

Accelerated partial breast irradiation using a strut-based brachytherapy device for the treatment of ductal carcinoma in situ of the breast.

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Objectives: Limited data are available on the treatment of ductal carcinoma in situ (DCIS) with accelerated partial breast irradiation (APBI). The available literature suggests that these patients have low local recurrence rates using this treatment technique but patient numbers are relatively low and length of follow-up is short. As a result of this, the American Society for Radiation Oncology (ASTRO) consensus guidelines on APBI list its use on patients with DCIS as “cautionary”. We present the largest series of DCIS patients reported to date, all of whom were treated with the APBI using strut-based brachytherapy.

Methods: The Strut-Based Brachytherapy Research Group (SBBRG) database was used to identify patients with DCIS at 12 institutions treated with strut-based brachytherapy for APBI. All patients had a histologic diagnosis of DCIS and received post-operative APBI to a dose of 3400 cGy in 10 fractions to the Planning Target Volume (PTV-eval) using this device. Data on patient age and margins status, implant dosimetry, device size, disease status and toxicity using this device were analyzed.

Results: From 2007-2011, 274 patients with DCIS received APBI using strut-based brachytherapy. Patient ages ranged from 40-87 with a median age of 62. 38 patients were under 50 years of age. Dosimetry is available on 254 patients. Overall dosimetry is excellent (median percent of target volume receiving 90% of the prescription dose was 97%, median skin dose was 104%, volume of target receiving 150% and 200% of the prescription dose was 25.1cc and 12.6 cc respectively.) At a median follow-up of 16 months the risk of ipsilateral “in-field” recurrence was 1.4%. There were no recurrences in the women under 50 years of age. There were 12 infections in 229 patients for whom data was available (5.2%). The incidences of grade ≥ 3 telangiectasis, fibrosis and prolonged seroma were 0%, 3.3% and 2.2% respectively.

Conclusions: APBI using strut-based brachytherapy is an effective treatment for patients with DCIS. Excellent dosimetry was achieved in the majority of cases leading to low local recurrence rates and acceptably low toxicity.