

Contingency finding of breast cancer after reduction mammoplasty

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Contingency Finding of Breast Cancer after Reduction Mammoplasty

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Report of a case

A 41-year old who was on estrogen replacement therapy presented to us for a mass 2 x 2 cm in the outer quadrant of the right breast. Mammography revealed a suspected lesion. B.I.Rads -5 highly suspicious of malignancy (A.C.R-B.I.R.A.D.S-American College Of Radiology _Breast Imaging Reporting and Data System). Open biopsy showed invasive mammary carcinoma and multifocal ductal carcinoma in situ (DCIS). The patient underwent right modified radical mastectomy because of multi centric disease and immediate reconstruction with a saline implant. She had been given postoperative chemotherapy consisting of six cycles of doxorubicin, cyclophosphamide and 5-fluorouracil (FAC) as well as tamoxifen therapy. Six months later the patient had undergone reduction mammoplasty of the left breast. On histopathology invasive duct carcinoma was found. After discussion with the patient it was decided to perform modified radical mastectomy and reconstruction with saline implant. Four years after the second operation, there was no evidence of recurrence.

Fig. 1



Fig. 2



Abstract

Reduction mammoplasty (RM) is a common surgical procedure performed for cosmetic reasons or for symptomatic mammary hypertrophy (back and neck). It produces a variable amount of tissue that subsequently is sent for pathologic evaluation ⁽¹⁾. Reduction mammoplasty also performed in conjunction with contra lateral breast cancer procedures to achieve bilateral symmetry.

Breast tissues from RM procedures are commonly encountered specimens in surgical pathology, yet no well-defined guidelines are available for the pathologic examination of these specimens. Only a few reports are available in the literature discussing histopathological findings in RM's ⁽¹⁾.

We shall discuss the issue of reduction mammoplasty and breast cancer.

Mammography has proven to be effective for breast cancer screening. Incidental diagnosis of breast cancer might have been/prevented in three of the four women in our series if preoperative mammograms had been obtained; patient 4 had invasive lobular carcinoma, which has been associated with mammographically occult malignancies and a false-negative rate of 19%.

The American Cancer Society currently recommends routine mammography screening for women starting at age 40 years. It is important to identify the risk factors for breast cancer and obtain an appropriate preoperative mammogram. Women can be separated into low to moderate risk and high risk categories. For women between the ages of 20 and 39 years, a physical breast examination every 1-3 years is recommended, and breast self-examination is encouraged.

Approximately half of the malignancies discovered by mammography are not palpable. The sensitivity of screening mammography for women in their 50s is 73% to 88%, with a false-negative rate of 7.5%. Preoperative mammography, in addition to a comprehensive physical examination of the breasts and nodal basins, is crucial for patients with breast cancer undergoing reduction mammoplasty. In fact, all patients with a history of breast cancer should have bilateral diagnostic mammography before any breast surgery. For women with dense breasts, ultrasonography should be considered as an additional diagnostic tool.

If the mammogram or physical examinations reveal an abnormality, a diagnostic workup including biopsy should be performed before proceeding with reduction mammoplasty. If the preoperative biopsy demonstrates neoplasia, then all potential treatment options remain available, including sentinel node biopsy instead of axillary dissection. One option may include the combination of breast conservation therapy and reduction mammoplasty. This approach has been shown to be effective for select patients who have large pendulous breasts, who do not wish to undergo mastectomy, and who are otherwise candidates for breast conservation therapy. Patients with macromastia who undergo breast conservation surgery with radiotherapy have an increased rate of complications and poor cosmetic results, largely because of radiation-induced fibrosis from radiation dose inhomogeneity. Combining reduction mammoplasty with breast conservation therapy reduces dose inhomogeneity and can provide good cosmetic results ⁽²⁾.

If an occult carcinoma is diagnosed intraoperatively, at least three options are available: closure of wounds without additional dissection, segmental mastectomy (with or without concurrent axillary node dissection), or immediate mastectomy. The time during the surgery when the carcinoma is diagnosed influences the decision process. Immediate closure may be more feasible when the carcinoma is identified before extensive dissection of the breast. After exposure of multiple breast tissue planes, future identification of the tumor site may be difficult and mastectomy will often be required. Segmental mastectomy with an attempt to obtain at least a 1-cm grossly negative margin is a reasonable option if the true margin can be confidently identified. This may be difficult or impossible if extensive dissection of the breast parenchyma has been performed. In addition, segmental mastectomy may not be an option if

the resection would include significant portions of the nipple-areola complex, pedicle, or remaining breast skin. Axillary dissection can be performed, if indicated, primarily through the mammaplasty incisions or through a separate axillary incision. With either approach, axillary dissection may reduce the vascularity of the lateral skin flap; care should therefore be taken to minimize the amount of undermining of the lateral skin flap to maintain adequate vascularity. Alternatively, a delayed axillary node dissection can be performed, if indicated, after receipt of the permanent pathology report and discussion with the patient about the risks and benefits. Although requiring a second procedure, this approach might spare some patients from an unnecessary axillary node dissection and help preserve vascularity to the lateral skin flap. Despite successful completion of segmental mastectomy, axillary node dissection, and reduction mammaplasty, subsequent mastectomy may be required if permanent section pathological examination demonstrates multifocal disease, positive margins, or incompletely resected ductal carcinoma in situ or if the patient prefers mastectomy to breast conservation therapy⁽¹²⁾. The third option, performing immediate mastectomy, commits the patient to a delayed (or no) reconstruction unless the patient and surgeon have planned and are prepared for immediate breast reconstruction⁽³⁻⁶⁾.

The diagnosis of breast cancer after breast reduction surgery may reduce surgical options and complicate further cancer treatment. To reduce the risk of incidental breast cancer in reduction mammaplasty specimens, identification of risk factors for breast cancer during the initial consultation is crucial. A thorough interview and clinical breast examination must be completed. Discussions between the surgeon and patient should include identification of breast cancer symptoms, family history of breast cancer, history of any breast surgery, and findings from recently obtained mammograms. A thorough clinical breast and nodal basin examination should be performed and any suspicious findings should be investigated before surgery⁽⁷⁻¹⁰⁾.

Despite preoperative evaluation with mammography and physical examination, occult carcinoma is occasionally identified during reduction mammaplasty. The incidence of occult breast carcinoma in mammaplasty specimens has been reported to be 0.16% to 0.38% and correlates with patients' overall risk for breast cancer. Women with cancer in one breast have an increased risk for contralateral breast cancer; the incidence of metachronous contralateral breast carcinoma is 0.5% to 1% per year. Therefore, patient with breast cancer undergoing concurrent or delayed breast reduction for symmetry would be expected to have a higher incidence of occult carcinoma than would patients having bilateral reduction for macromastia⁽¹¹⁾.

Most occult carcinomas are identified in the final pathological specimens rather than intraoperatively by the operating surgeon, and they are traditionally treated with mastectomy. Intraoperative identification and diagnosis of occult carcinoma would facilitate orientation of the resected specimen for margin assessment, allow additional excision to obtain clear margins, and increases the feasibility of treating select patients with breast conservation therapy⁽¹²⁻¹⁵⁾.

Women at high risk for breast cancer are women with a genetic predisposition. The criteria for genetic predisposition as developed by the American Society of Clinical Oncology are the family has more than two breast cancer cases and one or more cases of ovarian cancer diagnosed at any age, the family has more than three breast cancer cases diagnosed before the age of 50 years, or the family has sister pairs with two of the following cancers diagnosed before the age of 50 years: two breast cancers, two ovarian cancers, or a breast and ovarian cancer. For women with this genetic history, annual mammography and physical breast examination every 6 months are initiated 5-10 years before the earliest age of diagnosis of breast or ovarian cancer in a relative, but not before age 25 years. The cumulative risk of breast cancer may be as high as 19% by the age of 40 years in women with BRCA 1 mutations. As the overall risk of breast cancer in BRCA-1 or BRCA-2 mutation carriers is estimated to be 20-fold greater than the average population risk, the benefit of screening may justify the radiation exposure.

Another group of women with high risk are women with lobular carcinoma in situ (LCIS). LCIS is associated with a 10%-15% increase in lifetime risk of subsequent development of cancer in each breast. For women with LCIS, an annual mammogram and physical examination are recommended. Any suspicious abnormalities must be fully evaluated before elective surgery.

In 1960, Snyderman and Lizardo⁽¹⁶⁾ reported a study on the detection of malignant neoplasms in routine breast plastic operations, including RM (reduction mammoplasty) procedures. Of 5,008 RM cases, 19 breast carcinomas were discovered before (by physical examination), during (by frozen section), or after (by routine pathologic study) the operation. Bondeson and Linell⁽¹⁷⁾ posed the question of what to do with all the tissue produced by these operations. They studied 200 RM cases and found no pathologic abnormality in all patients younger than 30 years. Of the patients older than 40 years, 8% had lobular carcinoma in situ. They concluded that in patients younger than 30 years, careful gross examination with or without minimal microscopic examination (1 or 2 blocks) is adequate. Extensive microscopic examination in specimens from women older than 40 years was recommended, even in the absence of grossly evident lesions. Other reports identified a variety of pathologic changes ranging from more common proliferative lesions to rare invasive carcinomas.

Jansen et al.⁽¹⁸⁾ relatively recent survey of 2,576 patients, who underwent RM, 4 breast carcinomas were detected in the surgical specimens. This is a lower percentage (0.16%) of malignant neoplasms than the reported by Snyderman and Lizardo (0.38%). This lower rate of carcinoma detection was attributed to a greater awareness of the general public of disease, leading to earlier detection, and to the increased access to mammography. The consensus was that RM specimens should be considered an opportunity to evaluate in great detail breast tissue in higher risk age groups.

Ishag et al.⁽¹⁾ study detected a higher percentage of carcinoma (0.7%) than previously published rates. The incidence of carcinoma was 2% (1/42) in patients with a history of breast carcinoma and 0.6% in patients with no history of breast carcinoma. All 4 of the carcinomas detected were small (T1 invasive carcinoma, 3; ductal carcinoma in situ, 1). We also found that 1.4% of patients had atypical ductal and/or atypical lobular hyperplasia, lesions known to be associated with an increased risk of developing carcinoma. Lesions associated with a mildly increased carcinoma risk (papilloma, moderate/florid hyperplasia, sclerosing adenosis) were identified in 9.3%, in a younger age group (mean age, 44.6 years; range, 24-65 years) than those with carcinoma or atypical hyperplasia (mean age, 55.6 years; range 43-70).

Appropriate postoperative follow up after breast conservation and reduction mammoplasty is very important. Small areas of fat necrosis after surgery can result in palpable mass and calcifications. A new mammogram should be obtained 6 months after surgery. Ricci et al.⁽⁷⁾ and we agree with them, that contralateral breast reduction mammoplasty is a reliable technique providing an opportunity for diagnosis of an occult synchronous breast cancer.

The technique should be considered in combination with immediate breast reconstruction. Eldar et al.⁽¹⁹⁾ concluded, and we agree with this way of thinking that immediate breast reconstruction improves well-being and quality of life for women undergoing mastectomy for breast cancer.

We recommend preoperative mammography for every patient 40 years of age, annual physical breast examination and screening mammography, and breast self-examination.

References

1. Ishag MT, Bashinsky DY, Beliaeva IV, et al. Pathologic finding in reduction mammoplasty specimens. *Am J Clin Pathol.* 2003; 120:377-80.
2. Silverstein MJ, Lagios MD, Recht A, et al. Image -detected breast cancer: state of the art diagnosis and treatment. *J Am Coll Surg.* 2005; 201:586-97.

3. Pitanguy I, Torres E, Salgado F, et al. Breast pathology and reduction mammoplasty. *Plast Reconstr Surg.* 2005; 115:729-34.
4. Nano MT, Gill PG, Kollias J, et al. Qualitative assessment of breast reconstruction in a specialist breast unit. *ANZ J Surg.* 2005; 75:445-53.
5. Iwuagwu OC, Drew PJ. Reduction mammoplasty specimens and occult breast carcinomas. *Eur J Surg Oncol.* 2005; 31:806.
6. Viana GA, Pitanguy I, Torres E, et al. Histopathological findings in surgical specimens obtained from reduction mammoplasties. *Breast.* 2005; 14:242-8.
7. Ricci MD, Munhoz AM, Pinotti M, et al. The influence of reduction mammoplasty technique in synchronous breast cancer diagnosis and metachronous breast cancer prevention. *Ann Plast Surg.* 2006; 57:125-32.
8. Munhoz AM, Montag E, Arruda EG, et al. Superior – medial dermoglandular pedicle reduction mammoplasty for immediate conservative breast surgery reconstruction: technical aspects and outcome. *Ann Plast Surg.* 2006; 57:502-8.
9. Schrenk P, Wolff S, Bogner S, et al. Symmetrization reduction mammoplasty combined with sentinel node biopsy in patients operated for contralateral breast cancer. *J Surg Oncol.* 2006; 94:9-15.
10. Munhoz AM, Montag E, Arruda EG, et al. Critical analysis of reduction mammoplasty techniques in combination with conservative breast surgery for early breast cancer treatment. *Plast Reconstr Surg.* 2006; 117:1091-103.
11. Hage JJ, Karim RB. Risk of breast cancer among reduction mammoplasty patients and the strategies used by plastic surgeons to detect such cancer. *Plast Reconstr Surg.* 2006; 117:727-35.
12. Thornton BP, Stewart DH, McGrath PC, et al. Breast reduction as an alternative treatment option for early breast cancer in women with macromastia. *Ann Plast Surg.* 2006; 56:26-30.
13. Ramakrishnan R, Bhandare D, Fine N, et al. Pathologic findings in contralateral reduction mammoplasty specimens in patients with breast cancer. *Breast.* 2005; 11:372-3.
14. Asgeirsson KS, Rashood T, McCulley SJ, et al. Oncological and cosmetic outcomes of oncoplastic breast conserving surgery. *Eur J Surg Oncol.* 2005; 31:817-23.
15. Manassa EH, Olbrisch RR. Metastasis of breast cancer in the donor site after breast reconstruction with a latissimus dorsi flap. *Plast Reconstr Surg.* 2005; 115:972-3.
16. Snyderman RK, Lizardo JG. Statistical study of malignancies found before, during, or after routine breast plastic operations. *Plast Reconstr Surg.* 1960; 25:253-256.
17. Bondeson L, Linell F, Ringberg A, et al. Breast reductions: what to do with all the tissue specimens? *Histopathology.* 1985; 9:281-5.
18. Jansen DA, Murphy M, Kind GM, et al. Breast cancer in reduction mammoplasty: case reports and a survey of plastic surgeons. *Plast Reconstr Surg.* 1998; 101:361-4.
19. Elder EE, Brandberg Y, Bjorklund T, et al. Quality of life and patient satisfaction in breast cancer patients after immediate breast reconstruction: a prospective study. *Breast.* 2005; 14:201-8.