



MammoSite® Radiation Therapy System

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Whole breast radiotherapy is used in combination with lumpectomy for women with breast cancer that can be treated with breast-conserving therapy. Studies have shown that most breast cancer recurrences are located at the initial lumpectomy site, regardless of whether the patient has received whole breast radiation (Kuerer, 2003). Theoretically, radiation of the entire breast may not be necessary in most early-stage cancers and may add to complications or long-term sequelae.

The concept of partial breast irradiation (PBI) has been explored recently as a treatment option. PBI involves treatment of only the lumpectomy cavity and surrounding tissue, sparing the remainder of the breast. One method of PBI is the MammoSite® Radiation Therapy System (Proxima Therapeutics, Inc., Alpharetta, GA), which delivers high-dose radiation via a balloon catheter in a fraction of the time compared to conventional external beam radiation.

Goal: The goal of the MammoSite balloon is to facilitate delivery of high-dose rate radiation (HDR) therapy in a total of five days while irradiating the cells in the immediate lumpectomy or tumor site with little effect on the more distant surrounding tissue.

Objectives: To provide local control of breast cancer in patients following lumpectomy, minimize radiation therapy-related complications, and optimize cosmesis in the treated breast.

Advantages: The therapy is completed in five days and provides optimal cosmesis and concentrated doses of radiation in the area where the tumor was removed previously. The shortened therapy limits travel requirements and may improve patient quality of life and patient satisfaction. Because the duration of treatment is short, the radiotherapy can be given before starting a chemotherapy regimen, thus avoiding a delay in completing the local therapy.

Disadvantages: The remainder of the breast distal to the lumpectomy cavity does not receive therapy. The long-term effects of the treatment relative to local control of the breast cancer remain unknown. MammoSite balloon placement may require an additional procedure compared to conventional external beam radiation therapy.

Patient selection: Criteria for patient selection varies by institution and clinical trial guidelines. In general, patients who may be good candidates include women who are aged 40 and older with histologically diagnosed in situ and invasive T1 and T2 and N0 or N1 breast cancer treated with lumpectomy and sentinel lymph node or axillary node dissection (Dowlatshahi et al., 2004).

Contraindications to the use of MammoSite balloon radiation therapy: A patient may not be a good candidate if

- She has a serious medical illness or condition that may affect the use of the Mam-

moSite applicator (e.g., advanced diabetes, Parkinson disease).

- She is pregnant or breast-feeding.
- She has a collagen vascular disease, particularly dermatomyositis.
- Tumor pathology demonstrates an extensive intraductal component (more than 25% ductal carcinoma in situ).
- She has multicentric disease.
- If the distance from the lumpectomy cavity margin to the skin surface is less than 5 mm.
- She has a breast size smaller than a B cup.

Coordination of care: Multidisciplinary coordination of care is essential. Creating a flow sheet with all team members assists in communication and scheduling. Team members include the surgeon, schedulers, radiation oncologist, surgical and radiation nurses, and radiation and billing departments. Discussing patients at clinical case conferences helps to promote communication and coordination of care among team members.

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