

SATISFACTION AND PROSTHESIS RELATED COMPLAINTS IN WOMEN WITH IMMEDIATE BREAST RECONSTRUCTION FOLLOWING PROPHYLACTIC AND ONCOLOGICAL MASTECTOMY.

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ABSTRACT

SATISFACTION AND PROSTHESIS RELATED COMPLAINTS IN WOMEN WITH IMMEDIATE BREAST RECONSTRUCTION FOLLOWING PROPHYLACTIC AND ONCOLOGICAL MASTECTOMY.

Aim: This study evaluated patient's satisfaction with immediate breast reconstruction (IBR) with silicone prosthesis. Special attention is paid to the differences in satisfaction, and specific prosthesis related complaints of IBR after prophylactic and oncological mastectomy.

Methods: All women who were operated between April 1995 and May 1999 at the University Hospital Rotterdam/ Dr Daniel den Hoed Cancer Centre received one year following operation a self-report questionnaire, concerning their perceived advantages of and satisfaction with IBR, their prosthesis-related complaints and various psycho-social variables.

Results: The most important perceived advantage of IBR was not to have to wear an external prosthesis (95%). Despite the fact that one third of the patients had specific prosthesis related complaints, 80% was satisfied with IBR and 88% would do it again. There was no significant difference in satisfaction between the prophylactic and the cancer group. Overall satisfaction is mostly influenced by cosmetics ($r = -.58$), information ($r = -.45$) and specific prosthesis related complaints ($r = -.39$). Especially specific prosthesis related complaints are important for both the prophylactic and the cancer group.

Conclusions: The majority of patients were satisfied with IBR after oncological or prophylactic mastectomy. However the findings of the importance of specific prosthesis related complaints should be taken serious for the information and care of patients.

Keywords: immediate breast reconstruction, silicone prosthesis, oncological and prophylactic mastectomy

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INTRODUCTION

The surgical treatment of breast cancer has made significant advances. At the end of the nineteenth century Halsted introduced the radical mastectomy in which both pectoral muscles en bloc with the breast and ipsilateral axillary lymph nodes were removed (Halsted, 1895). The modified radical mastectomy was developed by Patey in 1932 in which the breast, including the pectoral fascia, is dissected of the pectoral muscle (Patey, 1967). Nowadays breast-conserving therapy (BCT), which combines lumpectomy and axillary lymph node dissection, followed by radiation of the breast is widely embraced as an acceptable standard of care in the management of breast cancer. (Fisher et al, 1989, Veronesi et al, 1981) BCT is not recommended for all patients. Depending on size or pathological features of the tumour, mastectomy may be preferable. In these cases, breast reconstruction may be the means to improve cosmesis. Several studies compared quality of life for patients with breast cancer who underwent mastectomy alone and mastectomy with breast reconstruction. The majority of these studies showed psychological advantages: higher satisfaction with both body image (Schain et al 1985, Stevens et al, 1984), and sexual functioning (Rowland et al, 1993).

Treatment options for women with a genetic predisposition to develop breast cancer are regular surveillance, chemoprevention, or prophylactic bilateral mastectomy. If a woman chooses for prophylactic surgery, a breast reconstruction may be considered. Prophylactic mastectomy in women at increased risk for breast cancer remains a controversial procedure (King et al, 1993, Lopez et al, 1996). Two studies used statistical models to predict the benefit of prophylactic mastectomy in high-risk women (Hartmann et al, 1990) or in mutation carriers

(Schrag et al, 1997). They modelled a 90% and an 85% reduction in risk of breast cancers respectively. Although these results are very optimistic about the prophylactic mastectomy, caution should be used with the interpretation, while waiting for prospective studies focusing on the different treatment strategies in high-risk women. Meijers-Heijboer et al. recently published a prospective study on 139 women with a proven BRCA1 or BRCA2 mutation. Half of the women underwent PM and the others chose for regular surveillance. After a median follow-up of 2.2 years, no breast cancer was observed after PM, while under regular surveillance 8 incident breast cancers were diagnosed. Although in this latter study the follow-up is short and the number of patients is limited, it is concluded that PM in proven mutation carriers strongly reduces the incidence of breast cancer (Meijers-Heijboer et al, 2001).

One study has shown that women at high risk of breast cancer who are undergoing prophylactic surgery were satisfied with their decision, although comfort with reconstruction was mixed (Stefanek et al, 1995). Another study reported that 5% had later regrets about the surgery (Borgen et al, 1998). The psychological and sexual problems in women with prophylactic mastectomy may approximate those seen in women with oncological mastectomy (Gyllenskold et al, 1985, Meyer et al, 1986). However, the psychological effects of bilateral mastectomy have not been determined for large groups of asymptomatic women undergoing this procedure to prevent breast cancer. This issue is beyond the purpose of this study in which we partly focus on IBR after prophylactic mastectomy. In the Daniel den Hoed Cancer Centre 84% of the women with a prophylactic mastectomy chooses for immediate breast reconstruction (Contant et al, 2002).

Historically, almost all breast reconstructions were delayed for months or years after mastectomy. It was feared that immediate breast reconstruction (IBR) would compromise adjuvant treatment, increase the risk of postoperative complications, or mask locoregional

recurrence. Due to the evolution of reconstructive techniques and the increased availability of the plastic surgical expertise, IBR after mastectomy has become a good alternative for delayed reconstruction. IBR alleviates the need for a second operation and shows more psychological benefit compared to delayed reconstruction. This includes less depression, less time to mourn the complete loss of the breast, and not having to endure mutilation while waiting for a second operation (Schain et al, 1985, Stevens et al, 1984). Other studies show a decrease in anxiety and depression (Al-Ghazal et al, 2000) and a significant better body image, self-esteem and sexual feeling of attractiveness and satisfaction when comparing immediate breast reconstruction over delayed reconstruction (Al-Ghazal et al, 2000, Franchelli et al, 1995).

The different methods for breast reconstruction compromise the use of prosthetic material, or autogenous tissue, or a combination of the two. In general the aesthetic results from autogenous tissue reconstruction are superior to those of prosthetic reconstruction (Eberlein et al, 1993, Rosen et al, 1990). On the other hand the prosthetic reconstruction is the simplest method with the shortest operating time. Furthermore the insertion of an implant subpectorally theoretically minimises the risk of masking recurrent disease.

In 1990 immediate breast reconstruction (IBR) with a subpectorally placed silicone prosthesis after mastectomy, on prophylactic or oncological indication, has been introduced in the Daniel den Hoed Cancer Centre. From 1995 a study started to research the effects of this treatment with the aim to evaluate the satisfaction with IBR. Furthermore, satisfaction would be studied in more detail since quality of life, body image, and sexual functioning were discussed in the literature as variables of importance. Special attention is paid to the differences in satisfaction, and specific prosthesis related complaints of IBR between the different operation indications, i.e. after prophylactic or oncological mastectomy.

METHOD

Sample

Between April 1995 and May 1999, at the University Hospital Rotterdam/Daniel den Hoed Cancer Centre, 139 women were treated with mastectomy followed by IBR with a subpectorally placed silicone prosthesis. Sixty-eight patients were treated for breast cancer and 71 patients had a prophylactic mastectomy. The operations were performed by one of the two surgical oncologists and one plastic surgeon.

Surgical technique

The surgical oncologist and the plastic surgeon perform the PM and IBR as a team in a 2.5-hour session. The operation is performed under general anaesthesia with the patient in a half supine position. The mastectomy is done through a vertical, peri-areolar incision, which extends from just above the nipple down to the submammary fold. The breast including the superficial or subdermal fascia (creating thin skin flaps), the axillary tail, the nipple-areolar complex, and the fascia of the pectoral muscle are removed. The axillary nodes are not dissected in case of a prophylactic mastectomy or in case of in situ carcinoma as operation indication. The axillary nodes are resected through the vertical incision in case of invasive breast cancer as operation indication. After the mastectomy the silicone prosthesis is inserted by the plastic surgeon in a pocket created below the pectoral muscles with some extension to the space underneath the rectus abdominis and the serratus.

Development and provision of information

A working group consisting of two surgical oncologists, a plastic surgeon, a rheumatologist, a radiologist and a health psychologist developed information-modules. The modules contained: (1) information about the surgical procedure and its possible complications; (2) the different methods and surgical techniques of breast reconstruction; (3) an account of IBR with the use of a silicone prosthesis; (4) the advantages of the use of a silicone prosthesis and a summary of the controversy over the use of the silicone implant; (5) an explanation of the importance of attending check-ups and reporting complaints. Photographic illustrations were provided of various cosmetic results of IBR.

Routing of patients

In general all patients undergoing oncological or prophylactic mastectomy are offered immediate breast reconstruction with a subpectorally placed silicone prosthesis. Some remarks for patient selection has to be made. Based on clinical experience this kind of reconstruction is not the method of choice for obese women or those with ptotic breast due to the disappointing cosmetic results. Moreover, based on previous research (Contant et al 2000c) women with radiation therapy of the chest wall are offered autologous breast reconstruction because of the significant increased morbidity (capsular contracture and loss of prosthesis) of implant reconstruction in irradiated area. Finally skin-sparing mastectomy must be an oncological safe procedure. Therefor, women with T4 breast tumours are treated by regular mastectomy and are excluded from this study.

Patients with an increased risk for breast cancer were seen at the family cancer clinic and extensively informed of their risk of breast cancer, the screening schedule, the pros and cons of intensive surveillance and the possibility of prophylactic mastectomy (PM). Those

patients requesting more information about PM were referred to one of the two surgical oncologist involved in the family cancer clinic.

All patients, who were interested in an immediate breast reconstruction following prophylactic or oncological mastectomy, were informed about this study. During a consultation with one of the two surgical oncologists, the aim and instruments (modules, questionnaire) of the study were explained to the patients. A separate consultation with the plastic surgeon followed for all patients in which detailed information about the method of reconstruction, the pros and the cons of the use of silicone prosthesis, and the expectations of cosmetic outcome was given. In this session photos of reconstructed breasts were provided.

Questionnaire

All patients received a self-report questionnaire after an interval of one-year following the operation. The questionnaire was divided into 5 sections dealing with: (1) demographic details; (2) perceived advantages of IBR; (3) satisfaction with IBR; (4) information; and (5) quality of life, body image, and sexual functioning. Some items replicated questions used in previous research (Bergman & van Dam, 1981) or were part of existing scales (de Haes et al, 1990). The researchers of this study designed the other items (Contant et al, 2000a).

Analyses

Data were analysed using SPSS 10.0 for Windows (Statistical Package of the Social Sciences). Analyses used were frequency, Pearson's product-moment correlation, independent samples T-test, factor analysis and reliability analysis for scale construction. In addition stepwise regression analysis was used.

Scale construction

All variables of interest in this study were based on the formation of the various items into scales. The criteria for the scale construction, based on methodological conventions and considerations of the results of the factor- and reliability analysis were Eigenvalue > 1.0, factor loading > 0.40, maximum variance accounted for, and Cronbach's alpha > 0.60. All scales were separately checked for both patients with IBR after oncological mastectomy and prophylactic mastectomy. In Table I, the results of the scale construction are presented. Quality of life was divided in physical and psychological complaint scales of the Rotterdam Symptom Checklist (RSCL) (de Haes et al, 1990). Both contained 12 items. Body image was measured with items used by Bergman and van Dam (Bergman & van Dam, 1981). Three examples of the 6 items used in this scale were: *as far as my breasts are concerned I (1) feel no shame walking around naked, (2) find it difficult to look at myself when getting changed and, (3) find it difficult to touch my reconstructed breast*. Answer categories were "very true", "true", "not at all true". The sexual functioning scale was made up of five items which were specially constructed for this study on the basis of findings in the literature (Table II). The answer categories were the same as for the body image items. The satisfaction score was based on the total score of seven items as reflected in Table III. The reliability of the scale is α 0.75 and 42% of the variance is explained by these items. Information was based on the answers of five questions as presented in Table IV. Cronbach's α was 0.75 and 51% of the variance was explained by these questions. The specific prosthesis related complaints scale was made up of four items dealing with discomfort, pain, tension of the skin, and cold and stiff sensation of the skin of the reconstructed breast. The answer categories were "very true", "true", or "not at all true". The Cronbach's α was 0.75 and 56% of the variance was explained by these questions. For further analyses, the data on this scale were recoded in a high-complaint score and a low-complaint score. The maximum score was 11 and the minimum

score was 4. A score between 4-7 was defined as high, whereas a score between 8-11 was defined as low prosthesis related complaints.

Furthermore scale constructions were made up for cosmetics (Table V), femininity, and depression. The femininity scale was made up of three items, which were the answers to: The advantages of IBR are that I: (1) feel being a women again, (2) feel having regained something of myself, (3) have regained my feelings of femininity. The answer categories were “very true”, “true”, “not at all true”. Three examples of the 6 items used in the depression scale were: (1) do you feel sad and down, (2) do you have outbursts of crying, (3) are you more irritable than before the operation.

RESULTS

Patients

Of the 139 patients, 124 (89%) completed and returned the questionnaire. Their age at operation ranged from 26.7 to 59.5 years (median 40.7 years, mean 41.0 years). The indications for mastectomy were invasive breast cancer in 52, extensive carcinoma in situ 11, and prophylactic mastectomy in 61 patients. These women were separated into 2 groups: the cancer group (n = 63, age 26.9 – 67.6 years, median 43.5 years, mean 43.9 years) and the prophylactic group (n = 61, age 26.7 – 57.7 years, median 38.6 years, mean 39,7 years).

Fifteen patients did not return the questionnaire. Their medical reports were checked to find a possible explanation. Ten patients underwent a prophylactic mastectomy and the other 5 an oncological mastectomy (breast cancer in 4 and carcinoma in situ in 1 patient). In 1 patient the prosthesis was removed due to complications. Another patient was treated with chemotherapeutics at the moment of receiving the questionnaire. The other 13 patients had no specific complaints or complications.

Advantages

The most important perceived advantage of IBR was not to have to wear an external prosthesis (overall 95%, prophylactic 100%, and cancer 90%) (Table VI). The advantages ‘not to have to wear an external prosthesis’ and ‘to endure the amputation more easily’ were significantly more mentioned in the prophylactic group (respectively Chi-square = 6.2, p=.01, and chi-square = 4.5, p=.04). Six patients within the cancer group did not see ‘not to wear an external prosthesis’ as an advantage of IBR. Further in depth analysis showed that all these patients had more expectations of the result of IBR and had an asymmetric reconstruction.

Satisfaction with the treatment

Patient's satisfaction with IBR by silicone prosthesis was measured in terms of seven questions (Table III). There was no significant difference in the items of the satisfaction scale between the prophylactic and the cancer group. Almost all patients would recommend IBR to other patients (94%). Fifteen patients (12%) would never choose IBR again. Reasons given were: concerns about the possible complications associated with silicone gel implants (9), postoperative complications (4), and disappointing cosmetic result (1). One patient did not specify her disapproval for IBR with silicone prosthesis. Twenty patients (16%) would dissuade other patients from having IBR with silicone prosthesis. Eleven patients thought the choice for IBR with silicone prosthesis was too personally. Other reasons to dissuade women from having the treatment were postoperative complications (5), concerns about silicone prosthesis (2), disappointing cosmetic result (1), and preference for another method of IBR (1). Although one-third of the patients had complaints about the prosthesis, most patients were satisfied with the reconstruction and would undertake it again (further analysis about this finding will be presented in the next section). There was no correlation between the satisfaction factor or the 7 satisfaction items and who (myself/surgeon/together/others) the decision for IBR had made.

In Table VII the correlation between satisfaction with IBR and psychological and physical quality of life, sexual functioning, specific complaints of the prosthesis and body image are presented. All, except body image, correlated significantly with satisfaction. The highest negative correlations were with cosmetics ($r = -.58$), information ($r = -.45$) and specific prosthesis related complaints ($r = -.39$). The more specific prosthesis related complaints the patients had and the more information was needed, the less satisfied they were with IBR.

In the stepwise regression analysis with satisfaction as dependent variable and psychological and physical quality of life, cosmetics, information and specific prosthesis related complaints

of the prosthesis as independent variables, only the latter 3 variables entered the regression and explained 49% of the variance of satisfaction ($R = .70$; $R\text{-square} = .49$).

Overall body image correlated significantly with cosmesis ($r=0.29$, $p=.006$), prosthesis related complaints ($r=0.28$, $p=.02$) and depression ($r=0.21$, $p=.03$). For the prophylactic group none of the scales correlated significantly with body image and for the cancer group cosmesis ($r=.36$, $p=.007$), prosthesis related complaints ($r=.37$, $p=.004$), depression ($r=.26$, $p=.05$), and femininity ($r=.32$, $p=.02$).

Reconstruction related complaints

Thirty-eight percent of the women in the oncological group and 25% in the prophylactic group had high specific prosthesis related complaints (ns). Interesting differences were found between the cancer and the prophylactic group as far as the relation between these complaints and the psychological profile of the patients are concerned. Recoding the total score of the answers into a high complaint and a low complaint group showed a significant influence of the specific prosthesis related complaints on the sexuality score ($t=2.8$, $df=51.1$, $p=.007$) and images of femininity for the cancer group only ($t=3.6$, $df=76.4$, $p=.001$) (Table VIII). As can be expected for cancer patients because of the diagnosis of the illness, the physical quality of life score showed a significant difference between the high complaint and low complaint group for this group only, too. (cancer group: $t=2.6$, $df=32$, $p=.014$; prophylactic group: $t=.63$, $df=20.9$, $p=.54$). Other significant differences on psychosocial variables between the high and low complaint score for the cancer group, but not for the prophylactic group, were found for cosmetic ($t=-3.7$, $df=35.9$, $p=.001$), depression ($t=-2.1$, $df=39.7$, $p=.048$) and body image ($t=-2.7$, $df=32$, $p=.011$). These differences showed a higher score for the low complaint group in comparison with the high complaint group. A last interesting finding on the differences in the complaint groups for the cancer group, but not for

the prophylactic group was for general satisfaction. Contrary to what one would expect (as indicated in the previous section), the high complaint group showed significant more satisfaction than the low complaint group ($t=3.4$, $df=27.6$, $p=.002$) The only significant difference between the high and low complaint group found in the prophylactic group, but not in the cancer group, was for information ($t=-2.6$, $df=12.4$, $p=.02$). For this result the low complaint group was more satisfied with the information provided than the high complaint group.

Information

Even though 95% of the patients obtained written information about IBR and silicone prosthesis, and 99% of the patients was informed about the use of a silicone prosthesis and 98% about the dis/advantage of silicone prosthesis, a quarter of the patients still had a need for more information (Table IV). The cancer group was more in the need of information than the prophylactic group, although not significantly. In general, most women (90%) were satisfied with the information that they had about how to cope with specific problems and where to find help.

The correlations between the information factor and the satisfaction and specific prosthesis related complaints were significant ($r = -.45$, $p= .000$ and $r = .32$, $p= .001$ respectively). This means, the less satisfied the patients were and the more complaints they had, the higher was the need for information. In Table IX the correlation between satisfaction and the 3 of the 5 different information items are given. In the cancer group all these 3 items had a negative correlation, meaning, the less satisfied patients were with IBR, the higher was their need for more information about the use of silicone prosthesis ($r = -.51$), dis/advantages of IBR ($r = -.37$) and the results of IBR ($r = -.39$). In the prophylactic group only satisfaction and more information about the results of IBR correlated significantly ($r = -.44$, $p = .001$).

DISCUSSION

In this study patients' satisfaction with, the treatment and information one year after mastectomy followed by immediate breast reconstruction with silicone prosthesis was evaluated. The examined patients were distinguished in two separated groups, those who underwent a prophylactic mastectomy and those who underwent a mastectomy for breast cancer. In the former group mastectomy is determined by balancing the negative effects of breast removal against the reduction of breast cancer incidence. Moreover, these women can choose between two treatment-options, regular surveillance versus prophylactic mastectomy, while the women with breast cancer have only one option. Furthermore, the decision making in both groups is different. A psychologically difficult decision-making process lengthens the time to operation in women with a prophylactic mastectomy. In the Daniel den Hoed Cancer Centre it takes half a year to one year after the patient is referred from the family cancer clinic to the definite prophylactic operation. In women confronted with the presence of breast cancer the time to operation is usually substantially shorter for oncological reasons.

Not to have the experience of an external prosthesis was the most important perceived advantage of IBR, which was significantly more agreed in the prophylactic group (overall 95%, prophylactic 100% and cancer group 90%, $p < .05$). This is in accordance with previous research (Contant et al, 2000a, Schain et al, 1985, Stevens et al, 1984), which indicates that the thought of having to wear an external prosthesis is very threatening for women regarding sport and leisure activities and not being able to wear the clothes they want to. The 6 women (10%) within the cancer group, who did not see "not to wear an external prosthesis" as an advantage of IBR, had more expectations of the result of IBR and had an asymmetric reconstruction. Moreover these women were less satisfied and had more specific prosthesis related complaints. Perhaps these women would have had more benefit from an external

prosthesis or delayed breast reconstruction than a disappointing immediate breast reconstruction.

In a report of Borgen 5% of the women had later regrets about the prophylactic mastectomy (Borgen et al, 1998). The most important factor that predicts an unfavourable outcome in this study was a physician-initiated discussion. In this study it was evaluated analogously if there was a relation between satisfaction with the IBR and the initiator for IBR. More than 50% of the women in the prophylactic group choose for IBR by themselves compared to 30% of the women in the cancer group. There was no relation between who had made the decision for IBR and satisfaction.

Overall, the patients in the underlying study were satisfied with their breast reconstruction with silicone implant. Almost all patients would recommend IBR to other patients (94%). Fifteen patients (12%) would never choose IBR with silicone prosthesis again, mostly because of the concerns about the possible complications associated with silicone prosthesis. It is claimed that silicone implants could introduce a rheumatoid autoimmune syndrome. At this moment a prospective study is carried out in the Daniel den Hoed Cancer Centre, in which all women are followed, who are operated since 1995 with subpectorally placed silicone prosthesis. In this study women are checked regularly serologically and by questionnaire for rheuma, sjögren, and raynaud related complaints. The methods used in this study are already published in a retrospective study (Contant et al, 2000b). Awaiting the results of this prospective study the conclusions from the literature that there is no evidence for a silicone-related syndrome are conformed (Gabril et al, 1994, Hennekens et al, 1996, Noone et al, 1997, Sanchez-Guerrero et al, 1995).

Although 30% had prosthesis related complaints, i.e. discomfort, pain, tension of the skin, cold and stiff sensation of the reconstructed breast, 80% were satisfied with their IBR. These specific prosthesis related complaints were highly correlated with satisfaction ($r = -.39$,

p = .000). Moreover, this was one of the 2 scales showing significant results with the satisfaction scale in both the prophylactic and cancer group. On the whole more the prosthesis related complaints were scored for the cancer group than for the prophylactic group. A closer look at the results of the t-tests between the complaint groups and the different scales also showed more significant differences for the cancer group than for the prophylactic group. The results as far as sexuality and femininity are concerned, showed that these female domains are more affected by the occurrence of both cancer and physical complaints. Maybe these two together were too much stress for a patient to cope with, while at the same time trying to come to terms with a mutilation of the female breast - the pillar of both sexuality and femininity. This explanation was supported by the results of the cosmetic and body image scales, because these domains were affected by the whole group of cancer patient irrespective of the strength of their physical complaints. The result that the lower complaint group had a higher depression score for women with cancer was also interesting. A possible explanation for this could be that physical complaints detract attention away from the psychological process of dealing with the cancer diagnosis. An absence of these complaints means that one has to confront the anxiety and uncertainty of this life threatening disease. Feelings of depression are still quite common in patients a year after their operation (Goldberg, 1988, Kurtz et al, 1995). These results also showed that the quality of the information provision about the reconstruction was more important for the prophylactic group with low physical complaints than for the cancer group. An explanation for this could be that these women had less stress because of fewer complaints and no cancer diagnosis to come to terms with. In the light of stress theory (Folkman, 1984), this could mean more concentration for other domains such as information.

Furthermore, the non-significant correlation between satisfaction and body image is interesting and contradicts previous research findings that breast reconstruction in general and

immediate breast reconstruction in particular have a significant influence on body-image. (Noone et al, *Plast Reconstr Surg* 1982) (Dean et al, *Lancet* 1983) (Stevens et al, *Plast Reconstr Surg* 1984) (Franchelli et al, *Plast Reconstr Surg* 1995) (Pusic et al, *Plast Reconstr Surg* 1999) (Al-Ghazal et al, *Eur J Surg Oncol* 2000). **A closer look at the body image scale in the 2 different groups finds a significant correlation with cosmetics, prosthesis related complaints, depression, and the femininity –scale for the cancer group but no significant correlation with none of the scales in the prophylactic group. A possible explanation can be the scale construction. In this study body image was measured with items used by Bergman and van Dam (Bergman & van Dam, 1981). In their study only women with mastectomy breast cancer were included. Obviously this scale can not be used in women with prophylactic mastectomy. However, in previous research (Contant et al, 2000a) we did find a significant correlation between satisfaction and body image. The reason for this contrary result is unknown. Probably, cosmesis, prosthesis related complaints, depression and femininity are more important for body image than satisfaction with IBR. This can be explained by the different items of cosmesis and prosthesis related complaints (both highly significant in the cancer group), all dealing with questions about the breast, which is more body related than general questions about IBR, items of the satisfaction scale.**

In previous research (Contant et al, 2000c, Contant et al 2002) it was indicated that IBR with a subpectoral placed silicone prosthesis was with considerable complications, especially in women who had had radiation therapy of the thorax previous or after IBR. In particular, capsular contracture around prostheses situated in the radiation field was significantly increased (Contant et al, 2000c). In this study the group women with radiation therapy was too small to compare satisfaction in women with or without radiation therapy and IBR. On the other hand the most common delayed complication of IBR with a subpectoral

silicone prosthesis was capsular contracture which occurred in 21% of the reconstructions leading to surgical intervention in 88% (Contant et al, 2000c). Capsular contracture results in hardening, tightness, mild-to-severe pain and deformity of the breast. In other words these symptoms are in accordance with the items of the prosthesis related complaints. Indirectly we could say that it is likely that complications may have an impact on satisfaction with IBR.

The unexpected finding of this research was the significant finding that the high complaint group showed more satisfaction than the low complaint group. A possible explanation for this might be found in Festinger's Cognitive Dissonance Theory (Festinger, 1957). This theory clarifies the difficulty people experience when living with two conflicting constructs. Having made the choice for breast reconstruction was positive, enduring physical complaints is negative. If the woman would indicate that she is dissatisfied with the reconstruction, she has to admit that she has made the wrong choice. Unless the reconstructive breast is removed, this leads to a state of dissonance, which is psychologically uncomfortable and quite stressful for a person. If the woman states that she is nonetheless satisfied with the reconstruction, her cognitive state is consonant and less stressful.

Since the need for more information about silicone prosthesis and breast reconstruction was compared in a former published study (Contant et al, 2000a), it can be concluded that the need for more information is weakened. The patient sample can explain this: in the present study 50% of the women had a prophylactic mastectomy, compared to 12 % prophylactic mastectomies in the former study. In the present study the cancer group was more in need for information, although not significant. Moreover, satisfaction was significantly correlated with 3 information items in the cancer group conform the former study (Contant et al, 2000a). In the prophylactic group only one information item correlated significantly. This can be explained by the difference in decision-making time-interval. While a women with a high risk for breast cancer has several contacts with different specialist

(genetics, oncologist and surgeon) during a period of several months in which a thoughtful decision can be made for prophylactic mastectomy and IBR, a women with breast cancer has only several weeks. In other words the high-risk women have more time to get the information they wanted and have more time to think about the treatment they are going to chose for. The cancer patients, on the other hand, need more effective information for important decisions in a shorter time interval.

CONCLUSIONS

The main advantage of IBR is ‘not to have to wear an external prosthesis’, which is significantly more agreed in the prophylactic group. More than 50% of the women with a prophylactic mastectomy choose IBR themselves. This is significantly more than in women with an oncological mastectomy, for whom the choice for IBR is made primarily by the surgeon. Satisfaction is not related to the decision-maker of IBR (patient/ surgeon/ together).

Although many women (30%) have breast reconstruction related complaints, the majority (80%) is satisfied with IBR after mastectomy. There is no significant difference in satisfaction between the prophylactic group and the cancer group. Overall satisfaction is mostly influenced by cosmetics, information, and prosthesis-related complaints. Especially prosthesis related complaints are important for both the prophylactic and the cancer group. It is very important to inform these women about the possible specific IBR related complaints.

Table I. Details of the different scales: number of items, Cronbach's alpha, explained variance, and eigenvalue.

| Scale | Cases (n) | items (n) | Cronbach's α | Explained variance (%) | eigenvalue |
|-----------------------|-----------|-----------|---------------------|------------------------|------------|
| Qual life psych | 115 | 12 | 0.90 | 50 | 5.87 |
| Qual life physical | 114 | 12 | 0.76 | 29 | 3.51 |
| Body image | 122 | 6 | 0.69 | 45 | 2.73 |
| Sex functioning | 82 | 5 | 0.87 | 45 | 2.72 |
| Satisfaction | 108 | 7 | 0.75 | 42 | 2.96 |
| Information | 103 | 5 | 0.75 | 51 | 2.53 |
| Prosthesis complaints | 109 | 4 | 0.74 | 56 | 2.26 |
| Cosmetics | 92 | 4 | 0.71 | 54 | 2.24 |
| Femininity | 100 | 3 | 0.74 | 66 | 2.00 |
| Depression | 120 | 6 | 0.64 | 39 | 2.30 |

Table II. Items of the sexual functioning scale.

| Item through IBR: | Agree % (all) | Agree % (prophylactic) | Agree % (cancer) |
|--|------------------|---------------------------|---------------------|
| my sexual life can continue undisturbed | 76 | 74 | 77 |
| there is no need for my partner to feel inhibited in our sexual relation | 75 | 77 | 72 |
| I think that I have remained sexually attractive | 65 | 69 | 60 |
| I wanted to remain sexually attractive | 64 | 65 | 63 |
| no major changes have taken place in my sexual life | 57 | 61 | 54 |

Table III. Items of satisfaction scale.

| Item | yes % (all) | yes % (prophylactic) | yes % (cancer) |
|--|-------------|----------------------|----------------|
| Would recommend IBR to other patients | 94 | 98 | 90 |
| Would do it again | 88 | 88 | 88 |
| Would recommend IBR with silicone prosthesis to other patients | 84 | 84 | 84 |
| Satisfied with reconstruction | 80 | 87 | 74 |
| Breast reconstruction meets expectation | 68 | 77 | 61 |
| Complaints about reconstruction | 31 | 25 | 38 |
| Would dissuade other patients from having IBR with silicone prosthesis | 10 | 10 | 10 |

Table IV. Items of information scale.

| Need for more information about | Yes % (all) | Yes % (prophylactic) | Yes % (cancer) |
|--|-------------|----------------------|----------------|
| Results of breast reconstruction | 36 | 26 | 44 |
| The use of silicone prosthesis | 24 | 18 | 30 |
| Dis/advantages of immediate reconstruction | 23 | 15 | 32 |
| Breast cancer and its treatment | 15 | 13 | 18 |
| Coping with specific problems and knowing where to find help | 10 | 5 | 11 |

Table V. Items of the cosmetic scale

| Items | Agree % (all) | Agree % (prophylactic) | Agree % (cancer) |
|-----------------------------------|------------------|---------------------------|---------------------|
| my reconstructed breast(s) is/are | | | |
| artificial | 65 | 59 | 69 |
| not similar | 64 | 50 | 75* |
| too high | 33 | 19 | 41** |
| skewed | 20 | 19 | 21 |

* pearson chi-square 7,3 sig (2-tailed) p= .008

**pearson chi-square 5.2 sig (2-tailed) p= .03

Table VI. Advantages of immediate reconstruction.

| Advantages | Agree % (all) | Agree % (prophylactic) | Agree % (cancer) |
|---|---------------|------------------------|------------------|
| Not to have an external prosthesis** | 95 | 100** | 90** |
| To avoid changes in sexual relation | 76 | 74 | 77 |
| To feel feminine again | 75 | 75 | 75 |
| To have an unchanged sexual relation with my partner | 75 | 77 | 72 |
| To wear a bra when desirable | 66 | 75 | 62 |
| To have the feeling of having something of my own again | 66 | 63 | 70 |
| To remain sexually attractive | 65 | 69 | 60 |
| To get rid of the cancer | 63 | 71 | 57 |
| To have more confidence | 60 | 60 | 59 |
| To feel myself again | 59 | 66 | 53 |
| To endure the amputation more easily** | 50 | 60** | 40** |

** = significant ($p < .05$)

Table VII. Correlation between satisfaction and other scales

| Scale | Satisfaction overall | | Satisfaction prophylactic | | Satisfaction cancer | |
|-------------------------------|----------------------|------|---------------------------|------|---------------------|------|
| | r | p | r | p | r | p |
| Qual of life physical | .35 | .000 | .11 | ns | .44 | .001 |
| Qual of life psychological | .24 | .01 | .22 | ns | .22 | ns |
| Sexual functioning | .26 | .02 | .07 | ns | .21 | ns |
| Prosthesis related complaints | -.39 | .000 | -.35 | .01 | -.35 | .007 |
| Cosmetics | -.58 | .000 | -.42 | ns | -.61 | .000 |
| Information | -.45 | .000 | -.44 | .003 | -.44 | .001 |
| Body image | -.08 | ns | -.17 | ns | -.08 | ns |

Table VIII. Independent t-samples test specific complaints of the breast reconstruction (high and low) and the different scales.

| Scale | overall | | | Prophylactic group | | | Cancer group | | |
|----------------------------|---------|------|------|--------------------|------|-----|--------------|------|------|
| | t | Df | p | t | Df | p | t | Df | p |
| Qual of life physical | 2.7 | 47.9 | .009 | 0.6 | 20.9 | ns | 2.6 | 32.0 | .01 |
| Qual of life psychological | 2.6 | 42.8 | .014 | 1.3 | 12.4 | ns | 2.0 | 31.4 | ns |
| Body image | -2.2 | 51.6 | .033 | 0.4 | 27.1 | ns | -2.7 | 32.0 | .01 |
| Sexual functioning | 2.8 | 51.1 | .007 | 0.8 | 14.7 | ns | 3.0 | 35.8 | .006 |
| Satisfaction | 3.8 | 42.4 | .000 | 1.8 | 14.0 | ns | 3.4 | 27.6 | .002 |
| Information | -2.7 | 50.0 | .008 | -2.6 | 12.4 | .02 | -1.5 | 38.5 | ns |
| Cosmetics | -4.7 | 45.7 | .000 | -2.2 | 9.3 | ns | -3.7 | 35.9 | .001 |
| Femininity | 3.6 | 76.4 | .001 | 1.4 | 22.8 | ns | 3.5 | 49.5 | .001 |
| Depression | -3.0 | 59.3 | .004 | -2.1 | 17.2 | .06 | -2.0 | 39.7 | .05 |

Table IX. Correlation between satisfaction and information items.

| Item | Overall | | Prophylactic | | Cancer | |
|----------------------------------|---------|------|--------------|------|--------|------|
| | r | p | r | p | r | P |
| More information about | | | | | | |
| The use of silicone prosthesis | -.44 | .000 | -.32 | ns | -.51 | .000 |
| Dis/advantages of IBR | -.32 | .001 | -.19 | ns | -.37 | .005 |
| Results of breast reconstruction | -.42 | .000 | -.44 | .001 | -.39 | .002 |

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