

## Satisfaction with and psychological impact of immediate and deferred breast reconstruction

J. Fernández-Delgado<sup>1</sup>, M. J. López-Pedraza<sup>2</sup>, J. A. Blasco<sup>2</sup>, E. Andradas-Aragones<sup>3</sup>, J. I. Sánchez-Méndez<sup>4</sup>, G. Sordo-Miralles<sup>1</sup> & M. M. Reza<sup>2\*</sup>

<sup>1</sup>Servicio de Cirugía Plástica del Hospital Universitario La Paz, Madrid; <sup>2</sup>Unidad de Evaluación de Tecnologías Sanitarias, Agencia Lain Entralgo, Madrid; <sup>3</sup>Área de Investigación y Estudios sanitarios, Agencia Lain Entralgo, Madrid; <sup>4</sup>Servicio de Ginecología del Hospital Universitario La Paz, Madrid, Spain

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**Background:** The present work assesses the effect of immediate breast reconstruction (IBR), deferred breast reconstruction (DBR), and no breast reconstruction on the psychological impact.

**Patients and methods:** Standard questionnaires were used to determine the psychological impact suffered by patients who underwent IBR, DBR and no reconstruction, their degree of satisfaction with the results achieved, and their postprocedure opinions regarding reconstruction options.

**Results:** A total of 526 women underwent mastectomy. The response rate to the questionnaires was 71.67%. A significantly greater proportion of the women who underwent no reconstruction suffered psychological problems than those who underwent reconstruction of some type ( $P = 0.01$ ). Some 94.77% of the women who underwent IBR maintained a postprocedure preference for this option; in contrast, some 87.27% of the DBR and 56.14% of the no-reconstruction patients declared a postprocedure preference for IBR. In all, 63.49% of the women who underwent reconstruction were moderately very satisfied with the aesthetic results achieved, while only 22.80% of the no-reconstruction patients declared such satisfaction ( $P = 0.0001$ ).

**Conclusions:** The women who underwent no breast reconstruction suffered more emotional problems than those who underwent a reconstruction procedure. In general, all groups reported a postprocedure preference for IBR in their questionnaire answers. The aesthetic results achieved by IBR seem to be those best accepted.

**Key words:** breast neoplasm, breast/surgery, mammoplasty, mastectomy, patient satisfaction, plastic surgery

### introduction

Breast cancer is the most common malignancy affecting women and that responsible for the greatest mortality. The surgical treatment of this disease involves tumorectomy or mastectomy. Mastectomy is commonly associated with a strong emotional impact—partly because of the significance of the disease itself but also because of the psychological importance of this organ. Women may experience a loss of femininity and self-esteem or changes in their self-perception and sexuality strong enough to alter their behaviour in the family. Some women are also affected at the wider social level, including the workplace.

Breast reconstruction can help patients recover an acceptable body image and re-establish psychological equilibrium [1]. Reconstruction can be carried out at the time of the mastectomy [immediate breast reconstruction (IBR)] or after some months or even years have elapsed [deferred breast reconstruction (DBR)]. In either case, reconstruction should

be seen as part of the overall treatment of breast cancer, allow the construction of a breast similar in shape and texture to the patient's natural breast, and avoid the need for any form of external prosthesis.

The surgical options available for breast reconstruction include the use of prosthetic implants [2] (normally a submuscular prosthesis or a tissue expander) or autologous tissues (flaps). Flaps commonly used include the latissimus dorsi and transverse rectus abdominal myocutaneous (TRAM) flaps. Other types of flap can be prepared by microsurgery [3–6], such as the deep inferior epigastric perforator flap, the free mini-TRAM flap, the gluteal free flap, the gracilis flap, and the Rubens flap. Reconstruction is carried out taking advantage of the anaesthesia induced for the mastectomy procedure; at the same time the contralateral breast can be adjusted (mastopexy, reduction, augmentation) if necessary. Some studies report an association between breast reconstruction and patient satisfaction with treatment [7, 8]. Others still indicate reconstruction to strengthen the affective and sexual relationship of affected couples [9]. From a clinical point of view, a recent systematic review [10] suggests the results achieved can vary depending on the time

\*Correspondence to: M. Reza, Unidad de Evaluación de Tecnologías Sanitarias, Agencia Lain Entralgo, C/ Gran Vía 27, 7<sup>a</sup>, 28013 Madrid, Spain. Tel: +34-91-308-9473; Fax: +34-91-308-9463; E-mail: mercedes.reza@salud.madrid.org

at which reconstruction is undertaken. No differences were detected between IBR and DBR in terms of any need to delay radiotherapy/chemotherapy, nor were any differences seen with respect to disease recurrence. Similarly, differences were reported between IBR and DBR in terms of the aesthetic result achieved. With respect to psychological outcomes in general, patients have been reported happier with IBR than DBR (although the difference is not significant) [10]. IBR appears to be less associated with anxiety and depression and seems to invest patients with a better body image and greater self-esteem [10]. However, very few studies have examined these variables and those that have are of low quality and commonly date from the 1980s. The present study collected information from patients to try to assess the psychological impact of breast reconstruction, to assess their satisfaction with the results achieved, and to investigate their postprocedure preferences for IBR, DBR, and no reconstruction.

## methodology

### study design

The study was retrospective in nature and involved the comparison of patients who had undergone mastectomy plus IBR/DBR and those who had undergone mastectomy with no breast reconstruction.

### patients and methods

The patients of the present study ( $n = 526$ ) underwent surgery at the Immediate Breast Reconstruction Unit, Hospital Universitario de la Paz, Madrid, Spain, between 2002 and 2006. All the interventions were carried out by the same surgeons. The techniques generally employed in breast reconstruction at this unit involve implants; direct submuscular prostheses are usually used in IBR and tissue expanders in DBR. Autologous tissues are used in a smaller number of patients. A group of women who underwent only mastectomy during the same period were randomly selected to form a comparison group.

Six months after the mastectomy, the patients participated in a telephone interview involving two questionnaires. The first of these, the Hospital Depression and Anxiety Questionnaire [11] (adapted and validated for use with the Spanish population [12]) was used to screen for the problems suggested in its name. This contains 14 questions (none of which refers to symptoms) divided into two groups: seven covering psychic manifestations (anxiety scale) and seven covering anhedony (depression scale). The score for each varies between 0 (never, no intensity) and 3 (nearly all day, very intense). The time frame for the answers is that of the previous week. The second questionnaire, that of Al-Ghazal et al. [13], was used to evaluate patient satisfaction with the treatment they had undergone, the cosmetic results achieved, and the impact of the procedure on their sexuality. This questionnaire had not previously been validated for use in Spain; it was therefore first validated employing a sample of the present patients.

Fifteen attempts were made to contact the patients. Their telephone numbers were obtained from their clinical records. If no number had been recorded or it had been incorrectly recorded, attempts were made to contact the patients using data in the hospital network databases.

The data obtained from the patient clinical records and the questionnaire results were stored in a specially designed database. The  $\chi^2$  test was used to compare the percentage of women showing psychological abnormalities in each treatment group and their level of satisfaction with treatment outcome. Significance was set at  $P < 0.05$ . All calculations were carried out using SPSS version 15 software for Windows.

## results

The mean age of the patients was 55.28 years (SD = 12.360 years). In all, 194 (36.88%) of these women underwent mastectomy and IBR, 110 (29.17%) underwent mastectomy and DBR, and 114 (30.23%) underwent mastectomy with no breast reconstruction. Tissue expanders were used in 84.35% of those women who underwent DBR. In all, 71.67% (377 of 526) of the patients answered the telephone questionnaires. Of those who did not respond, 47.65% (71 of 149) could not be found, 20.13% (30 of 149) had died, and 14.76% (22 of 149) did not wish to take part. Over half of each of these three types of nonresponder (45.07%, 76.66%, 68.18%) belonged to the no-reconstruction group.

Some 17.77% (67 of 377) of all patients were found to suffer some anxiety problem; 16.18% (61 of 377) suffered depression. Table 1 shows the scores obtained for each type of problem in each treatment group. Among the IBR women, 7.2% showed symptoms of anxiety or depression (scores 11–21); among the DBR women, 8.2% showed serious anxiety problems and 10.9% suffered depression; and among the no-reconstruction women, 13.2% suffered serious anxiety and 11.4% suffered depression. Table 2 shows the percentages of women in each treatment group whose scores were normal (0–7) or likely to reflect normality [8–10]. Thus, a greater proportion of no-reconstruction women were symptomatic for anxiety/depression than were those who had undergone some form of reconstruction (42.98% versus 30.03%;  $P = 0.01$ ). The proportion of IBR women likely to be clearly suffering from anxiety was significantly lower than among the no-reconstruction women (15.03% versus 24.56%;  $P = 0.05$ ). No significant differences were found between the proportion of IBR and DBR women who were likely to be clearly suffering from anxiety (15.03% versus 14.54%,  $P = 0.912$ ) or depression (15.03% versus 15.45%,  $P = 0.92$ ).

At the time of questioning, some 94.77% (145 of 153) of the IBR women maintained their original preference for such treatment, while 87.27% (96 of 110) of the DBR and 56.14% (64 of 114) of the no-reconstruction women said they wished they had undergone IBR.

Figure 1 shows patient satisfaction with regard to the aesthetic results achieved. Some 63.49% (167 of 263) of the women who underwent reconstruction were satisfied or very satisfied with the results achieved, while only 22.80% (26 of 114) of the no-reconstruction were satisfied ( $P = 0.0001$ ). In all, 68.62% (105 of 153) of the IBR women were satisfied or very satisfied compared with 56.36% (62 of 110) of the DBR

**Table 1.** HDA scores for anxiety and depression

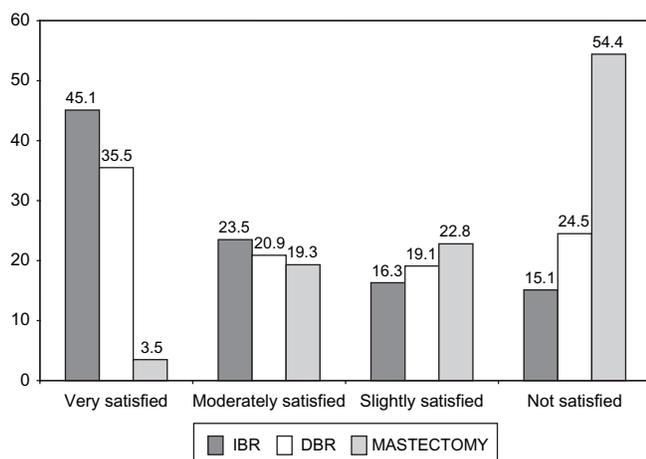
Type of treatment	Anxiety			Depression		
	N	Mean	SD	N	Mean	SD
IBR	153	3.99	4.301	153	2.90	4.320
DBR	110	4.11	4.191	110	3.14	4.646
Mastectomy	114	4.82	4.676	114	3.83	4.269

SD, standard deviation; IBR, immediate breast reconstruction; DBR, deferred breast reconstruction.

**Table 2.** Probable and clear anxiety/depression in patients of the different treatment groups

Type of treatment	Anxiety			Depression			
	N	Normal, n (%)	Probable anxiety, n (%)	N	Normal, n (%)	Probable depression, n (%)	Clear symptoms of depression, n (%)
IBR	153	130 (85)	12 (7.8)	153	130 (85)	12 (7.8)	11 (7.2)
DBR	110	94 (85.5)	7 (6.4)	110	93 (84.5)	5 (4.4)	12 (10.9)
Mastectomy	114	86 (75.4)	13 (11.4)	114	93 (81.6)	8 (7)	13 (11.4)

IBR, immediate breast reconstruction; DBR, deferred breast reconstruction.

**Figure 1.** Percentage satisfaction with aesthetic results achieved.

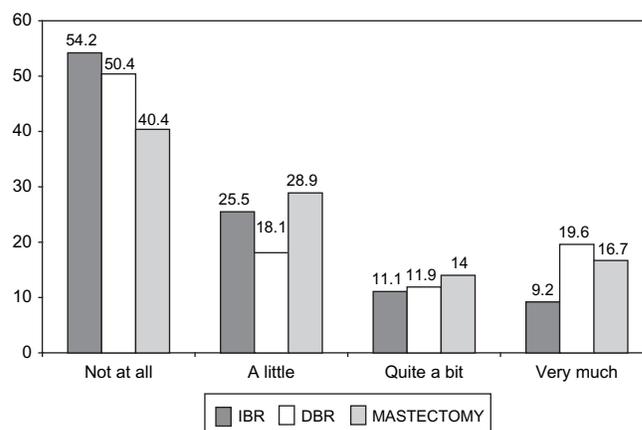
women ( $P = 0.04$ , as for the comparison between IBR and no-reconstruction women). The majority (54.38%) of the no-reconstruction women were very unsatisfied with the aesthetic results achieved.

Figure 2 shows the response of the women with respect to their feelings of being sexually attractive. In all, 75.28% (198 of 263) of the women who underwent reconstruction felt no less sexually attractive than before, while 69.29% (79 of 114) of the no-reconstruction women felt the same way ( $P = 0.2$ ). Significant differences were found, however, between the proportion of IBR women who felt no less sexually attractive and the DBR women who felt the same way (79.73% versus 69.09%;  $P = 0.04$ ) and between these IBR women and no-reconstruction women who felt the same way (79.73% versus 69.29%,  $P = 0.05$ ).

## discussion

The aim of the surgical treatment of breast cancer should not be just to eliminate or reduce the size of a tumour, but to attain the best aesthetic result possible with the least psychological and physical impact. Breast reconstruction—especially IBR—can help to attain this goal. Some 70%–80% of breast cancers can be brought under clinical control, but a great many women who do not undergo breast reconstruction face emotional suffering that may go on indefinitely.

The present results show that the women who had undergone reconstruction experienced less anxiety and

**Figure 2.** Percentage of women who felt no less sexually attractive according to treatment received.

depression than those who had undergone mastectomy alone. No significant differences were seen in this respect between the DBR and no-reconstruction women, but they certainly were found between the IBR and no-reconstruction women in terms of anxiety. Al-Ghazal et al. [13] and Schain et al. [14] assessed the psychological impact of IBR and DBR and concluded that IBR women were less likely to suffer psychological difficulties (although significant differences were only recorded in the first of these studies). Rubino et al. [15] reported no differences exist between these groups in terms of anxiety and depression.

The mean percentages of patients experiencing anxiety and depression in each treatment group of the present study are very similar to those reported by Harcourt et al. [16].

The preference shown for IBR in the present work agrees with that reported by Al-Ghazal et al. [13] (95% in both cases, using the same scale). These figures are higher than the 70%–91% reported by other authors [17–23]. Some 80%–93% of women said they would recommend IBR to others [17, 20, 23], and 67%–88% would choose the same procedure again if necessary [18, 20, 21].

More of the women who underwent breast reconstruction were satisfied with the aesthetic results achieved than those who underwent no reconstruction (63.49% compared with 22.80%). In all, 68.62% of the IBR women were satisfied with the results achieved compared with 56.36% of the DBR women ( $P = 0.04$ ). Al-Ghazal et al. [13] reported 94% of

IBR patients to be satisfied compared with 73% of DBR women ( $P < 0.001$ ). Other authors have reported levels of satisfaction with the aesthetic results of reconstruction of 76%, 89%, and even 96% [15, 24, 25]; two of these three studies [15, 25] reported no significant differences in the satisfaction associated with IBR and DBR. Moscona [20], Jabor [26], Gui [18], Druker [19], and Gerber [22] also report higher levels of satisfaction (64%–90%), although they only examined IBR women. Gui et al. [18] reported 88% to be satisfied with the aesthetic results achieved, while Druker-Zertuche and Robles-Vidal [19] reported 92% to be satisfied with their body image. The percentage reported by Moscona et al. [20] was 86% when satisfaction was measured when the patient was dressed, but this fell to 48% when naked. Finally, Cocquyt et al. [27] reported 81% of patients to be satisfied with the appearance of their breasts after IBR; significantly more women were satisfied with this procedure than with conservative surgery.

With respect to feelings of sexual attractiveness following breast reconstruction, 75.28% of the women who underwent reconstruction felt no less sexually attractive; for women who underwent mastectomy alone, this figure was 69.29% ( $P = 0.2$ ). Significant differences were found, however, between IBR women and no-reconstruction women and between IBR and DBR women ( $P < 0.05$ ). As reported by Al-Ghazal et al. [13], the DBR women felt less sexually attractive than the IBR women. Moscona et al. [20] reported 90% of IBR women to have suffered no changes in their feelings of sexual attractiveness and that 81% had experienced no changes in their sexual relationships. Further, 79% experienced no change in the behaviour of their partners. Rubino et al. [15] indicated that 81.4% of patients who underwent reconstruction to be satisfied with their sexual relationships, whereas only 30.2% of those who only underwent mastectomy were satisfied ( $P < 0.002$ ). No significant differences were associated with the type of reconstruction carried out. Gui et al. [18] reported 81%–88% of IBR women to feel little or no less feminine. Finally, Druker-Zertuche and Robles-Vidal [19] reported 90% of IBR women to experience no change in their sexual activity and 94.3% to experience no change in their social relationships.

Many scales have been used to assess the psychological impact and aesthetic satisfaction of breast surgery. As Jabor et al. [26] point out, the satisfaction experienced by women in this position is not on the basis of the surgical result alone, but on a range of psychosocial factors and individual experiences. Satisfaction therefore has both objective and subjective facets.

Given the present and previous results [28–33], which suggest IBR to offer psychosocial advantages, as well as the reflections of medical professionals regarding the negative aspects of living with the deformity caused by mastectomy [25], breast reconstruction (especially IBR) should be carried out whenever feasible. It should be considered that not all the patients are candidates for IBR. Those patients are women with obesity or hypertension at the time of mastectomy or patients who refused to consider reconstruction when irradiation had to be planned postoperatively, among others. In those cases, the reconstruction can be delayed and

women can undergo the intervention months after the mastectomy.

The present study is limited due to probable differences in the initial characteristics of the patients, such as the tumour stage at surgery, or the use of adjuvant treatments. If the women interviewed were undergoing radiotherapy or chemotherapy at the time of the telephone interview, it is likely that they would show differences in their state of mind; this could have affected the psychological and aesthetic satisfaction results. Factors such as surgical complications, a recent diagnosis of metastases or the death of family member etc., may have influenced the psychological status of affected patients irrespective of the treatment received; nonetheless, fewer than 10% of patients were affected in this way.

## conclusions

Anxiety and depression are the most common psychological problems of women who have undergone a mastectomy. Breast reconstruction should therefore be a routine part of breast cancer surgery. Women who have undergone IBR are more likely to be satisfied with the aesthetic results achieved and are least likely to feel a loss of sexual attractiveness.

Future work involving validated instruments should not only assess the psychological state of women who have undergone breast reconstruction but also their evaluation of their own body image and self-esteem. Other factors that could influence their overall physical and psychological state should also be investigated, e.g. work and family relationships, changes in daily life activities, and the perception of quality of life.

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