



Tumor Cell Dissemination Secondary to Surgical Interventions in the Breast

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Dissemination secondary to surgical interventions is an issue that arises in conversations between patients and providers prior to breast biopsy. Research supports needle biopsies over incisional or excisional biopsies in most situations. Tumor cell dissemination is a rare occurrence. However, the fear of dissemination as experienced by the patient is very real. That fear may influence the patient's decision to proceed with a recommended biopsy.

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The proper diagnosis and treatment of cancer requires a tissue sample obtained either through a biopsy or a surgical intervention. Microscopic evaluation via histologic analysis guides treatment, particularly in the initial presentation of the disease. Some of the factors influencing biopsy type are risk to the patient, patient willingness to consent to a procedure, or the ability to obtain a sufficient sample because of tumor size or location. Types of biopsies that may be used in diagnosing breast cancer can include fine-needle aspiration biopsy, core-needle biopsy, excisional biopsy, or incisional biopsy (Vogel, 2011). American Cancer Society and National Comprehensive Cancer Network (NCCN) (2007) guidelines for breast biopsy indicate a needle biopsy as the preferred method of tissue sampling for most cases.

Literature Review

Several studies have focused on whether tumor cell dissemination occurred during biopsies. Michalopoulos et al. (2008) prospectively studied breast biopsies,

with 2 of 31 participants having benign cells disseminated. Of the various types of biopsies, vacuum-assisted biopsies were the least associated with tumor seeding (Loughran & Keeling, 2011). Researchers noted that even if tumor cells were disrupted and dissemination occurred, tumor cells were not seeded or proliferating after the disturbance (Carter, Jensen, Simpson, & Page, 2000). Three specific cases of tumor cell seeding resulting in localized recurrence were examined from stereotactic core breast biopsies that did not have adjuvant radiation (Chao et al., 2001). Although confirmation exists for tumor dissemination post-biopsy, the risk is very low.

In a study by Uriburu et al. (2006), the authors noted that although needle tract seeding exists, the incidence of dissemination is about 0.005%. In a review of 15 other studies, displacement of epithelial cells in a core needle biopsy did occur. However, the displacement of cells did not translate into an increase in morbidity. Radiation for some and follow-up for all will continue to be recommended for patients with breast cancer (Liebens et al.,

2009). Fitzal et al. (2006) concluded that core needle biopsy did not change recurrence or survival of patients, particularly when biopsy was followed by surgery and radiation. In addition, a biopsy confirming cancer allows options such as neoadjuvant or adjuvant chemotherapy that might otherwise be unavailable if a biopsy was not performed (Fitzal et al., 2006). Micrometastasis in areas such as the axilla can exist and go undetected at the time of core biopsy (Filippakis & Zografos, 2007), which makes findings of dissemination hard to interpret as initial time of tumor spreading cannot be determined. In a study by Nagi, Bleiweiss, and Jaffer (2005), 53 cases of epithelial displacement occurred from a total of 13,334 biopsies, which confirms that dissemination with breast biopsy is a rare occurrence and, therefore, difficult to study.

Implications for Practice

Current guidelines for most breast cancers involve excision of remaining tumor followed by radiation in some scenarios; in addition, radiation after excision is recommended if the tumor is 5 cm or larger, the margins were either close or positive, or with positive nodal involvement (NCCN, 2012). Many of the studies reviewed noted that when seeding occurred after biopsy, it was mostly in patients who had not received breast radiation. If a core breast biopsy and excisional breast biopsy can yield the same results, and the core biopsy does not pose significant risk of tumor cell dissemination, a core biopsy may be a better overall choice compared to an excisional biopsy. Patients may fear seeding of their tumor post-biopsy; however, biopsy has not been clearly shown to spread breast cancer. Tumor cells found in lymphatic