

Intraoperative Radiation Therapy For Breast Cancer

A Guide To Physician-Patient Discussions



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Carl Zeiss Meditec, Inc.
5160 Hacienda Drive
Dublin, California 94568
USA

Phone: 1 925 557 4100
Fax: 1 925 557 4101
info@meditec.zeiss.com
www.meditec.zeiss.com/intrabeam



Radiation Therapy Decisions

A tiny shadow on a mammogram can cast a major shadow on a woman's life. But when breast cancer is the diagnosis, today many women still go on to live long, healthy lives – in part, due to a growing range of advanced new treatments, including intraoperative radiotherapy.

With an ever-increasing understanding of breast disease, these new therapies often can be carefully optimized to provide highly effective treatment for a woman's particular form of cancer, while also helping to preserve quality-of-life.

Recently, a new type of radiation therapy, given at the time of surgery, has proven beneficial for some women. A growing number of patients with small, early-stage tumors

are eligible to receive this new single-treatment radiation. For many, it provides advantages over lengthy post-operative external radiation therapy.

Additionally, women who do not meet the criteria for single-treatment radiation therapy may be able to incorporate intraoperative radiotherapy (IORT) into their more extensive radiation programs to shorten treatment duration by up to one week.

A breast cancer diagnosis is never easy and presents patients with many decisions. This brochure was developed to help physicians educate women about this new treatment option and help patients make an informed choice.

Breast Conserving Surgery and Conventional External Radiation Therapy

Treatment Overview

Today, women diagnosed with early-stage breast cancer are typically treated with breast-conserving surgery (BCS), also known as a lumpectomy. This contrasts with the more radical full breast removal, or mastectomy. The goal during a lumpectomy is removal of the diseased breast tissue and a small surrounding margin of unaffected cells.

Radiotherapy following surgery is an important part of the treatment. Breast-conserving surgery followed by whole breast radiation therapy has been shown to be an efficacious alternative to mastectomy for women with early-stage breast cancer. Radiation is administered with the goal of destroying any remaining cancer cells, helping to reduce the chances of a cancer recurrence.



Figure 1. Linear accelerator used to deliver conventional external beam radiation.



Figure 2. INTRABEAM system used for delivery of intraoperative radiotherapy.

INTRABEAM Radiotherapy - Internal Radiation Therapy

Whole Breast Radiation Therapy

Conventional radiation therapy (figure 1) generally referred to as whole breast radiation therapy (WBRT), is delivered using a linear accelerator. This radiation delivery method produces a beam of high-energy radiation directed toward the tumor bed and other nearby tissue. Patients are typically treated five days a week during a five or six week period, starting about a month after cancer surgery.

For the past 20 years, conventional radiation therapy has been shown to be highly successful in preventing cancer recurrence. However, the benefits can be associated with a range of potential side effects, including damage to healthy tissue, redness and soreness of the skin, permanent changes in skin color, fatigue, breast fibromas and delayed wound healing.

Single Dose Treatment with the INTRABEAM System

Today, some women have an important new radiation treatment option called INTRABEAM targeted intraoperative radiation therapy (figure 2). This innovative therapy is administered during surgery, following tumor removal. INTRABEAM targeted IORT is delivered using a miniaturized radiation device which, after insertion within the breast,

generates a dose of therapeutic radiation. Radiation is directed immediately and precisely right where it is needed most – the tumor bed.

Intraoperative radiotherapy using the INTRABEAM system is delivered as a single 20 to 30 minute treatment during surgery. This single dose replaces all external radiation treatments and minimizes radiation exposure to healthy tissue and organs.

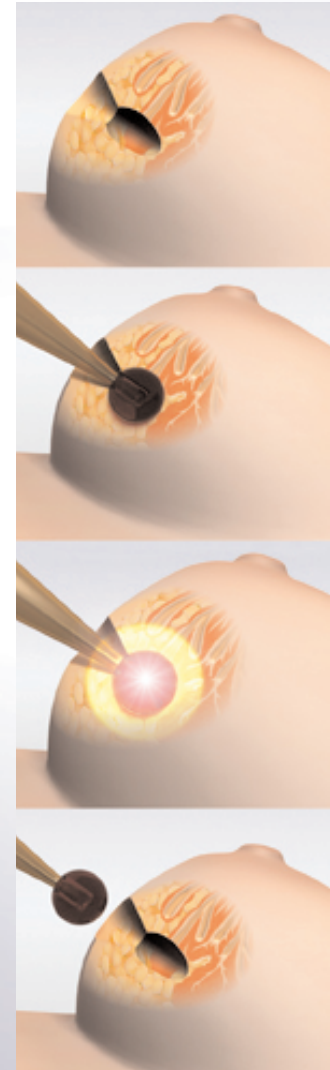


INTRABEAM Radiotherapy - Treatment Convenience, Supported by Clinical Experience

A significant body of research, including a study published in the prestigious medical journal *The Lancet*, has supported this single internal radiation treatment. For patients meeting specific conditions, this research has demonstrated intraoperative radiotherapy with the INTRABEAM system can serve as a viable alternative to conventional whole breast radiation therapy. The physicians coordinating a patient's breast conservation therapy will determine whether INTRABEAM radiotherapy is an appropriate option.

INTRABEAM for Women Receiving Whole Breast Radiation

Some women undergoing conventional radiation treatment may have the choice of receiving INTRABEAM radiotherapy as a *boost dose* during cancer surgery, before the start of external radiation. This initial boost dose is an alternative to the one-week boost treatment typically delivered at the end of a standard course of external breast radiation. For many women, it is an excellent option.



STEP 1. INTRABEAM therapy is delivered during breast cancer surgery.

STEP 2. After the surgeon removes the tumor, the radiation oncologist positions the INTRABEAM applicator precisely into the excision site.

STEP 3. Low-energy radiation is delivered locally, minimizing exposure to healthy tissue.

STEP 4. Following a 20 to 30 minute treatment, the applicator is removed. The surgeon closes the incision, and the patient is brought to the recovery room.