



Should we routinely analyze reduction mammoplasty specimens? [☆]

Päivi A. Merkkola-von Schantz ^{a,*}, Tiina A. Jahkola ^a,
Leena A. Krogerus ^b, Katja S. Hukkinen ^c,
Susanna MC. Kauhanen ^a

^a Department of Plastic and Reconstructive Surgery, University of Helsinki and Helsinki University Hospital, P.O. Box 266, 00029 HUS, Finland

^b Department of Pathology, University of Helsinki and Helsinki University Hospital, P.O. Box 800, 00029 HUS, Finland

^c Department of Radiology, University of Helsinki and Helsinki University Hospital, P.O. Box 263, 00029 HUS, Finland

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Summary *Background:* Reduction mammoplasty is one of the most common plastic surgery procedures. Preoperative imaging and histopathology protocols vary among countries and institutions.

We aimed to analyze the incidence of occult breast cancer and high-risk lesions in reduction mammoplasty specimens. We also analyzed whether patients with abnormal histopathology differed from the study population in terms of demographics.

Patients and methods: In total, 918 women who underwent reduction mammoplasty from January 2007 to December 2011 were retrospectively reviewed for demographics, preoperative imaging, further preoperative examinations, pathology reports, and postoperative follow-up.

Results: Abnormal histopathological findings were revealed in 88 (10%) patients with a mean age of 49.5 ± 10.2 years. The incidence of breast cancer was 1.2%, and the incidence of high-risk lesions (atypical ductal and lobular hyperplasia and lobular carcinoma in situ) was 5.5%. Age and specimen weights were significantly higher in patients with abnormal histopathology. Eighty-one percent of patients with abnormal histopathology had normal preoperative imaging revealing two high-risk and two cancer findings. Two patients developed breast cancer in the same breast in which the high-risk lesion was originally detected.

Conclusion: Women with abnormal histopathology cannot be sufficiently detected preoperatively. Therefore, histopathological analysis of reduction mammoplasty specimens seems

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* Corresponding author. Department of Plastic and Reconstructive Surgery, University of Helsinki and Helsinki University Hospital, P.O. Box 266, 00029 HUS, Helsinki, Finland. Fax: +358 947187570.

E-mail address: paivi.merkkola-vonschantz@hus.fi (P.A. Merkkola-von Schantz).

mandatory. Reduction mammoplasty combined with subsequent histopathological examination offers a sufficient chance of detecting cancer and risk-increasing lesions that merits the cost of histopathology.

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Introduction

Reduction mammoplasty involves many breast and plastic surgeons. Common indications for the surgery are symptomatic macromastia, breast asymmetry, and contralateral symmetrization during or after breast cancer surgery. Despite preoperative evaluation and examination of the patients, occult breast cancer and benign breast disease demonstrating increased risk of breast cancer may appear in reduction mammoplasty specimens.

The incidence of occult breast cancer in reduction mammoplasty specimens has been studied in several countries, with incidence ranging from 0.05% to 4.5%.^{1–16} However, comparison between studies is made difficult because of variations in study methodologies and definition of relevant breast pathology findings. Moreover, inclusion of in situ findings or patients with previous history of breast cancer produce discrepancies.¹

Women with benign breast disease, typically found in reduction mammoplasty specimens,^{2,3,8,12,13,15,17–19} are at a higher risk of breast cancer.^{20–31} Proliferative breast lesions without atypia cause slightly increased risk (1.5–2.0 times), atypical ductal hyperplasia (ADH) and atypical lobular hyperplasia (ALH) cause moderately increased risk (4.0–5.0 times), and ductal carcinoma in situ (DCIS) and lobular carcinoma in situ (LCIS) markedly increased the risk (8.0–10.0 times) of breast cancer.²⁵

The aim of our study was to analyze the incidence of occult breast cancer and findings demonstrating increased risk of breast cancer in reduction mammoplasty specimens. We also analyzed whether patients with abnormal histopathology differed from those with normal histopathology in terms of demographics.

Patients and methods

Patients who underwent reduction mammoplasty in the Department of Plastic and Reconstructive surgery, Helsinki University Hospital, between January 2007 and December 2011 were reviewed. Postoperative surveillance of the patients with abnormal histopathology until October 2015 was included. The study was approved by the University Hospital Research Board.

A total of 1255 women underwent reduction mammoplasties during the study period. Women with previous history of breast cancer were excluded, and the final study population was 918 women. The indications for the surgery were symptomatic macromastia and asymmetry of the breasts. One patient had undergone mastectomy because of burn injury, and reduction mammoplasty was performed

for achieving better symmetry. Eleven patients entered the study twice and one patient entered thrice because of re-reductions. Unilateral procedures were performed in 35 cases because of congenital or postoperative asymmetry. Findings were recorded per treated patient and not per breast. Patient records were retrieved and retrospectively analyzed for demographic data, preoperative imaging, operative and histopathology reports, and postoperative follow-up.

Preoperative imaging findings were classified according to the American College of Radiology Breast Imaging Reporting and Data System,³² as listed in Table 1.

Experienced pathologists performed the histopathological evaluation of reduction mammoplasty specimens. After fixing with formalin, the specimens were weighed and examined. The specimens were cut into 1-cm slices that were palpated for masses and areas of increased density. Samples for tissue blocks were obtained from macroscopically suspicious areas and were evaluated histopathologically. The number of tissue blocks per breast varied between four and 20, five being the most usual number.

Histopathological findings in reduction mammoplasty specimens were categorized according to a consensus statement outlined by the Cancer Committee of the College of American Pathologists.²⁵ In short, abnormal histopathological findings in our study included proliferative breast lesions without atypia, ADH, ALH, LCIS, DCIS, and invasive cancer. High-risk lesions included ADH, ALH, and LCIS. Invasive cancer and DCIS were categorized as cancer findings because of their similar clinical management. All other histopathological findings were defined as normal breast tissue. In 69 patients, no sample was obtained for histopathology. The percentages of abnormal findings were calculated from the number of samples available ($n = 849$).

Table 1 BI-RADS classification.

Category	Definition	Likelihood of cancer
BI-RADS 0	Incomplete	N/A
BI-RADS 1	Negative	Essentially 0%
BI-RADS 2	Benign	Essentially 0%
BI-RADS 3	Probably benign	>0%, but ≤2%
BI-RADS 4	Suspicious	>2%, but <95%
BI-RADS 5	Highly suggestive of malignancy	≥95%
BI-RADS 6	Known biopsy-proven malignancy	N/A

Adopted from ACR BI-RADS Atlas, Breast Imaging Reporting and Data System.

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