

## Evaluation of incidence and histopathological findings of breast lesions in reduction mammoplasty specimens: Uludag University experience

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### Abstract

**Objective:** To report the incidence of benign, pre-cancerous and malignant lesions in reduction mammoplasty specimens.

**Methods:** The retrospective study was conducted at the Uludag University, Bursa, Turkey and comprised data of 264 patients who underwent bilateral breast reduction between 2004 and 2009. Operative reports and pathological findings of all patients were reviewed. Patients were divided into three age groups with reference to the hormonal characteristics: girls and women between 13 and 35 years constituted group 1; women older than 35 and younger than 50 years old were clustered in group 2; and women over 50 years formed group 3. Descriptive statistics were applied.

**Results:** Fibrocystic disease was the most common (n=402; 76.13%) lesion in all groups. Proliferative lesions such as intraductal epithelial hyperplasia and atypical ductal hyperplasia were each found in 0.4% (n=2) cases. There were 2(0.4%) cases with invasive ductal carcinoma, and 1(0.2%) case with ductal carcinoma in situ. All malignant tumours were found in patients over 50 years of age.

**Conclusion:** Microscopic examination of macroscopically normal breast tissue from breast reduction specimens may provide noteworthy pathological findings. Histological sampling of reduction mammoplasty specimens gave rise to the early detection of occult neoplastic breast lesions.

**Keywords:** Reduction mammoplasty, Breast lesions, Breast carcinoma, Histopathology. (JPMA 63: 878; 2013)

### Introduction

Reduction mammoplasty (RM) is one of the most common reconstructive surgical procedures across the world<sup>1,2</sup> and is performed to address both aesthetic and reconstructive concerns of patients with macromastia.<sup>3</sup> In histological evaluation of breast reduction specimens, fibrocystic and proliferative breast lesions are frequently seen.<sup>3</sup> Nevertheless, in literature, there are few studies that specifically examined the incidence of these common breast lesions. Thus far, the incidence of occult invasive breast carcinoma in breast reduction specimens has been reported between 0.06% and 0.4%.<sup>4</sup> In this study, we retrospectively reviewed patients who had undergone RM over a 5-year period to determine the incidence of benign, pre-cancerous and malignant lesions.

### Patients and Methods

The retrospective study was conducted at Uludag University, Bursa, Turkey and comprised the records of 264 patients who underwent bilateral breast reduction between 2004 to 2009. Patients were divided into three age groups with reference to the hormonal characteristics: those between 13 and 35 years constituted group 1; these over 35 but below 50 years formed group 2; and women over 50 years old formed group 3. Pre-

operative, operative and pathological findings of all patients were reviewed. Pre-operative evaluation included bilateral conventional mammography and bimanual breast examination. All patients had undergone bilateral RM with standard techniques. Specimens were grossly examined, including weight and size measurements. They were serially sectioned in a sagittal plane at 1cm intervals and placed in 10% buffered formalin for fixation. Following the fixation, breasts were thoroughly evaluated for any gross cystic change, focal lesions such as ductal ectasia, fibroadenoma, and conspicuous hard areas suggestive of carcinoma. All suspicious areas were sectioned and subjected to microscopic examination. If no visible lesion was identified by gross examination, at least six random samples were obtained. The tissues selected for histological evaluation were routinely processed for embedding in paraffin blocks. Afterwards, the blocks were cut and the sections stained with haematoxylin-eosin (HE). Histopathologically, lesions were classified into three groups: benign alterations, proliferative lesions and tumours. Benign lesions included fibrocystic disease, sclerosing adenosis, fibroadenoma, ductal ectasia and lipoid necrosis. Ductal hyperplasia without atypia, atypical ductal hyperplasia, intraductal hyperplasia with atypia, and ductal papillomatosis were the proliferative lesions. The malignant tumours detected in the study were ductal carcinoma in situ (DCIS) and invasive ductal carcinoma. The lesions were categorised according to the Rosen classification.<sup>5</sup> As the study was a cohort, descriptive statistics were applied.

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## Results

The mean age at the time of breast reduction was

Table: Histological evaluation of breast tissue specimens.

Histopathology	Specimens number (n = 528)	%
Normal histology	78	14.7
< 35 year	46	8.7
35-50 year	22	4.2
> 50 year	10	1.8
Fibrocystic disease	402	76.1
< 35 year	213	40.3
35-50 year	150	28.4
> 50 year	39	7.4
Sclerosing adenosis	38	7.2
< 35 year	14	2.7
35-50 year	24	4.5
> 50 year	-	-
Ductal hyperplasia without atypia	148	28
< 35 year	59	11.2
35-50 year	64	12.1
> 50 year	25	4.7
Microcalcification	26	4.9
< 35 year	-	-
35-50 year	11	2.1
> 50 year	15	2.8
Fibroadenoma	38	7.2
< 35 year	4	0.8
35-50 year	26	4.9
> 50 year	8	1.5
Ductal ectasia	22	4.2
< 35 year	9	1.7
35-50 year	11	2.1
> 50 year	2	0.4
Lipoid necrosis	10	1.9
< 35 year	6	1.1
35-50 year	4	0.8
> 50 year	-	-
Atypical ductal hyperplasia	2	0.4
< 35 year	-	-
35-50 year	-	-
> 50 year	2	0.4
Ductal carcinoma in situ	1	0.2
< 35 year	-	-
35-50 year	-	-
> 50 year	1	0.2
Ductal papillomatosis	2	0.4
< 35 year	-	-
35-50 year	2	0.4
> 50 year	-	-
Intraductal papilloma	2	0.4
< 35 year	-	-
35-50 year	2	0.4
> 50 year	-	-
Invasive ductal carcinoma	2	0.4
< 35 year	-	-
35-50 year	-	-
> 50 year	2	0.4

43.6± 8 years (range: 16=67). Group 1 had 20 (8.1%) patients, 200 (75.75%) patients were in group II; and 44 (16.66%) patients were in group III. None of the patients had a previous history of breast cancer before the RM. All mammography, breast examination and intraoperative findings were normal. The mean weight of breast specimens was 878.6±40 (range: 50=3.250). The average number of blocks submitted per breast was 10.8 (range: 2-40). Abnormal pathologic findings were found in 450 (85.2%) specimens. Fibrocystic disease was the most common (n=402; 76.13%) SD lesion in all groups (Table). Proliferative lesions such as intraductal epithelial hyperplasia and atypical ductal hyperplasia were found in (0.4%) cases each. Besides, there were 2 (0.4%) invasive ductal carcinomas and 1 (0.2%) DCIS as malignant tumours in the series. All the malignant tumours were found in patients over 50 years of age. After the diagnosis, one of the patients with invasive ductal carcinoma was re-operated for complementary mastectomy, and adjuvant radiotherapy was administered; the other patient had chemo-radiotherapy. Both patients survived and did not have any sign of the disease. In the follow-up, patients were advised to conduct manual breast self-examination every month, as well as to have annual clinical breast examination and mammograms if they were over 40. All patients with atypical ductal hyperplasia and DCIS were referred to a breast surgeon or oncologist.

## Discussion

The goal of breast reduction surgery is to reduce the breast size. Moreover, this procedure offers the chance to detect the malignant or pre-malignant lesions of the breast.<sup>3</sup> In literature, a variety of pathological changes ranging from the more common proliferative lesions to rare invasive carcinomas have been reported in RM.<sup>6</sup> A study observed that the highest number of histopathological lesions was found in women less than 35 years of age.<sup>7</sup> According to that study, fibrocystic disease and fibroadiposity were the most common benign lesions. Similarly, in our series, more than two-third of the specimens displayed histopathological patterns of fibrocystic changes. Our findings demonstrated that there may be a strong association between fibrocystic changes and breast hypertrophy. One study reported that 64.4% of patients (130 out of 202) were 40 years of age or older. Almost all of the patients with significant pathologic findings were older than 40 years.<sup>8</sup>

The most important histopathological finding in reported RM series was the determination of invasive

carcinoma. The incidence of clinically occult breast cancer in RM specimens ranged from 0.06% to 4.6%. The differences in percentages were due to the presence of patients with the history of previous breast cancer in some series.<sup>8,9</sup> Since it is quite possible to detect breast cancer during breast reduction,<sup>10</sup> histopathological evaluation of the specimens in these women gains more importance. Invasive carcinoma incidentally discovered at RM was first reported in 1959.<sup>11</sup> They examined 5008 RMs specimens and identified malignancy in 19(0.37%). Others reviewed 200 RMs and found that 8% had lobular carcinoma in situ, all being older than 40 years.<sup>12</sup> Still others showed invasive breast cancer in 20%, DCIS in 14%, lobular carcinoma in situ in 3% of patients in a series of 110 patients.<sup>13</sup> Studies have demonstrated lower rates of atypical (1.4% and 1.6%, respectively) and in situ (0.2% and 0.3%, respectively) lesions.<sup>6,9</sup> Similarly, in our study, we detected invasive carcinoma in 0.4% of the patients. These patients did not have a history of breast carcinoma. We also determined DCIS and atypical ductal lesions as risk factors for breast carcinoma development.

Detection of quite different percentages of incidental breast carcinoma in reported diverse RM series might be mainly due to pathological assessment of breast reduction specimens. There is no worldwide standardised procedure for the processing and examination of these specimens. After gross evaluation of specimens, the number of tissue sections submitted for histological assessment varies from institution to institution.<sup>8</sup> Detecting neoplastic lesions in macroscopically normal breast tissues gives rise to the concern of missing important occult lesions due to inadequate sampling of the specimen. RM specimens are often very large and the selection of two blocks of tissue for microscopic analysis means that only a very small proportion of the total tissue is examined histologically. Detailed macroscopic examination with palpation of the tissue is recommended to identify areas that may contain microscopic abnormalities.<sup>14</sup> A study concluded that in patients younger than 30 years, careful gross examination with or without minimal microscopic examination (1 or 2 blocks) were adequate.<sup>12</sup> Extensive microscopic examination in specimens from women over 40 years was recommended even in the absence of grossly evident lesions.<sup>12</sup> By using this method, it determined 8% lobular carcinoma in situ in the series. Similarly, another study described a method for pathological assessment of RM specimens consisting of gross examination followed by microscopic examination of

one section from the skin and three sections from the breast tissue. Also, the result of another study confirmed the low frequency of malignancy in RM specimens. It suggested that for routine RM cases, a careful gross inspection and microscopic evaluation of 4 tissue sections per specimen, including breast tissue and skin, is sufficient for assessment. It determined carcinoma with a percentage of 0.2% with this method.<sup>15</sup>

In the current study, we evaluated 528 RM specimens and determined 2 invasive carcinomas, 3 DCIS, and 3 lobular carcinomas in situ; all were in patients over 50. Increasing the number of samples raised the possibility of determining significant pathological findings, particularly in patients over 50. Therefore, meticulous sampling of RM specimens is needed in this age group. However, it was mentioned in minority of earlier studies.<sup>8</sup>

## Conclusion

Microscopic examination of breast reduction specimens, even without a macroscopically recognisable lesion, provides an opportunity for detailed evaluation of the breast tissue in higher risk age groups. Sufficient histological sampling of RM specimens in women over 40 leads to increased identification of occult neoplastic lesions. The surgeon should evaluate these patients regarding suspicious breast lesions and mark these tissues appropriately during RM.

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