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Chest Wall Reconstruction with a Bilayered Wound Matrix Mesh Following Toilet Mastectomy

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Data Interpretation D
Manuscript Preparation E
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Conflict of interest: None declared

Patient: Female, 43
Final Diagnosis: Metastatic breast cancer
Symptoms: Breast lesion, breast tumor
Medication: —
Clinical Procedure: Chest wall reconstruction with a bilayered wound matrix mesh following toilet mastectomy
Specialty: Surgery

Objective: Unusual or unexpected effect of treatment
Background: Breast cancer is still the most common malignancy in women. Though management of local disease has been thoroughly studied, management of metastatic breast cancer (MBC) is still under much debate. Modern diagnostic tools allow the detection of early metastatic disease, which may be more responsive to treatment than late metastatic disease. Source control of MBC by “toilet mastectomy” is being studied in many case reports and studies.
Case Report: We present the case of a 43-year-old woman presenting with MBC and complaining of a recurrent breast fungating disease, aiming to highlight the importance of palliative surgical treatment in systemic breast malignancy and to report our experience with the effectiveness of the ‘Integra’ mesh.
Conclusions: Chest wall reconstruction using bilayered wound matrix mesh following “toilet mastectomy” offers excellent reconstructive results and local control of disease, and is a low-morbidity procedure.

MeSH Keywords: Breast • Mastectomy • Oncology Service, Hospital

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Background

Breast cancer is still the most common malignancy in women. Though management of local disease has been thoroughly studied, management of metastatic breast cancer (MBC) is still under much debate. However, survival of patients with MBC is steadily improving [1], with a decrease of the risk of death by 1–2% yearly [2]. This is likely related to the development and widespread availability of modern systemic therapies [3]. Furthermore, modern diagnostic tools allow the detection of early metastatic disease, which may be more responsive to treatment than late metastatic disease [4,5]. Source control of MBC by “toilet mastectomy” is being studied, and although the results are inconclusive, they seem positive for an increase in survival [6]. This is useful for both a proper decrease (debulking) in the tumor cell load and in controlling a recurrent necrotic and/or fungating disease. Here, we share our experience with a patient presenting with MBC and complaining of a recurrent breast fungating disease, aiming to highlight the importance of palliative surgical treatment in systemic breast malignancy and to report our experience with effectiveness of the ‘Integra’ mesh.

Case Report

We present the case of a 46-year-old female patient known to have a metastatic breast cancer (biopsy done showing invasive ductal carcinoma), presented to our care with a foul-smelling necrotic huge left breast cancer (Figure 1). She had disease progression while taking chemotherapy. Her disease had been causing intense breast discomfort and distress, which pushed her and her family to pursue a more definitive approach at our surgery clinic. A total body scan was done 1 year ago in another hospital to check for metastasis and it was positive. We performed a chest X-ray for operative clearance (Figure 2).

After evaluating and analyzing the distinct preoperative period of the disease and the extent of the expected defect, and after the case was discussed by a multidisciplinary team including surgeons, radiologists, radiotherapists, and medical oncologists before initiating the treatments, the decision was made to perform surgery.

The patient received a full explanation of the complexity of the surgical procedure, expectancy of life, and the expected postoperative functional and aesthetic outcome, after which a written consent for surgery was obtained.

We proposed to her a “toilet mastectomy” consisting of a complete mastectomy, removal of the all the skin overlying the breast tissue, with debridement of any devitalized tissue (Figure 3). Since she had metastatic invasive ductal carcinoma,

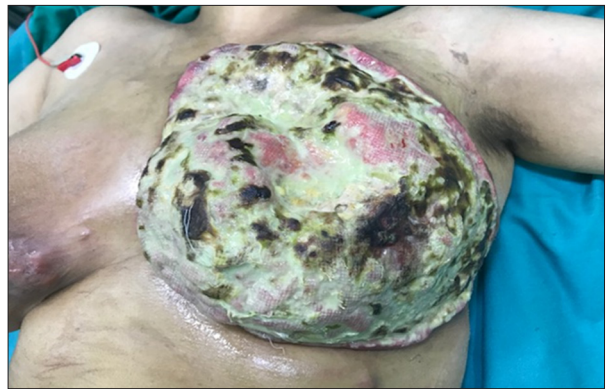


Figure 1. Preoperative image showing the fungating left breast neoplastic disease.

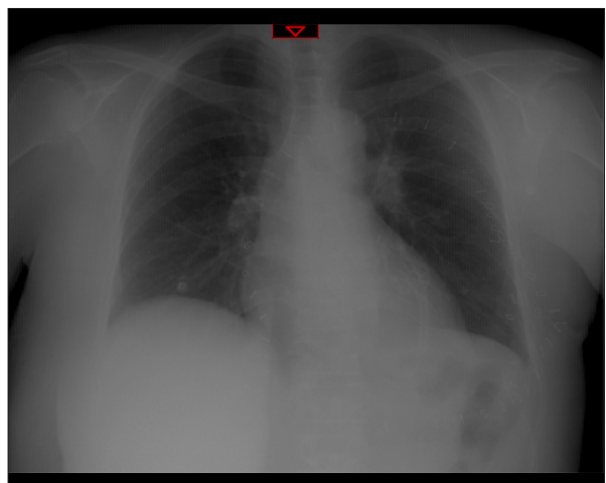


Figure 2. Preoperative chest X-ray.



Figure 3. Intraoperative image showing the major defect left following the “toilet mastectomy”.

we aimed for palliative surgery. For that reason, cosmetic outcome was not discussed because it was not important to the patient as much as the success of the surgery was. She was only concerned about limiting the disease and reducing morbidity.



Figure 4. Intraoperative image showing the bilayered dermal mesh applied on the defect before applying the wound vacuum.



Figure 5. Intraoperative image showing the application of the wound vacuum on top of the mesh.

Using a scalpel, a wide excision was made all around the necrotic dead tissue, reaching the muscle and removing necrotic adherent muscle fibers, and making sure the edges of the defect were healthy.

We avoided the axilla region because there were adherent lymph node masses engulfing the axillary vessels. Rigorous intraoperative lavage with hypertonic saline was done to destroy spilled cancer cells during surgery.

A thoracic surgeon was present at the time of the surgery for possible chest wall manipulation, but he did not scrub in.

Surgery took around 4 h, after which the patient was followed up for about 1 week.

We had a major fear of respiratory compromise after surgery due to the traction of the wide defect, but no paradox breathing or any complication was noted.

The defect was then covered with a bilayered wound matrix “Integra” mesh (Figure 4) with a wound vacuum applied on top of it for 3 weeks (Figure 5).

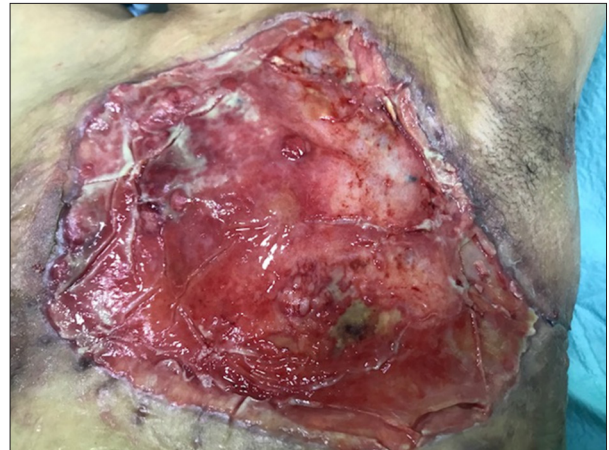


Figure 6. Image taken 4 weeks after surgery showing the healthy granulation tissue occupying the defect.

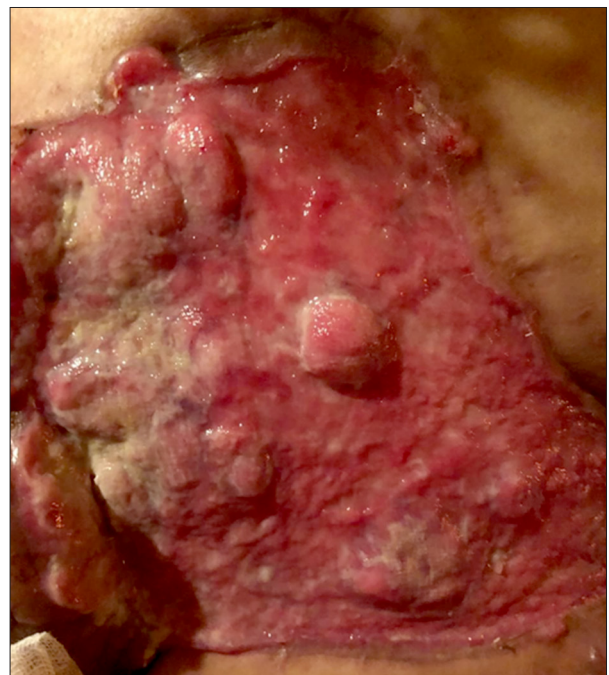


Figure 7. The breast 70 days after surgery, showing healthy granulation tissue occupying the defect and more muscle mass in the defect area.

Subsequent follow-ups showed formation of healthy granulation tissue, with a favorable prognosis (Figure 6).

As seen in Figure 7, the patient had a higher muscle mass in the defect area 70 days after surgery. Approximately 3 months after surgery, the patient died due to metastasis.

Discussion

Metastatic breast disease has been traditionally restrained with chemotherapy and anti-hormonal therapy. Surgery has its place in local treatment. Palliative surgery for systemic disease is still the subject of many studies aiming to draw definitive conclusion concerning its absolute benefit. However, it is considered to be a relatively low-cost and low-morbidity management plan that offers fast and adequate local control and has can often improve survival [6].

Little attention has been paid to significant chest wall reconstruction following a so-called “toilet mastectomy” in which the mastectomy is conducted on metastatic breast cancer patients with the objective of removing the breast and skin tissues and minimizing local complications [7]. Well-vascularized tissue is required for the coverage of the defect to provide a reliable blood supply. This will allow additional local and systemic treatment such as adjuvant chemotherapy or radiotherapy without delay.

For the chest wall reconstruction, it is important to mention that after radical oncologic resection of malignant chest wall tumors, it requires adequate soft tissue reconstruction with function, stability, integrity, and an aesthetically acceptable result of the chest wall.

Many authors have recommended closing the thoracic defect using local flaps (e.g., bilateral advancement, thoracoabdominal, or thoracoepigastric) or skin grafts [8]. However, we opted for a different approach, a surgical though less invasive approach. Our method showed that chest wall reconstruction with the “Integra” mesh has promising results without the need to perform major local reconstruction. Nevertheless, more cases need to be reported before recommending a definitive plan of care.

References:

1. Andre F, Slimane K, Bachelot T et al: Breast cancer with synchronous metastases: Trends in survival during a 14-year period. *J Clin Oncol*, 2004; 22(16): 3302–8
2. Giordano SH, Buzdar AU, Smith TL et al: Is breast cancer survival improving? *Cancer*, 2004; 100(1): 44–52
3. Chia SK, Speers CH, D'yachkova Y et al: The impact of new chemotherapeutic and hormone agents on survival in a population-based cohort of women with metastatic breast cancer. *Cancer*, 2007; 110(5): 973–79
4. Mahner S, Schirrmacher S, Brenner W et al: Comparison between positron emission tomography using 2-[fluorine-18] fluoro-2-deoxy-D-glucose, conventional imaging and computed tomography for staging of breast cancer. *Ann Oncol*, 2008; 19(7): 1249–54
5. Hodgson NC, Gulenchyn KY: Is there a role for positron emission tomography in breast cancer staging? *J Clin Oncol*, 2008; 26(5): 712–20
6. Pagani O, Senkus E, Wood W et al: International guidelines for management of metastatic breast cancer: Can metastatic breast cancer be cured? *J Natl Cancer Inst*, 2010; 102(7): 456–63
7. Park JS, Ahn SH, Son BH, Kim EK: Using local flaps in a chest wall reconstruction after mastectomy for locally advanced breast cancer. *Arch Plast Surg*, 2015; 42(3): 288–94
8. Skoracki RJ, Chang DW: Reconstruction of the chest wall and thorax. *J Surg Oncol*, 2006; 94: 455–65
9. Deo SV, Purkayastha J, Shukla NK et al: Myocutaneous versus thoracoabdominal flap cover for soft tissue defects following surgery for locally advanced and recurrent breast cancer. *J Surg Oncol*, 2003; 83: 31–35
10. Persichetti P, Tenna S, Cagli B et al: Extended cutaneous ‘thoracoabdominal’ flap for large chest wall reconstruction. *Ann Plast Surg*, 2006; 57: 177–83
11. Matros E, Disa JJ: Uncommon flaps for chest wall reconstruction. *Semin Plast Surg*, 2011; 25: 55–59
12. Rivas B, Carrillo JF, Escobar G: Reconstructive management of advanced breast cancer. *Ann Plast Surg*, 2001; 47: 234–39
13. Lee MC, Newman LA: Management of patients with locally advanced breast cancer. *Surg Clin North Am*, 2007; 87: 379–98
14. Godfrey PM, Godfrey NV, Romita MC: Immediate autogenous breast reconstruction in clinically advanced disease. *Plast Reconstr Surg*, 1995; 95: 1039–44

Advanced breast cancer ablation and removal of necrotic tissue often leads to an enormous defect in the chest wall. The primary clinical problem is to adequately cover any major chest wall defect, and a range of methods have been applied over the last 4 decades, including skin grafts, local skin or fasciocutaneous flaps, omental flaps, and myocutaneous flaps [8–12]. Selection should be based on the size and place of the flap, taking into account the postoperative danger of tension and flap necrosis, which prolongs the adjuvant chemotherapy period.

In contrast to the dramatic evolution in the field of breast reconstruction, less attention has been paid to reconstructing large chest wall defects following a so-called “toilet mastectomy” [16,17]. Therefore, no major studies have compared different flap techniques with the “Integra” mesh chest wall reconstruction method we used. Long-term prospective studies are needed to confirm our results.

Based on the low morbidity and high effectiveness of our procedure, we hope that more surgeons will advocate the use of this technique in chest wall reconstruction following “toilet mastectomy”.

Conclusions

Chest wall reconstruction using bilayered wound matrix mesh following “toilet mastectomy” offers great reconstructive results and local control of disease and is a low-morbidity procedure.

Conflicts of interests

None.