The Role of the Indispensable Surgical Pathologist in Treatment Planning for Breast Cancer

David G. Hicks, MD; Swati Kulkarni, MD; M. Elizabeth H. Hammond, MD

The diagnosis of breast cancer is devastating news for women of any age and immediately raises a number of pressing questions for the patient: Will the tumor return in the future? Will she survive, and what additional treatments beyond surgery are necessary for the best possible outcome? Women placed in these situations are fearful and confused, and they seek reassurance and information. While reassurance can readily be given, clear information to guide decisions about treatment is more elusive because of the increasing complexity of breast cancer treatment options.

The treatment of breast cancer has become increasingly specialized, with rapidly changing therapies and new therapeutic guidelines. These changes have been driven by a number of complex factors, including advances in molecular biology (with the developing capability of clinically relevant molecular subtyping of tumors) and the rapid development of new cancer therapies directed at these molecular subtypes. In an effort to provide state-of-the-art care, provide the most definitive and timely information to patients, and keep up with these rapid advances in diagnosis and treatment, many centers have developed multidisciplinary breast cancer clinics. The physicians who staff these clinics typically include surgeons, medical oncologists, radiation oncologists, and breast radiologists who have become increasingly specialized in the many facets involved in the diagnosis and treatment of breast cancer. Such specialization has allowed these physicians to become experts in their respective disciplines and to provide state-of-the-art care for their patients. Despite these advances, charting a course through the increasingly complex therapeutic algorithms for an individual patient remains clinically challenging.

Of central importance to the decision-making process for treating physicians is the information that is provided by the pathologist. Surgeons, oncologists, and radiologists all rely heavily on the pathology report about the patient’s tumor in order to make treatment decisions and offer the best possible care. Accurate and detailed assessment of the surgical margins, including the distance from the closest margin and lymph node status, both intraoperatively and on final review, are essential to the surgeon and radiation oncologist to plan additional surgery or appropriate fields for radiation. The consequences of inaccurate reporting could result in inadequate treatment, resulting in increased risk of local or distant recurrence, or overtreatment of the patient. Overtreatment can be associated with significant morbidity in both the short and the long term. Physicians are looking for pathologic descriptions of the breast cancer that provide information about the concordance between the core biopsy results, resection specimens, and breast imaging, particularly in light of new imaging modalities, such as breast magnetic resonance imaging.

New, targeted therapies depend on accurate assessment of tumor target molecules (biomarkers) within the breast tissue samples, since the measurement of such target molecules has a profound impact on the choices for adjuvant therapy. It is the responsibility of the pathologist to ensure accurate and timely reporting of the results of breast biomarker assays so that this information is available to the physicians and patients at the time of adjuvant and neoadjuvant treatment planning. Ideally, this information is available in an easily accessible summarized form so that time is not lost searching for additional addendum reports. Accurate and reproducible breast biomarker assays are heavily dependent on the biologic quality of the tissue sample, and thus are dependent on tissue handling, fixation time, and processing. This, in turn, requires coordination between surgery and pathology to help minimize the time between tissue removal, gross examination, and fixation. If tissue handling, specimen fixation, or assay conditions vary substantially, so will the results of breast biomarker assays. One way to facilitate adequate specimen handling is to perform an immediate intraoperative gross assessment of all breast specimens with a documented cancer on needle core biopsy or a clinical suspicion of cancer. Such specimens should be sent fresh to pathology to be oriented, inked, and sectioned in a timely manner. A gross impression could be called back to the surgeon prior to placing the specimen into fixative. This approach not only ensures optimal tissue handling but also provides a good opportunity to discuss history, clinical questions, and patient-specific concerns. Ensuring the accuracy of breast biomarker assays is also the responsibility of the pathologist and the laboratory. Regardless of the laboratory methodology employed, proper laboratory procedures need to be in place along with a rigorous quality control program, experience, and proper training for accurate interpretation.
commercial availability of Food and Drug Administration–approved, clinically validated test kits, which contain appropriate controls and high-quality reagents of known sensitivity and specificity, has made it easier to offer breast biomarker assays of high quality and consistency. The surgical pathologist plays an important role in assuring the quality of these biomarker assays and providing that assurance to physicians and patients as necessary in multidisciplinary treatment planning conferences or written documentation.

The rapid evolution in therapeutic algorithms and the incredible pace at which these changes have taken place has proven to be a significant challenge for the field of pathology and heightens the need for particular expertise and greater involvement of the surgical pathologists in this increasingly complex and specialized environment of breast cancer care. Furthermore, the medical literature is full of reports of increasingly complex and sophisticated molecular assays offered mainly by reference laboratories and genomic companies that hold the promise for more accurate risk assessment and clinical response prediction for specific treatment regimens. In light of these changes, is the traditional role of the surgical pathologist, providing only a separate, standard morphologic assessment of each breast tissue sample, at risk of becoming obsolete? Are we approaching a day in the not-too-distant future when, after providing a morphologic diagnosis of breast cancer, pathologists will be asked to hand off the tumor tissue so that it can be sent out for molecular profiling and treatment planning involving other laboratory specialists? Alternatively, might the changes that are taking place present an opportunity for surgical pathologists to enhance and revalue their role in the diagnostic evaluation of breast cancer tumor samples? If the latter is so, then how do the pathologists who want to assume this role become indispensable members of the multidisciplinary patient care team?

The movement from the traditional role to an indispensable role for the surgical pathologist begins with a willingness to stay informed and knowledgeable about what current information is important to the breast cancer patient and how this information will influence treatment decisions and patient outcomes. This becomes much easier if pathologists are allowed to become more focused in their clinical work and begin to move in the direction of a more subspecialized practice model, similar to our clinic counterparts. Such subspecialization may not be possible in smaller groups with limited staffing; however, if an institution sees a significant number of breast specimens, the group may want to designate one or two of its pathologists to be the liaisons with the treating physicians. The pathologist should strive to develop a firm understanding of all the clinical implications of their reports and become an active participant and consultant in the multidisciplinary breast cancer group. The critically important information from the evaluation of the patient’s specimen needs to be provided in clear, concise, and understandable reports. These reports need to address all issues that are relevant to the patient’s care and provide summary diagnostic information and recommendations that are patient tumor specific. The communication between pathologists and physicians should extend to multidisciplinary planning, where a knowledgeable pathologist would be available to discuss all relevant issues at treatment planning sessions with all physicians. The pathologist also needs to be available to physicians and patients during clinic visits to help answer questions and clarify related issues so that good therapeutic decisions can be made in real time while the patients are available. This might entail having a designated breast pathologist who is available by telephone during clinic hours to address specific questions that might arise concerning the pathology report for a given patient. On occasion, the pathologist who is a member of the multidisciplinary breast cancer care team might be called on to communicate directly with a patient about his or her pathology report’s conclusions and recommendations. Direct pathologist-patient communication would need to be done with some care so as not to create confusion for the patient, and it should only be undertaken with the full consent and support of the treating physician. The role of the surgical pathologist in the multidisciplinary group has the potential to expand as the options for treatment grow and the number of molecular tests available increases. A knowledgeable pathologist is ideally suited to help the multidisciplinary group navigate through the sea of increasingly complex molecular assays.

Clearly, the future of cancer diagnosis and treatment will include molecular testing to aid in the selection of the most appropriate therapeutic options for an individual patient. These larger trends in diagnosis and management of breast cancer and other solid tumors are being driven by technology advancement and economic need and are inevitable given the potential to refine therapeutic decision making and improve outcomes. In this future, surgical pathology does not need to be relegated to the role of a center solely for morphologic diagnosis and tissue distribution. In fact, the surgical pathologist is ideally suited to interpret and summarize molecular data in terms of the morphologic and clinical context for a given patient. Working as an indispensable member of the multidisciplinary patient care team, the surgical pathologist can morphologically triage tissue samples to the most appropriate molecular tests. These efforts will also require collaboration with companies to define sample requirements, the creation of appropriate algorithms for treatment options with physicians, and summary interpretation and integration of morphologic, molecular, and clinical information for each individual patient. Such activities will need to have new payment options defined for surgical pathologists who create integrated, patient-specific reports that reflect new treatment schemas resulting from molecular analysis. In the future, as the type of pathologic analyses of tissue samples changes with time, surgical pathologists can expand their role, and in doing so will continue to be relevant and critically important members of the multidisciplinary breast cancer care team and the health care cancer provider community.