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A 21st century approach to TLC: Leveraging technology to improve care



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Breast cancer, the most common cancer among women, is a critical women's health issue that affects one in eight women in the United States. While any cancer diagnosis can be devastating, the processes used to diagnose and treat breast cancer can be particularly stressful, uncomfortable and anxiety provoking. Mammograms, breast biopsies, breast surgery, chemotherapy and radiation therapy all have physical and psychological impacts on women, and these effects frequently occur when breast cancer patients are actively engaged in career and family-raising activities. While therapeutic advances have helped to improve outcomes and survival for women with breast cancer, innovative technologies also have an important role to play in improving these patients' journey from diagnosis, through treatment and to life as a breast cancer survivor.

Northwell Health, New York State's largest healthcare provider, has a mission to improve the health of the communities it serves. Key to achieving this mission is ensuring that advanced technologies are accessible to patients throughout the network and not only at larger hospital centers. Northwell's adoption of an advanced technology for localization of non-palpable breast lesions offers a roadmap for implementing medical innovation across a large healthcare network in ways that benefit patients, physicians, clinical operations and the organization's bottom line. It also demonstrates how medical technology innovation continues to play an important role in protecting, preserving and improving women's health.

Localization of non-palpable breast lesions

Breast conserving surgery (BCS) enables women to retain breast tissue and is an important alternative to radical mastectomy. Effective BCS requires accurate

identification and localization of the tissue that is to be excised. For many years, this was achieved by placing a wire into the lesion through the patient's skin. Despite the seeming simplicity of this approach, it has several limitations. Because the wire protrudes from the breast it needs to be placed the day of surgery in order to prevent it from migrating or dislodging. Performing the wire placement and surgery on the same day can increase patients' psychological stress and physical discomfort. This additional procedure on the day of surgery – a day that is often fraught with anxiety for patients and their families – can be an additional source of stress.

From a clinical workflow perspective, same-day wire placement requires coordination between radiology and surgery departments and may lead to unnecessary wait times for patients and physicians if there are delays in either department. At Northwell, the need for radiology staff to travel from their offices to facilities where surgery is performed to place the wires the morning of surgery significantly reduced their productivity, as they had limited ability to perform other work while away from their offices.

Radioactive seed localization (RSL) is a wire-free alternative in which a radioactive pellet is implanted within the lesion. While this approach obviates a number of the challenges that occur with wire localization, it may be difficult to implement due to regulatory and administrative requirements related to use of radioactive material. Northwell had explored RSL but did not pursue it aggressively due to cumbersome tracking and handling processes that would have been especially difficult to implement across its entire network of sites.

Radar localization, another wire-free approach, utilizes a small reflector that can be placed in the lesion at any

time during the diagnosis and treatment continuum. During the excision procedure, the surgeon uses a hand-held device to detect the location of the reflector and direct accurate tissue excision. Importantly, it is the only non-radioactive localization implant that has no restriction on how long it can remain in the breast, which gives clinicians maximum flexibility to use SCOUT throughout the care continuum. This includes reflector placement at the time of biopsy, prior to neoadjuvant chemotherapy or prior to surgery.

A comprehensive approach to evaluating new technology

As a wire-free, non-radioactive approach, Northwell believed that the SAVI SCOUT® Radar Localization System would provide multiple benefits to the organization and the patients it serves.

- Patients would have the flexibility to undergo the reflector replacement procedure at the time and location most convenient to them, offering enhanced convenience compared with wire localization. Additionally, radar localization eliminates the discomfort and stress that many women experience with a wire that protrudes from their breast, which increases patient satisfaction.
- The radiology department could gain workflow efficiencies by performing placement procedures in radiologists' offices rather than at Northwell's surgical facilities. Such efficiencies would support an increase in the volume of patients that radiologists are able to see each day, making care accessible in a timelier manner. Additionally, the ease of the reflector placement procedure would facilitate training of radiology staff and enable rapid adoption of the technology throughout the network. This was a key institutional goal as Northwell sought to standardize care across its facilities.
- The surgery department could also gain workflow efficiencies by eliminating delays in operating room (OR) start time, which occurred frequently with same-day wire localization. Such efficiencies would save time and money and allow increased OR utilization. Ease of use of the SCOUT system within the OR would facilitate training of surgical staff and further enable rapid adoption of the technology across the network.

- From a healthcare finance perspective, reducing inefficiencies in Northwell's radiology and surgical departments would reduce unnecessary costs while increasing the volume of breast lesion localization and excision procedures. The efficiencies gained through the use of radar localization also had the potential to increase the efficiency and volume of other procedures performed by the radiology and surgery departments.
- Being at the forefront of adopting new technology is critical for advancing Northwell Health's position as a leader in making healthcare innovation broadly available throughout the communities it serves. Adopting radar localization as the standard of care across the Northwell network would demonstrate the organization's commitment to providing patients with optimum care. Additionally, taking a pioneering approach to implementing this new technology could increase Northwell's opportunities to participate in evaluating breakthrough medical innovations by demonstrating its ability to rapidly deploy new advances across its network.

A commitment to new technology implementation

Adoption of a new technology is a two-stage process – evaluating which technology to adopt and then effectively implementing it throughout the system. Following the decision to adopt SCOUT as the standard of care for localization of non-palpable breast lesions, Northwell and the vendor (Cianna Medical), established a mutually agreed-upon trial period that included on-site training and support at two pilot facilities. Champions within the radiology and surgery departments proactively initiated training of relevant departmental staff. Within the radiology department this process built on the staff's existing device placement skills, facilitating rapid adoption. Breast surgeons were contacted personally and encouraged to attend procedures in which SCOUT was used. Onsite vendor clinical applications specialist support was especially important for addressing surgeon's questions in real time as they were observing or participating in excision procedures using radar localization. This high level of support enabled a short surgical learning curve and rapid adoption of the technology by surgical staff.

Addressing the facility and workflow needs associated with new technologies is also essential for effective adoption. Decoupling the placement and excision procedures had a significant impact on how these procedures were scheduled. The radiology department developed a new concierge scheduling system that allowed patients to schedule the placement procedure at any site within the network at a time convenient for the patient and not constrained by scheduling of the excision surgery. The ability to perform reflector placement at any Northwell facility also required adapting radiology examination suites to accommodate these localization procedures. Additional examination suites were also deployed in order to ensure that the introduction of localization procedures didn't have an adverse impact on the volume of other procedures performed within the department.

Another critical component of successfully adopting new technology is securing funding not only for the purchase of the technology itself, but also to support the requisite staff and facilities infrastructure. Northwell raised \$250,000 from donors who supported the implementation of a new radar-based technology that would be made broadly accessible and had the potential to improve the patient experience and reduce costs without compromising quality of care. Northwell provided additional institutional funding based on the technology's compelling value proposition and long-term potential to improve patient experiences, costs and operational workflows.

Hallmarks of success

The new technology evaluation and implementation process undertaken for the SCOUT system at Northwell health has yielded multiple positive outcomes. The system has achieved rapid adoption, with approximately two-thirds of localization procedures (600/900) at two pilot hospitals performed with SCOUT in the

first full year of the program. Of the two hospitals that piloted this new technology, one is now 100% wire-free and the other is approaching 90% wire-free. Northwell is moving to make wire-free localization the standard of care for localization of non-palpable breast lesions across its network. Radar localization has currently been implemented at 17 facilities and expansion to at least two more is expected in the near future.

Implementation of radar localization has also resulted in increased efficiencies. The concierge scheduling system implemented to support wire-free localization procedures is now being deployed for all breast imaging services and procedures. This allows patients receiving breast imaging care to schedule procedures based on the time and location of their choosing and enables more effective use of radiology department time and resources. Uncoupling of the radiology and surgery schedules has reduced downtime for staff in both departments, eliminating unnecessary costs while also eliminating operating room delays related to localization procedures.

Most importantly, implementation of this new technology has improved patients' experiences. Patients who had previously undergone wire-based localization report that the wire-free approach is more comfortable and convenient. Additionally, the ability to have the localization procedure done at the time and facility of their choosing minimizes impacts on women's schedules, which, in many cases, are already busy with work, school and home life.

Northwell's experience with radar-based localization demonstrates that when evaluated and implemented effectively, new technology can play a vital role in improving patient care while meeting increasingly stringent quality and cost metrics. ■



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