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Is routine histological examination of mastectomy scars justified? An analysis of 619 scars

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Summary *Background:* The increasing incidence of breast cancer is paralleled by an increasing demand for post-mastectomy breast reconstruction. At the time of breast reconstruction routine submission of mastectomy scars has been considered appropriate clinical practice to ensure that no residual cancer exists. However, this practice has been challenged by some and has become the topic of controversy. In a retrospective analysis we wished to assess whether routine submission of mastectomy scars altered treatment.
Methods: Utilizing the Stanford Translational Research Integrated Database Environment (STRIDE) all patients who underwent implant-based breast reconstruction with routine histological analysis of mastectomy scars were identified. The following parameters were retrieved and analyzed: age, cancer histology, cancer stage (according to the American Joint Committee on Cancer staging system), receptor status (estrogen receptor [ER], progesterone receptor [PR], Her2neu), time interval between mastectomy and reconstruction, and scar histology.
Results: A total of 442 patients with a mean age of 45.9 years (range, 22—73 years) were included in the study. Mastectomy with subsequent reconstruction was performed for in-situ disease and invasive cancer in 83 and 359 patients, respectively. A total of 619 clinically unremarkable mastectomy scars were sent for histological analysis, with the most common finding being unremarkable scar tissue (i.e. collagen fibers). Of note, no specimen revealed the presence of carcinoma.
Conclusion: According to published reports routine histological examination of mastectomy scars may detect early local recurrence. However, we were not able to detect this benefit in our patient population. As such, particularly in the current health-care climate the cost-effectiveness of this practice deserves further attention. A more selective use of histological analysis of mastectomy scars in patients with tumors that display poor prognostic indicators may be a more reasonable utilization of resources.

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The incidence of breast cancer in women is increasing as evidenced by the fact that breast cancer is expected to account for 28 percent of all new cancer cases among women.[1] Contemporary treatment of breast cancer frequently entails a multidisciplinary approach, which consists of surgery, radiotherapy, and chemotherapy. Despite the advances in treatment, local recurrence rates following wide local excision or mastectomy are between 6 and 43 percent.[2] Although the majority of recurrences are detectable either by clinical or radiological means, mastectomy scar recurrence has occasionally been demonstrated in the absence of any other sign or symptom.[3] As such, routine histological examination of excised mastectomy scars has been considered appropriate clinical practice.

This practice, however, has been questioned by Soldin et al., who in their study of 45 patients (48 mastectomy specimen) concluded that histological examination of mastectomy scars at the time of secondary reconstruction is of no benefit in the absence of clinical or radiological findings suggesting recurrence.[4] As this topic has resulted in some controversy,[5–8] we designed the present study to evaluate whether routine histological examination of mastectomy scars had an impact on therapeutic intervention in our patient population.

Patients and methods

The Stanford Translational Research Integrated Database Environment (STRIDE), which is a research and development project at Stanford University to create a standards-based informatics platform supporting clinical and translational research,[9] was utilized to identify all patients who underwent mastectomy with implant-based breast reconstruction with routine histological examination of mastectomy scars from 2001 to 2010. Institutional Review Board (IRB) approval was obtained prior to conducting the study. Only patients with a pathology report describing mastectomy scars were included for final analysis. Subsequent to identifying all patients eligible for inclusion in the study, the following parameters were retrieved and analyzed: age, cancer histology (ductal carcinoma in-situ [DCIS], lobular carcinoma in-situ [LCIS], invasive ductal carcinoma [IDC], and invasive lobular carcinoma [ILC]), cancer stage (according to the American Joint Committee on Cancer staging system), receptor status (estrogen receptor [ER], progesterone receptor [PR], Her2neu), time interval between mastectomy and reconstruction, and scar histology.

Results

A total of 442 patients with a mean age of 45.9 years (range, 22–73 years) were included in the study. Mastectomy with subsequent implant-based reconstruction was performed for in-situ disease and invasive cancer in 83 and 359 patients, respectively. Seventy-eight and 5 patients had DCIS and LCIS, respectively. The most common invasive tumor was invasive ductal carcinoma ($N = 307$). Fifty-two patients had invasive lobular carcinoma (Table 1). Seventy percent of patients ($N = 311$) had either stage I or stage II disease (Table 2). All mastectomy scars were clinically unremarkable without any suspicious findings preoperatively. Analysis of receptor status revealed that the majority of patients had estrogen receptor (ER) and progesterone receptor (PR) positive tumors (327 and 288 patients, respectively). Her2Neu receptor status was predominantly negative ($N = 266$) (Table 3).

Table 1 Distribution of tumor histology (DCIS: ductal carcinoma in-situ; LCIS: lobular carcinoma in-situ; IDC: invasive ductal carcinoma; ILC: invasive lobular carcinoma).

Tumor histology	Number of patients (%)
DCIS	78 (17.6%)
LCIS	5 (1.1%)
IDC	307 (69.5%)
ILC	52 (11.8%)

A total of 619 mastectomy scars were sent for histological analysis with the most common finding being unremarkable scar tissue (i.e. collagen fibers). Of note, no specimen revealed the presence of carcinoma (Table 4). In none of our patients was subsequent treatment affected by the practice of histological scar analysis.

The mean time interval between mastectomy and reconstruction (=excision and analysis of the mastectomy scar) was 17 months with almost all patients (97.6 percent) undergoing reconstruction within 3 years of mastectomy. Scar histology did not appear to be influenced by the time interval since mastectomy.

Discussion

Local recurrence rates after ablative surgery for breast cancer range between 6 and 43 percent, with the majority of these occurring within the first 3–5 years.[2] In general, local recurrence within the lumpectomy or mastectomy scar is rare, and if present is typically clinically apparent.[4,10] One of the earliest reports recommending routine histological examination of excised mastectomy scars is by Granick et al.[3] Of the 4 patients reported with recurrent breast cancer, one patient had recurrent disease within the mastectomy scar. As the pathology report was not preceded by clinical evidence of tumor recurrence the authors suggested routine histological examination of all excised mastectomy scars. Since then, this has been considered good clinical practice.

Table 2 Distribution of tumor stage.

Stage	Number of patients (%)
In-situ	83 (19.7%)
IA	152 (33.4%)
IB	2 (0.5%)
IIA	95 (21.5%)
IIB	62 (14%)
IIIA	36 (8.1%)
IIIB	5 (1.1%)
IIIC	6 (1.4%)
IV	1 (0.2%)