

RADIOLOGY INSIGHTS

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Breast Seed Localization: Is it Time to Retire the Wire?

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How do surgeons know where to cut to remove a breast cancer that can't be felt by hand? The purpose of this article is to provide special education about radioactive seed localization for breast abnormalities and its advantages over the traditional wire localization.

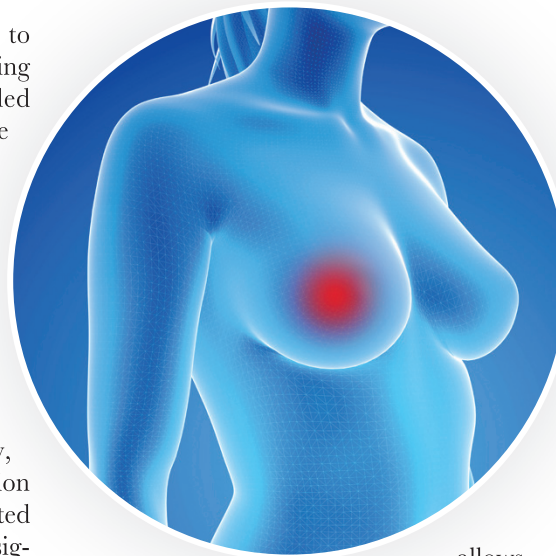
After appropriate diagnostic breast workup, a breast abnormality including cancer may need surgical intervention. If lumpectomy (partial mastectomy) or excision is pursued, then the area of interest in the breast will need to be localized prior to surgery to guide the surgeon. Localization, which marks the area to be removed that may be too small to be felt by hand, is done two ways: using a wire or a radioactive seed and placed using image guidance.

During wire localization, a wire is placed in the breast at the target site and done on the day of surgery. Seed localization is a procedure in which a tiny metal seed, about the size of a small sesame seed, is placed into the breast at target site. Radioactive seeds contain a small amount of radiation and can be placed several days prior to surgery as it stays in place in the breast. Since seeds are placed internally, with no external wires extruding from the skin surface, there is no risk of wire dislodgement or migration with resultant loss of localization.

Wire localizations are restricted to day of surgery; therefore, cases requiring wire localization cannot be scheduled until after there has been adequate time for wire placement and transport of the patient to the operating suite. A major advantage of seed localization over wire localization includes the ability to place the seed in the breast up to 5 days before surgery, which greatly reduces scheduling conflicts. Seed localization cases can be scheduled in the operating room as the first case of the day. Additionally, patients who underwent seed localization at least one day before their surgery rated the convenience of the entire process significantly higher than those who had wire localization.

Moreover, seed localization offers more flexibility than wire localization both for placement of the seed and for determining the surgical incision site. The ideal entry site for accurate placement of a localization wire is often distant from the ideal surgical incision site. With none of the constraints dictated by wire location, there is more flexibility for the surgical approach using a seed and results in increased surgeon satisfaction.

In those breast cancer patients who are injected with technetium 99m for the purpose of sentinel lymph node mapping, the unique radiation properties of the radioactive seed, which is typically Iodine-125,



allows it to be distinguished. A handheld gamma detection probe can show the two peaks as distinct allowing one to confidently distinguish the localized breast lesion from the sentinel lymph nodes. Furthermore, real-time intra-operative monitoring of the detected gamma counts from the seed allows for more accurate lesion localization with lower incidence of positive margins and decreased need for repeat surgery than with wire localization.

Lastly, are radioactive seeds safe? Radioactive seeds are considered by the Nuclear Regulatory Commission to be safe for human exposure. As the seeds are used as point reference sources for

localization rather than for therapeutic treatment, fewer seeds are used and the seeds remain within the patient for a limited time.

Both wire and seed localizations are performed by radiologists utilizing image guidance and done in the radiology department. The radiologists from Radiology Specialists of Florida at Florida Hospital are very well trained and experienced. We have radiologists specifically trained in breast imaging who diagnose imaging abnormalities of the breasts, perform image-guided biopsies, and who perform wire and radioactive seed localizations prior to surgery. We keep up to date on the latest technology and information so that we can offer patients the best care.

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