

Breast conserving surgery of primary bilateral breast cancer in a lady with prior implant breast augmentation: A case report

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Department of General Surgery, Division of Surgical Oncology, King Abdulaziz Medical City NGH-HA, Jeddah, Saudi Arabia Keywords: breast, implant, precapsular, tumor, breast conserving surgery

Abstract

Introduction: Breast cancer remains the most prevalent malignancy among women in Saudi Arabia, despite declining rates in Western countries, coupled with the rising popularity of breast augmentation, necessitates a shift towards breast-conserving surgeries for early-stage diseases. While breast augmentation offers cosmetic benefits, it presents unique challenges. Addressing these challenges requires specialized approaches and ongoing research to ensure optimal care for women with breast augmentation.

Case report: A 52 year old female, with history of bilateral prepectoral implant breast augmentation, presented with right IDC luminal B type, underwent right breast transcapsular lumpectomy (SAVI-guided) and SLNB with bilateral implant exchange followed by adjuvant radiotherapy. Upon her follow up she showed good aesthetic outcome grade 1 Baker classification. Two years later she presented again with left t breast IDC luminal B type, underwent left breast total precapsular wide local excision (SAVI-guided) through a hidden axillary incision with sentinel lymph node biopsy. Currently she is planned for adjuvant radiotherapy.

Discussion: This case report details a patient who was diagnosed with breast cancer on two separate occasions and successfully received bilateral breast-conserving treatment twice, all while maintaining her breast implants. Despite concerns regarding implant safety after radiation, effect on mammographic sensitivity, and delayed detection of abnormalities as well as the lack of randomized trials; our findings suggest that this approach can provide excellent cosmetic and oncologic outcomes. While the literature highlights potential risks, such as capsular contracture, our case demonstrates the feasibility and benefits of preserving both breast shape and long-term survival.

Conclusion: Further research is needed to establish definitive guidelines for treating augmented patients with breast cancer. This case provides valuable evidence supporting the safety and good aesthetic outcome of breast-conserving surgery in patients with prior breast augmentation..

Introduction

Breast cancer was the most diagnosed malignancy in Saudi Arabia. Following leukemia; and it was the second leading cause of cancer-related mortality. Existing literature suggests that the incidence of breast cancer continues to rise in Saudi Arabia, contrasting with the declining rates observed in Western countries. Estimates indicate that breast cancer has an incidence rate of 29.7% among women in Saudi Arabia, with a corresponding mortality rate of 8.5% [1,2].

Breast augmentation remains a widely sought aesthetic procedure, with a substantial number of surgeries performed yearly. A recent study published in 2024 encompassing over 3,000 participants, who underwent various cosmetic interventions, revealed that 31.2% of them opted for breast augmentation surgery [3].

While radical mastectomy was the predominant treatment for breast cancer, the landscape of breast cancer therapy has evolved significantly with the advent of oncoplastic breast surgery. This surgical approach prioritizes breast preservation while ensuring adequate negative margins around the tumor, marking a profound alteration in the management of breast cancer. Existing literature indicates that there is no statistically significant difference in local recurrence rates, oncologic outcomes, or overall survival rates between radical mastectomy and Breast-Conserving Surgery (BCS) with Axillary Lymph Node

Dissection (ALND) followed by breast irradiation. However, BCS is generally associated with superior cosmetic outcomes [4].

The challenges associated with screening and managing augmented patients continue to pose significant concerns for healthcare providers. These concerns arise from the unique anatomical and physiological changes that occur following breast augmentation, necessitating specialized approaches to patient care. One of the potential drawbacks of breast augmentation is a reduction in mammographic screening sensitivity, resulting in obscuring breast tissue visualization ranging from 28% to 39% for sub and prepectoral implants, respectively. Furthermore, the delayed detection of breast abnormalities can contribute to patients presenting with advanced-stage disease, potentially leading to poorer prognosis [5].

Case presentation

Patient information: A Saudi 52-year-old female, premenopausal, mother of 5 children, 1st child at age of 23 years, menarche at age of 11

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Figure 1. Patients images and radiology studies



Figure 2: Pre operative Bilateral breasts with implant based augmentation, Right breast cancer, Date: July 31, 2022

years, smoker, with negative History of hormonal replacement therapy, who underwent a bilateral prepectoral implant breast augmentation along with a left breast lumpectomy for a benign intraductal papilloma in 2016. She presented to King Abdulaziz medical city NGH-Jeddah, breast and endocrine oncology surgery clinic in May 2022, after being diagnosed with screening detected right breast cancer (Figures 1 and 2).

Clinical findings: Upon examination, BMI: 35.2, cup size: C 36, Ptosis: grade 1, bilateral symmetrical breasts with good cosmetic outcome the left being slightly larger than the right with a slightly elevated right nipple, and bilateral inferior mammary fold scar of the previous breast augmentation surgery, Neither breast nor axillae had any detectable masses.

Diagnostic assessment and interpretation: Mammogram, US breast and axilla, MRI breast were done on 22/05/2022 and showed: ACR type B breast density. Bilateral intact breast implants. A spiculated, round 0.9×1.3 cm mass was visualized in the right breast, positioned centrally at the 12 o'clock location 4.7 cm from the nipple, 4.0 cm from the medial skin, and 4.1 cm from the chest wall close to the implant

capsule along with two tiny retroareolar cystic lesions with no solid component and no suspicious right axillary lymph nodes.

Her Metastatic workup (CT CAP and Bone Scan) was done in 25/05/2022 and showed No evidence of metastasis. Rt breast CNB of lesion at 12 o'clock: Invasive breast carcinoma with tubular feature, MSBR grade 1, DCIS present, Immunohistochemistry: ER positive in 90% PR positive in 100% HER2 negative (score 0), CNB of the right breast retro areolar, proximal lesion: LCIS, classic type.

Intervention: The patient expressed a firm intention to preserve both her breasts and implants. Following a discussion of her case in the multidisciplinary Breast Cancer meeting held on August 22, 2022, the decision was reached to proceed with upfront surgery. She underwent an uneventful right breast trans capsular wide local excision (SAVI guided) with a level one oncoplastic closure of the exciton cavity and dual tracer (intraoperative gamma probe and Blue Dye) sentinel lymph node biopsy with bilateral implant exchange (prepectoral) with intraoperative specimen mammography insuring adequate gross margins and was discharged the following day (Figure 3 and 4).

Follow up and outcome: She was seen in the surgical clinic after her operation, wounds were well healed with no complication. She was very satisfied with her aesthetic results.

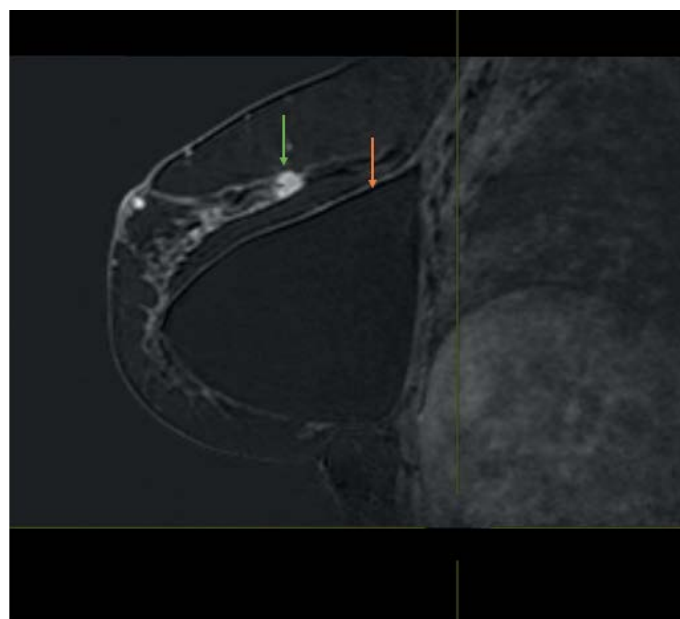


Figure 3: Sagittal subtracted T1 Post-Gadolinium of the Right breast. Enhancing speculated mass superior to the breast implant, date: June 14, 2022. **Note:** Green arrow pointing to right breast mass, and Red arrow pointing to the right breast implant



Figure 4: 2 years post operative and post radiation, left breast cancer, Date: 14/07/2024

Specimen pathology:

Right sentinel lymph node: 7 reactive lymph nodes, negative for malignancy (7/0). Right breast lump, lumpectomy: Invasive carcinoma of no special type (ductal) Grade 1, Tumor size: 2.1 cm, Single focus of invasive carcinoma, DCIS: present (solid and cribriform, low grade), no Lymphovascular invasion, all margins negative for invasive carcinoma.

Pathologic stage classification: pT1a, pN0. She received whole breast radiation 15 fractions in Nov 2022 and started on tamoxifen on July 2022. Following the completion of her radiation therapy, she was evaluated in our clinic, demonstrating a favorable aesthetic result. Both breasts appeared natural and were soft to touch, corresponding to a grade 1 classification on the Baker scale.

She continued her follow-up with medical oncology with a negative genetic testing result. In March 2024, as part of her screening procedure, she underwent a breast ultrasound and an MRI of the breast, which revealed:

Intact bilateral symmetrical breast implants with radial folds more in the right side.

Posttreatment changes are noted in the upper central aspect of the right breast with areas of fat necrosis. A new small, rounded, 0.8 cm mass was seen in the upper outer quadrant of the left breast, specifically in the axillary tail region and the visualized parts from the left and right axilla show almost stable lymph nodes (Figure 5).

Core needle biopsy showed: Invasive ductal carcinoma with mucinous features, grade 1, ER positive (strong, 98%), PR positive (strong, 95%), HER2 neu = negative (score 1+) Proliferative index: Ki67: 15% of neoplastic cells.

Intervention: She reiterated her wish to retain both her implants and breasts. The case was reevaluated at the multidisciplinary meeting, concluding in the decision to proceed with upfront surgery. on 5/8/2024 she underwent Left breast precapsular wide local excision through a hidden axillary incision (SAVI guided) with a level one

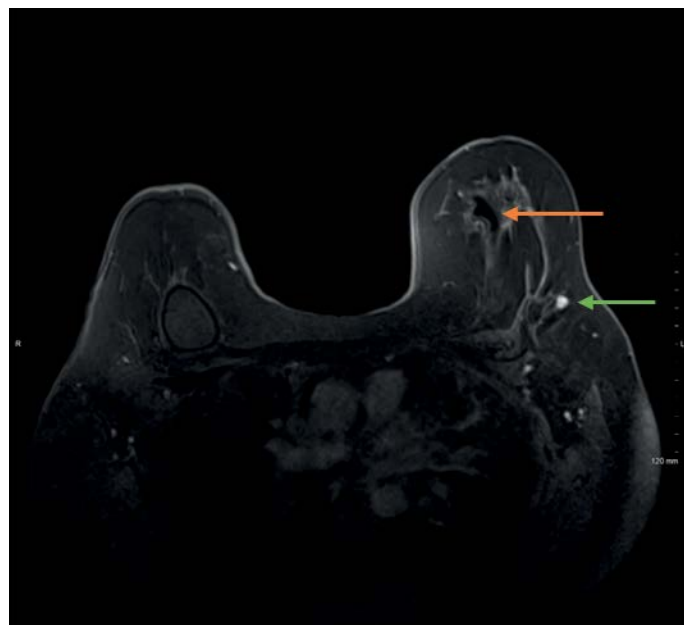


Figure 5: Axial T1W post-gadolinium showing the enhancing mass in the left axillary tail. Implant is not well visualized, date: April 1, 2024

oncoplastic closure of the exciton cavity and Left sentinel lymph node biopsy (Intraoperative Gamma probe), while protecting the implant capsule throughout the procedure, again intra operative specimen mammography confirmed adequate safety margins. The surgery was uneventful, and she was discharged on the same day.

Follow up and outcome: She was evaluated in the surgery clinic 2 weeks post op, her wound was healed, and again was very pleased with her aesthetic outcome.

The specimen pathology:

Left breast lumpectomy, Invasive ductal carcinoma with mucinous features, grade 1, Tumor size: 5.0 mm, Unifocal, all margins negative for invasive carcinoma, Pathologic stage classification pT1a pN0.

Lymph node, left axilla sentinel:

Three lymph nodes negative for metastatic (0/3).

Seen in the radiation oncology clinic on 6/10/2024 and planned for whole left breast irradiation which she is currently undergoing.

She was seen in the oncology clinic and was continued on tamoxifen.

Results and discussion

Breast cancer is the most common cancer among women locally and internationally [1,2]. Breast augmentation is one of the most common cosmetic interventions worldwide [3]. An official concordance for treating augmented patients has not yet been established. Proposing a common consensus to treat such patients would be highly valuable. In this paper, we reported a case about a patient who underwent breast augmentation with implants that was offered breast conserving surgery and immediate bilateral implant exchange for breast cancer a few years ago, which classically treated with mastectomy, and she was recently diagnosed again with breast cancer on the contralateral side and underwent another breast conserving surgery preserving the implant. Our findings suggest that breast conserving therapy alongside preserving breast shape with an implant has a significantly better outcome for patients' overall wellbeing.

The existing literature is concerned regarding the implant after receiving radiation therapy [6]. A paper published in 2017, studied the difference between implant sparing mastectomy and breast conserving surgery, and it resulted in low rates for developing capsular contracture in the first group [7]. Nonetheless, multiple factors are taken into consideration when introducing radiotherapy to augmented patients, such as equipment variations, dosages and adjustment to target regional lymph nodes, utilization of tissue-equivalent materials, wedges or filters, etc., [8, 9]. Although risks for developing capsular contracture may be low, it is essential to counsel patients with this regard [10]. A comprehensive histopathological analysis of the surgical specimen confirmed the presence of adequate negative margins, thereby ensuring complete excision of the tumor. This plays a pivotal role in determining the likelihood of favorable long-term oncologic prognosis.

In our case, the patient was diagnosed with right breast cancer in 2022 and underwent right breast transcapsular wide local excision with SLNB and bilateral prepectoral implant exchange. During her follow up, she completed radiotherapy sessions and maintained an excellent cosmetic outcome, Baker grade 1, with no complications throughout the follow up period. However, the patient was diagnosed recently with left breast cancer and had to undergo breast surgery. Fortunately, we were able to preserve her breast and implant as she underwent breast

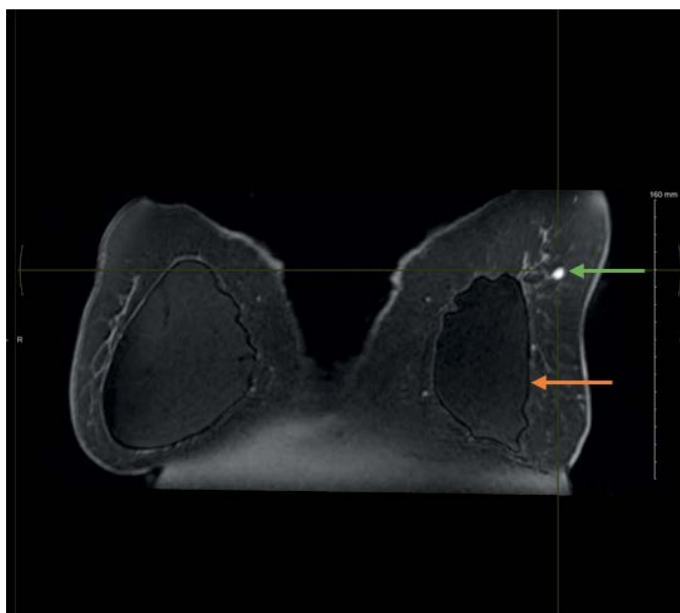


Figure 6: Coronal T1W post-gadolinium is showing the enhancing mass Superolateral to the left breast implant, date: April 1, 2024. **Note:** Green arrow pointing to left breast mass, and Red arrow pointing to the left breast implant

conserving therapy with SLNB (Figure 6). The patient is planned for radiotherapy, and she will be followed long term to observe for post op complications, cosmetic and oncologic outcomes. A case series in UK stated that despite that we are more likely to commit women with previous breast implant-based augmentation to mastectomy. BCS appears safe, but techniques are heterogeneous, and prospective data sets are required to determine best practice [11].

Breast radiation following implant-based reconstruction appeared to be safe in our case without apparent risk with respect to the implant, as well as it fits the literature as a safe and essential part of breast conserving therapy [8]. Also, breast conserving therapy provided astonishing aesthetic outcomes and psychological well-being [9]. Some studies suggest that patients with prior breast implants may experience good cosmetic outcomes, but also have a moderate risk of requiring additional surgical intervention. However, whole breast irradiation therapy did not worsen the aesthetic outcome, nor did it increase the risk of requiring another surgery [6].

Conclusion

Patients who have previously undergone breast implantation typically enjoy favorable long-term cosmetic results with breast conserving surgery although may would advise for mastectomy, knowing that there is a moderate chance of requiring further surgery in the future. The application of whole breast irradiation in our case did not lead to poorer cosmetic outcomes or an increased necessity for additional cosmetic procedures. Further research is needed to establish definitive guidelines for treating prior augmented patients with newly diagnosed breast cancer.

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Human subjects

Patient informed consent was obtained.

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Conflicts of interest

In compliance with the ICMJE uniform disclosure form, all authors declare the following: Payment/services info: All authors have declared that no financial support was received from any organization for the submitted work.

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