

# Preface

Breast magnetic resonance imaging (MRI) is creating a revolution in breast diagnosis and intervention. In the last decade, breast MRI has evolved from being an investigational technique to a clinically valuable tool for breast cancer detection and diagnosis. Individuals who perform or refer patients for breast imaging studies need to understand the indications for breast MRI, how to obtain and interpret the images, outcomes of breast MRI in specific scenarios, and how to perform biopsy of lesions detected by MRI only. This book was created to fill that need.

This book is organized into two Parts. Part I, the text, starts with the basics, including a historical overview, technique, how to set up a breast MRI program, the normal breast, the axilla, the breast MRI lexicon, and kinetic analysis. MRI features of benign lesions, ductal carcinoma in situ (DCIS), and invasive breast cancer are discussed in detail. Uses of breast MRI are presented, including high-risk screening, breast cancer staging, assessment of residual disease, MRI after breast cancer treatment, evaluation of silicone breast implants, and other clinical scenarios. The emerging technology of breast MRI spectroscopy is discussed. Specific chapters address MRI-guided interventional procedures, including step-by-step instructions on how to perform MRI-guided needle localization and MRI-guided vacuum-assisted biopsy, and suggestions for challenging cases. The final chapter discusses the potential for breast MRI in percutaneous ablation of breast cancer in the future.

Part II is an atlas of breast MRI. Case examples illustrate the normal breast as well as malignant lesions (distribution of tumor, staging, metastasis, invasive cancer and also have a strong family history of breast cancer and in women who have specific histologies (e.g., invasive lobular) in the index cancer. When breast MRI is used, it should supplement, but not replace, mammography.

For radiologists embarking on a breast MRI program, it may be helpful to start with women who have proven breast cancer, to look for additional ipsilateral and contralateral disease. An essential component of any breast MRI program is the ability to perform localization and biopsy of lesions identified only by MRI. It is invaluable to include mammography technologists experienced at stereotactic biopsy in MRI-guided interventional procedures. Physicians who perform breast MRI should track the results at their own institutions and share this information with their referring clinicians, so that patients can be appropriately counseled. A negative breast MRI does not spare the need for biopsy of a lesion that is suspicious based on mammography or physical examination. It should be remembered that breast MRI is expensive, that some women (e.g., those with claustrophobia, pacemakers, or aneurysm clips) may not be candidates for breast MRI, that there is variability in technique, interpretation, and insurance reimbursement, and that no studies have shown breast MRI to save lives.

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