

ABSTRACT SECTION

1. Prognosis for Mammographically Occult, Early-Stage Breast Cancer Patients Treated With Breast-Conservation Therapy

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Purpose

To compare mammographically occult (MamOcc) and mammographically positive (MamPos) early-stage breast cancer patients treated with breast-conservation therapy (BCT), to analyze differences between the two cohorts.

Methods and Materials

Our two cohorts consisted of 214 MamOcc and 2168 MamPos patients treated with BCT. Chart reviews were conducted to assess mammogram reports and method of detection. All clinical–pathologic and outcome parameters were analyzed to detect differences between the two cohorts.

Results

Median follow-up was 7 years. There were no differences in final margins, T stage, nodal status, estrogen/progesterone receptor status, or “triple-negative” status. Significant differences included younger age at diagnosis ($p < 0.0001$), more positive

family history ($p = 0.0033$), less HER-2+ disease ($p = 0.0294$), and 1° histology ($p < 0.0001$). At 10 years, the differences in overall survival, cause-specific survival, and distant relapse between the two groups did not differ significantly. The MamOcc cohort had more breast relapses (15% vs. 8%; $p = 0.0357$), but on multivariate analysis this difference was not significant (hazard ratio 1.0, 95% confidence interval 0.993–1.007, $p = 0.9296$). Breast relapses were mammographically occult in 32% of the MamOcc and 12% of the MamPos cohorts ($p = 0.0136$).

Conclusions

Although our study suggests that there are clinical–pathologic variations for the MamOcc cohort vs. MamPos patients that may ultimately affect management, breast relapse after BCT was not significantly different. Breast recurrences were more often mammographically occult in the MamOcc cohort; consideration should be given to closer follow-up and alternative imaging strategies (ultrasound, breast MRI) for routine posttreatment examination. To our knowledge, this represents the largest series addressing the prognostic significance of MamOcc cancers treated with BCT.

2. Three-Dimensional Imaging in Gynecologic Brachytherapy: A Survey of the American Brachytherapy Society

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Purpose

To determine current practice patterns with regard to three-dimensional (3D) imaging for gynecologic brachytherapy among American Brachytherapy Society (ABS) members.

Methods and Materials

Registered physician members of the ABS received a 19-item survey by e-mail in August 2007. This report excludes physicians not performing brachytherapy for cervical cancer.

Results

Of the 256 surveys sent, we report results for 133 respondents who perform one or more implantations per year for locally advanced cervical cancer. Ultrasound aids 56% of physicians with applicator insertion. After insertion, 70% of physicians routinely obtain a computed tomography (CT) scan. The majority (55%) use CT rather than X-ray films (43%) or magnetic resonance imaging (MRI; 2%) for dose specification to the cervix. However, 76% prescribe to Point A alone instead of using a 3D-derived tumor volume (14%), both Point A and tumor volume (7%), or mg/h (3%). Those using 3D imaging routinely contour the bladder and rectum (94%), sigmoid (45%), small bowel (38%), and/or urethra (8%) and calculate normal tissue dose-volume histogram (DVH) analysis parameters including the D2cc (49%), D1cc (36%), D0.1cc (19%), and/or D5cc (19%). Respondents most commonly modify the treatment plan based on International Commission on Radiation Units bladder

and/or rectal point dose values (53%) compared with DVH values (45%) or both (2%).

Conclusions

More ABS physician members use CT postimplantation imaging than plain films for visualizing the gynecologic brachytherapy apparatus. However, the majority prescribe to Point A rather than using 3D image based dosimetry. Use of 3D image-based treatment planning for gynecologic brachytherapy has the potential for significant growth in the United States.

3. Lateral Decubitus Breast Boost: Description, Rationale, and Efficacy

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Purpose

To describe and evaluate the modified lateral decubitus boost, a breast irradiation technique. Patients are repositioned and resimulated for electron boost to minimize the necessary depth for the electron beam and optimize target volume coverage.

Methods and Materials

A total of 2,606 patients were treated with post-lumpectomy radiation at our institution between January 1, 2000, and February 1, 2008. Of these, 231 patients underwent resimulation in the lateral decubitus position with electron boost. Distance from skin to the maximal

depth of target volume was measured in both the original and boost plans. Age, body mass index (BMI), boost electron energy, and skin reaction were evaluated.

Results

Resimulation in the lateral decubitus position reduced the distance from skin to maximal target volume depth in all patients. Average depth reduction by repositioning was 2.12 cm, allowing for an average electron energy reduction of approximately 7 MeV. Mean skin entrance dose was reduced from about 90% to about 85% ($p < 0.001$). Only 14 patients (6%) experienced moist

desquamation in the boost field at the end of treatment. Average BMI of these patients was 30.4 (range, 17.8–50.7). BMI greater than 30 was associated with more depth reduction by repositioning and increased risk of moist desquamation.

Conclusions

The lateral decubitus position allows for a decrease in the distance from the skin to the target volume depth, improving electron coverage of the tumor bed while reducing skin entrance dose. This is a well-tolerated regimen for a patient population with a high BMI or deep tumor location.

