

The Statistical Package for the Social Sciences (SPSS) release 15 was used for the statistical analysis. The Kruskal–Wallis analysis of variance<sup>20</sup> was used for comparisons between groups with respect to age and BDI scores. The Mann–Whitney test was used to compare groups I and II with regard to time since surgery. Educational level, menopausal status and hormone therapy were compared using the  $\chi^2$  test.<sup>21</sup> The significance level was set at 0.05.

## RESULTS

There were no differences between groups in age or educational level (Table 1). The median age of the patients in groups I, II and III was 53, 53.8 and 51 years, respectively. In groups I, II and III, respectively, 26.1%, 47.8% and 26.1% of the patients had only primary education. In the control group, a smaller number of patients had undergone menopause ( $p=0.024$ ). Time since surgery was longer in group II ( $p=0.012$ ), and there was no significant differences between groups I and II with regard to hormone therapy ( $p=0.500$ ).

There were no significant differences in depression between groups. Considering the BDI items, there were no significant associations between groups (Table 2).

## DISCUSSION

Research on breast cancer has traditionally focused on disease-free survival, tumor responses and overall survival.<sup>22,23</sup> However, it has become evident that these aspects are no longer sufficient to guide decisions about the type of

**Table 1** - Age and education distribution in group I (conservative surgery with breast reconstruction), group II (conservative surgery without breast reconstruction), and group III (controls without cancer).

	Groups						Tests
	Group I		Group II		Group III		
	Mean	Median	Mean	Median	Mean	Median	
Age (years)	52.8	53.0	51.0	53.8	52.0	51.0	H <sub>calc</sub> = 0.66 p = 0.717
Time since surgery (years)	3.7	3.0	5.0	5.0	-	-	Mann–Whitney Z = 2.52 p = 0.012
Educational Level	<8 years n (%) 6 (24)	≥8 years n (%) 19 (76)	<8 years n (%) 11 (44)	≥8 years n (%) 14 (56)	<8 years n (%) 6 (24)	≥8 years n (%) 19 (76)	χ <sup>2</sup> χ <sup>2</sup> = 3.135 p = 0.079
Menopause	Yes n (%) 20 (80)	No n (%) 5 (20)	Yes n (%) 23 (92)	No n (%) 2 (8)	Yes n (%) 15 (60)	No n (%) 10 (40)	χ <sup>2</sup> = 7.45 p = 0.024
Hormone therapy	Yes n (%) 20 (80)	No n (%) 5 (20)	Yes n (%) 21 (84)	No n (%) 4 (16)	Yes -	No -	Fisher p = 0.500

**Table 2** - Depression levels for patients in group I (conservative surgery with breast reconstruction), group II (conservative surgery without breast reconstruction), and group III (controls without cancer)

Level of depression	Groups			Total n (%)
	Group I n (%)	Group II n (%)	Group III n (%)	
No depression	16 (64)	12 (48)	13 (52)	41 (55)
Mild	5 (20)	4 (16)	9 (36)	18 (24)
Moderate	3 (12)	8 (32)	1 (4)	12 (16)
Severe	1 (4)	1 (4)	2 (8)	4 (5)
Total	25 (100)	25 (100)	25 (100)	75 (100)
$\chi^2$ Test	$\chi^2 = 9.97$ ; $p = 0.126$			

treatment to be sought. On the other hand, the interest and concern for the quality of life of patients have progressively increased.<sup>12</sup>

According to the WHO estimates, depression is one of the three main diseases that contribute to global burden of disease.<sup>24</sup> Studies have demonstrated that depression is caused by genetic factors, and also as a response to stress and social pressures, or by a combination of these three factors.<sup>25,26</sup>

Depression is a psychiatric condition common in patients with cancer.<sup>13,14,27</sup> It is particularly prevalent in women with breast cancer.<sup>11,28,29</sup> The study of depression in patients with breast cancer is challenging, because the symptoms caused by the life-threatening illness may range from mood changes to major affective disorder.<sup>25</sup> Different tools can be used to assess depression. The structured clinical interview for DSM has been widely used, and a Brazilian Portuguese version is available.<sup>30</sup> In this study, depression levels were assessed by the BDI, which has also been extensively used in clinical research; a factor analysis of the BDI has been previously conducted in a population of women with breast cancer.<sup>31</sup>

Several studies have evaluated the occurrence of depression in women with breast cancer, but few studies have correlated depression with the type of surgical procedure.<sup>15,28,29,32,33</sup> Although breast-conserving surgery is considered a standard approach for women with early-stage breast cancer, the aesthetic outcome of the treatment may be unsatisfactory.<sup>8,9,23</sup> Breast asymmetry commonly occurs and may become a constant reminder of the disease and treatment, preventing the psychosocial adjustment of the patient.<sup>8</sup>

Better aesthetic results can be obtained with plastic surgery. A recent prospective study demonstrated the positive impact of immediate breast reconstruction on the quality of life and self-esteem of patients who underwent conservative surgery for breast cancer.<sup>34</sup> On the other hand, other studies have shown that patients who underwent mastectomy or conservative surgery had similar levels of depression.<sup>15,28,29,32,33</sup> Several aspects associated with the type of surgery and quality of life of patients with breast cancer are still controversial and unknown, and depression is one of them. This can be explained by the fact that quality of life is not affected only by the type of treatment, but also by other factors, such as the diagnosis of cancer itself, and fear of recurrence.<sup>35,36</sup>

In this study, occurrence of cancer and the type of surgical procedure had no impact on the levels of depression

experienced by the women who participated in the study. The homogeneity of the sample with respect to age and educational level may have influenced the results.

The presence of depression symptoms in menopausal women has been reported in the literature.<sup>37,38</sup> The median age of the patients who participated in this study corresponds to the age of the menopause in women. However, a smaller number of patients had undergone the menopause in the control group than in the other groups. This difference may be due to the fact that most patients in the breast cancer groups had undergone hormone therapy and, therefore, had the menopause induced. It is known that the menopause is a period in the life of women characterized by physical and emotional changes; therefore, this is another factor that might also have influenced the results of this study.<sup>39</sup>

Although our results indicate that breast-conserving surgery with or without breast reconstruction has no influence on the levels of depression of patients, future prospective randomized studies with larger sample populations are needed to evaluate the actual role of the type of surgery on the levels of depression in patients undergoing conservative treatment for breast cancer.

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