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Original Paper

The Benefit of Breast Reconstruction after Mastectomy

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REZUMAT

Beneficiile reconstructiei mamare dupa mastectomie

Obiectivul studiului: Mastectomia reprezinta un eveniment traumatizant in viata unei femei diagnosticate cu cancer de san, fiind insa necesara pentru supravietuire. Metoda salvatoare pentru intregirea corporala este reprezentata de reconstructia mamara.Obiectivul studiului a fost de a accentua imbunatatirea vietii psiho-sociale si familiale a femeilor care recurg la reconstructie mamara postmastectomie.
Material si metode: Am efectuat un studiu statistic retrospectiv, care a cuprins 25 de paciente care au beneficiat de reconstructie mamara postmastectomie oncologica. Metodele reconstructive au fost variate si pacientele au fost supuse unui chestionar de satisfactie.
Concluzii: Indiferent de metoda aleasa, pacientele au fost multumite de rezultat, datorita cresterii consecutive a calitatii vietii.

Cuvinte cheie: reconstructie de san, cancer mamar, DIEP, TRAM

ABSTRACT

The objectives of the study: Mastectomy is a traumatic event in the life of a woman who is diagnosed with breast cancer, but it is necessary for her survival. The saving method for reaching body integrity is represented by breast reconstruction. The objective of the study was to emphasize the improvement of psycho-social and family lives of all women who underwent breast reconstruction after mastectomy.
Material and Methods: We performed a retrospective statistical study, that included 25 patients who benefited from breast reconstruction after oncologic mastectomy. There were employed various surgical techniques and the patients were submitted to a satisfaction questionnaire.
Conclusions: Whatever the chosen method , the patients were satisfied with the results, due to the increase of their life quality.

Key words: breast reconstruction, breast cancer, DIEP, TRAM

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BACKGROUND

Being diagnosed with breast cancer means that the involved patients are dealing with a new phase in their lives. We can say that their priorities change radically. A study from 2011 shows that the leading cause of cancer deaths, in women, in developing countries, is breast cancer, compared to the past decade where the main cause was the cervical cancer. (1) Up to accepting the diagnosis and regaining the strength to move forward, women go through frustration, denial, guilt, feelings exacerbated by physical mutilation (mastectomy) which they have to deal with this disease. Breast cancer is the most commonly diagnosed cancer and the main cause of cancer death among females, representing 23% of total cancer cases and 14% of cancer deaths. (1)

The mastectomy is a traumatic event in the life of a woman diagnosed with breast cancer, but remains an important surgical option despite improvements in screening and diagnosis, as well as advances in breast cancer treatment. (2) 16.9% of patients who undergo oncological mastectomy choose either immediate or late breast reconstruction. (3)

Breast reconstruction is not a problem of vanity, but represents a problem of perception of self-image and femininity, in today's society, that affects relationships. "Mens sana in corpore sano" (Juvenal). The quality of life has become a standard measurement in evaluating the effectiveness of medical interventions. (4)

MATERIAL AND METHODS

We performed a retrospective statistical study on a group of patients who underwent breast reconstruction after mastectomy in Plastic Surgery Clinic of "St. John's " Hospital, in Bucharest, between 2013-2015. The treatment began by assessing the patients: the general status, the time that passed from mastectomy, the contralateral breast volume, receving or not adjuvant therapy (chemotherapy and in particular radiotherapy), the remaining skin quality, the available donor sites and the patients expectations. The reconstructive method was chosen according to all these criteria.

Of the 25 patients, only one patient had immediate breast reconstruction with silicone anatomic implant after subcutaneous mastectomy, the nipple being kept on an upper pedicle. 24 patients received late breast reconstruction. 5 patients are still in the first stage of the procedure.

There were used the following reconstructive methods:

- Myo-cutaneous latissimus dorsi flap with a tissue expander inserted under the flap - which represented the first stage of breast reconstruction - 9 cases; in the second stage, the expander was extracted after 2-6 months depending on the evolution of the flap and the development of complications and it was replaced with silicone implant according to the volume of contralateral breast - 6 cases. All patients required contralateral breast symmetrization. 3 cases still undergo treatment.
- Myo-cutaneous unilateral pedicled TRAM flap - 4 cases. In one case this method was chosen because the patient had a previous tissue expander with extrusion.
- DIEP flap - 3 cases.
- Free myocutaneous TRAM flap - 1 case.
- Tissue Expander in the first reconstructive stage - 9 cases, followed by a second stage which was represented by the extraction of the expander and replacement with silicone implant - 6 cases. 3 cases still undergo treatment.
- Silicone Implants – 3 cases.

Tissue expander use was necessary to optimize the size of the reconstructed breast.

For patients who underwent radiotherapy, breast reconstruction was not possible by using only alloplastic material. The skin was thin, the scars were retractile, requiring only autologous tissue or a combination with an alloplastic material. Patients who received chemotherapy could benefit from reconstruction only with alloplastic material. (**Fig. 1**)

When the reconstruction was done by using musculo-cutaneous latissimus dorsi flap there was used lipofilling in 3 cases for symmetrization with the contralateral breast.

Complications depended on the method used and were represented by:

- 1 case of partial necrosis of the latissimus dorsi flap;
- 1 case of fat necrosis below pedicle TRAM flap;
- 1 case of unexpected deflation of the tissue expander;
- 1 case of extrusion of the expander;
- 1 case of implant extrusion;
- 1 case of infection in a patient with implant reconstruction;
- 6 cases of seroma in the donor site of latissimus dorsi flap (**Table 1**).

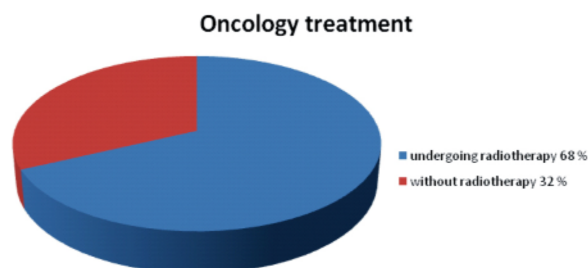

Figure 1. It is well known that radiotherapy influence the indications of reconstructive methods

Table 1. Particularities of the reconstructive methods used in our study

The reconstructive method	The number of cases	The complications
Latissimus dorsi flap with expander and implant	9	1 to the flap 6 to the donor area
Pedicle TRAM flap	4	1
DIEP flap	3	0
Free TRAM flap	1	0
Tissue expander and implant	9	2
Silicone implant	3	2

The final step of the procedure was represented by nipple reconstruction, which was performed with local flaps – flaps with three lobes. Only 2 patients wished for areola tattooing. (**Fig. 2**)

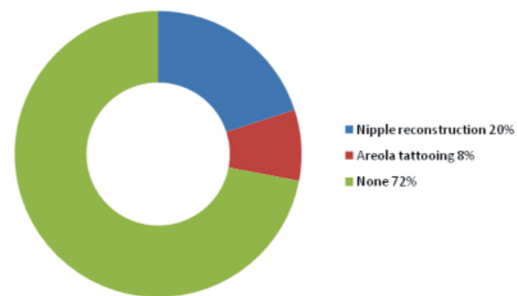

Figure 2. The final stage in breast reconstruction is the nipple reconstruction and areola tattooing

RESULTS

From June 2014 The National Health Insurance House reimburses the breast implants for breast reconstruction after mastectomy. Compared with previous years we found an increase of addressability for breast reconstruction in our clinic. Breast reconstruction was reimbursed by the state before the program, but only for the procedures that used autologous tissue.

The retrospective study was performed on 25 patients who presented for breast reconstruction after mastectomy between 2013-2015. Observation sheets were analyzed retrospectively.

Patients were aged between 39-62 years. Of the 25 patients entered in the study, the age group of 41-50 years was the most representative (**Fig. 3**)

Figure 3. Distribution of patients by age

Right mastectomy was performed in 8 cases, left mastectomy in 13 cases and bilateral in 4 cases. (**Table 2**)

The tumor stage is important for the vital prognosis of patients. (**Fig. 4**)

Figure 4. The tumor stage is important for the decision of breast reconstruction

I conducted a satisfaction questionnaire toall of the 25 patients who wanted breast reconstruction. The questionnaire was completed by each patient after surgery, prior to reconstruction of the nipple. (**Fig. 5**) Patients responded 100% that they were very grateful for the result of reconstruction, regardless of the chosen reconstructive method .

Latissimus dorsi flap provides good results, the technique being relatively easy. 43 years old patient with bilateral mastectomy had reconstructive surgery with latissimus dorsi flap, expander and implant. On the right breast the pacient had an oncological mastectomy for intraductal carcinoma, and on the left side she had a profilactic mastectomy. First, on the right side we performed reconstruction with latissimus dorsi flap and expander, and on the left side we performed reconstruction using only an expander. After 3 months, we removed

Table 2. Particularities of the oncological mastectomy of the studied group

Right mastectomy	8
Left mastectomy	13
Bilateral mastectomy	4

Satisfaction Questionnaire

1. How do you assess your body image after mastectomy?
   - Unsatisfactory
   - Satisfying
   - Good
   - Very good
2. How do you estimate your reintegration into society after breast reconstruction?
   - Unsatisfactory
   - Satisfying
   - Good
   - Very good
3. How do you estimate your family reintegration after breast reconstruction?
   - Unsatisfactory
   - Satisfying
   - Good
   - Very good
4. How do you perceive your emotional state after breast reconstruction?
   - Unsatisfactory
   - Satisfying
   - Good
   - Very good
5. How do you assess the outcome after breast reconstruction?
   - Unsatisfactory
   - Satisfying
   - Good
   - Very good

Figure 5.

the expanders and replaced them with silicone implants. After 1 month, on the left side she developed an infection in the implant pocket that forced us to remove the implant. We decided then to perform a latissimus dorsi flap after treating the infection and replacing the implant beneath the flap. Even with this complication, the result was very good. (**Fig. 6, 7, 8, 9**)

52 years old patient had right total mastectomy (Halsted type) performed for invasive ductal carcinoma associated with intraductal carcinoma, with chemotherapy and radiotherapy. The reconstructive method was latissimus dorsi flap with expander. The flap suffered a partial necrosis, which was excised. After healing, the expander was replaced with silicone implant. For the contralateral breast we performed a breast reduction. Lipofilling was performed for symmetrization. The result was very good. (**Fig. 10, 11, 12, 13**)

The greatest advantage of TRAM flap is the close resemblance of the skin and subcutaneous tissue between breast and abdomen, especially for patients with large contralateral breast and ptosis. (**Fig. 14, 15**)

The advantage of DIEP flap is that it does not sacrifice the rectus abdominis muscle. It provides a normal breast appearance and consistency similar to natural contralateral breast (**Fig. 16, 17, 18**)

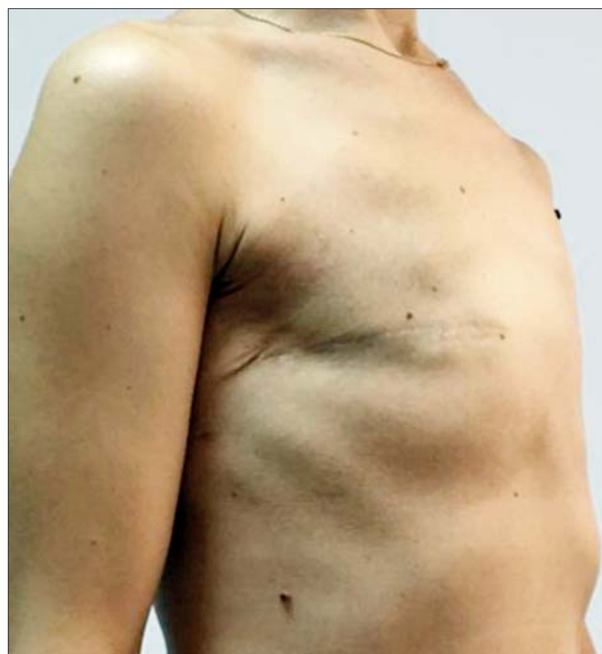

Figure 6. Preoperative aspect of bilateral mastectomy - profile

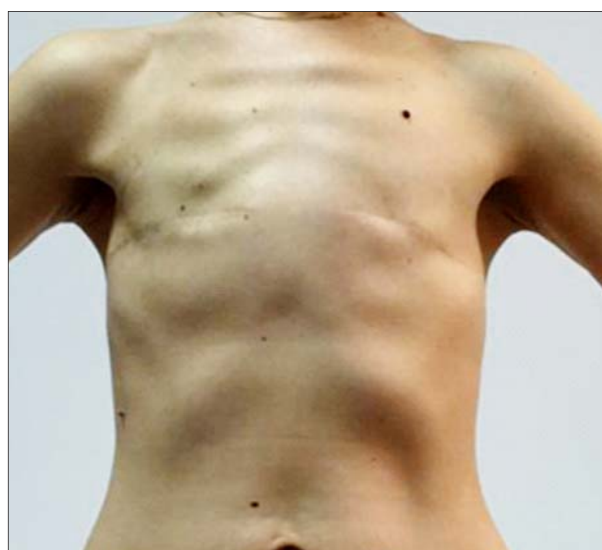

Figure 7. Preoperative aspect of bilateral mastectomy – anterior aspect

DISCUSSION

Breast reconstruction, in its various forms, is an appropriate option for the patients diagnosed with breast cancer, the benefits of this surgery are quite obvious, but it is important to select carefully the patients. Patients need to take an informed decision about the proposed treatment, considering that the duration of treatment is quite long, being divided into several stages.2

The musculo-cutaneous latissimus dorsi flap is used both in immediate and in late breast reconstruction. To improve the aesthetic appearance of the donor site there

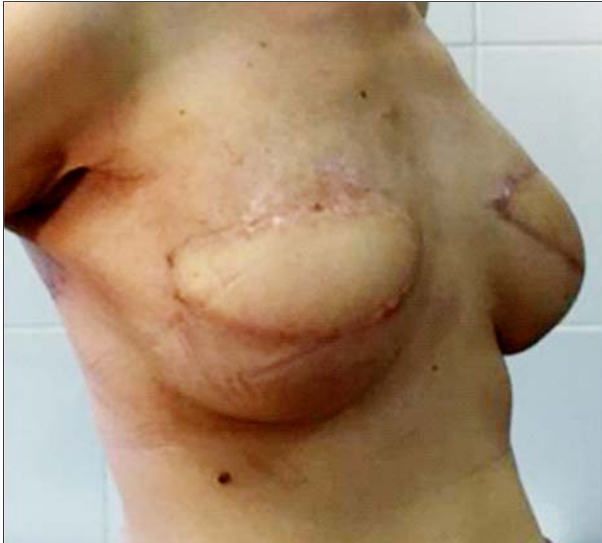

Figure 8. Postoperative aspect of bilateral breast reconstruction with latissimus dorsi flap and implant - profile

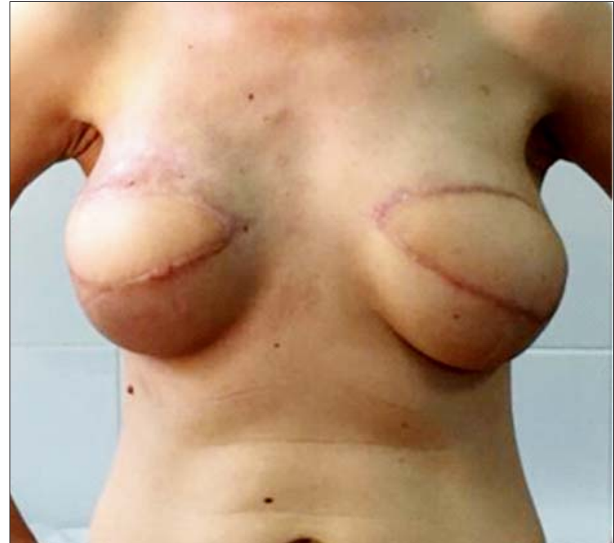

Figure 9. Postoperative aspect of bilateral breast reconstruction with latissimus dorsi flap and implant – anterior aspect

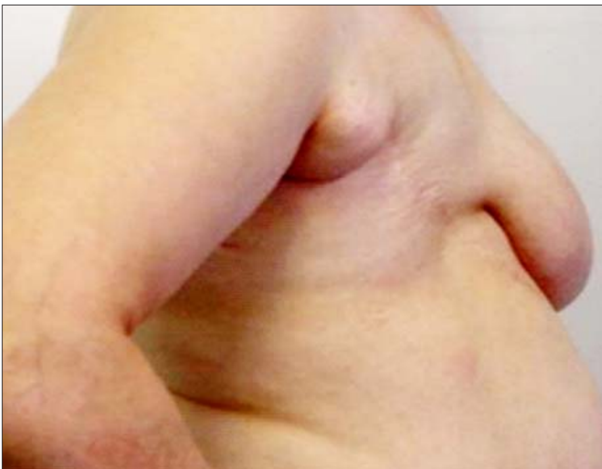

Figure 10. Preoperative aspect of a right oncological mastectomy - profile

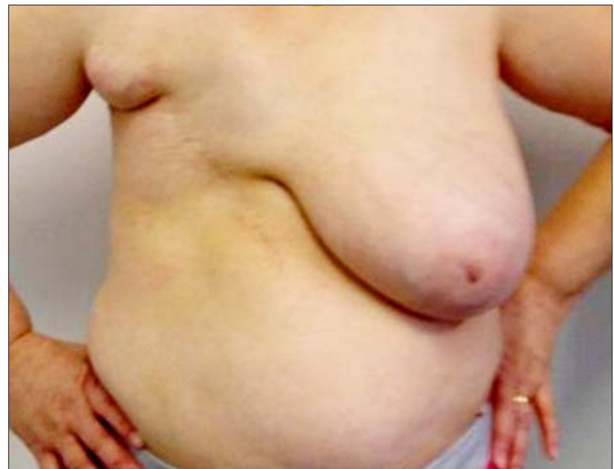

Figure 11. Preoperative aspect of a right oncological mastectomy - anterior aspect

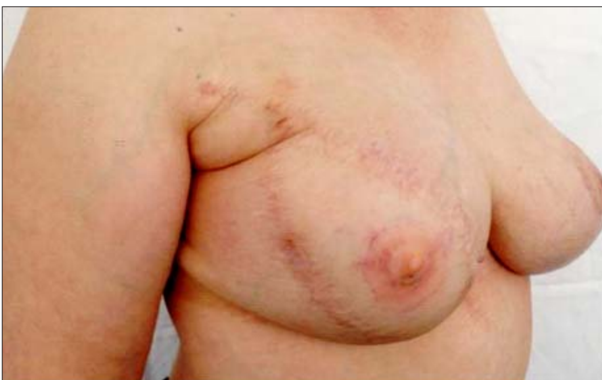

Figure 12. Postoperative aspect of breast reconstruction with latissimus dorsi flap and implant - profile

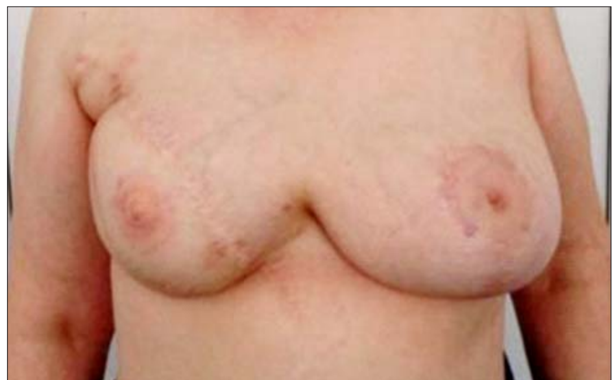

Figure 13. Postoperative aspect of breast reconstruction with latissimus dorsi flap and implant – anterior aspect

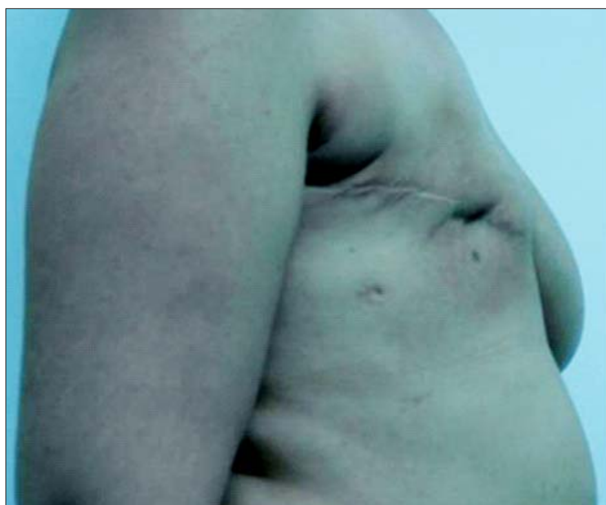

Figure 14. Preoperative aspect of right oncological mastectomy

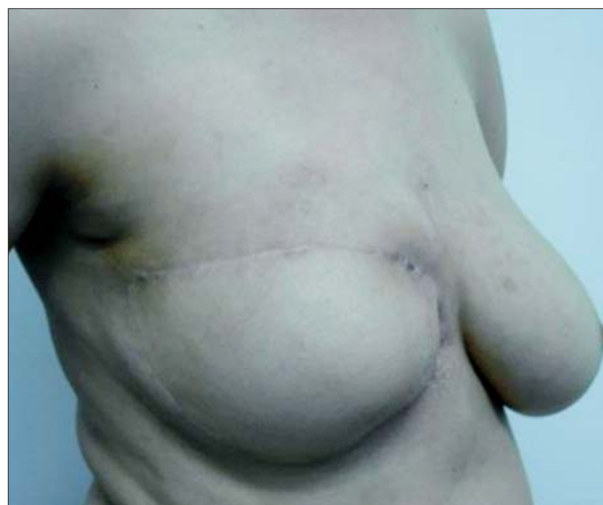

Figure 15. Postoperative aspect of pedicle TRAM

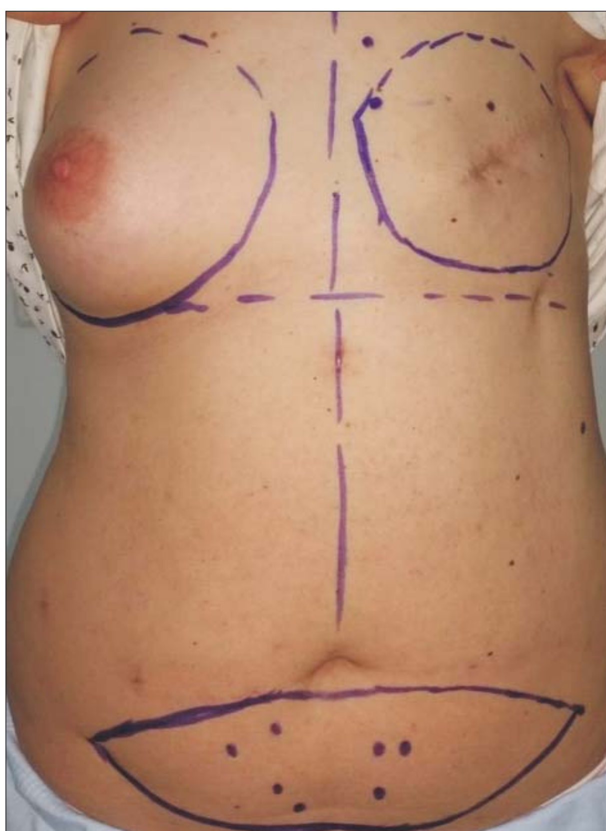

Figure 16. Preoperative aspect of left oncological mastectomy. In this picture you can see the perforators vessels that are marked on the abdomen

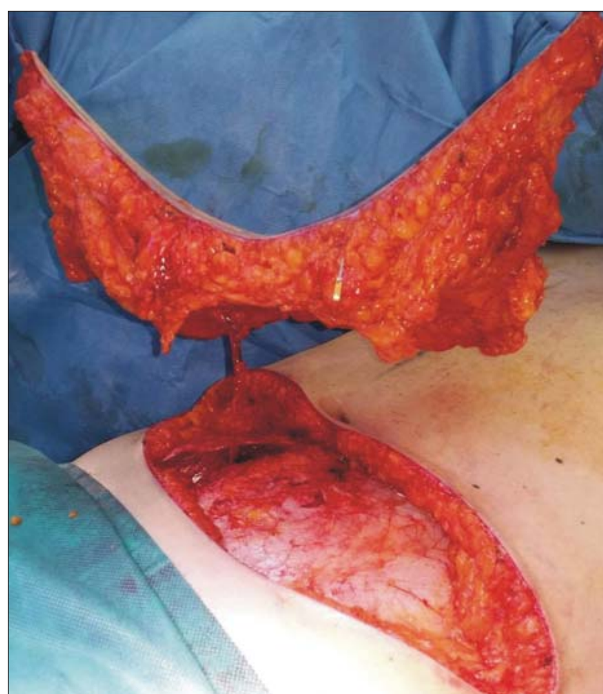

Figure 17. Intraoperative aspect of DIEP flap. The flap is raised on a single perforator

were made some refinements in flap harvesting, in order to obtain fine and smooth scars of the posterior wall, orientation of the skin island along the tension lines, harvesting deep fat layer with the flap, section of the dorsal thoracic nerve, partial cutting of the muscle insertion, placing the expander, in the first stage, and then replacing with the silicone implant, in the second stage. (5) We have used some of these technical improvement to the flap, with good results. The horizontal posterior scar can be hidden in the bra. A 2010 study shows that patients who received breast reconstruction with latissimus dorsi flap had developed seromas of the donor area, that were evacuated percutaneously. (6) This complication appeared in 6 of our cases in which latissimus dorsi flap was used as a reconstructive method. The seromas were evacuated percutaneous and they were not followed by infection.

Yassir Eltahir et al perform a study in 2013 that showed the degree of satisfaction and the quality of life of the patients who were diagnosed with breast cancer

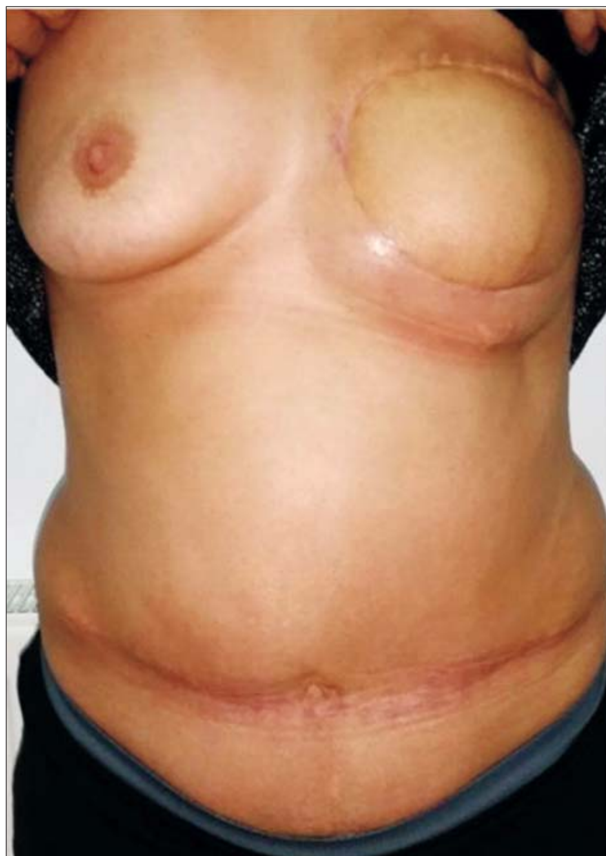

Figure 18. Postoperative aspect of DIEP flap. The result is very good with the apearance of a inframamary fold

and who underwent mastectomy, or who underwent mastectomy and breast reconstruction. The results of this study showed that patients who chose to have breast reconstruction were more satisfied and had less pain than those who did not choose this, whether or not they received chemotherapy. (2) The satisfaction score was significantly higher in patients with reconstruction than those without it; similarly it was about the psycho-social status and the sexual satisfaction. (2) The majority of patients who came for breast reconstruction had their mastectomy done 5-10 years ago. Due to the desire to improve the physical appearance and body integrity, they decided to perform reconstructive surgeries.

In 2010 it was performed a study that included 583 patients with breast reconstruction after mastectomy that compared the satisfaction of the patients having four different reconstructive surgical techniques: expander / implant, latissimus dorsi, TRAM flap and DIEP pedicle flap. 439 of the patients completed satisfaction questionnaires. The patients with DIEP flap had the highest level of overall satisfaction and with TRAM pedicle flap had the highest level of satisfaction regarding aesthetics. (7)

A study performed in 2012 with participation of 51 patients who completed a questionnaire of satisfaction regarding breast reconstruction using autologous tissue from the abdomen, concluded that there were statistically significant improvements in terms of satisfaction and psycho-social and sexual status. (8) All patients who received breast reconstruction, regardless of the reconstructive method which was chosen, said they are satisfied with the appearance of their breasts, that they have improved their family life and their changed perception of self-image, being confident in their own reliant.

Yassir Eltahir revealed, in a study performed on 92 patients, that the breast reconstruction with autologous tissue gives more satisfaction than the reconstruction with breast implant, but about the quality of life found no difference between these two reconstructive procedures; 47 patients received breast reconstruction with autologous tissue, and 45 with silicone implant. (9) Women who had a successful breast reconstruction are generally satisfied and have a good quality of life, regardless of the surgical method used. (9,10) Breast asymmetry after breast reconstruction occurred in 54% of cases where there were used autologous tissue, compared to 11% when there were used implants. (9) The quality of life of the patients with breast reconstruction increased regardless of the reconstructive method that we chosen. The breast asymmetries that occurred after a breast reconstruction after mastectomy have been solved by breast lifting and breast reduction to the contralateral breast.

Healing is a labile process and highly exposed of normal biology (11). All mastectomy scars were sent to histopathological examination to rule out a tumor relapse. In all cases the result was negative.

In a study performed in 2011 in the department of Psychiatry, University of Turin, Italy, in which were enrolled 57 patients diagnosed with breast cancer, the clinical and the personality characteristics related to the quality of life after breast reconstruction were evaluated. The patients underwent surgery that consisted of mastectomy and immediate breast reconstruction with tissue expander, replaced with silicone implant. The evaluation was performed at 1 week after surgery (mastectomy and expander) and 3 months postoperatively. The egocentric and vindictive personality in interpersonal relations condition significantly affected the subjective quality of life of the patients with breast reconstruction after oncologic mastectomy. They concluded that psychotherapy focused on preventing depressive symptoms and improving interpersonal relationships is indicated in the first week after surgery. (12) All patients said that they were depressed after mastectomy and felt they were robbed of their femininity.

Age and time needed for reconstruction did not affect overall satisfaction. (10) Nipple reconstruction had positively affected satisfaction. (10)

The impact of oncoplastic mastectomy (conservative surgery) and breast reconstruction, in perception of body image and quality of life, is influenced by patient age and education level. (4)

CONCLUSIONS

The number of requests for breast reconstruction after oncological mastectomy greatly increased after the implementation of the National Program for breast reconstruction. Each reconstructive method has its advantages and indications, but in the long term, reconstruction with autologous tissue is superior to alloplastic methods. Regardless of the reconstructive method that we used, patients were satisfied with the results.

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