

Aesthetic result among breast cancer patients undergoing autologous breast reconstruction versus breast conserving therapy

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Abstract

Purpose Following breast-conserving surgery or mastectomy followed by autologous breast reconstruction, breast cancer patients were studied to discover their satisfaction with the aesthetic results of the two treatment strategies.

Patients and methods One hundred and thirty-four breast cancer patients were included in this study. Sixty-four underwent breast-conserving surgery followed by radiotherapy. Mastectomy was performed in 70 patients with immediate or late reconstruction. To evaluate the quality of the aesthetic results in both groups we designed a questionnaire assessing different cosmetic categories.

Results Patients in both therapy groups showed a very high satisfaction with their cosmetic results; the patients undergoing breast reconstruction were even more satisfied than the patients who had breast-conserving therapy.

Conclusion Our study demonstrated that breast reconstruction with autologous tissue offers an opportunity to support patients with advanced breast cancer who were confronted with mastectomy, showing a high degree of satisfaction with the cosmetic results.

Keywords Breast cancer · Autologous breast reconstruction · Aesthetic results

Introduction

Breast cancer is the most common cancer in women; about 10% of women in industrialized countries will suffer from this disease. Since the end of the nineteenth century the concept of breast cancer has changed from that of a localized to one of generalized disease, and in consequence the surgical approach has also changed from radical local procedures, first performed by Halsted in 1882, to the modified mastectomy and finally to breast-conserving therapy, the standard technique for 20 years (Atkins, Veronesi, Fisher) [1].

In about 30% of patients modified mastectomy is still indicated to achieve local oncological control in locally advanced breast cancer. The loss of a breast is a traumatic event in a woman's life and the beneficial effect of breast reconstruction on psychosocial and sexual well-being has been noted.

During recent decades many different methods of autologous tissue reconstruction have been developed, first using pedicled musculocutaneous transplants. The latissimus dorsi flap (Lado-flap) and the transversus-rectus-abdominis flap (TRAM-flap) are regarded as safe techniques of breast reconstruction. Which method will become the standard type of autologous flap technique has still to be determined, taking microvascular techniques into account [2, 4, 10, 13, 19, 21].

The quality of the aesthetic result is one of the most important criteria in breast operations and this also applies for oncological operation concepts. The aim of this article is to examine by means of a retrospective

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study whether mastectomy with autologous reconstruction using a TRAM flap or Lado-flap has disadvantages for patients with regard to satisfaction with the cosmetic result compared to breast-conserving procedures.

Patient satisfaction and the satisfaction of specialist physicians with the cosmetic result have already been investigated and compared in studies. However, for the patient, not only is her subjective body image crucial postoperatively but the acceptance of the people around her is particularly important for how she feels about herself psychosexually. In this study the cosmetic result was therefore assessed not only by the patient and, for comparison, by medical experts but in addition non-medical laypersons were surveyed as representatives of the patient's social environment.

Patients and methods

One hundred and thirty-four breast cancer patients were included in this study. These were patients who attended the Hamburg Eppendorf University Gynaecology Clinic with breast cancer in 2002. Sixty-four underwent breast-conserving surgery followed by radiotherapy. Mastectomy was performed in 70 patients with immediate or late reconstruction. Eighteen patients had simultaneous reconstruction with a Lado-flap and 28 with a pedicled TRAM flap. Twenty-four patients underwent late autologous breast reconstruction after mastectomy, two using a lado-flap and 22 a TRAM flap. The decision for primary or late reconstruction was made by the patients after they were provided with the information about the advantages and disadvantages of both methods including that the cosmetic results are better following primary reconstruction. In all reconstructed patients a sufficient volume was achieved by only using autologous tissue. No implants were necessary. As expected the prognosis factors (pT, pN, grading) were favourable in the breast-conserving group compared to the reconstructed group since in the majority of cases the advanced stages of breast cancer were the reason for the mastectomy.

A questionnaire was designed to record satisfaction with the cosmetic result. This includes seven questions about the subjective assessment of the overall cosmetic result and the operated breast compared to the contralateral breast with regard to size, shape, symmetry, nipple position, colour, and scar appearance. The assessment was made using a three-point score ("very good to good", "satisfactory", "poor") (Fig. 1).

The assessment was made by three groups: on the one hand by the patient herself and on the other hand by a specialist medical jury (the surgeon himself and

two postgraduate trainees) and by two non-medical laypersons. The patients were therefore invited for a postoperative review.

The data in the questionnaire were analysed using a Chi-square test with Fisher's two-sided test and/or the Freeman–Halton test with over four fields; there was a significant difference in the characteristics at a P value ≥ 0.05 .

Results

A total of 134 patients with breast-conserving surgery and breast reconstruction were included in the analysis of the cosmetic result.

A significant difference is apparent in the self-assessment between breast-conserving surgery patients and patients with autologous breast reconstruction. The latter assess their overall cosmetic result as better than the women who had breast-conserving surgery: "very good to good" in 90 versus 81% ($P = 0.012$). Overall, nearly 96% of patients with reconstruction assessed the overall result as "very good" to "satisfactory", and all patients with breast-conserving surgery assessed it as no worse than "satisfactory" (Table 1).

When the overall cosmetic result was assessed by experts, there is also a significant difference, though the expert group is more critical of the breast reconstructions, which were reported in just under 61% as "very good to good", while the breast-conserving surgery was in the very good to good range in 78% ($P = 0.039$). However, the overall cosmetic result was not assessed as worse than "satisfactory" in any case (Table 2).

The assessment of the laypersons of the flap cosmetic result was significantly worse than for breast-conserving surgery ($P = 0.000$).

A "very good to good" result was seen in 19% of the breast reconstructions but in just under 55% of the breast-conserving group. The laypersons gave the grade "satisfactory" to the flap procedures in 54% but regarded the result as "poor" in 26%, while a "very good" to "satisfactory" result is seen with the conservative operation procedures in approximately 97% (Table 3).

Comparison of the overall cosmetic result between the jury groups

The overall cosmetic result was assessed worse overall by the laypersons than by the patients and the expert group. Experts and laypersons found an overall better result with breast-conserving surgery than with breast reconstruction, but in contrast to this, the patients in our population who had breast-conserving surgery

Fig. 1 Questionnaire to record satisfaction with the cosmetic result**Questions about the cosmetic result**

How do you judge the operated breast regarding the...

1) ...overall cosmetic result?

<i>Very good</i>	<i>good</i>	<i>satisfactory</i>	<i>poor</i>	<i>very poor</i>
1	2	3	4	5

2) ...symmetry compared to the other breast?

<i>Very good</i>	<i>good</i>	<i>satisfactory</i>	<i>poor</i>	<i>very poor</i>
1	2	3	4	5

3) ...size compared to the other breast?

<i>Very good</i>	<i>good</i>	<i>satisfactory</i>	<i>poor</i>	<i>very poor</i>
1	2	3	4	5

4) ...shape?

<i>Very good</i>	<i>good</i>	<i>satisfactory</i>	<i>poor</i>	<i>very poor</i>
1	2	3	4	5

5) ...nipple position?

<i>Very good</i>	<i>good</i>	<i>satisfactory</i>	<i>poor</i>	<i>very poor</i>
1	2	3	4	5

6) ...colour?

<i>Very good</i>	<i>good</i>	<i>satisfactory</i>	<i>poor</i>	<i>very poor</i>
1	2	3	4	5

7) ...scar appearance?

<i>Very good</i>	<i>good</i>	<i>satisfactory</i>	<i>poor</i>	<i>very poor</i>
1	2	3	4	5

were more critical of their result than those who had breast reconstruction (Fig. 2).

The cosmetic result was also assessed more critically by the laypersons than by the patients and the expert group in the subcategories (symmetry, skin colour, scars, position of the nipple). On measurement of the exact significance, the Chi-square test (two-sided) yields a significant difference between laypersons and patients ($P = 0.000$) but not between patients and expert group. Thus, the result is assessed significantly better by the affected patients than by the laypersons. The assessment of the experts was similar to the self-assessment by the patients.

Table 1 Results of self-assessment of overall cosmetic appearance by patients

“Overall cosmetic” grade	Breast reconstruction	Breast-conserving surgery
1 very good to good	90.0% ($n = 63$)	81.3% ($n = 52$)
2 satisfactory	5.7% ($n = 4$)	18.8% ($n = 12$)
3 poor	4.3% ($n = 3$)	0% ($n = 0$)
Total	100% ($n = 70$)	100% ($n = 64$)

Table 2 Results of assessment of overall cosmetic result by experts

“Overall cosmetic” grade	Breast reconstruction	Breast-conserving surgery
1 very good to good	61.4% ($n = 43$)	78.1% ($n = 50$)
2 satisfactory	39.1% ($n = 27$)	21.5% ($n = 14$)
3 poor	0% ($n = 0$)	0% ($n = 0$)
Total	100% ($n = 70$)	100% ($n = 64$)

Comparison between the jury groups in the assessment of primary versus secondary breast reconstruction

In the assessment by laypersons the evaluation of the cosmetic results after immediate reconstruction overall and in individual categories was significantly better compared to secondary breast reconstruction. Among the experts, in contrast, there is a tendency towards better assessment of the primary operations in most categories of cosmetic evaluation; immediate reconstruction is assessed as significantly better only in the assessment of breast shape and ptosis. The patients in both groups assessed their cosmetic result as equally

Table 3 Results of assessment of overall cosmetic result by laypersons

“Overall cosmetic” grade	Breast reconstruction	Breast-conserving surgery
1 very good to good	19.4% (<i>n</i> = 14)	54.7% (<i>n</i> = 49)
2 satisfactory	54.3% (<i>n</i> = 38)	42.2% (<i>n</i> = 27)
3 poor	25.7% (<i>n</i> = 18)	3.1% (<i>n</i> = 2)
Total	100% (<i>n</i> = 70)	100% (<i>n</i> = 64)

good, and patients with immediate reconstruction assessed their result as significantly better only in their assessment of the breast size achieved. Overall, assessment of primary reconstruction was better than following a secondary operation.

Discussions

Breast reconstruction using autologous tissue has been performed at Hamburg Eppendorf University Gynaecology Clinic since 2002. The most important criteria of quality by which operative procedures are assessed today in breast cancer surgery are the complication rate, the cosmetic result, patient satisfaction with the cosmetic result and recently the health-related quality of life also. This study dealt with the cosmetic result after breast-conserving surgery compared to the result after breast reconstruction with autologous tissue. Assessment by the patient herself was compared with that of specialists on the one hand and of laypersons on the other. A uniform questionnaire was designed in order to standardise the results.

Patient satisfaction with regard to the cosmetic result after oncological breast operations has already been investigated in a few studies and patient satisfaction

was often compared with assessment by a specialist physician. However, for the patient, not only is her subjective body image crucial postoperatively but the acceptance of the people around her is particularly important for how she feels about herself psychosexually. In this study the cosmetic result was therefore assessed not only by the patient and by medical experts for comparison but in addition medical laypersons were surveyed as representatives of the patient’s social environment.

In our investigation of the cosmetic result, a very satisfactory result was apparent when compared internationally. There is very high patient satisfaction particularly in our breast reconstruction group. However, comparison of our study with previous studies is only partially possible as the cosmetic result was often assessed only by the patients or by experts. A comparative assessment was made in only a few studies. As in previous studies, a somewhat more critical assessment by the experts than by the patient was to be expected [10]. In our study, in contrast, the assessments by patient and doctor were largely in agreement, while in comparison the assessment by the laypersons turned out worse. A particularly good result in international comparison was seen in the analysis of the group with autologous reconstruction, where the assessment was “very good to good” and “satisfactory” in 98% of the patients, 99% of the experts and 84% of the laypersons [4].

The possible cause of this result may be that the doctor, on the basis of his experience and knowledge of what is “surgically feasible”, from the outset expects an “optimal” result of the breast operation that is not entirely natural. A patient who is or was confronted with complete loss of the breast is possibly satisfied with a result that shows only moderately good reconstruc-

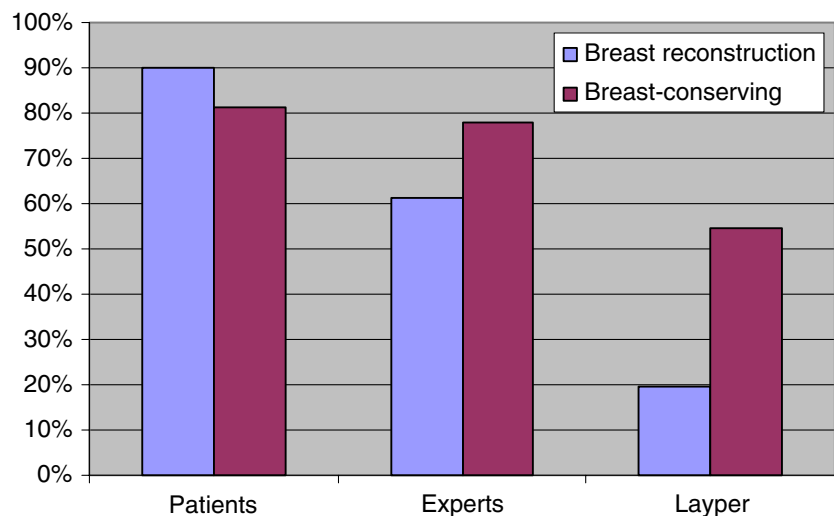
Fig. 2 Percentage of overall cosmetic result assessed as very good to good

Fig. 3 Example of a reconstructed breast (latissimus dorsi flap) where the scores between experts “good”, patients “very good” and laypersons “poor” differ



tion of the breast. Moreover, one study showed that patient satisfaction depended substantially on the quality of the preoperative information and discussion. A patient also does not assess the result impartially if she does not expect perfect symmetry because of the information she has been given beforehand. The impartial layperson, on the other hand, expects as a “very good” result a natural-appearing breast, a result that according to today’s experience cannot be achieved fully even with operations using autologous tissue (Fig. 3). However, comparison with other studies is also difficult because some studies only state the percentage in which the assessment was “satisfactory” [2, 6, 11, 14, 24, 25].

As in earlier studies, the best cosmetic results were also obtained in our breast reconstruction group with a skin-sparing mastectomy (SSM) with immediate reconstruction, in which troublesome scars and differences in skin colour occur to a lesser extent. Our survey—corresponding to the results of previous studies—yielded a significantly more positive assessment of the immediate reconstructions by the laypersons while among the experts there was only a tendency toward better assessment of the primary operation. This can possibly be explained by the fact that surgeons at the second operations were faced with the previous mastectomy as the initial situation where reconstruction was then more problematic, so that the results achieved were seen more positively. It was interesting in our study that this difference was not found in our patient jury and both operative procedures were assessed equally. In self-assessment, a tendency to a more positive assessment was even identified in women who had secondary surgery. A possible reason for this result is that these patients saw their cosmetic result in comparison with the previous mastectomy so that the subjective assessment of the reconstruction was more positive. Internationally, immediate reconstruction procedures are also favoured as this not only has technical advantages but the single-stage procedure is also preferred for psychological and psychosocial reasons in dealing with the disease. All “primary” TRAM flaps and Lado-flaps were operated with this method, partially preserving the nipple–areola complex. A better result was also found in our analysis with regard to breast size and projection,

which has also been shown in earlier studies of the SSM technique [3, 7–10, 12, 15, 16, 20, 22, 23].

In contrast to the previously customary subcutaneous mastectomy with simultaneous reconstruction by insertion of implants, in which a compromise often had to be made between adequately radical breast removal and aesthetic result, in the SSM with autologous tissue reconstruction, the skin covering can be thinned sufficiently without impairing the cosmetic result. Local recurrences therefore do not occur more often with this method so SSM is a safe method from the oncological aspect [3–5, 15, 17, 18, 24].

Conclusion

Using a questionnaire, the aesthetic outcome with the various procedures was examined. Analysis showed that very high patient satisfaction with the cosmetic result was achieved in the breast-conserving surgery group but particularly also in patients who had breast reconstruction. Patients who had breast reconstruction even perceived their cosmetic result as significantly better than patients who had a breast-conserving procedure. Assessment of the cosmetic results by the patients did not differ in our study compared to that of a medical expert. The aesthetic results were regarded somewhat more critically by non-medical laypersons, who were selected in our study as an analogue of the patient’s social environment. The latter reported that the best cosmetic results were obtained by breast-conserving operations but in the reconstructed patients they still assessed the cosmetic outcome as very good to good or satisfactory in 74%.

On the basis of these results, we are of the opinion that autologous reconstruction of the breast by means of standard procedures such as Lado-flaps and pedicled TRAM flaps can make a very good contribution to patients in dealing with breast cancer. When advising a woman who is confronted with mastectomy and desires breast reconstruction, the more recent data regarding the advantages and disadvantages of the operative procedures should be noted so that the choice is made in favour of the best method individually with regard to

the aesthetic result taking operative and postoperative stress into account.

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