

Acellular Dermal Matrix in Breast Reconstruction Surgery

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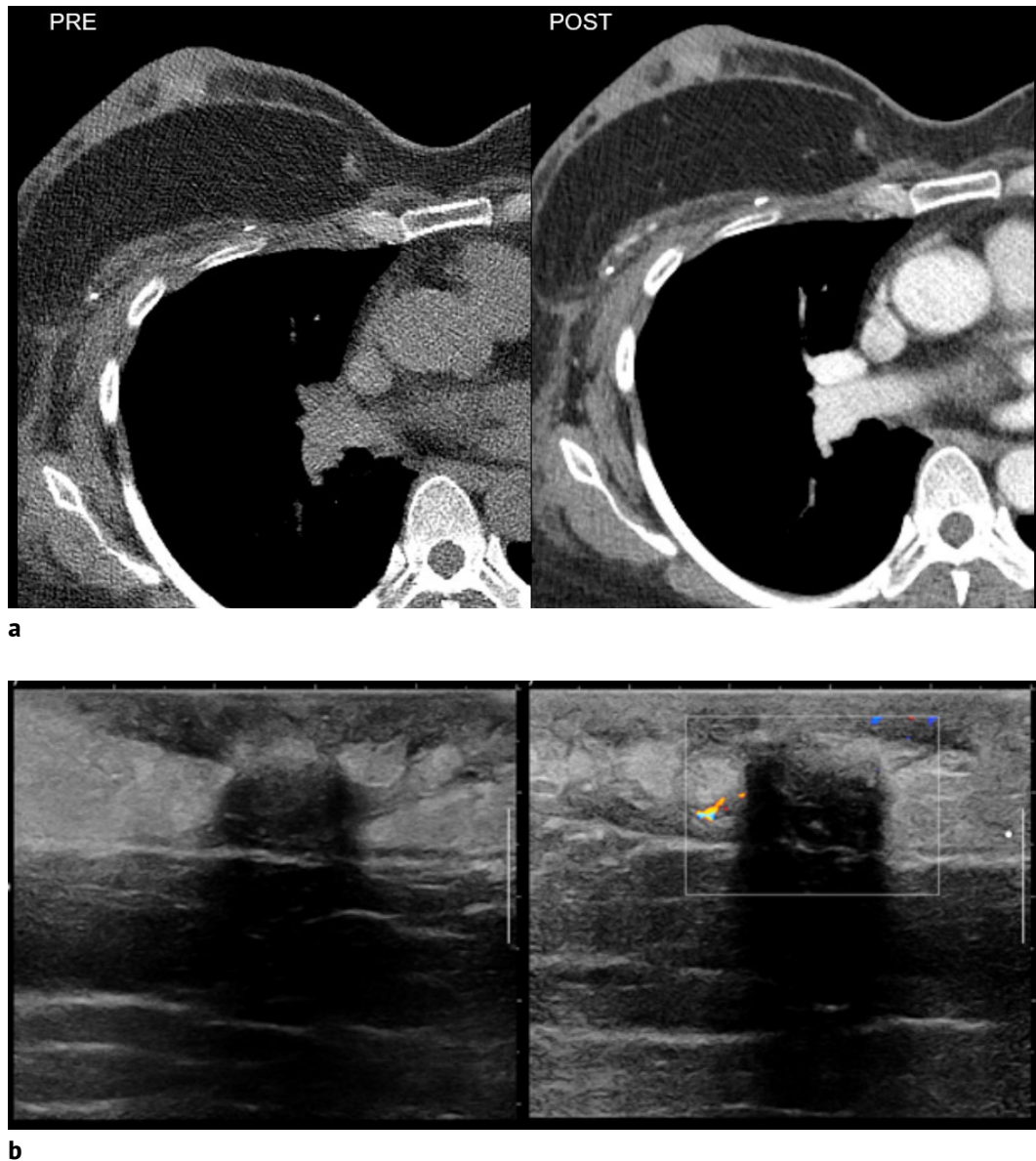


Fig. 1. Postoperative surveillance images in a 47-year-old woman who had undergone right nipple sparing mastectomy and breast reconstruction with TRAM flap. (a) Chest CT shows small non-enhancing oval circumscribed high density mass at right subareolar area and (b) Breast ultrasound shows about 1.5 cm oval circumscribed hypoechoic mass without internal vascularity.

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Case 1

A 47-year-old woman showed non-enhancing

oval circumscribed high density mass at right subareolar area on postoperative surveillance chest CT. She has undergone neoadjuvant chemotherapy,

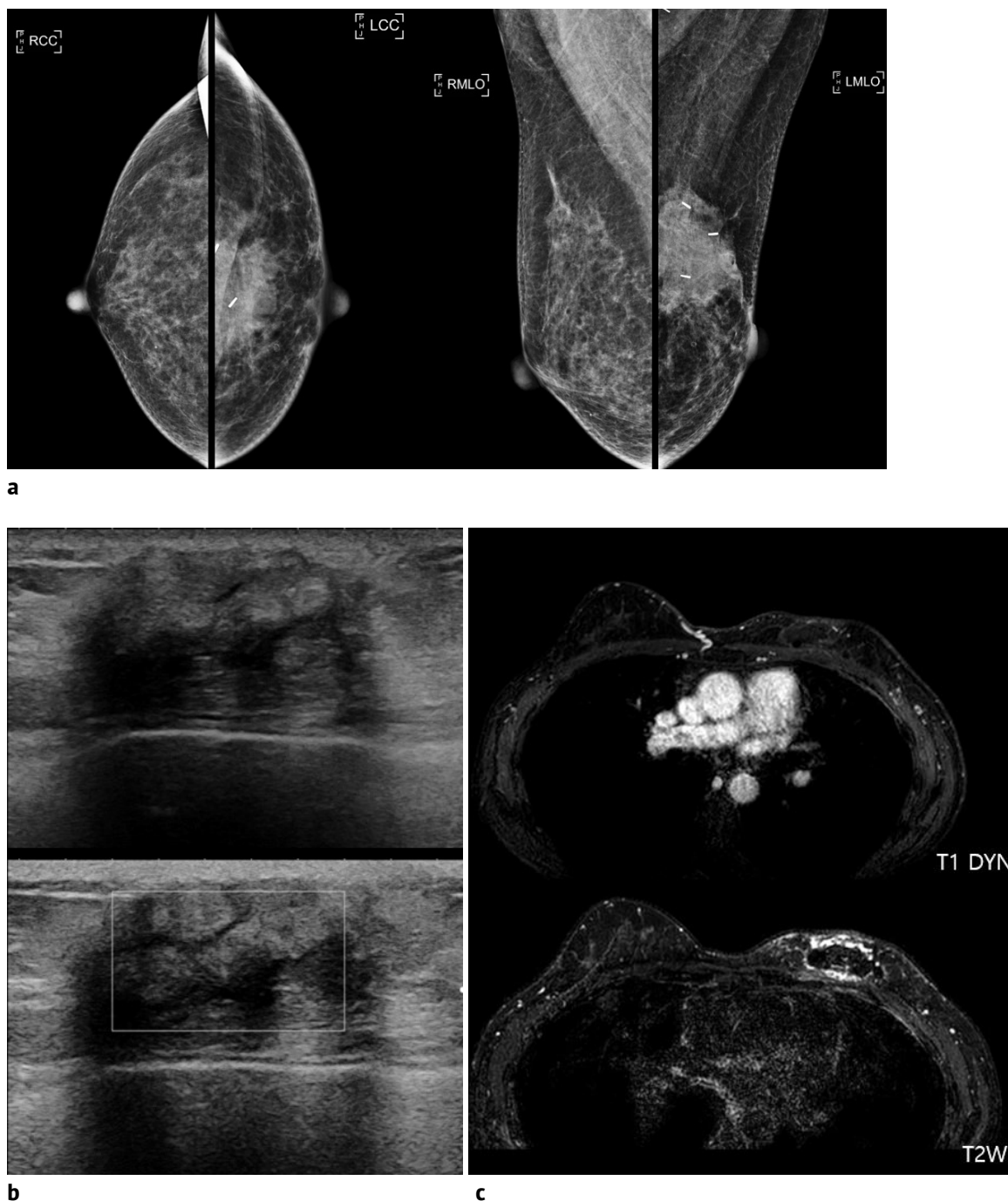


Fig. 2. Postoperative surveillance images in a 47-year-old woman who had undergone left breast conserving surgery 6 months ago. (a) Mammography shows about 3 cm irregular high density mass with surgical materials at left upper breast. (b) Ultrasound shows artificial appearing 3.5 cm irregular heterogeneous mass with posterior shadowing. Partially it has angular margin and internal debris like echogenicity, but no internal vascularity. (c) Post operative 12 months breast MRI shows non-enhancing ADM with T2 low signal intensities, minimal fluid collection at the previous tumor resection site.

right nipple sparing mastectomy, breast reconstruction with free transverse rectus abdominis musculocutaneous (TRAM) flap 6 months ago due to right breast cancer (invasive ductal carcinoma) and adjuvant radiotherapy. Breast ultrasound shows oval circumscribed hypoechoic lesion without internal vascularity at right subareolar area (Fig. 1). The possibility of a surgical material seemed higher than a recurrence.

The operation report stated that Bellacell[®], a type of acellular dermal matrix (ADM), was used for reinforcement fascia and trimmed remnant ADM was used for nipple base augmentation.

Case 2

A 47-year-old woman who underwent breast conserving surgery 6 months ago and on adjuvant chemotherapy due to left breast cancer (invasive ductal carcinoma) shows irregular high density mass with surgical materials at the site of the previously resected malignancy on postoperative surveillance mammography. Breast ultrasound shows artificial appearing 3.5 cm irregular heterogeneous echoic mass with posterior shadowing without internal vascularity (Fig. 2).

The operation report stated that the size of the specimen was large (about 6 cm), so the ADM is used for fulling parenchymal defect. No additional biopsy was performed because it was thought to be postoperative finding, and the breast MRI performed at 12 months after surgery showed no evidence of recurrence.

ADM is a type of allograft derived from human or animal tissue to remove cells and retain portions of

the extracellular matrix and does not evoke immune response. These materials serve as pillars for epithelialization, neovascularization, and fibroblast infiltration and has been used as tissue expander to support the implant in breast surgery (1). Recent studies have reported that volume replacement with ADMs was a safe and cosmetically beneficial procedure (2).

The literature on imaging features of ADM remains limited and imaging diagnosis of ADM remains largely based on clinical history and short-term follow-up (3).

The challenge is to differentiate ADM from recurrence, like fat necrosis or suture granuloma in patients undergoing reconstructive breast surgery. Familiarity with postoperative imaging findings of ADMs used for breast surgery may help to distinguish tumor recurrence and avoid misdiagnosis (2).

References

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