

# Oncologic breast surgery of retroareolar breast cancer with racquet mammoplasty technique

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## ABSTRACT

Oncoplastic breast surgery is increasingly preferred method of intervention today. Surgery allows for the removal of mass with clear borders while keeping the appearance within the acceptable standards. The success of breast conserving surgery is evident only after the radiotherapy received. Oncoplastic techniques that allow filling of the defect by shifting the breast tissue are the best option for the treatment. An invasive ductal carcinoma with dimensions of 23 mm × 21 mm, located in the retroareolar area on the upper outer quadrant of the right breast was detected in a 59-year-old postmenopausal female patient. Taking into the consideration of tumor-breast ratio, localization of tumor, the density of the breast and skin features, racquet mammoplasty technique was used. In today's world, breast cancer is considered to be a chronic disease by the World Health Organization. In a well-staged condition, the surgical intervention must be applied with an acceptable cosmetic appearance.

**Keywords:** Breast cancer, breast conserving surgery, mammoplasty, segmental mastectomy.

**Cite this article as:** Açar S, Ciftci E. Oncologic breast surgery of retroareolar breast cancer with racquet mammoplasty technique. Zeynep Kamil Med J 2021;52(2):105–108.

**Received:** February 27, 2021 **Accepted:** March 18, 2021 **Online:** June 18, 2021

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## INTRODUCTION

Breast cancer is a public health problem and the diagnosis and treatment of which require attention. If detected in the early stages of the condition, it can be treated almost up to 100% recovery. About 60–80% of the breast cancer cases detected in recent years can be treated with breast-conserving surgery.<sup>[1]</sup> Taking into consideration that the patients live a long time after the time of diagnosis, the effect of radical surgery costs a negative effect on patients' quality of life.

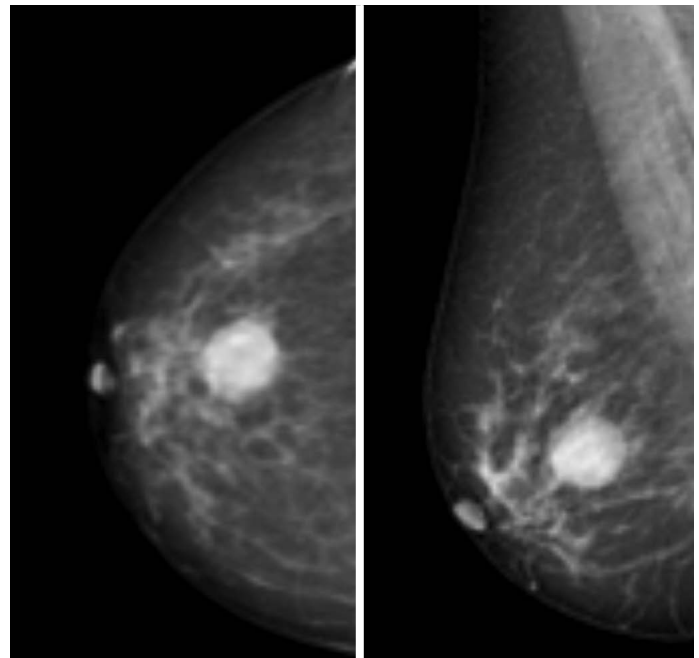
The aim of breast cancer treatment is to cure the condition, effective utilization of oncologic principles and having cosmetic appearance within the acceptable standards.<sup>[2]</sup> Clough et al.<sup>[3]</sup> classified the oncoplastic breast surgery techniques. After their study, the excision of tumors that required a great amount of tissue loss became possible. Rezaei et al.<sup>[4]</sup> indicated the systemization of the applied oncoplastic techniques. Localization of tumor, tumor-breast ratio, requirement of radiotherapy, and surgical intervention are the factors that affect the appearance of the breast after the breast conserving surgery.<sup>[5]</sup> In some cases of breast conserving surgery, satisfaction with the esthetic appearance of the breast and the ratio of deformity can be up to 30%. This ratio, after the oncoplastic surgery, is 15–18%.

## CASE REPORT

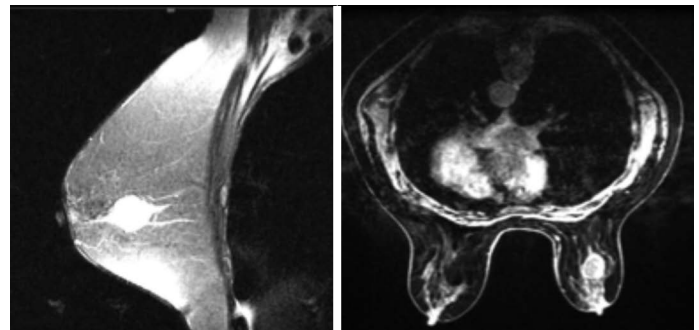
A 59-year-old postmenopausal patient applied to our hospital with the complaint of mass felt manually on her right breast. On ultrasonography, a well circumscribed solid mass with dimensions of 24 mm × 20 mm localized to the upper outer quadrant, posterior to nipple areola complex was detected. The mass was staged as BIRADS 4a. In mammography, no microcalcification was detected and on the right breast a mass was seen (Fig. 1). Before biopsy, magnetic resonance image was taken. The mass was found 23 mm × 21 mm in dimensions with heterogenous pattern appearance with contrast and had necrotic areas within with limited diffusion (Fig. 2). With Tru-cut biopsy, the mass was identified as invasive ductal carcinoma. The tumor was positive for estrogen and progesterone receptors, negative for Cerb2 and Ki 67 index was 20%. To screen for systemic disease, positron emulsion tomography was done. Localized to retro-areolar area in the upper outer quadrant of the right breast with SUV max of 6,2 a malignant mass was detected. There was no axillary lymph involvement or systemic involvement. After multidisciplinary discussion, surgery was planned. Taking into consideration the tumor size, its localization, the breast size, and the density of parenchyma, racquet mammoplasty technique was used. There was no complication of wound healing (Fig. 3). In pathological examination, the diameter of tumor was found to be 2.4 cm × 2.5 cm. The estrogen and progesterone receptors were 90% positive, Ki index was 10%, and Cerb2 negative invasive ductal cancer was identified. The surgical borders were well circumscribed and sentinel lymph node was negative. Lymph vascular invasion and necrosis were not detected.

## DISCUSSION

Breast cancer is the most common type of cancer seen in women. One of every eight women suffers from breast cancer at one point of their lives. Due to early detection uprising rate and developed personalized approach, the overall survival is increasing.



**Figure 1:** Appearance of a mass lesion in the right breast in CC and MLO mammography.

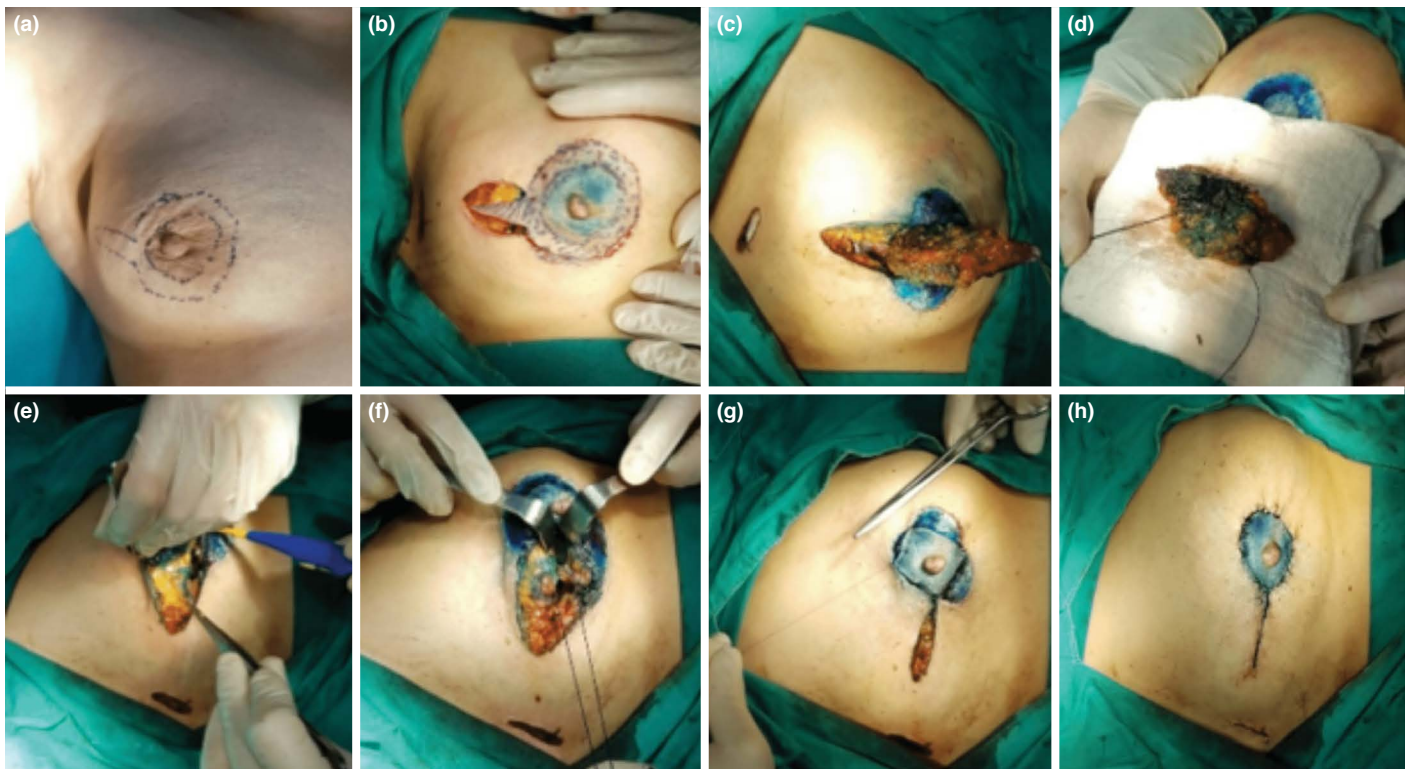


**Figure 2:** Magnetic resonance imaging of the tumor. The massive lesion is 23 mm × 21 mm in size. It has a heterogeneous enhancement pattern. It contains cystic necrotic areas. It shows pronounced diffusion restriction.

With the studies made in recent years, radical surgical treatment is replaced by breast conserving surgery. A study done by Deutsch et al.<sup>[6]</sup> was the turning point in this process. Radical and basic mastectomy was compared independent of radiotherapy. The results showed that there was no significant change in relapse, metastases, or general survival. It was evident that axillary dissection was enough for those patients with positive sentinel lymph node. In a study done by Christian et al.,<sup>[7]</sup> mastectomy, lumpectomy, and lumpectomy with radiotherapy were compared given that axillary dissection was performed to those with masses smaller than 4 cm. It was seen that, when lumpectomy is performed and followed by radiotherapy a better localized control was asserted than only lumpectomy operation. Thereby, in early staged breast cancer, breast conserving surgery was preferred instead of mastectomy, and the need of radiotherapy was emphasized. Breast conserving surgery is done in cases of ductal carcinoma in situ/Tis, T1, and T2 and with assurance of providing an acceptable cosmetic appearance. In studies, 5 cm was accepted as the threshold for the tumor size.



**Figure 3:** Appearance of the breast after surgical treatment. (a) Appearance 3 days after surgery (b, c) Appearance 1 week after the end of radiotherapy.



**Figure 4:** Racket mammoplasty technique. (a, b) The first incision is the circular incision made just around the areola complex with the nipple. A second incision is made around the nipple areola complex 1–2 cm beyond this incision. The third incision is in the form of a wedge extending from the areola to the axilla (c, d). After the incisions, the tumor is removed with the surrounding breast tissue (e, f). Skin flaps are separated from the breast tissue and the breast tissue is mobilized from the pectoral muscle laterally and medially (g, h). The glandular tissue on both sides is approached one by one, with continuous absorbable sutures under the skin and under the skin.

The excision of lymph nodes is directed more toward staging and prognostic importance rather than being directed at treatment-wise. The main aim is to identify how to prevent excess treatment of axillary area and therefore decreases the likelihood of complications such as lymphedema. Krag et al.,<sup>[6]</sup> in their study, examined those patients with positive sentinel lymph node that have undergone axillary lymph node dissection. They discovered that women with only one positive sentinel lymph node contracted no other positive sentinel lymph nodes after axillary dissection. Study of Caudle et al.,<sup>[9]</sup>

done in 2011 became a guide for the management of axillary area in cases of early detection of breast cancer. Those patients with tumor size smaller than 5 cm, or with clinically negative lymph nodes in axillary region or where after sentinel lymph node sampling, there were <3 positive sentinel lymph nodes and supported with the addition of adjuvant hormonal therapy or chemotherapy, there was no need for complementary axilla lymph node dissection.

In that sense, it is best to treat with current approach when there is no additional focus in breast and perform breast conserving sur-



gery with sentinel lymph nodes and radiotherapy to whole breast. Marrow<sup>10</sup> stated that no other surgery is more evidence based than breast conserving surgery. Breast conserving surgery is evaluated based on the survival, locale relapse, cosmetic appeal, and quality of life. Build on this, oncoplastic surgery surpasses some of the limitations. Especially in terms of decreasing the negative effect of radiotherapy on the incision site, this is very important. In addition, it allows for the reduction of large breasts, correction of ptosis, and the prevent the irregular shape of breast after lumpectomy. The success is dependent on the volume of excision, tumor localization, and glandular density. In all techniques, the main factors are the change in place of volume and replacement.

Breast tumors are mostly localized in the upper outer quadrant of the breast. Tumors in this quadrant can be excised without causing a deformity with standard breast conserving methods. Only in cases of small or middle-sized breasts, if more than 20% of the breast tissue is needed to be excised through lumpectomy, a deformity formation can be inevitable. Scar tissue after excision and radiotherapy may cause mispositioning of the nipple areolar complex. In such situations, the more preferred oncoplastic breast surgery technique is racquet mammoplasty. This can be applied with ease in cases of serious reduction of middle-sized breasts, planned large excisions, and for the correction of ptosis where outer quadrant mobilization is necessary.

In racquet mammoplasty technique, three subsequent incisions are used. The first incision is the circular incision around the nipple areolar complex. To the outer 1–2 cm of this circular incision a second circular incision is made. The third incision is wedge shaped incision stretching from areola to axilla. After the incisions, tumor is removed with the surrounding tissue. Excision is done to remove subcutaneous tissue and pectoralis fascia. The area between the two circular incisions around the nipple areolar complex is de-epithelized. Skin flaps are separated from the breast, and breast tissue is separated from the pectoralis muscle on the medial and lateral surface (Fig. 4). The nipple-areolar complex may misposition toward lesion side and therefore needs to medially correct.

## CONCLUSION

After oncoplastic surgical interventions, bleeding, infection, breast asymmetry, loss of sensation, seroma, prolonged wound healing, necrosis of nipple, and fat necrosis may be seen. When considered the cosmetic appeal and the success of the treatment in the long term, racquet technique may become a routine technique in breast tumor surgeries.

## Statement

**Informed Consent:** Written informed consent was obtained from patients who participated in this study.

**Peer-review:** Externally peer-reviewed.

**Author Contributions:** Concept – S.A.; Design – S.A.; Supervision – S.A.; Resource – S.A.; Materials – S.A.; Data Collection and/or Processing – E.Ç.; Analysis and/or Interpretation – S.A.; Literature Search – S.A.; Writing – S.A.; Critical Reviews – S.A.

**Conflict of Interest:** The authors have no conflict of interest to declare.

**Financial Disclosure:** The authors declared that this study has received no financial support.

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