

RECURRENCES AFTER IMMEDIATE RECONSTRUCTION IN BREAST CANCER

P. Mustonen¹, V. Kataja², M. Berg³, T. Pietiläinen⁴, A. Papp¹

¹ Department of Plastic Surgery,

² Department of Oncology,

³ Department of Radiology,

⁴ Department of Pathology,
Kuopio University Hospital, Kuopio, Finland

ABSTRACT

Aim: To determine the incidence of and reasons for recurrences after immediate breast reconstruction in breast cancer patients.

Material and Methods: The data of 79 patients undergoing immediate breast reconstruction between 1998 and 2001 in Kuopio University Hospital were re-examined from both the local cancer register and the patient charts at the end of year 2003.

Results: There were five local recurrences (6.3 %), one regional recurrence (1.2 %), and three cases (3.8 %) presented bone and/or visceral metastases. All recurrences except one (primary tumor noninvasive) appeared within the first two years after primary therapy. Young age and increasing size of the tumour were risk factors for distant or logoregional metastases.

Conclusion: Immediate breast reconstruction is a safe procedure in breast cancer patients, but a multidisciplinary team is needed for careful patient selection.

Key words: Breast reconstruction; breast cancer; recurrence

INTRODUCTION

Breast conserving surgery (BCS) is possible, if the size of the tumour is not too large in relation to breast size and the tumour is not multicentric. The majority of women at their working age are willing to undergo a breast reconstruction, if mastectomy is needed to treat their cancer (1). If mastectomy is inevitable, breast reconstruction is nowadays increasingly performed immediately. Depending on the technique of removing the tumour and glandular tissue in immediate breast reconstruction (IBR), most pa-

tients don't receive postoperative RT. In the newest technique, where a large resection and LD-miniflap is used, postoperative RT is always used, just like the current practice is to deliver RT to the breast also in BCS (2–7). From the 1990's many authors are convinced that IBR is as safe as delayed reconstruction and it can be performed without the risk of delay in adjuvant oncological treatments (Table 1). This article presents the incidence of and the possible reasons for logoregional and distant recurrences after IBR in our own material.

MATERIAL AND METHODS

The study was approved by the Ethics Committee of Kuopio University Hospital. The charts of breast cancer patients from January 1998 until the end of the year 2001 were retrospectively reviewed. There were 27 TRAM-flaps, 28 LD-flaps and 23 segmental resections and LD-miniflaps and one reconstruction performed with a prosthesis. The

Correspondence:

Paula Mustonen, M.D.
Department of Plastic Surgery,
Kuopio University Hospital
P.O. Box 1777
Fin - 70211 Kuopio, Finland
Email: paula.k.mustonen@kuh.fi

TABLE 1

Local recurrences after immediate breast reconstructions.

Author	Year	Follow-up time	Patient N	Local recurrences	Notes
Slavin	1997	45 months	25 invasive cancers, 26 DCIS	LR4 %, RR8 %/inv. 4 %/DCIS	
Kroll	1999	Min 6 years or until local recurrence	114/SSM 40/nonSSM	7,0 %/SSM 7,5 %/nonSSM	T1 or T2 cancers LR more in T2 than T1
Medina-Farnco	2002	Medium 73 months	173	4.50 %	Ti or T2 cancers Risk factors:Tumor size more than 2 cm, poor grading
Spiegel	2002	At least 6 years	177 invasive cancers, 44 DCIS	5,5 %/invasive 0 %/DCIS	
Carlson	1997	Mean 41 months	327 SSM 188nonSSM	4,8 %/SSM 9,5 %nonSSM	More advanced disease in nonSSM
Langstein	2003		1694	2.30 %	Patients with subcutaneous metastasis have better prognosis than patients with chest wall recurrences

TABLE 2

Patient data.

Tumour classification	
DCIS	14 (17,7 %)
T1	42 (53,1 %)
T2	19 (24,1 %)
T3	4 (5,1 %)
Nodal status	
N0	56 (79 %)
N1	23 (29 %)
Multifocal	
Yes	25 (31,6)
No	54 (68,4)
Operative procedures	
Wide local excision(WLE)	23 (29,1 %)
Skin sparing mastectomy (SSM)	21 (26,6 %)
Non skin sparing mast. (nonSSM)1 (1,3%)	
Subcutaneous mastectomySCM)	34 (43 %)
Nipple areola complex saving	
Removed	27 (34,2 %)
Saved	52 (65,8)
Reconstructions	
TRAM-flap (Free)	27 (34,2)
LD-musculocutaneous flap	28 (35,4)
LD-miniflap	23 (29,1 %)
Prosthesis	1 (1,3)

type of operation and the tumour classification are shown in Table 2. All patients with partial removal of breast tissue received postoperative RT to the breast (N0 – axillary status) or to the breast, ipsilateral axilla and subraclavicular region (N1-2 axillary status). RT was given in 2.0 Gy fractions, five times per week to a total dose of 50.0 Gy. Adjuvant chemohormonal therapy was administered according to the national guidelines. Briefly, all axillary lymph node positive cases received 6 times cyclophosphamide-epirubisin-fluorouracil chemotherapy in three-week cycles. The same therapy was also given to patients with a negative axillary status, but who had a tumour size > 20 mm. Adjuvant medication was continued in these cases with tamoxifen in patients with ER or PR expressing tumours.

STATISTICS

The overall and disease-free survival were analysed with the Kaplan-Meier method. The differences between groups were analysed with the Student's T-test and chi-square test or Fisher's exact test, when appropriate. Cox regression model was used to analyse the significance of risk factors for recurrences. The analyses were performed with the SPSS for Windows 11.5.

RESULTS

The overall 5-year survival was 88 % and the disease-free 5-year survival 80 %. The data of the local, regional or metastatic recurrences after a mean follow-up time of 3.6 years are presented in Tables 3 and 4. There were five LRs (6.3 %), one RR (1.2 %), and in three cases (3.8 %) the recurrence was systematic, presenting with bone and/or visceral metastases. All recurrences except one (noninvasive) appeared within the first two years (mean 20 months) after primary therapy.

Young age of the patient was a risk factor for diffuse or local recurrences in this material (recurrences in 29.4 % of patients at the age of 41 years or younger vs. in 6.5 % in patients over 41 years, $p = 0.02$). Increasing tumour size was also associated with a higher risk of recurrence (5.4 % recurrences in DCIS and T1 vs. 26.1 % recurrences in T2 or larger, $P = 0.016$). In aggressive disease, metastases or recurrences were evident in all our recurred patients within two years after the operation.

DISCUSSION

In Finland IBRs are usually performed with autologous tissue without prosthesis (8). In the beginning of the 1990s IBRs were performed using the trans-

TABLE 3
Patients with diffuse or local recurrences

Patient number / age	TN-class	Grading	Receptors	Operation	LR,RR or metastases	Disease free time	EIC/ or largeDCIS or small margins
1/38 years	T3N2	3	Er+/Pr+	SSM+LD	Bone metastases	1 year	Large DCIS comedotype
2/40 years	T3N0	3	ER-/Pr-	SSM+TRAM	Multiple metastases	1 year 11 months	DCIS comedotype
3/45 years	T2N1	3	Er+Pr+	SSM+TRAM	Multiple metastases	1 year	DCIS comedotype
4/29 years	T2N1	3	Er-/Pr-	SCM+TRAM	RR	2 year 1 month	EIC comedotype
5/40 years	T2N0 multif	3	Er-,Pr-	SSM+LD	LR+lymph node metastases	2 year	DCIS comedotype
6/55 years	DCIS multif			SCM+LD	LR	1 year	EIC comedotype
7/53 years	T1+DCIS N0	1	Er+,Pr+	SSM+LD	LR	1 year 10 months	DCIS cribrif.
8/40 years	T2N1 multif	1	Er+,Pr+	SCM+TRAM	LR	2 years	DCIS cribrif
9/56 years	DCIS			SCM+TRAM	LR	5 years	DCIS cribrif.

TABLE 4
Recurrences according to mastectomy method.

	WLEX+LDMF	SSM+TRAM or LD	SCM+TRAM or LD	
N	23	22	34	
Age (years ±SD)	51,8±7,7	46,8±6,2	47,2±8,0	
Follow-up time (years ±SD)	2,8±0,6	3,6±0,8	3,9±1,1	
Recurrences				
Local	0	2	3	p = ns
Regional	0	0	1	p = ns
Diffuse	0	3	0	p = ns

WLEX+LD=Wide local excisio+Latissimus dorsi miniflap
SSM=Skin sparing mastectomy
CM=Subcutaneous mastectomy
TRAM=Transversus rectus abdominis muscle flap
LD=Latissimus dorsi musculocutaneous flap

versal rectus abdominal muscle (TRAM) flap (8). In recent years in Finland as well in other European countries also latissimus dorsi (LD) musculocutaneous flaps have been used, especially if the patient has small breasts or if there are contraindications to TRAM flaps (9, 10). RT after prosthetic reconstruction is known to lead to an unsatisfactory result (11), which is why prostheses are usually used in late reconstructions. The newest technique including a segmental resection of the breast and reconstructing only part of the breast with a smaller musculocutaneous LD-flap (combined with postoperative RT) is called the LD-miniflap technique (12). Surgical complications remain fewer after LD-miniflap technique compared to extended LD technique, where much of the fat overlying the latissimus dorsi muscle is used to increase the size of the flap (13, 14).

In invasive cancers, most LRs appear during the first three years (15). Advanced disease is the most significant prognostic factor for LR in BCS (15). Our finding of advanced size of tumours carrying a higher risk for recurrences also after IBR has been reported earlier (16–18). It is likely, that three of our patients (with advanced disease and young age) who succumbed to metastatic relapse would have died be-

cause of their cancer even if their surgery had been plain radical mastectomy and axillary clearance. The surgical technique, when radical with respect to cancer and allowing oncologic adjuvant treatment in due time, has little prognostic significance.

In one of our patients with the RR the recurrence came so soon that it is possible that the node was not removed in the first operation. This patient was the only patient in this series who didn't undergo total axillary evacuation, although one of the nodes contained metastasis. Now we use the sentinel node biopsy also in all IBR patients with tumours under 3 cm and also in DCIS because microinvasive cancers are often seen, despite the first diagnosis of the tumour in core biopsy being pure DCIS. Late axillary clearance in a secondary operation is more difficult than doing it primarily and it may also compromise the safety of the flap. If only micrometastases are seen in later immunohistochemical staining, no reoperation is performed. RT also to the axillary area is given.

In patient number 5 the risk for LR was increased due to the initial location of the tumour (in the upper medial border of the breast) leading to small margins. Also DCIS was found in almost all of the re-

moved breast tissue. The mastectomy performed was a non-SSM, and the LD-flap was needed also for the closure of the wound. In addition to LR she also had metastases in regional axillary lymph nodes. After a LR in the skin 57 % of the patients had metastases compared to 91 % of patients after LR in the chest wall in the article of Langstein et al. (19). They concluded that LR in the skin or subcutaneous tissue compared to LR in the chest wall carry a different risk for diffuse metastases. Large recurrent tumour in the chest wall and rapid appearance of LR correlate to poor prognosis (19.) Most LRs after IBR are found to be in the skin or subcutaneous fat. Cells of residual breast tissue may be found around these LRs. It is clear that neglectance of RT in these situations may increase the risk for LR. According to our material, the 5-year overall survival is not worsened after IBR, if a patient selection to these operations is performed by a multidisciplinary team. It seems obvious that patients having a large segmental resection followed by a miniflap reconstruction and RT have good results with respect to recurrences. All these patients have postoperative RT. Two recurrent patients with mastectomy didn't have postoperative RT. Our material is still so small, that if patients are divided into different groups according to the method of operating the breast, no meaningful analysis to show the differences in survival between the groups is possible.

At the beginning of IBRs the surgical and oncologic problems have to be identified and the reasons for these analyzed. The patient series presented here are the first IBR patients with more liberal indications. Previously IBRs were performed in only DCIS. In our material the risk to LR increased if IBR was offered to young patients even with advanced stage disease. Mostly, the reason for the recurrence is the tumour behavior, not the mode of surgery. From the economical point of view performing the IBR in these patients was not reasonable, but considering psychological morbidity and quality of life it may have been a good decision. It has to be noted that despite the grim prognostic factors part of these patients will survive after all. Preoperative diagnosis of cancer with core needle biopsy gives many important things: grading and receptor status of the tumour and the information concerning prognosis of the patient before the decision of how to operate is done. The most important issue is to discuss the details with the patient. When all the facts concerning the cancer and planned operation are given to the patient, most of them agree with the surgeon on the method of operation, although some patients may need a few days to make a decision. It is essential to find the best method to operate the patient with respect to surgical, oncological and psychological consequences of the operation.

CONCLUSION

Young age of the patient and advanced disease stage carry a higher risk to locoregional and diffuse metastases after IBR. With appropriate patient selection

by a multidisciplinary team IBR is an oncologically safe method to treat breast cancer patients. At least ten years of follow-up is needed to obtain the final results on the safety of immediate reconstructions.

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