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Case Report

Management of intraoperative breast implant injury during sternal metastasectomy and chest wall reconstruction: a surgical challenge

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ABSTRACT

Breast cancer is the most common malignancy in women, and the concept of oligometastasis supports local treatment in selected cases. Bone is the most frequent metastatic site, while isolated sternal involvement is uncommon. However, prior implant-based breast reconstruction introduces additional technical challenges, including the risk of intraoperative implant injury. A 40-year-old woman with a history of bilateral mastectomy and implant-based reconstruction presented with an isolated lytic metastasis of the sternal corpus 14 months after initial treatment. She underwent subtotal sternal resection with en bloc removal of adjacent costochondral segments, followed by chest wall reconstruction using titanium bars and costal clips. Intraoperatively, implant injury was detected and managed through the same incision with immediate replacement in collaboration with plastic surgery. The postoperative course was uneventful, and the patient was discharged on postoperative day three without complications. Isolated sternal metastasis from breast cancer is rare and may be amenable to surgical resection in selected patients. Although prior implant-based reconstruction increases technical complexity, sternal metastasectomy and chest wall reconstruction can be safely performed with careful planning and multidisciplinary management, even in the setting of intraoperative implant injury.

Keywords: breast cancer, sternum, metastasis, breast implants, thoracic wall, reconstructive surgical procedures

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Introduction

Breast cancer is the most frequently diagnosed malignancy in women worldwide and remains a leading cause of cancer-related mortality. Although metastatic breast cancer is generally considered a systemic and incurable disease, the concept of oligometastatic disease, first described by Hellman and Weichselbaum [1], has challenged this paradigm. Bone is the most common site of distant metastasis in breast cancer, with the sternum representing an uncommon but clinically significant location [2]. Several retrospective studies suggest that surgical resection of isolated or limited metastases in breast cancer may improve survival in carefully selected patients [3,4]. However, previous bilateral mastectomy with implant-based reconstruction introduces unique surgical challenges. The presence of breast prostheses may complicate exposure and increase the risk of intraoperative implant injury. Reports addressing sternal metastasectomy in patients with pre-existing breast implants are extremely limited in the literature.

This report highlights the oncologic rationale for isolated sternal metastasectomy and addresses the critical technical considerations required when operating in the presence of indwelling breast prostheses.

Case Report

A 40-year-old female patient underwent bilateral mastectomy and right axillary lymph node dissection with simultaneous implant-based bilateral breast reconstruction 14 months earlier, following neoadjuvant chemotherapy for triple-negative breast cancer. Adjuvant radiotherapy was administered in the postoperative period. During follow-up, a painful swelling over the sternum prompted thoracic computed tomography, which revealed a lytic lesion in the sternal corpus. On positron emission tomography-computed tomography (PET/CT), a newly developed lytic lesion was identified at the midline of the sternum with a maximum standardized uptake value (SUVmax) of 10.83 (Figure 1).

The patient was referred to our clinic by the oncology department for evaluation regarding metastasectomy. As the lesion was considered an isolated and resectable sternal metastasis, sternal resection and reconstruction were planned. Following a vertical midline incision of approxi-

mately 10 cm, the pectoralis major muscle was dissected, and the sternum along with the adjacent costochondral structures was mobilized. The proximal two-thirds of the sternal body together with the bilateral second, third, and fourth costochondral segments were resected en bloc. After resection, anterior chest wall stabilization was achieved using two titanium bars and four titanium costal clips (Figure 2). During placement of a clip at the left third costochondral region, injury to the existing breast implant was noted. Through the same surgical field, the deformed implant was removed, and after adequate irrigation and surgical field preparation, a new implant of the same size was placed in coordination with the plastic surgery team. The postoperative course was uneventful, and postoperative chest radiography demonstrated the titanium bars in proper position with no evidence of procedure-related complications (Figure 3). Accordingly, the patient was discharged on postoperative day three without any complications. Written informed consent for both participation and publication was obtained from the patient.

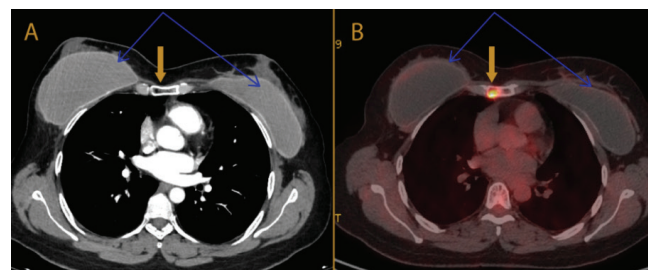


Figure 1. Thoracic CT (A) and PET/CT (B) showing a lytic lesion in the sternal body (yellow arrow) and bilateral breast implants (blue arrow).

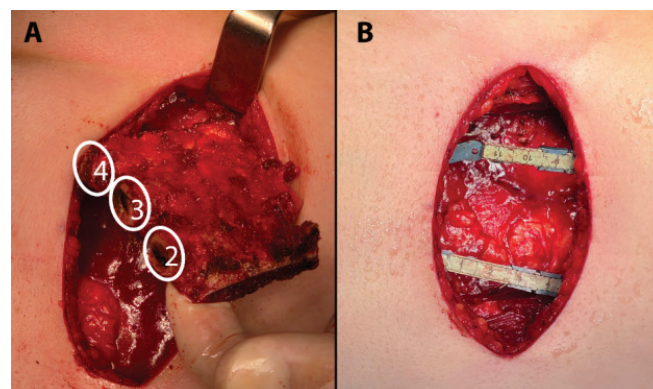


Figure 2. The proximal two-thirds of the sternal body together with the bilateral second, third, and fourth costochondral segments were resected en bloc (A). After resection, anterior chest wall stabilization was achieved using two titanium bars and four titanium costal clips (B).

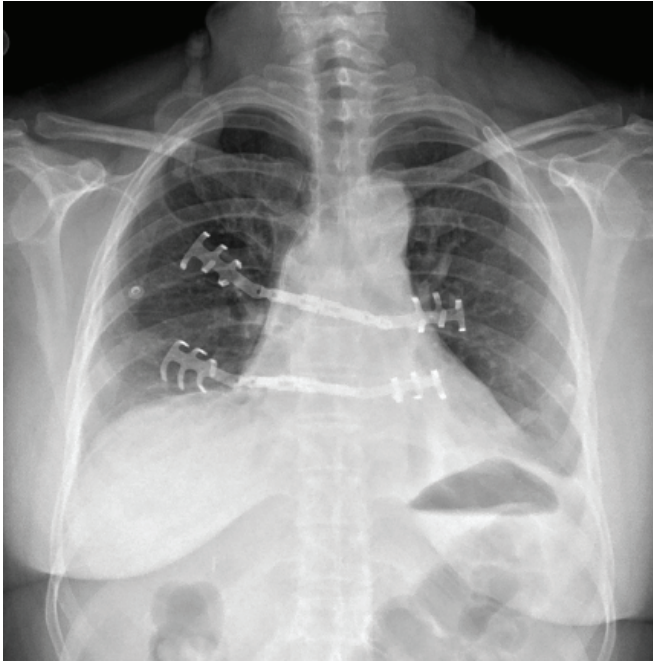


Figure 3. Postoperative chest radiography demonstrated the titanium bars in proper position.

Discussion

Isolated sternal metastasis from breast cancer is an uncommon clinical presentation but has been described in the literature as a distinct subgroup of metastatic disease. Early case series demonstrated that aggressive surgical resection is technically feasible and can be performed with acceptable morbidity in selected patients. More recent retrospective analyses further suggest that partial or total sternal resection, when combined with appropriate chest wall reconstruction techniques, may provide favorable long-term local control and potentially improved survival outcomes in carefully selected cases [4,5]. In our case, reconstruction was performed using transverse titanium plates, which provided a solid structural framework for the large anterior chest wall defect, ensuring sufficient rigidity and stability while preserving respiratory mechanics [6].

Against this background, improved survival rates in breast cancer have made it necessary to offer breast reconstructive procedures to enhance quality of life and self-esteem. Implant-based breast reconstruction is the most utilized reconstructive approach following mastectomy; however, it is associated with a considerable risk of major complications and prosthesis failure,

which may in turn complicate subsequent surgical interventions. Surgeons should be aware of possible implant injury and evaluate implant integrity intraoperatively [7]. In the study by Coombs et al. evaluating patients with preexisting breast implants who underwent cardiothoracic surgery or electrophysiologic procedures, postoperative implant-related complications within one year were reported in approximately 8%, 29%, and 5% of patients undergoing minimally invasive cardiac surgery (MICS), median sternotomy, and electrophysiologic procedures, respectively. Although the intraoperative implant rupture rate was higher in the MICS cohort, in 92% of cases the implant was safely manipulated through the original incision used for its placement [8]. These findings highlight the potential technical challenges posed by preexisting breast implants during thoracic procedures. In our case, the presence of bilateral breast implants posed a technical challenge during the mobilization of the costochondral structures and placement of clips through a limited incision. Despite prior bilateral implant-based reconstruction and adjuvant radiotherapy, the procedure was successfully completed with coordinated plastic surgery involvement. The implant damage was recognized intraoperatively at an early stage, and a new implant was inserted during the same session through the same operative field, without postoperative implant-related complications. Sternal resection and reconstruction performed without removal of the breast implant, using gentle and careful retraction and enlarging the surgical incision when necessary, may allow preservation of the integrity of the fibrous capsule and reduce the risk of postoperative incisional or prosthesis-related complications.

In conclusion, isolated sternal metastasis from breast cancer is an uncommon presentation in which surgical resection may be considered in carefully selected patients. However, prior implant-based breast reconstruction adds technical complexity to thoracic procedures. This case suggests that, with careful surgical planning and multidisciplinary collaboration, sternal metastasectomy and chest wall reconstruction can be safely performed despite intraoperative breast implant injury.

Declaration of conflicting interests

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Authors' contribution

KNK: Conceptualization, data curation, formal analysis, methodology, visualization, writing - original draft. SO: Data curation, formal analysis, visualization, writing - review and editing. SK: Conceptualization, methodology, project administration, supervision, writing - review and editing. All authors read and approved the final version of the manuscript.

References

1. Hellman S, Weichselbaum RR. Oligometastases. *J Clin Oncol* 1995; 13: 8-10.
2. Coleman RE. Clinical features of metastatic bone disease and risk of skeletal morbidity. *Clin Cancer Res* 2006; 12: 6243-9.
3. Wegener B, Schlemmer M, Stemmler J, Jansson V, Dürr HR, Pietschmann MF. Analysis of orthopedic surgery of bone metastases in breast cancer patients. *BMC Musculoskelet Disord* 2012; 13: 232.
4. Noguchi S, Miyauchi K, Nishizawa Y, Imaoka S, Koyama H, Iwanaga T. Results of surgical treatment for sternal metastasis of breast cancer. *Cancer* 1988; 62: 1397-401.
5. Sponholz S, Baldes N, Schirren M, Oguzhan S, Menke H, Schirren J. Sternal Resection for Breast Cancer Metastases. *Thorac Cardiovasc Surg* 2018; 66: 164-9.
6. Hamad AM, Marulli G, Bulf R, Rea F. Titanium plates support for chest wall reconstruction with Gore-Tex dual mesh after sternochondral resection. *Eur J Cardiothorac Surg* 2009; 36: 779-80.
7. Bucher F, Vogt PM. The Failed Breast Implant in Post-mastectomy Reconstruction: A Systematic Literature Review of Complications of Implant-Based Breast Reconstruction. *Ann Plast Surg* 2022; 88: 695-703.
8. Coombs DM, Wu SS, Bernard S, Djohan R, Isakov R, Schwarz G et al. Breast Implant-Related Outcomes After Cardiothoracic Surgeries and Electrophysiologic Procedures. *Ann Plast Surg* 2022; 89: 267-73.

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