Accelerated Partial Breast Irradiation

Strengthen your program by providing another option for early-stage breast cancer patients

BY DEANNA J. ATTAI, MD, FACS, AND JON STRASSER, MD

Community cancer centers have a significant new opportunity to expand and improve their treatment of patients with early-stage breast cancer. Centers that are committed to offering a full range of cancer care services can strengthen that claim by offering accelerated partial breast irradiation (APBI) or breast brachytherapy. Whole breast irradiation (WBI) is still considered the standard of care for radiation following a lumpectomy; however, maturing data and experience is proving APBI to be an acceptable treatment option for select patients.

Why APBI?

Due to the significant barriers that women must overcome in order to accommodate six weeks of standard WBI, many patients pursue mastectomy or forgo radiation altogether after their lumpectomy. For appropriately-selected women, APBI is an acceptable treatment alternative, delivering the entire course of radiation treatment in just five days. This shortened duration of treatment reduces time and travel, especially for patients in more rural areas, and allows more women to have access to the benefits of radiation. As clinicians, we believe that offering a full-range of treatment options is a cornerstone of patient-centered care.

Once limited to tertiary centers, this treatment approach has become more readily available and should be considered an option at the community cancer center—not only to enhance clinical care, but also to allow facilities to set themselves apart from their marketplace competitors. In our experience, breast brachytherapy delivers:

- More precise targeting of the radiation dose, resulting in better cosmesis, very low toxicity, and equivalent or superior clinical outcomes
- Strong patient satisfaction for a clinically proven, five-day alternative, compared to the six weeks required for WBI

Table 1. APBI Patient Selection Criteria of Professional Medical Societies

	ABS	ASBS		ASTRO (Suitable)	ASTRO (Cautionary)	ASTRO (Unsuitable)
Age	≥ 50 years of age	≥ 45 years of age		≥ 60 years of age	50–59 years of age	< 50 years of age
T-size	≤ 3 cm	≤ 3 cm		≤ 2 cm	2 cm – 3 cm	>3 cm
Nodes	Negative	Negative		Negative	N/A	Positive
Histology	IDC (infiltrating ductal carcinoma)	IDC ≥ 45 years of age	DCIS ≥ 50 years of age	IDC	ILC or DCIS (ductal carcinoma in situ)	N/A
Pathology	No EIC (extensive intraductal carcinoma) or LVI (lymphovascular invasion)	No EIC or LVI		No EIC or LVI	EIC or focal LVI	Extensive LVI
Margins	Negative	Negative (>2mm)		Negative (>2mm)	Close (<2mm)	Positive

- Targeting of tissue at greatest risk for subclinical disease and recurrence
- Reduced toxicity to the skin, lung, heart, and normal breast tissue
- Strategic differentiation for community centers that offer this modality.

As clinicians, we have counseled numerous patients who chose ABPI over WBI—not only because of the convenience, but also because of the documented excellent outcomes.

Our female patients talk about brachytherapy outside of the office, especially online, and their enthusiasm has led to well-established, online networks of women who encourage others to choose this treatment when appropriate. These communications can be persuasive. For example, a University of California, San Diego study concluded that a support network for brachytherapy *(www.SAVISisters.com)* "helped alleviate anxiety, thereby increasing their [women's] confidence in their choice of treatment." A UCSD survey found that the website and social network's activities were rated as either "very" or "extremely helpful" by a strong majority of respondents.[1]

This combination of patient satisfaction, excellent clinical outcomes, and potential competitive advantage makes brachytherapy a treatment well-suited to community cancer centers. Yet less than one-quarter of women who are eligible for brachytherapy are offered this treatment option. As clinicians, these data may indicate that we are not doing the best job of providing women with all their appropriate treatment choices.

In this article we draw upon our clinical research and practice to answer two questions:

- Why is breast brachytherapy a good treatment option for many patients?
- Why does breast brachytherapy fit so well within the community cancer center setting?

Despite the advantages of breast conservation therapy (BCT), involving lumpectomy plus radiation, only about 50 percent of candidates receive this treatment option. One of the reasons women opt for mastectomy instead of BCT is the inconvenience of multiple appointments and the lengthy time required for traditional radiation treatment with an external beam. One powerful way to overcome these objections is to offer accelerated partial breast irradiation, of which breast brachytherapy is the most common form.

Five-day brachytherapy provides a substantial benefit for women who have a family, a job, or other obligations, as well as those who would have to travel significant distance to receive WBI. Many women also like knowing that brachytherapy preserves future treatment options if needed.

Brachytherapy has been intensively studied and a part of modern clinical practice for more than 20 years. Growth of this technology accelerated with the introduction of the MammoSite balloon applicator about a decade ago.

Today the latest brachytherapy applicators offer significant improvements over the older, single lumen balloon device. The new applicators have multiple channels for more precise and tailored delivery of radiation and offer relatively easy insertion. The strut-based applicator, for example, has multiple sizes to fit each patient's anatomy and allows precise sculpting of the radiation dose—which greatly expands the number of women who can benefit from brachytherapy.

Who is a Candidate for APBI? Several professional medical societies have issued statements that outline patient selection criteria, including the American Brachytherapy Society (ABS)[2], the American Society for Radiation Oncology (ASTRO)[3], and

the American Society of Breast Surgeons (ASBS)[4]. Although all three societies agree that select patients may be appropriate candidates for APBI, the specific criteria vary between societies. For example, the ASBS consensus statement states APBI is an acceptable treatment for women who meet these criteria:

- 45 and older with invasive cancer; 50 and older with DCIS
- Total tumor size ≤ 3 cm
- Negative microscopic surgical margins of excision
- Sentinel lymph node negative.

For those women that do not meet the criteria, the NSABP B-39/RTOG 0413 clinical trial comparing APBI to WBI is currently accruing high-risk breast cancer patients. Table 1, page 37, compares the patient selection criteria of the various professional medical societies.

Clinical Data on APBI

Dr. Robert Kuske, the radiation oncologist who helped pioneer breast brachytherapy, summarizes the state of research findings this way: "Clinical outcomes to date have been reported in over 30 publications, including 10-year matched pair comparisons of PBI to WBI, a cooperative group Phase II trial, and two published Phase III clinical trials. The tumor control, toxicity rates, and cosmetic results compare favorably to breast conservation with whole breast irradiation (WBI) and mastectomy."[5]

Recent findings include:

- Data from the MammoSite Registry Trial, which is compiled by the American Society of Breast Surgeons, reported in 2012 that brachytherapy appears more effective in preventing local recurrence than whole breast irradiation. The study comprised 1,449 breast cancer patients at 97 institutions.[6]
- A four-year, three-site study on brachytherapy with a strut-based applicator concluded that it is a well-tolerated, effective treatment for early-stage breast cancer, and that it also broadens the pool of candidates for the treatment. The study, presented at the Breast Cancer Coordinated Care Conference in July 2012, had a median follow-up of four years on 70 patients, the longest term yet reported for patients receiving this form of brachytherapy. The cancer recurrence rate was comparable to the recurrence rate reported in the literature for WBI.[7]
- Among 1,010 patients at 12 centers, researchers found that strut-based brachytherapy provides excellent or good cosmetic outcomes in the majority of patients and can safely and effectively treat the broadest range of women. The data was presented at the 2012 National Interdisciplinary Breast Center Conference.[8]
- A study presented at the 2012 annual meeting of the American Society of Breast Disease, led by Dr. Strasser, showed low rates of toxicities among patients who received strut-based brachytherapy. The 12-site data found that rates of seroma, fat necrosis, and telangiectasia—potential side effects of any form of APBI—were favorably low among several hundred patients at one and two years after therapy.[9]

Establishing a Brachytherapy Program

Brachytherapy is becoming more prevalent in community cancer centers. Much of the research on the latest forms of breast brachytherapy is being done by clinicians practicing in community settings. It's clearly not necessary for patients to go to major academic centers to receive excellent results for this five-day therapy. Community-based cancer programs can effectively establish strong ABPI programs in both the private practice and hospital-based setting.

As part of our medical practices, we have treated more than 150 patients with strut-based brachytherapy, and we contribute to ongoing research and databases on the treatment. Based on our experience, here are some key elements that make a brachytherapy program succeed:

- The program may be initiated by a surgeon or radiation oncologist; however, a multidisciplinary team approach including surgeons, radiation oncologists, medical physicists, nurses, and radiologists is essential
- Reliable access to a high-dose rate (HDR) afterloader unit
- Ongoing communication among the surgeon, radiation oncologist, medical physicist, center coordinator, and nurse navigator
- Training and guidance for each specific kind of brachytherapy catheter, which is available from the manufacturers.

Once a brachytherapy program begins, the treatment team should reach a point where it completes at least 30 procedures per year to stay technically proficient. At that level, physicists who administer the dosage plans can maintain a high level

of consistency and speed, and surgeons and oncologists are ready to handle any unexpected issues.

Community Outreach

Once your brachytherapy program is established, your team must educate patients and other providers about the program.

Community cancer centers can take advantage of customizable tools that are provided by some of the device manufacturers. Our practices, for example, have used practice-marketing and other growth resources to communicate to patients, referring physicians, and the media. These materials include information to provide to physicians who refer patients to your cancer center, along with presentation slides and press releases to help generate public awareness of your brachytherapy service line.

Other materials to reach patients include content for your cancer center's website and access to an online affinity program, which helps patients communicate with others who have had the therapy.

One such affinity program website, *www.SAVISisters.com*, was the subject of a presentation at the 2012 conference of the National Consortium of Breast Centers by researchers at Johns Hopkins University and the Kimmel Cancer Center of Thomas Jefferson University.[10] The researchers, who also looked at the program's Facebook page, reported "the uptake and utilization of social media by women interested in radiation therapy was very rapid."[10] The program's Facebook page grew nearly 1,000 percent in 2011, to more than 8,300 followers, and as of August 2012, the page had more than 23,000 followers. Researchers also noted substantial growth in traffic to the website, with women's own stories being the most popular item on the site. These stories, shared by women about their experiences with APBI, prove to be one of the most important forms of communication for women making their treatment decisions. In addition to consulting with their surgeon and radiation oncologist, it's helpful for these women to have access to other women who have gone through the experience.

Is APBI for *Your* Program?

Establishing a program that uses five-day brachytherapy provides multiple advantages for community cancer centers, physicians, and patients. Your cancer program can gain a strategic competitive edge by adding this option to its offerings and providing the most comprehensive community-based care. Moreover, the technology has become a popular option with women, leading to high levels of satisfaction and strong clinical outcomes. OI

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