

Isolated Ipsilateral Nipple Recurrence: Important Lessons to Learn

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Abstract

Most breast cancer recurrences occur in the surgical scars or within other quadrants of the same breast. Isolated tumour recurrence occurring in the nipple after breast-conserving surgery and radiotherapy is extremely unusual. The reason for this is unknown, but is speculated to be due to involved surgical margins or an occult involvement of the nipple–areolar complex in a breast cancer of the same breast. We present a case of a 44-year-old Indian woman who had recurrent tumour over her right nipple after an ipsilateral breast-conserving surgery that was followed by adjuvant chemotherapy and radiotherapy. There was no typical malignancy features from the mammogram. However, histopathological study confirmed a malignant growth that infiltrated into the dermis and the underneath breast tissue. Completion mastectomy was then performed and the patient was later treated with Taxane-based chemotherapy. Nipple recurrence after breast-conserving surgery and adjuvant radiotherapy may be confused with other nipple conditions such as Paget's disease of the breast. Comprehensive assessments, which include mammogram and biopsy, have proved that such recurrence do occur, as presented in this case. This warrants a specific management strategy.

Keywords: breast-conserving surgery, diagnosis, nipple, recurrence, surgical oncology

Introduction

Breast-conserving surgery is used to treat early breast cancer (1–6). Among the risks involved using this strategy is ipsilateral breast tumour recurrence, which requires further radical treatment including completion mastectomy. The incidence of local recurrence from breast-conserving surgery in early breast cancer is reported to be as high as 14.3% (3). The tumour may recur at the surgical scar or the surrounding quadrants of the affected breast. The reason for such phenomenon is unknown, but unclear resection margins or unidentified occult tumor tissue may be the cause. We report our experience of managing isolated ipsilateral nipple recurrence occurring after breast-conserving surgery. The case involved a complete re-assessment of the local recurrence using radiological and histopathological examinations.

Case Report

A 44-year-old woman had breast-conserving surgery for a T2N1M0 right breast infiltrating ductal carcinoma on October 2007. She had no significant high risk factor for breast cancer or any past medical history. The tumour was located at the right upper quadrant of the breast. Mammogram and fine-needle aspiration biopsy showed malignancy. The histopathological examination showed a grade 3 tumour measuring 4.5 × 3.0 × 3.5 cm. The entire surgical margins were free. An axillary dissection showed 1 of the 17 lymph nodes had metastasis. The tumour was negative for estrogen receptor (ER) and progesterone receptor (PR) but was strongly positive (3+) for c-erb-2 oncoprotein. The patient completed 6 cycles of FEC (5-fluorouracil, epirubicin, cyclophosphamide) adjuvant chemotherapy, followed by 40 Gy of radiotherapy given in 15 fractions and a booster dose of 10 Gy in 5 fractions afterwards. At 5-month follow-up,

she developed an ipsilateral nipple pain with bloody discharge. A 1.0-cm, rounded, ulcerative growth appeared over the nipple. A subsequent mammogram did not show any malignant features, but histopathological examination from a wedge biopsy confirmed a recurrent infiltrating ductal carcinoma with similar histological features to her previous primary breast carcinoma. There was no evidence of distance metastasis. A completion right mastectomy was performed. The final histology was of grade 3, ER negative, PR negative, and c-erb-2 oncoprotein, again, strongly positive. Six axillary lymph nodes were further recovered this time and 3 of them were involved. The patient received another 4 cycles of Taxane-based chemotherapy, and currently under regular follow-up without evidence of further recurrence.

Discussion

Isolated local recurrence over the nipple at ipsilateral breast after breast-conserving surgery or nipple sparing mastectomy is rare (12). There was only 1 case reported in the literature (13), even though some authors have reported local recurrence of breast cancer in the form of Paget's disease of the nipple (7,8), which suggested an underlying tumour recurrence in the ipsilateral breast, occurring 5–16 months after radiotherapy. However, our case was different; the patient presented with a nodulo-ulcerative lesion that developed 5 months after breast-conserving surgery. It was not a Paget's disease of the nipple, and her mammogram was normal. The similarity of the histopathological studies between the first and second tumour had brought about the diagnosis of a local tumour recurrence. Furthermore, the tumour recurred only 5 months after the first surgery. This tumour was of the aggressive type based on its high grade, ER and PR negativity, and c-erb-2 oncoprotein positivity. This explains the loco-regional recurrence despite adjuvant chemotherapy and radiotherapy.

The real reason for an isolated ipsilateral nipple recurrence after a breast-conserving surgery remains a mystery. It is believed that unclear surgical margins, implantation phenomenon, or occult tumour at the nipple–areolar complex (9) may give rise to this phenomenon. The incidence of occult nipple involvement may be as low as 5.6% to 50.0% (9). Studies have discrepancies on parameters that might predict nipple involvement. Several studies showed that the tumour grade, size, and stage, tumour–nipple distance, and c-erb-2 positivity were significant predictors for occult nipple involvement in breast

cancer (11,14,15), but other studies reported contrasting findings (9,10). However, all of them agreed that the location of the tumour has an influence on nipple involvement (9–11,14,15). The incidence of nipple recurrence is higher for tumours located at the central or retroareolar area (10,11,14,15) compared with other 4 quadrants of the breast. Therefore, the decision to perform breast-conserving surgical procedures should not be based on the tumour location alone, but also on the size and stage of the cancer as well as the immunohistochemistry results and c-erb-2 status. This case increases our awareness of nipple recurrence and the importance of carefully selecting the appropriate breast conservation patients for nipple preservation.

Conclusion

A true infiltrating lesion as presented above is very rare. Comprehensive assessments such as mammogram and biopsy have proven that such recurrences do occur; this warrants a different management strategy. Tumour stage, grade, and location may play a vital role in predicting occult nipple involvement in breast cancer. Breast cancer patients must be carefully selected for breast-conserving surgery; failure to do so may later result in nipple recurrence.

Authors' Contributions

Conception and design, analysis and interpretation of the data, final approval of the article: SNAS, RM
 Provision of patient: NI, NM
 Collection and assembly of the data, drafting of the article: SNAS
 Critical revision of the article: RM
 Administrative, technical, or logistic support: SD

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