

■
■
1 . 1 . 1 . 1 . 2 . 2 . 3 . 4
1
3
4
2
1

:

: 4

40

: 28 - 74 45 . 35 (; 5 - 94)
. 14 26 . 26 14 40
34 (85%) 50% (p
< 0.001). 23 가 17 ,
가 6 . 1.7 cm (; 0.3 - 4.0 cm) . 8 (35%)
13 , 4 , 6
11 가 6 , 가 4 ,
가 4 , 1 . 2 cm (; 0.7 - 3.2 cm) .
:
가 . 가
가 .

Index words: Breast neoplasms; Postoperative; Ultrasound (US)

5 - 10% (1).

가
가 .

(locoregional recurrence)

(nodal bearing areas)

2%

Maestro

Balu -

95.5%, 90.9%, 45.5%

(2)

:

50,

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가

가

40 45 (28)

~ 74) . 5 가

94 35 (2 11) 가

가 28 15 ~ 2 가

12 (30%) 가 14 (35%),

가 26 (65%) .

26 (65%) (Figs. 1 - 4), 14

(35%) (Figs. 5 - 7) 4

1002 40 34 (85%)

40 (4.0%) 6 가 3

2006 7 (50%) 36 가 18

2 가 2

85%, 50%, 35% 14

(Figs. 3, 5) 2

12 (86%) ,

26 (Figs. 1 - 2, 4, 6 - 7) (positron

emission tomography) (internal mam-

mary lymph node) 가

1

가

3 22 (85%)

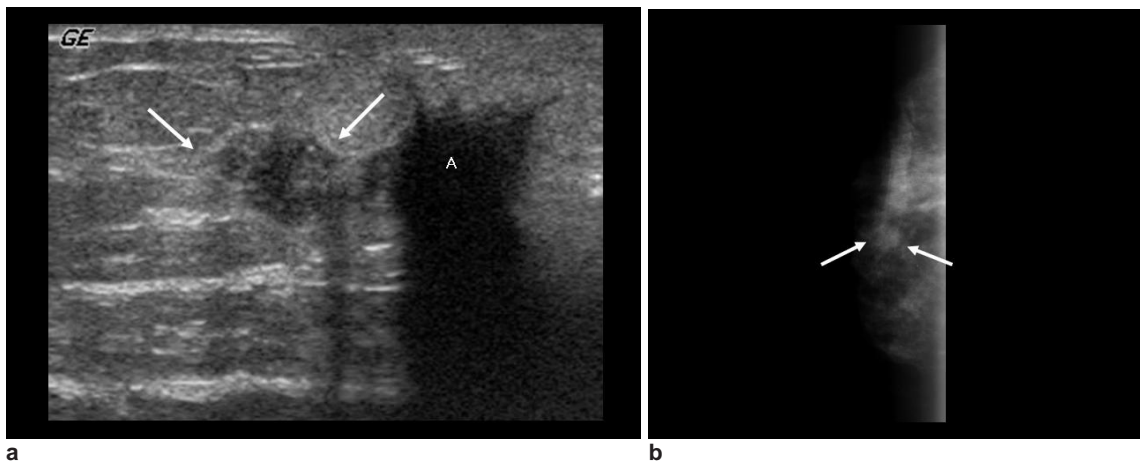


Fig. 1. A. US was performed for a routine check up, 13 months after breast cancer surgery in a 38 years old woman. US shows a 0.8 cm sized ill-defined hypoechoic lesion (arrows) near an operative bed (marked as A). US impression was tumor recurrence. US-guided core needle biopsy revealed an infiltrating duct carcinoma. The lesion was not palpable by a clinician. The original cancer was a 1.8 cm-infiltrating duct carcinoma with Bloom-Richardson grade III and all resection margins were free of tumor.

B. A mammogram shows a new nodular density (arrows) near a scar.

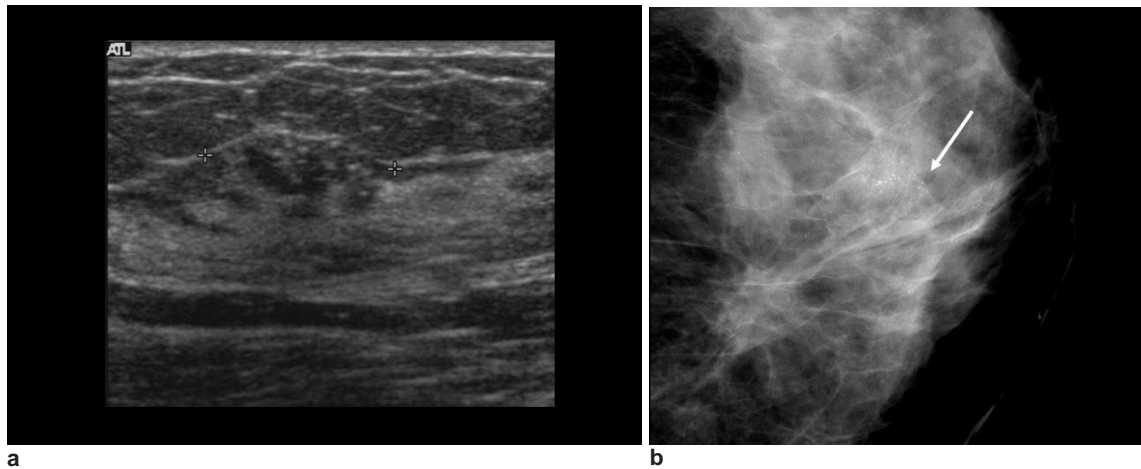


Fig. 2. A 48 years old woman underwent US (A) and mammogram (B) for routine check up, 44 months after surgery for ductal carcinoma in situ. US (A) shows a heterogeneous hypoechoic mass with multiple calcifications (cursors). US-guided core needle biopsy revealed a ductal carcinoma in situ. Mammogram (B) shows pleomorphic microcalcifications around a scar.

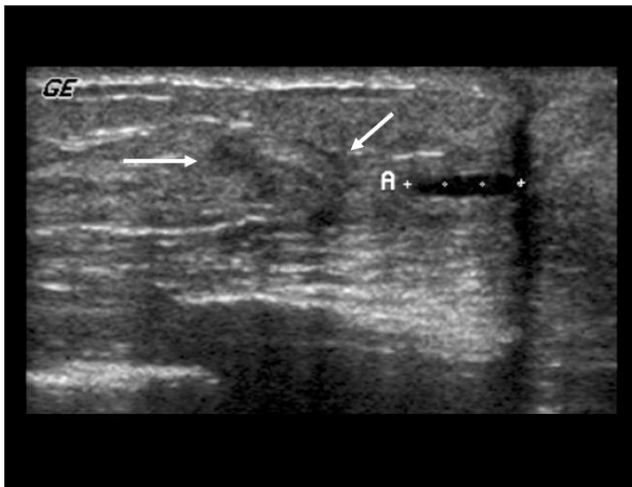


Fig. 3 US was performed for the patient's palpable sensation near operative bed, 8 months after breast cancer surgery in a 52 years old woman. US shows a 0.7 cm sized heterogeneous echoic lesion (arrows) near an operative bed (marked as A). US impression was fat necrosis and BI-RADS category was 3 (probably benign). US-guided core needle biopsy revealed an infiltrating duct carcinoma. Mammogram showed no abnormality (not shown here). The original cancer was a 2 cm-infiltrating duct carcinoma with Bloom-Richardson grade II and all resection margins were free of tumor.

Table 1. Comparison of Detection Rate of Locoregional Recurrence by US and Mammography in Palpable and Nonpalpable Recurrence

	n	US (%)	Mammography (%)
Palpable	14	12/14 (86)*	4/12 (33)
Nonpalpable	26	22/26 (85)*	13/24 (58)
Total	40	34/40 (85)*	18/36 (50)

* The detection rate of US was significantly higher than that of mammography ($p < 0.001$)

Table 2. Comparison of Detection Rate of Locoregional Recurrence by US and Mammography in Local and Regional Recurrence

	n	US (%)	Mammography (%)
Local	26	23/26 (88)*	16/25 (64)
Regional	14†	11/14 (79)*	2/12 (17)
Total	40	34/40 (85)*	18/36 (50)

* The detection rate of US was significantly higher than that of mammography ($p < 0.001$)

† Among 14 regional recurrences, 4 were recurred in breast simultaneously.

33%, 58% (35%)
 (p < 0.001). , 26 23
 (88%), 14 11 (79%) 6 (26%)
 64%, 17%
 (p < 0.001). 1, 2
 23 17 (74%)
 2 cm 8
 1.7 cm (0.3 - 4.0 cm)
 2.0 cm (0.6 - 4.0 cm),
 1.5 cm (0.3 - 3.0 cm)
 가 13 (Fig. 1), 가 4
 (Fig. 2),

6 (Fig. 3) 6 9 (39%)
 BI - RADS 3 () 4A ()
)
 11
 가 4
 6 가 (Fig. 5), 1
 (Fig. 6), level

III 4 (Fig. 7),
 4 , 1
 2.0 cm (0.7 - 3.2 cm)

가
 가
 (3 - 4).
 가

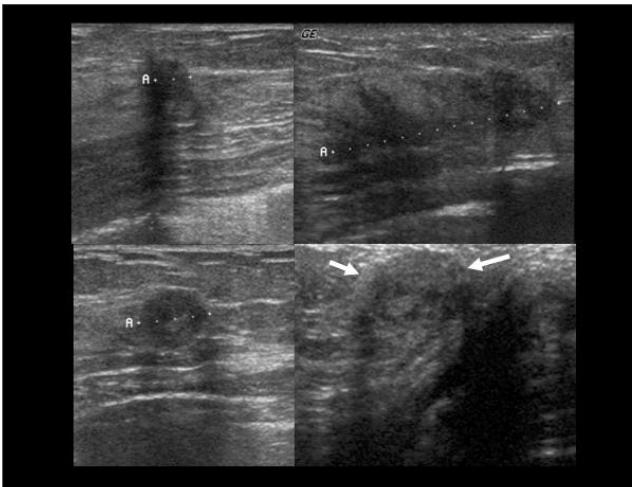


Fig. 4. A 41 years old woman underwent US for routine check up, 34 months after breast cancer surgery. US shows multiple hypoechoic masses including an operative site near scar of upper outer quadrant (left upper) and other quadrant (left lower, right upper). US scan of axillary fossa also shows a heterogeneous echoic mass near a scar (arrow, right lower). The pathology of an original cancer was not identified because the patient received operation at other hospital. The pathology of recurrent tumor was infiltrating duct carcinoma, Bloom-Richardson Grade III. In spite of following mastectomy and reoperation of axilla, second recurrence occurred in lungs after a year.

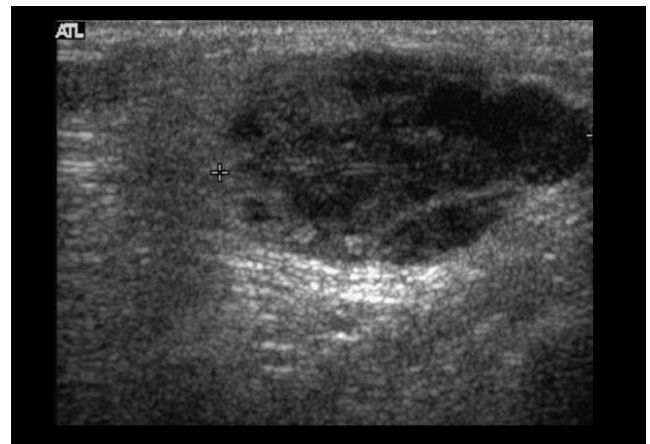
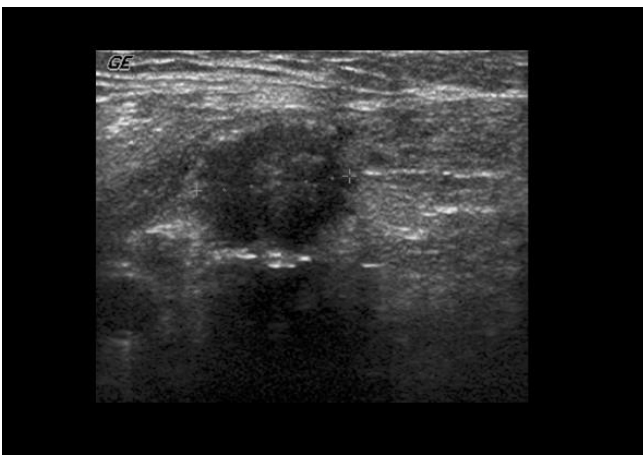
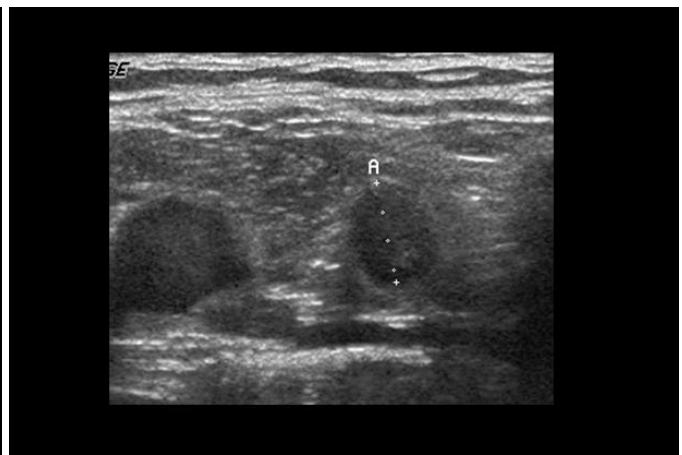


Fig. 6. A case of palpable recurrence at lymph node area (extraaxillary area). A 59 years old woman complained of mass at lower anterior axillary line 45 months after breast cancer surgery. US shows a 2.5 cm sized hypoechoic mass at a palpable site. The following excision showed a metastatic lymph node. The original cancer was high-grade infiltrating duct carcinoma without axillary lymph node metastasis in 18 removed lymph nodes.



a



b

Fig. 5. A case of nonpalpable recurrence at lymph node area (axillary area). A 63 years old woman underwent US for routine check up, 77 months after surgery for infiltrating duct carcinoma, Bloom-Richardson Grade II. US of axillary area (A) shows an enlarged lymph node at axillary fossa (level I) just lateral to axillary scar and it was still nonpalpable. The US-guided aspiration and following excision revealed a metastatic lymph node. A US scan of supraclavicular area (B) shows a synchronous recurrence at a supraclavicular lymph node. In spite of metastasectomy, second recurrence occurred in lungs after 2 years.



Fig. 7. A case of nonpalpable recurrence at lymph node area (extraaxillary area). A 45 years old woman underwent US for routine check up, 24 months after surgery for infiltrating duct carcinoma, Bloom-Richardson Grade III. US (A) shows multiple conglomerated lymph nodes at level III just below a medial end of clavicle and it was still nonpalpable. US-guided fine needle aspiration showed malignant cells.

Locoregional Recurrence in Patients with Breast Cancer Treated with Conserving Surgery and Radiation Therapy: Analysis of US Appearance

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Purpose: To assess the ultrasonographic (US) detection rate and appearance of locoregional recurrence in patients with breast cancer treated with conserving surgery and radiation therapy.

Materials and Methods: During a 4-year period, we found 40 patients with locoregional recurrence in patients with breast cancer after conserving surgery and radiation therapy who underwent breast US. We reviewed clinical and US characteristics of the recurrence.

Results: The patients aged from 28 to 74 years old (mean; 45 years). The median interval to recurrence from operation was 35 months (range; 5 - 94). Fourteen were palpable and 26 were nonpalpable. Twenty six cases were recurred in breast and 14 were to lymph nodes. US detected recurrence in 34 of 40 cases (85%) and the detection rate was significantly higher than that of mammography (50%, $p < 0.001$). Of 23 cases with recurrence in breast, main masses were located near conserving surgery scar in 17, far from scar in 6. The mean size was 1.7 cm (range, 0.3 - 4.0). Multiplicity was noted in 8 (35%). A noncalcified hypoechoic mass was noted in 13, a calcified mass in 4, and a heterogeneous echoic mass in 6. Of 11 cases with lymph node recurrence, enlarged lymph nodes were detected at axillary fossa and lower axilla in 6, subclavicular space in 4, supraclavicular area in 4, and internal mammary chain in 1. The mean size was 2.0 cm (range, 0.7 - 3.2).

Conclusion: An early stage, nonpalpable locoregional recurrence can be successfully detected with US. Recurrence in breast is more frequent than lymph node recurrence and is frequently seen as a noncalcified solid mass near a scar. A heterogeneous mass can mimic a benignity. Lymph node recurrence is most frequent in an axillary fossa.

Index words: Breast neoplasms; postoperative; Ultrasound (US)

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