

FIRST HILL DIAGNOSTIC IMAGING

A Swedish Medical Imaging Center

Clinical Indications for Breast MR Imaging

- **High-Risk Screening: Breast Cancer Gene Carriers; Prior Lymphoma Treatment; Strong Family History; Genetic Syndromes (e.g. Li-Fraumeni syndrome):** MR is recognized as the most sensitive method available for detection of breast malignancy in patients with greater than a 20-24 % lifetime risk of breast cancer. MR is not used for general breast screening.

- **Preoperative Evaluation and Staging:** MR is very sensitive & commonly detects unsuspected multifocal or multicentric tumors. It also has a high negative predictive value; i.e., a normal MR exam substantially improves confidence that no additional tumors are present. Unsuspected tumors in the other breast are detected by MR in 3-6% of patients with new breast cancers, allowing better surgical planning and treatment of both cancers at one time.

- **Dense Mammogram, With Known or Suspected Cancer:** MR is often particularly helpful in women with dense breasts for improved pre-operative determination of tumor extent, for better patient understanding, communication, and decision-making.

- **Lobular Cancer:** Difficult to detect by mammography, this insidious cancer is frequently multifocal, multicentric, or bilateral (5-10%) and commonly causes positive surgical margins.

- **Malignant Nodes, Clinically Occult Breast Cancer:** About 0.3% of breast cancers present with malignant axillary nodes, but normal mammograms and breast exams. MR can locate the tumor in most cases, allowing the option of breast conservation instead of mastectomy.

- **Neo-adjuvant Chemotherapy or Brachytherapy:** MR accurately measures pre-treatment tumor size & allows minimally invasive staging of lymph nodes status and metastatic disease. It also clearly documents tumor response, progression, or recurrence.

- **Close or Positive Surgical Margins:** Inadequate margins occur in up to 24 - 40% of lumpectomies, requiring additional surgery. MR can locate residual or additional tumors, and if routinely used pre-operatively, MR can decrease re-operation rates.

- **Post-operative Scar vs. Tumor Recurrence:** At \geq 6-12 months after surgery, scar tissue that may simulate cancer mammographically and clinically, does not enhance; this effectively eliminates recurrence diagnostically. Recurrent tumor typically has a malignant enhancement pattern and MR-guided biopsy is used for confirmation of suspected recurrence.

- **Implants, With or Without Known or Suspected Cancer:** MR is the most reliable exam for implant rupture. Women with prior ruptures or liquid silicone injections can also benefit from MR cancer screening. If cancer is suspected, intravenous contrast material is used.