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Quality of life of patients who undergo breast reconstruction after mastectomy: effects of personality features

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Background

In oncology, the survival prolongation and the disease-free interval can no longer be considered the only targets to be pursued. Recently, the concept of quality of life in patients affected by cancer has been increasingly explored and received a major importance in the assessment of treatment outcome. The World Health Organization defines quality of life as: “individuals’ perception in the context of their culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns. It is a broad-ranging concept affected in a complex way by the person’s physical health, psychological state, level of independence, social relationships, personal beliefs, and their relationship to salient features of their environment.” It is clear that this concept is tightly connected and influenced by individual’s physical integrity and body image. The impact on body image of breast cancer and its surgical treatment with mastectomy has a variety of consequences for the woman’s experience of her body, personal identity and characters of femininity. Many women reported impaired psychological and social well-being and difficulty in maintaining social activities due to their feelings of alienation after treatment of breast cancer. For this reason, breast reconstruction is required by a growing number of patients and has become an integral part of therapeutic procedure for woman who underwent mastectomy. There are different methods of breast reconstruction. The choice is mainly dependent on the preference of the surgeon, in accordance with his patient. Breast reconstruction can be done at the same time of mastectomy (immediate/primary), or at later date (delayed/secondary). Patients who are

uncertain about reconstruction are best advised to consider delayed reconstruction. The main benefit of immediate reconstruction is preservation of the native breast skin envelope and infra-mammary fold, that allows a better aesthetic outcome. On the other hand, if complications come up after surgery immediate reconstruction can delay adjuvant therapies.

Delayed reconstruction is a good option for women who need more time to accept their disease and who are frightened by post-surgical pain. Cosmetic results of delayed breast reconstruction is less natural and symmetrical because the native skin covering the breast is removed during the standard mastectomy. Immediate reconstruction is currently considered the standard of care in breast cancer surgery. In fact, mastectomy with immediate breast reconstruction is a surgical procedure that addresses both the need to remove the neoplasia, and the need of patient to emerge from anesthesia with a replaced breast. Some clinical studies showed that women who underwent reconstruction reached more psychological benefit from immediate intervention than from delayed surgery, probably avoiding the painful feeling of long-lasting mutilation. Moreover, immediate breast reconstruction neither impair prognosis nor cause a delay in detection of local recurrence (Petit et al, 1988; Morrow et al, 2001; Shaikh et al, 2001; Ota et al, 2014), and avoids the patient a second operation. New and very encouraging reconstructive techniques can provide a significant help to women with breast cancer. In particular, the implantation of internal prosthesis, instead of the external one having a dreadful impact on femininity and body image, allows to wear a greater variety of clothing and restores patient's feelings of identity and body-integrity. Recent refinements in use of autogenous tissue techniques, improvements in prosthetic technologies, and development of novel tissue substitutes induced noticeable advances in breast surgery. Although the reconstructive techniques have been improved over time, the cosmetic results in some cases are still not fully satisfactory. For this reason, patients need to get complete information about the fact that the intervention they undergo is not a cosmetic surgery on a

normal breast, but is a reconstructive operation on traumatized tissues with lower aesthetic results. The approach to breast reconstruction will be adapted to attain an appropriate balance between minimizing the risk of cancer recurrence and providing the best cosmetic outcome. The growing interest for the reason that induces women to ask for reconstructive surgery, for the benefits of breast reconstruction on psychological outcome and quality of life and for the characteristics of patients who receive reconstructive intervention, is due to the wide diffusion of this procedure in last years. The results of clinical studies on these topics are sparse and the systematic reviews often obtained inconclusive findings. With concern to the impact of breast restoration after mastectomy on psychological outcome and satisfaction, there is a certain degree of consensus that reconstruction improves patient's body image and perception, promoting a full emotional and physical recovery from cancer. Retrospective investigations assessing the safety, cosmetic outcome, sexual function, and patients' satisfaction after mastectomy with immediate reconstruction confirmed that a good level of satisfaction of body image was achieved, and some Authors stated that mastectomy followed by reconstruction obtained a progressive improvement of the health related quality of life if compared with mastectomy alone. As far we know, very few data indicated the risk that women who had breast-conserving surgery or breast reconstruction after mastectomy could experience more depressive symptoms or poorer well-being compared with women who had mastectomy alone. Investigators obtaining these negative findings assumed that some factors related to breast reconstruction or conserving operation may contribute to poorer quality of life: length of surgery, duration of hospitalization, time away from usual activities, postoperative pain, and fear for recurrence, all of which tend to be greater with reconstruction. The majority of studies have not shown differences between mastectomy or conserving operation in terms of general quality of life. According to some Authors, aesthetic outcome seems to be better with mastectomy with skin sparing (a particular technique that allows to preserve pectoralis major

muscle and skin covering the mammary gland) followed by reconstruction. On the contrary, other Authors retain that cosmetic satisfaction, sexual well-being and quality of life are greater in women who underwent conservative interventions than radical mastectomy with or without reconstruction.

In any case, studies concerning outcome of breast reconstructive surgery in terms of subjective satisfaction are still limited and rather heterogeneous. Only few Authors suggest that these discrepancies can be explained by individual characteristics of patients. In fact, the contribution of psychological factors, including personality traits and relational modalities, as predictors of patients' satisfaction and quality of life after breast reconstruction has not been extensively studied, yet. Some trials found that younger women and patients with higher level of depressive symptoms more often require breast reconstruction, but patients with pre-existing diagnosis of major depressive disorder seem to be less suited to immediate reconstruction. In particular, high level of depressive symptoms is a predictor of poorer body image and depressed patients are more vulnerable to psychological distress with a higher risk to fail their expectations. Moreover, affective distress, depression, somatisation, and somatic anxiety contribute to reduce general and aesthetic satisfaction with surgical outcome at one year.

Anyway, no randomized studies to evaluate whether personality traits and interpersonal patterns affect quality of life after breast reconstruction have been performed to date. A better knowledge of which personality traits can influence the desire for reconstruction and the satisfaction for the results would contribute to provide more complete pre- and post-surgical information and support and to evaluate advantages and disadvantages of reconstruction for single patients.

Personality is a complex concept that refers to an organized and dynamic set of traits and dispositions, and can be defined as stable characteristics that people exhibit across various

circumstances and across time. It influences cognitions, motivations, feelings and behaviors. Personality is essentially made of two components, temperament and character, interacting each other. Heritable temperaments refer to inborn characteristics that vary from one individual to another and determine a wide range of behaviours. Temperament is a core element in development of personality, that is combined with character. Character derives from the shaping influences of environmental experiences, the acquired features of psychic functioning and how they have been learned during life. Among several Authors dealing with these topics, Cloninger (1994) proposed a psychobiological model of the structure and development of personality, including dimensions of temperament and character. Initially, this model included three temperament dimensions: Novelty Seeking (NS), Harm Avoidance (HA), and Reward Dependence (RD). In a second time, a new temperament dimension was added: Persistence (P). The temperament dimensions were postulated to be independently heritable, to manifest early in life, to mature in adulthood, and to influence personal and social functioning. The temperament dimensions are defined in terms of individual differences in behavioural learning mechanisms, explaining responses to novelty, danger or punishment, avoidance of aversive stimuli, response to rewards, and perseverance in spite of frustration. Variations in each of these dimensions was supposed to be associated with different alterations of brain monoaminergic activity. In order to more adequately understand the individual differences, this model was extended to a seven-dimensional scheme, including three additional dimensions of character: Self-directedness (SD), Cooperativeness (CO) and Self-transcendence (ST). These dimensions refer to the ability of a subject to fit his behaviour to experience according to individually chosen objectives and values; the social tolerance, empathy and acceptance of other individuals; and the identification with everything conceived as essential and consequential parts of a unified whole. Cloninger postulated that character is much less heritable than temperament and matures with age.

In addition to the personality structure, the interpersonal relational pattern is another important factor that can influence quality of life and outcome of treatments. Personality and interpersonal relationships are two strictly linked concepts. According to the neo-Freudian theory of Harry Stack Sullivan (1953), personality is “the relatively enduring pattern of recurrent interpersonal situations which characterizes a human life” and its development depends on the fundamental role of social interactions.

In conclusion, it is clear that individual characteristics, such as personality features and relational styles, pervading all areas of individual life, have a significant impact on the way people approach general experiences and negative events such as illness. Thus, investigating and clarifying the specific effects of these factors is needed to predict the outcome of surgical reconstruction in women with breast cancer.

A clinical study of the effects of psychic factors in breast reconstruction

In order to better understand whether socio-demographic, clinical, and personality characteristics determine changes of subjective quality of life in women with breast cancer who undergo breast reconstruction after mastectomy, we performed a study in a group of patients who received filled texture saline expander at the time of mastectomy and completed their reconstruction with a permanent implant placement.

Our study was conducted at the Centre for Personality Disorders, Psychiatric Clinic, Department of Neuroscience, University of Turin, Italy. We included consecutive patients with a previous diagnosis of breast cancer who received post-mastectomy reconstruction at the Service for Plastic and Reconstructive Surgery of the University of Turin. Patients were enrolled from September 2007 to December 2008. Written informed consent was obtained from all patients before their participation. We followed the Declaration of Helsinki

guidelines and received ethics board approval. All patients were interviewed 1 week before the intervention of combined mastectomy and reconstruction (implant of tissue expander).

Follow-up was scheduled 3 months after the surgical intervention. At baseline patients were assessed with a semistructured interview to collect demographic and clinical characteristics, including age, educational level (primary school, secondary school, high school, university), work (worker/farmer, clerk, self-employed worker, unemployed/housewife, retired), marital status (single, married, separated/divorced, widowed), number of childbirths, breast cancer stage, surgical technique of mastectomy (unilateral mastectomy, bilateral mastectomy, mastectomy with lymph node dissection), record of previous mastectomies, prior radiation therapy, and previous chemotherapy. We also recorded the age of the first diagnosis of breast cancer. The following self-report instruments were used: the Short Form Health Survey Questionnaire (SF-36), the brief form of the Temperament and Character Inventory (TCI-125), and the Inventory of Interpersonal Problems (IIP-64).

The SF-36 is a standardized, self-administered survey measuring health-related quality of life. It has been largely used to investigate changes in quality of life in patients that underwent clinical interventions. SF-36 consists of eight scales evaluating physical functioning, role limitations related to physical problems, bodily pain, general health perception, vitality, social functioning, role limitations due to emotional problems, and mental health. The first three scales evaluate the physical well-being, the last three scales evaluate the emotional well-being, and the two scales in the middle are associated with both dimensions. Each of the eight scales includes 2-10 items, and each item is scored from 2 to 6 point on a Likert scale. A higher score corresponds to better health.

Raw score of each scale is transformed in a 0-100 score using the following formula:
transformed score = (raw score - lowest possible raw score) × 100/range of possible raw scores.

The TCI-125 is a brief version of the original TCI-240, which was prepared with the aim to perform a short-time assessment of the seven domains of Cloninger's biosocial theory of personality. The brief version considers only the seven main domains of personality, but not the subscales of the original version. In the TCI 125, Novelty Seeking and Harm Avoidance have 20 items (5 from each of 4 subscales of the original TCI-240), Reward Dependence and Self-Transcendence have 15 items (5 from each of 3 subscales), Self-Directedness and Cooperativeness have 25 items (5 from each of 5 subscales), and Persistence has 5 items. Each scale of the TCI-125 is scored by adding 1 point for each item answered appropriately true or false.

The IIP-64 is a self-report instrument that identifies the subject's most salient interpersonal difficulties. It includes 64 statements describing common interpersonal problems drawn from an original pool of 127 items prepared by Horowitz. The items are divided in two sections: the first items begin "the following are things you find hard to do with other people", the second items begin "the following are things that you do too much". Responses are ranged from "not at all" to "extremely". The interpersonal problems are identified by eight subscales: "Domineering/controlling", "Vindictive/self-centered"; "Cold/distant", "Socially inhibited", "Nonassertive", "Overly accommodating", "Self-sacrificing", "Intrusive/needy". A high score on the scale "Domineering/controlling" indicates that the person finds it difficult to relax control, tries to influence other people as hostile or even aggressive, but the emphasis is more on control than hostility. The scale "Vindictive/self-centered" describes problems of hostile dominance. The person readily experiences and expresses anger, irritability and desire of revenge and fights too much with other individuals. The domain "Cold/distant" indicates minimal feelings of affection for and little connection with other people. A high score on the scale "Socially inhibited" signifies that subject experiences feelings of anxiety, timidity, embarrassment in the presence of other people and difficulty in initiating social interactions.

“Nonassertive” is the scale that refers to a severe lack of self-confidence and self-esteem. People characterized by this modality of relationships are self-doubting and extremely unassertive and have difficulty taking the initiative. The scale “Overly accommodating” measures the excess of friendly submissiveness, the effort to please to other gaining their approval and the difficulty to give a negative answer to other people. The domain “Self-sacrificing” investigates if the subject is excessive affiliative, puts other people’s need before his own and has difficulty to express angry or hostility. The last scale, “Intrusive/needly”, describes problems with friendly dominance. People with a high score describes themselves as friendly, outgoing, and sociable, but present some problems: a powerful need to feel engaged with other people imposing the subject’s presence onto their attention. Raw scores are obtained by calculating the sum of the eight items for each of the eight scales. All items are rated 0-4.

In addition, we evaluated psychiatric symptoms with the following rating scales: the Severity Item of the Clinical Global Impression scale (CGI-S), and the Hamilton Rating Scales for Depression and Anxiety (HDRS, HARS).

The CGI is a clinician-rated instrument to make global assessment of illness and consists of three different measures: severity of illness, global improvement, efficacy index (comparison between patient’s baseline condition and a ratio of current therapeutic benefit and severity of side effects). In this study, we considered the first scale: severity of illness. It is a 7-point scale that requires the clinician to rate the severity of illness at the time of assessment: (1) normal, (2), borderline mentally ill, (3) mildly ill, (4) moderately ill, (5) markedly ill, (6) severely ill, (7) extremely ill.

The HDRS is a clinician-rated scale that scores severity of 21 depressive symptoms in the last week. Items are variably scored 0-2, 0-3, or 0-4, with a total score ranging from 0 to 64. Higher scores indicate more severe symptoms of depression.

The HARS is a clinician-rated scale scoring severity of 14 symptoms of anxiety in the last week. Item are all scored 0-4, with a total score ranging from 0 to 56. Higher scores indicate more severe anxiety symptoms.

All patient were interviewed at follow-up (3 months after surgery) with the Short Form Health Survey. The mean of the transformed scores of the eight Short Form scales was used for the analysis of data. It took patients about 45 minutes to complete the assessment at baseline (T0) and 15 minutes at the second evaluation (T1).

We excluded from this study patients with a lifetime diagnosis of delirium, dementia, amnesic, or other cognitive disorders; schizophrenia or other psychotic disorders; bipolar disorders. Exclusion criteria also considered a cocomitant diagnosis of major depressive episode and whether an individual was treated with psychotropic drugs during the 2 months before the study. Patients with cancer recurrences during the study and subjects with complications due to breast reconstruction were also excluded. We performed statistical analyses using the software system SPSS, version 17.0 (SPSS Inc., Chicago, Ill.). The univariate regression was used to study the relation between the difference T1–T0 of the Short Form mean transformed score and the following continuous variables: age, number of childbirths, age of the first diagnosis of breast cancer, illness duration, Severity Item of the Clinical Global Impression scale, HDRS and HARS scores, Temperament and Character Inventory dimensions (novelty seeking, harm avoidance, reward dependence, persistence, self-directedness, cooperativeness, self-transcendence), and Inventory of Interpersonal Problems domains (domineering or controlling, vindictive or self-centered, cold and distant, socially inhibited, nonassertive, overly accommodating, self-sacrificing, and intrusive or needy). We performed the analysis of variance to test if the change T1–T0 of the Short Form mean score was significantly related to the following categorical variables: marital status, educational level, work, previous mastectomies, surgical technique of mastectomy, breast

cancer stage, prior radiation therapy, and previous chemotherapy. Continuous and categorical variables that were found significant at the two tests were included in a regression model (stepwise forward) to identify which factors were independently related to the change of the Short Form mean score. Bootstrapping with 1000 samples and 1.95 confidence limits for standard errors was applied to confirm the validity of all regression coefficients and significance tests. Significance was set at p less than or equal to 0.05.

Fifty-seven women were recruited. The sample had a mean \pm SD age of 46.8 ± 8.1 years. The mean age of the first diagnosis of breast cancer was 44.3 ± 8.6 years. The mean duration of illness was 4.1 ± 2.4 months. The mean number of childbirths was 1.4 ± 0.8 . The mean score on the Severity Item of the Clinical Global Impression scale in the total group was 2.1 ± 1 ; mean scores on the Hamilton Depression and Anxiety Rating Scales were, respectively, 10.5 ± 5.1 and 10.4 ± 4.7 . The mean transformed score on the Short Form Health Survey Questionnaire was 62.24 ± 15.89 at baseline and 69.14 ± 13.24 at T1, with a difference of 6.90 ± 18.22 . This difference was found statistically significant with the analysis of variance ($p = 0.01$). Considering the Short Form mean score at T0 and T1 and applying the conventional $\alpha = 0.05$ with two-tailed tests, the power of statistical analysis β was 98.9%.

Forty-five patients (78.9%) underwent unilateral skin-sparing mastectomy, and 12 (21.1%) underwent bilateral skin-sparing mastectomy. In all patients, completely filled textured saline tissue expanders were inserted at the time of mastectomy. The mean intraoperative expander fill volume was 475 cc (range, 250 to 750 cc). Patients completed their reconstruction with permanent implant placement. Demographic and clinical characteristics of our sample are reported in Table 1.

With the univariate regression analysis, the change in the Short Form Health Survey Questionnaire score was significantly related to the following continuous variables: age ($p <$

0.01); age of first diagnosis of breast cancer ($p = 0.03$); two temperament dimensions of Temperament and Character Inventory: novelty seeking ($p = 0.02$) and harm avoidance ($p < 0.01$); and one character dimension of the Temperament and Character Inventory: self-directedness ($p < 0.01$). Moreover, the correlation was significant for the following Inventory of Interpersonal Problems domains: vindictive or self-centered ($p < 0.01$), cold and distant ($p < 0.01$), socially inhibited ($p < 0.01$), nonassertive ($p = 0.02$), and overly accommodating ($p < 0.01$). Results of the univariate regression analysis are presented in Table 2. The analysis of variance found that only the variable “work” was significantly related to the change of quality of life at follow-up ($p = 0.04$). The Bonferroni post-hoc test showed a significant difference between “retired” and “unemployed or housewife” ($p = 0.024$) in favor of the first condition. The multiple regression analysis showed that two factors of those found significant at the two preceding tests were significantly and independently related to the change T1–T0 of the Short Form Health Survey Questionnaire mean score: the Temperament and Character Inventory temperament dimension harm avoidance and the Inventory of Interpersonal Problems domain Vindictive/self-centered. Results of the multiple regression analysis are displayed in Table 3.

Comments and conclusions

Results of our study indicated that the Short Form Health Survey Questionnaire measure of quality of life had a statistically and clinically significant change in the 3 months after the combined intervention of mastectomy and tissue expander implant (immediate reconstruction). With regard to the role of different characteristics of our patients in changing the level of quality of life, we found that one personality dimension and a pattern of interpersonal relationship significantly affected quality of life in patients undergoing breast reconstruction. On the other hand, neither cancer characteristics nor treatment variables were related to subjective quality of life after reconstructive surgery.

In particular, results of the multiple regression analysis showed that quality of life obtained a greater improvement in patients characterized by higher levels of the temperament dimension Harm Avoidance measured with the Temperament and Character Inventory and by higher scores for the interpersonal domain Vindictive/self-centered on the Inventory of Interpersonal Problems. According to Cloninger's description of temperament dimensions, subjects with higher degree of harm avoidance tend to be cautious, apprehensive, fearful and doubtful, shy, and inhibited in most social situations. These characteristics belong to patients susceptible to criticism and frustration, who show pessimism and fear of uncertainty, and in part share traits of obsessive personality. We can suppose that the restoration of body symmetry and self-image through reconstruction might reduce social anxiety and insecurity related to stress or danger conditions in our patients. When the body image is restored as close as possible to the premorbid conditions, women will be able to forget the external signs of cancer and feel themselves almost completely recovered. Similar personality traits were also observed by Roth and colleagues (2007), that noticed that women who choose reconstruction report a great concern for their physical appearance and a strong need for complete (errorless) restoration of the surgically treated breast.

On the other hand, the pattern of interpersonal relationship Vindictive/self-centered is a characteristic feature of suspicious, irascible, and aggressive patients. It is often noted that subjects with high scores in this domain of the Inventory of Interpersonal Problems present traits of narcissistic personality. According to Horowitz, the person reports feeling little support for other people and not caring much about their needs. In these women, improvement of subjective quality of life after breast reconstruction could be justified by the continuous research of self-satisfying physical appearance. In self-centered patients, surgical intervention could also fulfill the desire of revenge on cancer and could symbolize the end of a reparative process that is started with the cancer diagnosis. It seems that these women feel

themselves recovered from the disease and can better face the fear of relapse after reconstruction of the mutilated breast. Similar conclusions have been found by Elder and colleagues (2005) in women who chose immediate breast reconstruction. Authors concluded that patients wish to remove the signs of mastectomy and to enhance self-esteem and emotional health. The two psychic factors that were found independently related to improvement in quality of life after reconstructive surgery correspond to concordant features of personality. In particular, both reflect a introverted, self-centered personality aimed to eliminate all physical defects. It looks as this type of patients consider themselves completely recovered only after the reconstruction of the mutilated part.

Moreover, we observed that no factor associated with cancer characteristics or treatment procedures significantly influenced quality of life after reconstruction in our sample. Of course, this finding was affected by the fact that only subjects who did not have cancer recurrences during the study and/or complications due to breast reconstruction were included in our sample.

The main benefit of immediate reconstruction is that patients avoid a long period of compromised body image and do not focus attention on mutilation as the effect of their illness. Concerning this issue, a possible limit of our investigation can derive from the lack of comparison between women who underwent immediate breast reconstruction by positioning the expander at the time of mastectomy with patients who receive delayed reconstruction.

Some authors found that women who undergo immediate breast reconstruction, compared with those who receive delayed reconstruction, have more negative outcomes, higher levels of impairment in emotional well-being, and more severe problems in both physical and functional well-being. Investigators noticed that these results could be related to the apprehension associated with a recent diagnosis of breast cancer and fears for potential complications associated with both mastectomy and reconstructive surgery. In addition, they

supposed that differences of personality characteristics can be present at baseline between women who chose to undergo immediate reconstruction and women who chose to undergo delayed reconstruction and can produce effects on surgical outcome.

In conclusion, the clinical study that we performed highlighted the importance of preoperative personality assessment with specific evaluation instruments in patients requiring breast reconstruction to identify predictive factors of subjective quality of life after surgical interventions. The assessment of women with breast cancer who undergo mastectomy and reconstructive surgery could be performed as a routine procedure also with the aim to identify the need for psychotherapy during the period of reconstruction. In our opinion, time-limited psychotherapy focused on preventing depressive symptoms and improving interpersonal relationship, such as Klerman's interpersonal psychotherapy (IPT), is indicated in selected patients from the first weeks after surgical intervention.

Concerning the relevant issue of psychotherapy in women after mastectomy, we collected initial data on the application of interpersonal psychotherapy in patients who had received immediate breast reconstruction and fulfilled diagnostic criteria (DSM-5) for adjustment disorder with depressed mood and anxiety.

Twenty-five patients were randomly allocated to IPT (13 patients) or a waiting list for psychotherapy (12 patients). The duration of the trial was twelve weeks. Twelve IPT sessions (once a week), each lasting an hour, were performed. Psychotherapy was provided by a therapist with experience in IPT and was focused on the interpersonal area of "role transition", in particular the shift from health to physical illness. The therapist was aimed to promote the patient's acceptance of disease, inducing a positive effect both on depressive symptoms and on the quality of interpersonal relationships. All patients were assessed at baseline and after 12 weeks with the following evaluation instruments: the Clinical Global

Impression – Severity item for general psychiatric symptoms; the Zung Self-Rating Anxiety Scale and the Hamilton Anxiety Rating Scale for anxiety symptoms; the Beck Depression Inventory-II and the Hamilton Depression Rating Scale for depressive symptoms; the Breast Cancer Treatment Outcome Scale to measure the subjective perception of aesthetic appearance; the Inventory of Interpersonal Problem-64 items to assess the disturbance of relationships; the Short Form Health Survey Questionnaire for quality of life. Results of the analysis of variance for repeated measures showed a significant difference between IPT and waiting list in severity of depressive symptoms ($p = 0.038$), in global severity of interpersonal problems ($p=0.045$), and in the interpersonal domains: “cold/distant” ($p = 0.046$), “overly accommodating” ($p = 0.032$), “self-sacrificing” ($p = 0.010$), and “intrusive/needy” ($p = 0.001$). Psychotherapy determines a significant difference in the outcome of reconstruction that is basically in accordance with the specific effects expected for IPT. In fact, both depressive symptoms and several areas of interpersonal problems showed a significant improvement in comparison with controls. These areas concern difficulties in interpersonal relationships that are likely to modify patients’ attitudes towards illness and its recovery. In particular, patients’ trust to obtain an adequate support in an extremely difficult situation of their life can be heavily compromised.

Our data on effects of IPT are encouraging and provide initial support for further investigations of psychotherapy in this particular population, with the aim to prove its efficacy and to provide reliable instruments of psychiatric intervention in this clinical setting.

Follow-up studies after breast reconstruction are needed to replicate and confirm the present findings and future investigations on this topic will provide more information to make easier the decision-making process for both patients and surgeons. Moreover, the development of research in this field is useful to identify which patients need to receive psychotherapy in the period following mastectomy and tissue expander implant.

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