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CASE REPORT
Breast

A Case of Breast Cancer Recurrence Diagnosed from a Delayed Seroma after Breast Implant Reconstruction

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Summary: When a delayed seroma with a low volume is detected more than 1 year after silicone breast implant insertion, aspiration is necessary. However, if the seroma is small and difficult to collect, we may avoid puncturing it, considering the risk of damaging the implant, and the patient may be followed up intensively. Moreover, a delayed seroma is a major symptom of breast implant-associated anaplastic large-cell lymphoma (BIA-ALCL). We encountered a case in which a delayed seroma around a breast implant was punctured to rule out BIA-ALCL after nipple-sparing mastectomy for breast cancer, which led to the diagnosis of locoregional recurrence in the nipple areola. Based on this experience, we suggest that puncture cytology for fluid around breast implants should be performed when a delayed seroma is observed, as it may indicate breast cancer recurrence as well as BIA-ALCL. *(Plast Reconstr Surg Glob Open 2024; 12:e6113; doi: 10.1097/GOX.0000000000006113; Published online 3 September 2024.)*

Breast implant-associated anaplastic large-cell lymphoma (BIA-ALCL) is a delayed complication of breast implant insertion for cosmetic purposes or reconstruction following mastectomy.[1–4] The most common symptom of BIA-ALCL is fluid collection around the implant, which occurs approximately 7–10 years after the insertion of a textured-surface breast implant. In this case, a delayed seroma around the implant was detected 3 years after breast implant reconstruction following breast cancer resection, and the cytological examination of the fluid, which was performed to rule out BIA-ALCL, led to the diagnosis of breast cancer recurrence.

CASE PRESENTATION

A 45-year-old woman underwent a nipple-sparing mastectomy, sentinel lymph node biopsy, and tissue expander (TE) (Allergan, Natrelle133, macro-textured surface) insertion for left breast cancer. The TE device was inserted under the pectoralis major muscle. The pathological diagnosis was invasive lobular carcinoma, pT1cN2M0 stage IIA, with surrounding lobular and ductal carcinoma in situ; the nipple excision margin was close. After postoperative chemotherapy, which was administered the initial surgery, the TE was replaced with a silicone breast implant (SBI) (Allergan, BIOCELL, macro-textured surface implant), and an additional nipple-side excision at the left side and a contralateral breast augmentation were performed simultaneously. No cancer was detected in the additional nipple-side excision. Postoperative endocrine therapy was administered, and the patient was followed up every 6 months.

Four years after the breast cancer surgery and 3 years after SBI insertion, a delayed seroma around the left breast implant and discharge from the left nipple were observed (Fig. 1). The nipple discharge was cytopathologically classified as class II. Fine-needle aspiration of the seroma yielded approximately 3 mL; thus, it was cytologically diagnosed as a class V adenocarcinoma. This cellular picture was consistent with recurrence, with atypical cells resembling those of known breast carcinomas. Echocardiography and magnetic resonance imaging revealed a seroma around the SBI (Fig. 2). However, no findings suggestive of breast cancer recurrence, such as mass formation, were detected. The patient elected an explanation and underwent left nipple areola excision and en bloc resection of the breast implant, with removal of the surrounding capsule and contralateral implant (Fig. 3). The pathological diagnosis was ductal carcinoma in situ of the left nipple. Histopathological examination showed the continuity between the existing ducts and the implant capsule just below the nipple and atypical

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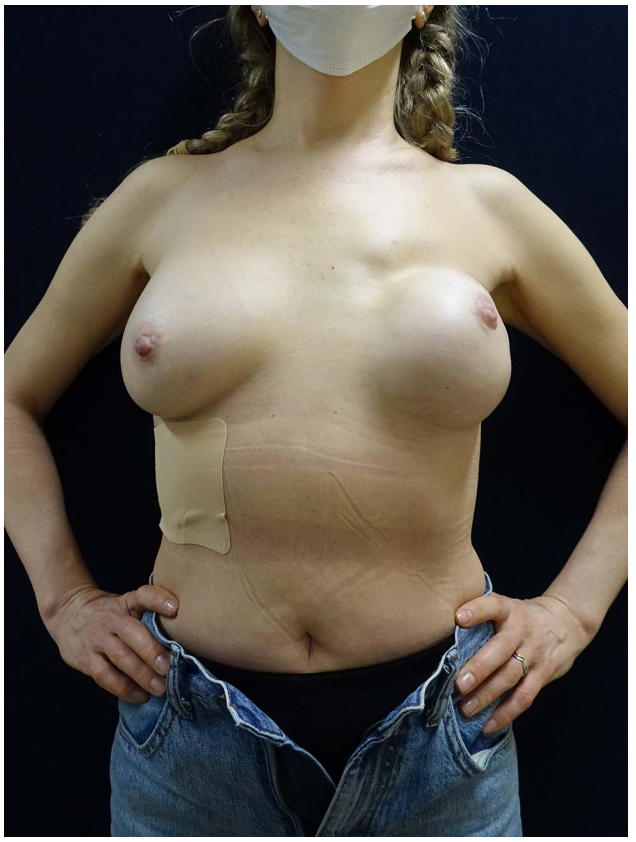

Fig. 1. A preoperative image of the patient's breasts, 4 years after left breast cancer surgery and 3 years after bilateral breast implant insertion.

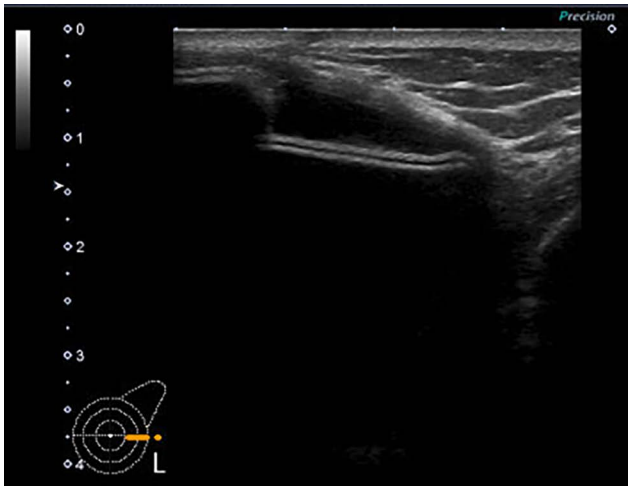

Fig. 2. Appearance of echographic findings showed delayed seroma around the implant.

epithelial cells in the same area (Fig. 4). No CD30+ ALK- anaplastic cells were seen on immunohistochemistry or cytology. Postoperative endocrine therapy was continued. Currently, 1 year has passed since the surgery, and no breast cancer recurrence has occurred.

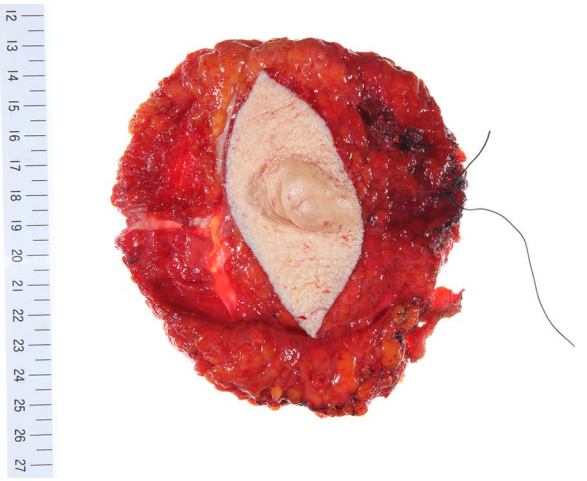

Fig. 3. Demonstration of the excised specimen, including nipple areola, peri-implant capsule, and implant. After capsule incision, the implant was not broken and the surrounding capsule was adhered to the implant.

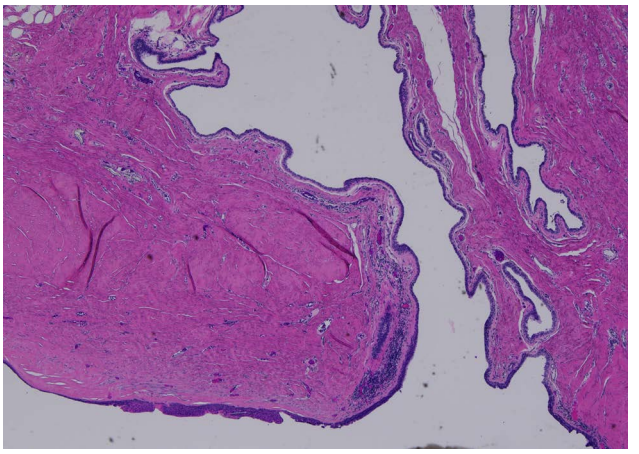

Fig. 4. A histological assessment showing the continuity between the existing ducts and the implant capsule just below the nipple and atypical epithelial cells in the same area. Hematoxylin & eosin stain ×40.

DISCUSSION

Delayed seromas may occur more than 1 year after SBI insertion. However, if the seroma is smaller than 10×10 mm on ultrasound examination and difficult to collect, the patient may be followed up intensively without puncture, considering the risk of damaging the implant. Sumanas et al reported a 5.4% incidence of early seroma during prosthetic breast reconstruction; however, this was an early seroma.[5] The frequency of delayed seroma was not clear, but it was detected in 49% of patients with BIA-ALCL.

BIA-ALCL, a late complication of SBI insertion for cosmetic purposes or reconstruction following mastectomy, has received worldwide attention. It may occur after long-term implantation of a textured-surface breast implant, and depending on the timing of diagnosis, this complication can lead to death; therefore, we must be

cautious. Allergan's BIOCELL-textured breast implant, which was recalled in July 2019 because of concerns about the increased risk of BIA-ALCL, was used in our patient.[3] The most common symptom of BIA-ALCL is a delayed seroma around the implant. Although at least 10 mL of the seroma should be evaluated, a diagnosis can be made based on cell morphology by cytology, CD30 immunohistochemistry, and flow cytometry for the evaluation of T cells.[6] Moreover, the Food and Drug Administration has issued new safety information on breast implant-associated squamous cell carcinoma, and histopathological evaluation after breast implant insertion is important.

Locoregional recurrence in the nipple areola after nipple-sparing mastectomy and immediate breast reconstruction for breast cancer is estimated to be approximately 3%,[7–9] and the diagnosis of recurrence is based on the presence of bloody discharge from the nipple or the presence of mass lesions. In our case, the cytological results of papillary secretion were negative, and the imaging findings did not suggest breast cancer recurrence; however, the diagnosis of recurrence was decided incidentally because of the cytological findings of the fluid collection around the SBI.

Currently, various implant-based breast reconstruction methods are available. If the TE or SBI is inserted under the pectoralis major muscle following nipple-sparing mastectomy, the underside of the nipple is covered by the pectoralis major muscle and should not be in direct contact with the prosthesis. However, the pathological findings showed continuous atypical cells along the ductal component of the peri-SBI capsule. Rahme et al reported the presence of viscous papillary discharge following implant breakage, which was thought to be caused by trauma or inflammation that might have caused the free silicone to erode and traffic through the papillary ducts.[10] In this case, there are two possible reasons for the continuity of the nipple area and peri-SBI capsules. First, the TE was inserted under the pectoralis major muscle during the initial surgery, although the pectoralis major muscle did not cover the nipple and the TE was in contact with the nipple. Second, the additional nipple-side resection at the time of SBI insertion brought the SBI closer to the nipple.

Thus, the circumstances under which breast cancer recurrence is diagnosed from a delayed seroma in the SBI capsule, which should not be continuous with the nipple area, are noteworthy, and we report one of these cases.

CONCLUSIONS

We encountered a case in which the puncture of a delayed seroma around a breast implant after nipple-sparing mastectomy for breast cancer led to a diagnosis of recurrence in the nipple areola. Based on this experience, we propose that if a delayed seroma is detected, we should consider the possibility of breast cancer recurrence, not just BIA-ALCL.

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DISCLOSURE

The authors have no financial interest to declare in relation to the content of this article.

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