Breast surgery: A problem of beauty or health?
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Citation for published version (APA):
Chapter VIII

General discussion and conclusions
General discussion

The complexity of care surrounding women seeking breast surgery, like the wide variety of surgical modalities, or the accompanying socioeconomic aspects, lead to the diverse investigations presented here, in an attempt to understand the influence of breast surgery on beauty and health of women.

Hypertrophy of the breast

Psychological and functional impairment in breast hypertrophy

The motivation of women to undergo reduction mammoplasty is usually based on both physical as well as psychological reasons.

As reported in many previous studies, macromastia is, in fact, the cause of an array of physical symptoms: such as back, neck and shoulder pain, due to posture alteration from the downward pull of heavy breasts, or pressure grooves from the bra straps, Mastodynia, difficulties in sports, maceration and intertrigo in the inframammary region also appear in the long list of problems related to hypertrophy of the breasts. Psychological symptoms such as self consciousness, social embarrassment, difficulty in finding fitting clothes, and low self esteem also play a role.

Although previously published longitudinal studies showed that reduction mammoplasty will reliably provide improvement of all symptoms, medical directors of health insurance companies are not convinced that this procedure is of medical benefit for the patients.

Therefore, the aim of our study was to demonstrate the influence of breasts weight on the physical morbidity of women. In our cohort study 50 women with various breast sizes underwent breast volume measurement, magnet resonance imaging of the spine, physical examination of the spine, and completed different questionnaires with regard to depression and pain.

The results showed, that the risk of developing a spine disorder is 2.7 fold higher per kilogram of increased breast weight. Morphological changes of the spine as well as pain levels increased parallel with progressive breast weight.

Assuming the hypothesis that reduction mammoplasty would be able to reduce these symptoms, Foreman et al. showed in 2009 that reduction mammoplasty can decrease the biomechanical stress on the spine.

In addition to these physical findings, the psychological impairment was demonstrated by the high prevalence of depressive symptoms in women with heavy breasts. In a recently published study, Saariniemi et al. were able to prove that breast reduction did significantly reduce the prevalence of depressive symptoms in these women.
These data provide objective evidence that breast weight has an influence on the physical morbidity of women and, therefore, challenge the basis for resource allocation decisions with regard to breast reduction.

Risk factors in reduction mammoplasty
Breast surgery does not only have beneficial effects on women’s health. Like any kind of surgery, breast surgery might lead to complications, which could result in an impairment of health for the patient. Typical complications in reduction mammoplasty are infections and wound healing problems.

Certain preoperative conditions, such as obesity, can increase the risk of such complications. However, the use of a target BMI as exclusion criterion should be treated with caution, as our previous study showed that BMI has a negative influence on spine disorders and prevalence of depression itself, which could be improved by breast reduction surgery.

The negative influence of tobacco smoking on physiological wound healing and surgical outcome is widely recognised in all fields of surgery. Based on this, the aim of our study was to evaluate the effect of smoking cessation on wound healing after breast reduction surgery.

Previous results of other study groups regarding the influence of smoking on wound healing were reconfirmed for reduction mammoplasty in our study. Smokers were shown to have more postoperative wound healing problems than non-smokers. In addition, we found a tendency that even in smokers a postoperative cessation of smoking appeared to reduce complications in wound healing. We concluded that each smoking patient should not only explicitly be informed about the negative effects of smoking and urged to stop smoking at least 3 weeks before surgery, but also be informed about the reduction of these negative effects due to postoperative tobacco abstinence.

In summary, it has to be stated that patients can influence the surgical outcome themselves and preoperative reduction of risk-factors like smoking or obesity can prevent women from impairment in health after surgery.

Breast reconstruction

Psychosocial aspects of breast reconstruction
The high psychosocial impairment of patients with breast cancer and related ablative surgery has been described extensively in several studies. To overcome
this problem reconstructive surgery became an integrated part in the treatment of breast cancer patients\textsuperscript{16,17}.

However, the question arose whether reconstructive surgery should be performed immediately or delayed? To enlighten this question we performed a study of 40 patients to determine psychosocial differences between those who underwent immediate (n=20) or delayed (n=20) breast reconstruction. A survey was done which questioned social behaviour, relationships, self-esteem, employment and satisfaction with the time of reconstruction as well as preoperative information.

All patients with delayed breast reconstruction had a high range of impairment in body image and social activities in the period between mastectomy and breast reconstruction. This impairment was reduced after breast reconstruction in 17 out of 20 patients.

Just one of 20 patients undergoing immediate breast reconstruction reported a high impairment in body image and social activities. After reconstruction there were no significant differences between both groups concerning social activities and body image. Five out of 20 delayed reconstructed patients lost their job and two out of 20 got divorced. Compared to this none of the immediate reconstructed patients were rendered unemployed or divorced.

18 out of 20 patients with delayed reconstruction would have preferred immediate breast reconstruction but did not get the information about the possibility before surgery. All immediately reconstructed patients would again decide to have an immediate reconstruction\textsuperscript{18}.

From these results we concluded that immediate breast reconstruction potentially avoids a period of time characterised by high psychosocial impairment for the patient\textsuperscript{18}. Several other studies have supported this conclusion\textsuperscript{19-21}. Therefore, the information about the possibility of breast reconstruction should be given at the time of breast cancer diagnosis.

In contrary to the assumed psychological benefits of breast reconstruction, recently published data show that differences in psychological distress disappeared one year after surgery among women regardless of reconstruction or timing of reconstruction\textsuperscript{22,23}. Metcalfe et al.\textsuperscript{22} stated that psychological functioning at 1-year post-surgery was not different between women with mastectomy alone, with mastectomy and immediate reconstruction or delayed reconstruction. Harcourt et al.\textsuperscript{23} concluded that breast reconstruction does not necessarily offer psychological benefits when compared to treatment by mastectomy only.

The Cochrane review on immediate versus delayed breast reconstruction published by D’Souza N. et al.\textsuperscript{24} represents a meta analysis on this topic. They saw a lack in reliable data due to missing randomized control trials, methodological flaws and a high risk of bias.
However, based on the limited data they surveyed, they concluded there was evidence that immediate reconstruction reduced psychiatric morbidity reported at three months post-operatively when compared to delayed reconstruction. Further research should aim to provide reliable evidence for people to be able to make well-founded decisions as to the best and most appropriate timing of breast reconstruction following surgery for breast cancer.

**Functional morbidity after breast reconstruction**

Using autologous tissue for breast reconstruction subsequently results in creating a donor site defect. Even without complications this might lead to a functional impairment for the patient. Tissue acquired from the abdominal wall for instance has the risk of creating weakness or even herniation. Despite technical improvements in harvesting by minimizing the amount of muscle resection and meticulous closure of the abdominal wall, until now this risk remains unsolved.

Most studies that focused on the comparison of different harvesting techniques (TRAM/DIEP/SIEA), were based on subjective measurements or static imaging by CT-Scans or MRI. These imaging tools are expensive and often not easily available, and furthermore not ideal for evaluating the abdominal muscles. In order to perform a morphological evaluation of muscle function one needs an imaging method, which is able to visualise functional properties of the remaining muscle. Ultrasound imaging offers this possibility: it is an easily available and cost-effective method, which visualises not only static, but also movements of the muscle. In our study we were able to show that ultrasound imaging fulfills the requirements needed to evaluate muscle function by showing contractility and movements of the remaining muscles.

We observed no statistically significant differences correlating the ultrasound results with the clinical data on abdominal wall function in our patients (power/contractility/pain). However, as a descriptive result we found contracting muscles together with impairment in abdominal wall function according to Janda. The question arises whether the function of the abdominal wall and the impairment in daily life could be influenced by muscle-training. Based on this method, further studies are needed to answer this question.
Patient satisfaction after breast reconstruction

Breast reconstruction has been shown to improve quality of life (QoL). However, long-term patient satisfaction is largely unknown. Our aim was to evaluate patient satisfaction and donorsite morbidity in five types of breast reconstruction.

A prospectively collected database of all breast surgery patients at Hospital Rudolfstiftung, Vienna, Austria was searched for five types of breast reconstruction (2000-2006): implant, latissimus dorsi (LD)-flap, LD-flap with implant, free transverse rectus abdominis musculocutaneous (TRAM)-flap, and deep inferior epigastric perforator (DIEP)-flap. Patients were sent a study specific questionnaire to assess satisfaction. SF-36 was used to analyze (QoL) and complication data were retrieved from the database and assessed during a follow-up visit.

There were 257 patients identified of whom 126 responded to the survey (17 implant, 5 LD+implant, 64 LD-, 22 TRAM- and 18 DIEP-reconstructions). No statistical differences were found in complication or reoperation rates. DIEP-flap patients were significantly more satisfied compared to patients from the implant group (p=0.007). However there was no significant difference regarding QoL scores amongst the groups. After logistic regression analysis only ‘impairment on daily life’ showed to be independently correlated with patient satisfaction. This in contrary to operation type and complication rate, which both did not correlate with patient satisfaction.

Our results indicate that neither operation type nor complication rate or revision rate independently correlated with patient satisfaction. Therefore to further improve patient satisfaction, future research should be focused on other pre-operative factors, like patient education, expectations, and personality characteristics.

Correlation between MRI results and intraoperative findings in silicone breast implants: the role of the linguine sign

Much of the interest in implant safety has focused on the issue of implant leak and rupture. Silicone gel implants gradually undergo gel bleed and many rupture without being detected by the patient or the physician. This has been the main reason why magnetic resonance imaging (MRI) of the augmented or reconstructed breast is advocated. The aim of the presented study was to investigate the accuracy of MRI in diagnosis of implant rupture. 50 consecutive patients with 85 silicone gel implants, were included into the study. The mean age of the patients was 51 years (range 21–72 years) with a mean followup of 3.8 years after implantation (range 1-28 years). All patients underwent clinical examination and subsequent breast MRI.
19 out of 50 patients suffered from clinical symptoms potentially related to implant rupture. Actual implant rupture was diagnosed intraoperatively by the operating surgeon. Intraoperative results were compared to the preoperative findings.

In 17 women 22 implant ruptures were diagnosed by MRI (out of 85 implants, 26%). 17 implants were removed surgically. In 7 out of these 17 removed implants (41%) the intraoperative diagnosis corresponded with the positive MRI result. However, only 57% of these patients were symptomatic. In 10 out of 17 implants (59%) no rupture was found intraoperatively, even though 90% of these implants were symptomatic. In the ultrasound imaging of the harvested implants we found signs of interrupted inner layers of the implant shell despite the integrity of the outer shell. By microsurgical separation of the different layers of the implant shell of a new implant, we were able to reproduce these same signs of implant rupture in the MRI.

In conclusion our results show that the rupture of only inner layers of the implant shell with integrity of the outer shell might lead to a misdiagnosis of implant rupture by MRI. Therefore our results question the indication of implant removal based only on MRI results. The correlation with clinical symptoms and the specific wish of the patients should be guiding in the decision whether or not to remove a breast-implant.
References

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