

## CLINICAL STUDY

# Study on possibilities of reconstructive – plastic surgery in patients with stage III breast cancer

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**Abstract: Background:** This population based study aimed to use reconstructive-plastic surgery with autologous tissue as a treatment of patients with stage III breast cancer.

**Patients and methods:** We identified women (374) diagnosed with stage III breast cancer between 2000 and 2009 years. We compared radical operations with and without a plastic step, where 29 patients underwent the surgery in combination with an immediate radical resection with LD-flap replacement, mastectomy concurrently to TRAM-flap reconstruction in 103 patients.

**Results:** We examined the immediate and remote results of therapy. In data analysis, there were higher summarized indices of physical and mental health rates in patients who underwent the reconstruction plastic surgery compared to patients with mastectomy.

All treated women 5 –year survival rate was 77.4+3.6 %, 63.5+3.2 % and 40.1+3.1 % in stages IIIa, IIIb, IIIc respectively. In the control group, the rates were 78.6+3.4 %, 64.0+3.3 %, and 39.3+3.1 % (p<0.05) respectively.

**Conclusion:** Our results showed that women with stage III breast cancer who underwent reconstructive-plastic surgeries had a chance to improve their quality of life, and did not increase the frequency, neither did reduce 5 year survival (Tab. 2, Fig. 4, Ref. 19). Full Text in free PDF [www.bmj.sk](http://www.bmj.sk).

**Key words:** breast cancer, breast reconstruction, LD-flap, TRAM-flap.

Breast cancer (BC) keeps a stable leading position during recent decades with a growing trend in women with oncological diseases in economically developed world countries (1, 7). Therewith, the part of locally advanced types of BC makes up some 40 % (3, 6, 17). BC occupies the first place among malignancies in women in Republic of Uzbekistan, in 2005 the morbidity rate being 6.3 of woman in 100,000 of population.

BC disease is followed by a severe psychological stress that is given during therapy. Radical mastectomy just only “exchange” cancer for aesthetic defect (5, 8, 10). Reconstructive plastic operations takes the main place in rehabilitation of BC patients and treatment of mental disorders associated with a loss of womanhood and wholeness of own organ (2, 12, 13).

Simultaneously, survey of literature data shows that reconstructive plastic surgery is mainly performed on patients with early stages of AC. There are few investigations devoted to the use of plastic step in rehabilitation of BC patients at IIIa and IIIb stages of disease (2, 11, 15, 16) and single information of IV

stage patients. At the same time, there are no data about reconstructive plastic operations of IIIc stage patients.

In this study, we aimed to evaluate the possibilities of using reconstructive plastic surgery methods during the complex treatment of III stage breast cancer patients.

## Patients and methods

The study analyzed the treatment results of 374 of patients with III stage breast cancer who received combined and complex therapy in mammology department of National Oncological Research Centre Ministry of the Health of the Uzbekistan and Clinical Oncological Centre Ministry of the Health of the Tatarstan (Russia) over the period 2000–2009 years.

The main group consisted of 132 patients with BC who underwent a reconstructive plastic surgery during complex treatment. The control group was formed of 242 patients with BC who underwent complex therapy without a plastic step.

In the main group, there were women aged from 24 to 56 years old and the mean age was 41.2±0.7 years. In the control group, there were women from 29 to 59 years old, and the mean age was 43.4±0.5 (p<0.01).

IIIa stage of process occurred more frequently, herewith T<sub>2</sub>N<sub>2</sub>M<sub>0</sub> prevailed by TNM classification - 40 (30.3 %) patients in the main group and 59 (24.4 %) in the control group. T<sub>3</sub>N<sub>1</sub>M<sub>0</sub> stage of disease was also considerable in both groups (25,0 and 16,1 % – in the main and control group, respectively). IIIc stage

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mainly occurred as  $T_2N_3M_0$  – 21 (15.9 %) in patients from the main group and 44 (18.2 %) – in the control group.

Preoperative radiotherapy (RT) in the main group received 42 (31.8 %) patients and in the control group 95 (39.3 %) patients. In the main group, postoperative RT was made in 89 (67.4 %) of BC patients, and in the control group in 126 (52.1 %) of patients.

Chemotherapy was performed by the standard scheme CAF. Altogether, 63 (47.7 %) of patients received preoperative CT in the main group and 183 (75.6 %) of BC patients in the control group. Totally, postoperative CT was conducted in 115 (87.1 %) patients from the main group and 190 (78.5 %) from the control group. In the postoperative period, hormone therapy was applied to 66 (50.0 %) patients from the main group and to 68 (28.1 %) patients from the control group.

If the tumor was small against the background of large breast with localizations in external quadrants, patients received the neoadjuvant chemo- radiotherapy. Sequentially, after a positive effect of a radical resection of tumor by Blochin (this method includes removing the quadrant of breast (1/3 or 1/4 of breast volume tissue with underlying area of fascia of mm pectoralis major with mm pectoralis minor, cellular tissue and lymphonodes of clavicular, axillary and subscapular areas] an immediate LD-plasty followed).

In large tumors with skin symptoms and localization in central and internal quadrants as well as in the lack of effect of chemo-radiotherapy, the patients underwent mastectomy by Patey or Madden. In the deficit of thorax tissue in order to close the defect we used LD-flap and in case of young patient who wanted to have better reconstructed breast, TRAM-flap was made.

An immediate TRAM-flap plasty was performed in 96 (72.7 %) patients with BC from the main group (Fig. 1). The choice of TRAM-flap on one or two muscle pedicles depended on breast volume. An immediate TRAM-flap reconstruction of breast on two muscles was applied when needed breast restoration with volume more than 400  $se^3$ . A delayed TRAM-flap was made to 7 (5.3 %) patients.

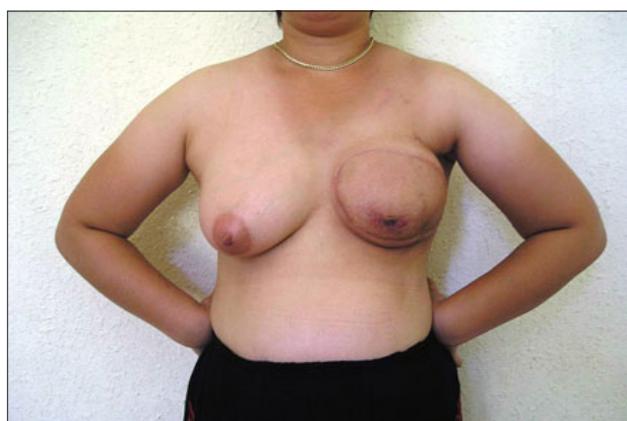


Fig. 1. Patient S, 27years old, H/C 6316. Patient's look after conduction of left breast TRAM-plasty with replacement on one muscle pedicle with lateral pumping.



Fig. 2. Patient K, 28 years old, H/C 2825. Patient's look after conduction of left breast LD-plasty.

## Results

We performed the LD-flap immediate reconstruction of breast in 29 patients (Fig. 2). This procedure was applied simultaneously with a radical resection by Blochin as it was conditioned by patients' wish and with the presence of postoperative cicatrices on anterior abdominal wall as well.

*Immediate therapy results.* A flap observation began just after the replacement and lasted up to 3 and more weeks. In the early postoperative period, the restored breast looked paler and had a decreased temperature in comparison with surrounding tissues, later colour and temperature were getting better. We investigated complications in the nearest postoperative period in patients with reconstructive plastic surgery and revealed 23 (17.4 %) cases, in the control group it was 13 (5.4 %) cases (Tab. 1). There were no intraoperative complications in both groups.

As the effect of blood circulation lack in flap, marginal necrosis was noted in 10 (7.8 %) observations in TRAM-plasty. In

Tab. 1. Immediate postoperative complications in patients with BC.

Complications	Main group n=132 (%)	Control group n=242 (%)
Intraoperative	–	–
Postoperative wound suppuration	–	6 (2.5)
Spread of margins of postoperative wound	2 (1.5)	2 (0.8)
Postoperative hemorrhage	1 (0.8)	3 (2.3)
Seroma	3 (2.3)	–
Lymphorrhoea	3 (2.3)	–
Anemia	1 (0.8)	2 (0.8)
Skin flap necrosis	TRAM	10 (7.6)
	LD	3 (2.3)
Total complications	23 (17.4)	13 (5.4)

**Tab. 2. Assessment of quality of life by MOS SF-36 scale in BC patients after therapy.**

Indicator	Main group n=132	Control group n=242	p
PF (physical function scale)	83.4±5.2	68.8±3.8	<0.01
RP (role physical function scale)	73.6±5.8	53.0±3.7	<0.01
BP (physical pain scale)	64.5±4.5	56.2±2.4	<0.05
GH (general health scale)	57.8±3.9	51.7±2.1	<0.05
Amount of points of physical health component	279.3±16.4	229.7±10.6	<0.01
VT (vitality scale)	63.4±4.8	54.6±2.5	<0.05
SF (social function scale)	65.1±5.1	35.3±1.4	<0.05
RE (role emotional function scale)	58.2±3.8	29.8±1.1	<0.01
MH (mental health scale)	61.4±4.7	36.4±1.6	<0.05
Amount of points of mental health component	248.1±14.2	156.1±6.3	<0.01

case of LD-plasty, flap necrosis developed in 3 (2.3 %) patients. In these cases, we performed an excision of necrotizing tissues with second suturing. In all patients it was succeeded to save the breast, but cosmetic effect was slightly lowered.

It is necessary to mention that the presence of complications in the group of patients with III stage BC did not suppress to conduct timely adjuvant chemo and radiotherapy by standard schemes.

*Remote therapy results.* BC patients quality of life after therapy has been identified by the questionnaire Medical Outcomes Study 36-Item Short-Form Health Survey (MOS SF-36) (18).

The comparative study results of patients' quality of life by questionnaire MOS SF-36 is demonstrated in Table 2.

In data analysis, there were higher summarized indices of physical and mental health rates in patients who underwent reconstruction plastic surgery as compared to patients with mastectomy.

Therewith, the most differences were found in the assessment of the mental health component.

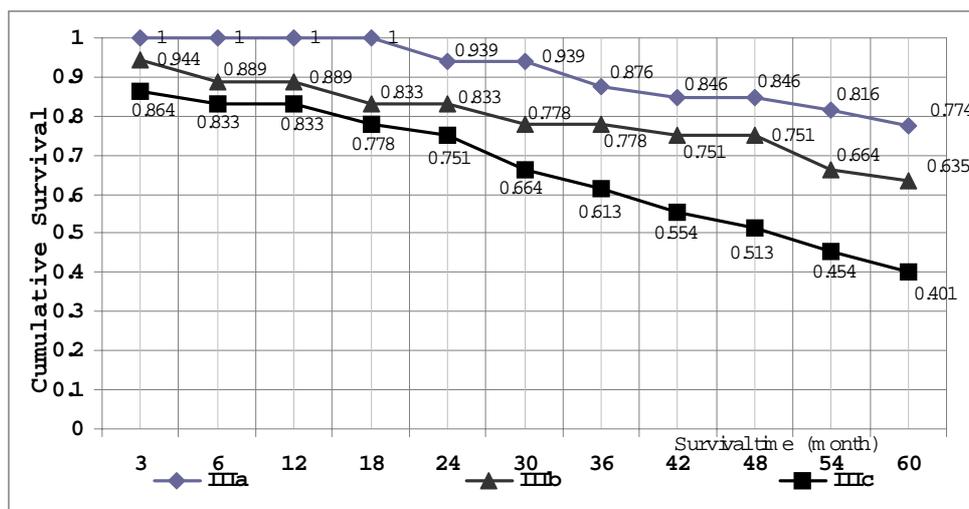
One of the major criteria of quality assessment of plastic step therapy was an aesthetic performance of obtained result. In the comparative assessment of features of mental disorders against clinical version of disease, the following changes were detected: in patients with mastectomy a higher level of restlessness and nerviness prevailed, depressive disorders and nerve-mental exertion followed. The indicated mental disorders manifested in a lesser degree in patients with reconstructive plastic surgery.

The incidence of locoregional recurrence following the radical operation was 15 patients (10.6 %) who had reconstruction and 28 patients (11.6 %) who had a radical operation alone. The median time to detect a locoregional recurrence was 2.3 years (range 0.3 to 5.5 years) in the reconstructed cohort and 1.8 years (range 0.2 to 5.6 years) in the non-reconstructed cohort.

The total 5-year survival rate in the group with reconstructive plastic surgery was 63.4±3.4 % (Fig. 3), 5-year relapse-free survival was 56.1±3.1 % (p<0.05).

In the control group, these indices were 65.8±3.3 % (Fig. 4) and 58.4±3.2 %, respectively.

The total 5-year survival rate of patients in the main group with III<sub>f</sub> stage of disease was 77.4 %, what approximately corresponds to the control group – 78.6 %. In III<sub>b</sub> stage, the 5 year survival rate was 63.5 % in the main group and 64.0 % in the control group. The lower rates of 5 year survival were revealed in III<sub>n</sub> stage – 40.1 % in the main group and 39.3 % in the control group of BC patients. In III<sub>f</sub> stage of disease, the 5-year relapse-free survival was 65.4 % in the main group and 67.0 % in the control group of patients. In III<sub>b</sub> stage of disease, the 5-year survival in the main group was 58.2 % and in the control group 56.3 %. In III<sub>n</sub> stage of disease it was 36.4 % in the main group and 35.1 % in the control group of patients with BC.



**Fig. 3. Total 5-year survival rate of patients in the main group, subject to stage of disease. Disease-free survival (DFS) in univariate (Kaplan-Meier) analysis (log-rank test; p=0.064).**

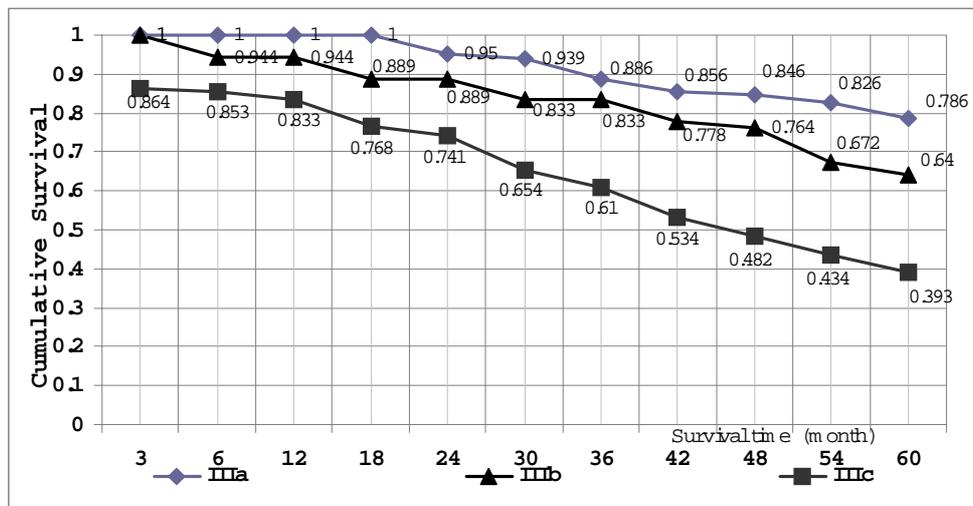


Fig. 4. Total 5-year survival rate of patients in the control group, subject to stage of disease. Disease-free survival (DFS) in univariate (Kaplan-Meier) analysis (log-rank test;  $p=0.048$ ).

## Discussion

The surgeon who performs restoration of breast today has a large spectrum of techniques, his choice depends on oncological situation, constitutional particularities of patient as well as her own wishes (2, 8).

The use of latissimus dorse myocutaneous flap (LD) and transverse-rectus abdominus myocutaneous flap (TRAM) have got more wide spread in breast plastic surgery (8, 10, 15). In USA, every year up to 400.000 operations on breast reconstruction are performed on, and review of remote results indicated real advantages of plasty with autological tissues, in particular, TRAM- plasty (19).

Development of microvascular surgery made it possible to improve existing techniques of breast plasty and, as a consequence, the percentage of these complications like margin and total necrosis of flaps was diminished (2). In our study, the use of restoring and plasty surgery possibilities allowed to extend the limits of operability of patients with locally advanced types and significantly improve the quality of life in this category of patients. The possibility of carrying out a reconstructive plastic surgery in III stage breast cancer during combined and complex therapy has been shown in 29 patients who underwent the plasty with LD-flap and in 103 patients who underwent the plasty with TRAM – flap.

The assessment of the quality if this category of patients revealed a higher degree of patient rehabilitation after reconstructive plastic surgery than in patients with mastectomy. One of the major criteria of value of plastic step quality is aesthetic perfection of obtained results as well as significant decrease of the number of mental disorders.

There are contradictory opinions on the role of radiotherapy in the reconstruction of breast. Particularly, patients who underwent radiotherapy after reconstruction are at a high risk for de-

velopment of the complications like fibrosis, fat necrosis, and flap contracture. In some cases, patients needed repeated reconstruction to correct complications after radiotherapy. On the other hand, there are many advantages of immediate reconstruction. Complicacy of task is that sometimes before obtaining histological response it is impossible to find out the necessity of radiotherapy use. There is also a difficulty to detect patients with a high risk of complications (14).

Some investigations showed that negative factors as radiotherapy, smoking and obesity did not influence the patients with breast reconstruction who underwent neoadjuvant chemotherapy (9). The performance of reconstructive plastic surgeries at the same time did not significantly affect the total and recurrence-free patients survival rate as compared to patients with mastectomy (4, 13).

The data obtained are the evidence of safety of reconstructive plastic surgery in patients with III stage of BC as they did not result in more significant deterioration of total and relapse-free survival rate of patients than in the group of patients without the reconstructive plastic step.

We concluded that the following are the indications to carry out reconstructive plastic surgery in patients with BC stage III: the patient's desire (95.5 %), optimal age (between 24 and 49 years old) (83.3 %), psycho emotional rehabilitation of patients (100 %). General contraindications were: severe somatic state of woman, concomitant disease at the stage of decompensation, elderly age of patients. The performance of reconstructive plastic surgery with TRAM and LD flaps in III stage breast cancer aims to rehabilitation after a radical therapy.

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