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CANCER INSTITUTE

Hyaluronic Acid Dermal Filler Study

St. Joseph's Hospital
BayCare Health System

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A Phase II Study of Hyaluronic Acid Dermal Filler in Breast Cancer Patients Who are Unable to Have MammoSite Therapy Due to Device and Skin Proximity. SJCI 024

Background

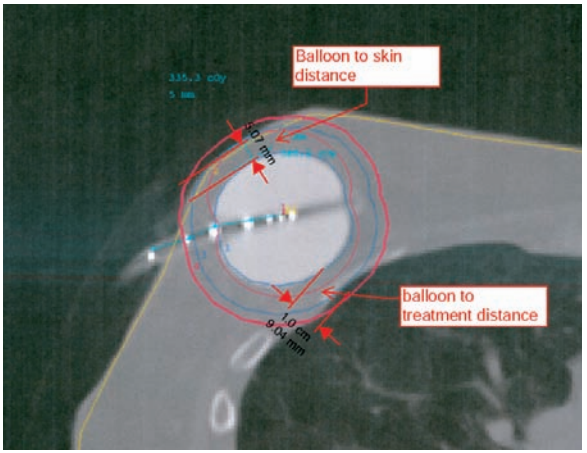
Lumpectomy followed by whole breast radiation has been the standard of care for small breast cancers since the mid 1980s. Although it is superior to mastectomy, as it allows women to retain their breasts, there are acute and long-term side effects, and it takes between five and six weeks of daily treatments to complete. During radiation, the breast becomes inflamed and sore, and may develop raw spots in the inframammary fold and axillary areas. Over time, the development of scar tissue leads to firmness of the breast with some patients developing edema, retraction or hyperpigmentation, which may be unsightly. Rare side effects include damage to the underlying heart and lung, although these changes are usually clinically insignificant.

When breast relapse occurs, it typically occurs in the quadrant of the breast that was affected at diagnosis, rather than in a remote part of the breast. This has led to the idea that perhaps partial breast radiation would be sufficient. If this results in the same cure rates as whole breast techniques, it would represent a significant improvement in the care of this disease for a number of reasons. First, because a smaller amount of breast is exposed to radiation, acute skin changes are reduced and long-term fibrosis is less likely. The exposure to the underlying heart and lung can be reduced in the majority of patients. Finally, because the volume irradiated is small, treatments can be given faster. A typical course takes five days instead of five to six weeks and this benefits the patient.

A randomized trial of whole breast versus partial breast radiation is currently ongoing under the auspices of the NSABP[1]. Results from this will probably not be available for five years. However, thousands of women worldwide have been treated with partial breast irradiation and it seems clear that, at least for low risk groups, if there are differences between partial breast and whole breast radiation, those differences are likely to be small. With that caveat, we offer partial breast irradiation to selected patients at St. Joseph's Hospital Clyde Perry Cancer Institute.

The Problem

MammoSite is a device used for partial breast irradiation. Following lumpectomy, the surgeon implants a balloon much like a foley catheter into the operative site. This is called the MammoSite. A double lumen catheter exits the skin. Patients come to the Department of Radiation Oncology twice daily for five days. During each session, the MammoSite is connected to a machine which contains an Iridium 192 source (smaller than a grain of rice). This source travels down the catheter and comes to rest within the balloon, where it dwells for approximately 10 minutes, irradiating the tissue adjacent to the balloon. The patient is disconnected and goes home until time for the next treatment. After the last treatment, the balloon is deflated, the device withdrawn and a bandage placed over the hole.



Cross-section through the breast showing the MammoSite balloon. Distance to skin is 5mm (unacceptable). Distance to skin must be at least 7mm.

Unfortunately, there are patients who are unsuitable for the MammoSite treatment. If the balloon lies too close to the skin (we need at least 7mm), a skin burn or skin slough can result. In these women, the catheter is removed and five to six weeks of conventional whole breast radiation is given.

Current Therapy

We are currently offering MammoSite therapy to a well-defined, low-risk group of patients who meet the following criteria:

- Women greater than age 45
- T1 or T2 tumors
- Negative surgical margins
- Negative axillary lymph nodes
- A minimum of 7mm-1cm space between the balloon and skin, as seen on CT scan

The Study

The choice to use the MammoSite instead of whole breast radiation is not a part of this study. The decision to insert the MammoSite catheter will have already been made at the time of surgery. This study will only be offered to patients who:

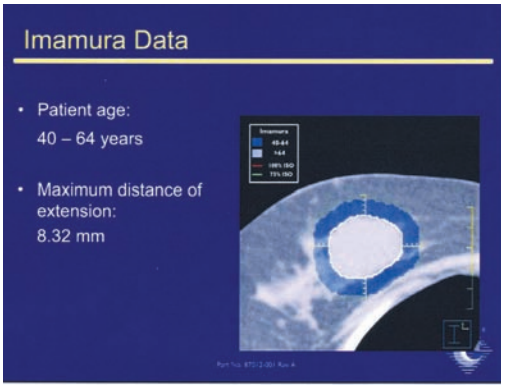
- Already have a balloon catheter in place
- Have the required 7-10mm overlying tissue between the balloon and the skin

We will inject the hyaluronic acid "wrinkle filler" Juvederm™, Allergan Pharmaceuticals, into the breast overlying the balloon to see if we can create the necessary space.

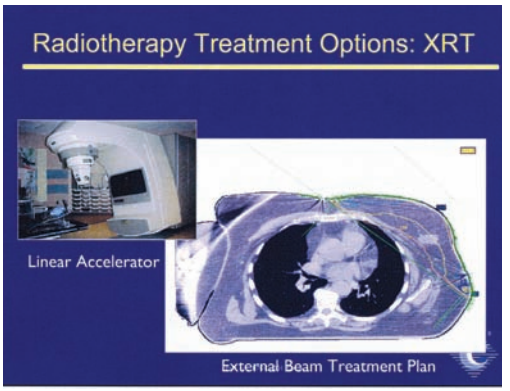
Product Information

Juvederm is natural, biodegradable and currently the only FDA-approved hyaluronic acid dermal filler that has demonstrated its safety and effectiveness in patients of all skin types and colors. It is biologically identical to human hyaluronic acid. Juvederm is the only hyaluronic acid filler developed using a proprietary, technologically advanced manufacturing process that results in a malleable smooth gel that flows easily into the tissue. All other currently approved hyaluronic acid fillers utilize a gel particle suspension formulation. The Juvederm product offers the highest concentration of cross-linked hyaluronic acid available in a dermal filler, which results in a longer duration of effect from four to six months. It is radiolucent and non-carcinogenic[2].

Hyaluronic acid occurs naturally in the body. It is a natural complex sugar found in all living organisms and creates volume and elasticity in the skin. Hyaluronic acid treats multiple medical conditions, including those associated with the eye and the knee, and has been used for more than 20 years.



Partial breast radiation treats only the lumpectomy site and can be completed in a week.



Traditional whole breast radiation requires five to six weeks of daily treatments.

Patient Recruitment

We propose to recruit women who are found, on post-surgical scan, to have their balloon too close to the skin for safe treatment (less than 7mm). We would then offer the patient the option of injecting Juvederm subcutaneously in the area where the skin is close and then repeating the scan. If the skin can be moved a sufficient distance from the balloon, treatment will be given. If not, the MammoSite balloon catheter would be removed and conventional radiation therapy initiated.

Endpoints

- To assess the feasibility of injecting Juvederm hyaluronic acid in the desired location, achieving the required distance
- To determine how many patients can be converted from MammoSite-inappropriate to MammoSite-appropriate
- To determine the reproducibility of the implant geometry from treatment to treatment
- To assess the impact of the injection on the clinical and mammographic follow-up of the patient

Risks

- Local discomfort from the injection
- Palpable thickening for several months post-injection, due to the continued presence of the filler

Patient Sample

Ten patients will be enrolled in this study. All patients who consent will be counted. The patients will be stratified into two groups:

1. Those who fail to achieve adequate space between the skin and balloon

2. Those who do achieve the required distance

Schema

- Decision to implant the MammoSite catheter has been made by patient and surgeon prior to study entry
- All planned surgical resection is completed
- Patient presents to Radiation Therapy for placement of the radiation source into the MammoSite catheter
- Pre-procedure CT scan reveals that the skin is 7mm or less from the balloon catheter
- Patient is advised at that time of two possible options:
  - Removal of the MammoSite catheter and proceed with standard external whole breast radiation, or
  - Injection of hyaluronic acid followed by repeat CT scan to evaluate the space between the balloon catheter and the skin
- Informed consent will be presented for discussion and signature at this time
- If the needed space between the balloon catheter and the skin is NOT achieved, the MammoSite balloon catheter will be removed and standard external whole breast radiation will be given

References and Illustrations

1. http://www.nsabp.pitt.edu/B39_Information.asp (National Surgical Adjuvant Breast and Bowel Project)

2. Source: Allergan, Inc.

Additional Information

Additional information may be obtained by contacting Drs. Calkins, Halme or Christensen at (813) 870-4160.