Skin–Areola, Nipple Sparing, and Subcutaneous Mastectomy and Immediate Implant-Based Breast Reconstruction Using a Titanium-Coated Polypropylene Mesh

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ABSTRACT

Skin sparing and nipple areola complex sparing subcutaneous mastectomies are both oncologically safe surgical procedures. Although autologous breast reconstruction has been considered as a standard means of surgical approach, excellent cosmetic results have been obtained by implant based breast reconstruction. In this report, we present the result of titanium coated polypropylene mesh (Tilooop Bra; Pfm Medical, Cologne, Germany), an ultimate support material utilized in the reconstruction of a patient with breast cancer.

Keywords: Breast cancer, skin sparing mastectomy, Tilooop Bra Mesh

Introduction

Most of the approaches that were applicable to breast cancer surgery up until recently are undergoing fundamental changes on account of the increasing number of patients, enhanced patient awareness and rapidly enlarging pool of information.

Today, preservation of the breast as an organ is the priority objective in cancer treatment. The prominent approach is to repair any damage and loss caused by surgical treatment performed as per oncological principles and to obtain a good cosmetic result. This approach has naturally turned autologous or implant-based breast reconstructions, which may be done simultaneously or late in breast cancer surgery, a part of the breast cancer treatment process.

In this article, we aim to present a patient with breast cancer in whom we performed simultaneous implant reconstruction using a titanium-coated polypropylene mesh, a new support material.

Case Presentation

The 54-year old female patient was observed to have an irregular lesion occupying a limited space sized at 8 x 12 mm in the medio-lateral oblique x-ray image of the left breast and monomorphic micro-calcifications with segmental distribution in the middle outer quadrant of the left breast in the mammogram (Figure 1). According to sonographic examination, a hypo-echoic solid lesion with irregular margins sized at 5 x 8 mm localized at 11 o'clock and a second hypo-echoic solid lesion with regular margins sized at 4 x 5 mm in the left breast (Figure 2) were seen and histopathological examination was recommended for solid lesions by the radiology department. A fine needle aspiration biopsy (FAB) was performed and the cytomorphology of the breast aspirate was judged consistent with papillary lesion. Since the diagnostic value of papillary lesion with FAB is limited, the lesion was recommended to be excised. The very prominent and non-palpable lesion in the upper inner quadrant of the left breast was excised following wire marking. The pathological examination results were as follows: invasive breast carcinoma containing in situ component (25%), histological Grade 1, glandular/tubular differentiation score of 1, nuclear pleomorphism score of 1, a mitotic count score of 1, tumor size measured at 1.3 x 0.9 x 0.8 cm including the in situ carcinoma and invasive site and invasive tumor diameter at 1 x 0.9 x 0.5 cm.

According to the pathology, it was reported as low-grade tumor without lymphovascular and perineural invasion and with ER (+), PR (-), C ERB B-2 (-) and Ki-67 of 23%. After that, the patient was planned for sentinel lymph node biopsy, areola, nipple and skin-sparing

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Figure 1. Mammography image

Figure 2. Ultrasonography image

subcutaneous mastectomy and simultaneous reconstruction. Simultaneous reconstruction was enabled with implant and titanium mesh (Figures 3, 4).

During the surgical procedure, each areola quadrant was injected with 1.55 cc methylene blue. The sentinel lymph node was located with axillary incision and it was sent to the laboratory as a frozen sample. The result was negative malignancy. Consequently, a 7-8 cm incision that was 1.5 cm above the fold was opened under the left breast and subcutaneous mastectomy was started. A tissue sample from under the areola was sent as a frozen sample. The laboratory result for frozen sample was negative malignancy. Subcutaneous mastectomy was continued and the skin on the former incision scar was removed, as well. After the removal of a piece from the breast, the lateral and superior margins were marked. In the remaining part of the surgery, the lower margin of the pectoralis major muscle was partially elevated through blunt and sharp dissections at the costal and sternal adhesion points.

To create a breast pocket, the titanium mesh was sutured under the pectoral muscle with 2-0 Vicryl. In the inferior part, the excess mesh

Figure 3. Postoperative day 1

Figure 4. Postoperative day 30

was folded under prosthesis and it was sutured medially on the rectus sleeve and laterally on the serratus muscle. Two suction drains were placed with subcutaneous suturing done using 3-0 Vicryl and cutaneous suturing 3-0 rapid Vicryl. The suction drains were used for neutral drainage. On the post-operative Day 4, the patient was discharged with full recovery.

In conclusion, nipple- and skin-sparing subcutaneous mastectomy is a procedure that is oncologically safe and raises the quality of life in carefully selected patients, combined with thorough pathological evaluation of subareolar tissue during surgery. Consequently, acellular dermal matrix or titanium-coated polypropylene mesh can be used in order to provide the breast pocket in simultaneous or late, implant-based breast reconstruction.

Discussion and Conclusions

Even though autologous tissue is preferred for reconstruction in breast cancer, there has been a shift towards implant-based reconstruction from autologous breast reconstruction in the last couple of years (1). Especially, the increased prophylactic mastectomies in patients with BRCA 1/2 gene mutations has resulted in an increased use of implants in subcutaneous mastectomy. An alternative to the use of acellular der-

mal matrix in breast reconstruction with implant is the use of titanium-coated polypropylene mesh.

New materials such as acellular dermal matrix and titanium-coated mesh have offered surgeons new areas of implementation (2). The challenges and disadvantages of placing implants in the subpectoral site have been overcome with these materials, which support the pectoral muscle from the bottom, prevent the pectoral muscle from migrating upwards and ensure the fixation of the implant in the subpectoral area.

Mesh was adopted in practice in implant-based breast reconstructions in Europe in the year 2008 and it started to be used; however, the data presented have not been adequate.

Dieterich et al. (2) published that the use of new materials such as biological matrix and synthetic meshes with implants became increasingly widespread and was safe. In a retrospective study with 231 cases that received immediate or late implant-based reconstruction with titanium-coated mesh following skin- and nipple-sparing mastectomy or modified radical mastectomy, the complications were assessed as major (needing additional surgery) (13.4%), minor (conservative treatment) (15.6%) and loss of implant (8.7%). In conclusion, implant-based breast reconstruction with titanium-coated mesh was presented as a safe and appropriate option with acceptable complication rates (3).

In our study, we performed a breast reconstruction with simultaneous placement of the implant and a titanium-coated mesh, which has recently been made available in Turkey, and obtained an acceptable cosmetic result without any complications. .

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Peer-review: Externally peer-reviewed.

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