Cosmetic Results After Breast Conserving Surgery and High Dose Rate Interstitial Brachytherapy for Early-stage Breast Cancer

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Purpose/Objective(s): To examine the relationship between patient, tumor and treatment characteristics and cosmetic outcomes in women treated with accelerated partial breast irradiation (APBI) using high dose rate (HDR) interstitial brachytherapy for early-stage breast cancer. Subjective and objective scoring methods were used, and the results of both methods are reported.

Materials/Methods: Between March 2004 and December 2008, 151 patients with early-stage breast cancer were enrolled in a prospective institutional protocol evaluating APBI using HDR multicatheter interstitial brachytherapy after breast conserving surgery at Washington University School of Medicine. Eligible patients included those with Tis-T2 tumors measuring ≤ 3 cm excised with negative surgical margins, with no nodal involvement. Patients received 3.4 Gy bid to a total dose of 34 Gy. Cosmetic outcomes were evaluated qualitatively by the patient and treating radiation oncologist (IZ) and quantitatively by the percentage breast retraction assessment (pBRA). Qualitative evaluation by patient and physician used the Harris scale (excellent, good, fair, poor). Cosmetic evaluation was done pretreatment (pretx), 6-8 weeks post-treatment, 3-4 months post-treatment, 6-8 months post-treatment, then every 6 months for the next 4.5 years and yearly thereafter. The paired t-test was used to assess changes in mean pBRA at an early and late time point. The kappa statistic was used to evaluate agreement between patient and physician global cosmetic evaluation.

Results: The median follow-up was 55 months. Compared to the pretreatment mean pBRA (7.35), there was no significant difference in mean pBRA at 3-4 months (8.09, p =0.21) and 2 years post-treatment (8.30, p = 0.15). Patients reported excellent/good outcomes as follows: 92% pretx, 91% at 3-4 months follow-up, 87% at 2 years, and 92% at 3 years. The physician reported excellent/good outcomes as follows: 97% pretx, 97% at 3-4 months follow-up, 94% at 2 years, and 94% at 3 years. Agreement between patient and physician evaluation using dichotomized cosmetic outcomes (excellent/good or fair/poor) at each time point was poor-slight (κ = 0.13-0.37).

Conclusions: There is no significant difference in mean pBRA up to two years after treatment. Although patient and physician agreement was low, there was a very high rate of excellent/good cosmetic outcomes in both patient and physician assessments. Multicatheter interstitial brachytherapy does not significantly change breast size as measured by pBRA over time.

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