



## Using BioZorb<sup>®</sup> Markers for Radiation Planning

Examining use cases of BioZorb<sup>®</sup> 3D bioabsorbable markers and their advantages for radiation planning and patient outcomes

Radiation oncologist, Kiran Devisetty, MD, was introduced to BioZorb<sup>®</sup> 3D bioabsorbable markers by a surgeon who felt it may be a helpful new tool for breast surgery and radiation planning. Dr. Devisetty describes having a “light bulb” moment after using the device for the first time, and he continues to utilize and encourage the use of BioZorb markers in cases that would benefit from the technology.



**Kiran Devisetty, M.D.**  
Radiation Oncology  
Memorial Health  
Savannah, GA

For more information, contact  
your Hologic representative

[hologicbreastsurgery.com](http://hologicbreastsurgery.com)

### Enhanced Definition

The typical radiation therapy planning session consists of a mapping session with a CT scan to review overall anatomy as well as the site of the removed tumor. To make planning sessions easier for radiation oncologists, surgeons historically placed clips at the site of tumor removal as a way to help target the surgical cavity. Unfortunately, targeting these clips is not often straightforward because the clips may shift as post-operative swelling reduces and breast tissue settles into a new baseline contour during the healing process. If clips are not placed, radiation oncologists instead must define the surgical cavity by using other surrogates such as the location of the scar, possible fluid collections, or surgical changes within the breast tissue itself. Dr. Devisetty, a radiation oncologist in Savannah, GA, describes this process of defining the surgical cavity by any one of these processes as variable, which could lead to either underestimation or overestimation of its true size. BioZorb markers aim to address this challenge.

“A picture is worth a thousand words. When we sit down to do our radiation planning, we have to think about how to define that surgical cavity. Maybe we’re chasing clips or CT changes that reflect the path the surgeon took to remove the tumor, or perhaps we include a post-operative seroma that should be at the site of the surgical cavity. In many ways, this process is an estimation. With the BioZorb marker, we have greater confidence that it reflects the true size and location of the surgical cavity since the surgeon sutures it in at the time of the surgery. Especially with the

low-profile device, this can make the cavity small, well-defined, and easier to contour on our planning CT. The easier it is to contour, the easier it is to do treatment planning,” said Dr. Devisetty.

“A picture is worth a thousand words. When we sit down to do our radiation planning, we have to think about how to define that surgical cavity.”

BioZorb markers feature six titanium clips embedded in a spiral, bioabsorbable framework that maintains its shape after a surgeon sutures the device into the lumpectomy cavity. Thanks to the marker’s unique shape and design, Dr. Devisetty has found that the cavity is typically well-defined and largely represents the original size and location of the tumor, which in turn can help him with radiation treatment planning.

“When defining treatment volumes with the BioZorb marker, there is no guess work. It is there, and it is easy to contour and define. I know that it reliably represents the surgical cavity, and I believe it often makes the volume of the cavity smaller when compared to other historical techniques. By having a smaller treatment volume, that means less breast tissue outside this volume is exposed to radiation, which can then translate into a better cosmetic outcome,” said Dr. Devisetty.

## Influencing Radiation Treatment

Once a treatment path is chosen, BioZorb markers can help enhance treatment for either accelerated partial breast irradiation (APBI) or whole breast radiation with a boost. In fact, in a registry of 818 patients, 98% of radiation oncologists reported the BioZorb marker was fairly to very useful in treatment planning for APBI and 86% reported the same for boost radiation planning.<sup>1</sup>

Recent research has shown there is no difference in survival rates for APBI versus whole breast radiation<sup>2,3</sup>, thus some clinicians have begun to prioritize APBI, when appropriate, due to its shorter treatment times and potential to positively impact cosmetic outcomes.

Dr. Devisetty has found that BioZorb markers can be beneficial during APBI, because he can target a 3-dimensional device that better defines the treatment area, which can potentially translate into a smaller treatment volume. He has found a similar benefit also translates to boosts used during whole breast radiation.

“In a registry of 818 patients, 98% of patients had no post-operation infection and 97% patients had no seromas.”

According to Dr. Devisetty, “The BioZorb marker has a benefit for both APBI and boost radiation as it helps to target a precise treatment area. The smaller the target, the greater the benefit when using BioZorb markers.”

## Impacting Surgery

BioZorb markers have the potential to impact the patient’s surgical cosmetic outcome. The marker comes in a variety of sizes ranging from two to five centimeters, including a



low-profile form. The surgeon can choose a device that naturally fills the surgical cavity and serves as scaffolding for the breast tissue to help maintain the breast contour.

If reconstructive plastic techniques are used to re-orient the breast tissue to improve cosmetic outcomes, Dr. Devisetty has found that suturing a low-profile BioZorb marker form into a collapsed surgical cavity can help to maintain a well-defined location for radiation planning.

When using a low-profile BioZorb marker, it is less palpable and works well with oncoplastic techniques that are used to improve cosmetic outcomes, but which can also change the size and location of the surgical cavity. During this process, the low-profile BioZorb marker can be sutured into the cavity in order to ensure it can be targeted accurately by radiation. This often allows for smaller radiation treatment volumes that can help improve cosmetic outcomes. “Ultimately, an improvement in cosmesis translates into an improvement in quality of life,” adds Dr. Devisetty.

Additionally, BioZorb markers do not contribute to complications caused by treatment, including post-operation infection rates. In a registry of 818 patients, 98% of patients had no post-operation infection and 97% patients had no seromas.<sup>1</sup>

## Patient & Provider Education

Dr. Devisetty has also found that BioZorb markers can be great tools to promote communication between surgeons and

radiation oncologists, especially when discussing treatment options with patients prior to surgery. In this setting, radiation oncologists can start educating patients on the different radiation options that can be considered after a lumpectomy, such as APBI vs. whole breast, and how radiation plans are designed. Doing so allows patients to feel informed and prepared for a variety of treatment options. Afterwards, surgeons and radiation oncologists can then share their insights on a patient’s eligibility for breast conversation and whether a BioZorb marker would be appropriate.

“Patient education should continue immediately post-operation, as well,” Dr. Devisetty said. “If I know a BioZorb marker has been placed, I always try to locate and feel the marker and explain to my patient that the device is there to help with targeting of the radiation therapy. As soon as patients are reminded of the marker and its purpose, it can take away any anxiety they may experience if they can feel it.”

In Dr. Devisetty’s experience, BioZorb markers can be a powerful tool for breast radiation, especially with the significant growth in the use of APBI. For the appropriate patient, BioZorb markers have become an essential tool in his clinic since they facilitate radiation treatment planning and can improve patient cosmetic outcomes. He adds, “Hologic and breast cancer are essentially synonymous. They have always been at the forefront of innovation.”



<sup>1</sup> Kaufman CS, et al. (2020). A Three-Dimensional Bioabsorbable Tissue Marker for Volume Replacement and Radiation Planning: A Multicenter Study of Surgical and Patient-Reported Outcomes for 818 Patients with Breast Cancer. *Annals of Surgical Oncology*. 28. 10.1245/s10434-020-09271-2.

<sup>2</sup> Haussmann, J., Budach, W., Corradini, S., Krug, D., Tamaskovics, B., Bölke, E., Djepmo-Njanang, F.-J., Simiantonakis, I., Kammers, K., & Matuschek, C. (2020). No difference in overall survival and non-breast cancer deaths after partial breast radiotherapy compared to whole breast radiotherapy—a meta-analysis of randomized trials. *Cancers*, 12(8), 2309. <https://doi.org/10.3390/cancers12082309>

<sup>3</sup> Meattini, I., et al. (2020). Accelerated Partial-Breast Irradiation Compared With Whole-Breast Irradiation for Early Breast Cancer: Long-Term Results of the Randomized Phase III APBI-IMRT-Florence Trial. *Journal of Clinical Oncology*. 38:35, 4175-4183.