

Initial Radiation Experience Evaluating Early Tolerance and Toxicities in Patients Undergoing Accelerated Partial Breast Irradiation Using the Contura™ Multi-Lumen Balloon (MLB) Breast Brachytherapy Catheters

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Abstract

Purpose: We reviewed our institution's experience treating patients with the Contura™ Multi-Lumen Balloon (MLB) breast brachytherapy catheter to deliver accelerated partial breast irradiation (APBI).

Materials and Methods: 41 patients treated with breast conserving therapy received adjuvant radiation using the Contura™ catheter (34 Gy in 3.4 Gy fractions). 13 patients had stage 0, 21 had stage I and 7 had stage II breast cancer.

Results: Median, minimum skin spacing was 10 mm (range, 2 to 17). Median, maximum skin doses (% of prescribed dose [PD]) were 99.7 (range, 57.1 to 124.1). Eight patients were treated with a skin spacing \leq 5 mm and 2 had a spacing of 2 mm. Median, maximum rib doses were 102.6 % of PD (10.0 to 187.7), and the median percentage of the planning target volume (PTV) receiving 95% of the PD was 98.8 (range, 79.4 to 107.4). The median volume receiving 200% of the PD was 5.7 cc (range, 1.3 to 9.9). The percentage of patients with excellent/good cosmetic results at 3 and 6 months was 94% (n=16 patients) and 100% (n=9 patients), respectively. Patient tolerance was assessed on a scale 0-10 (0=no pain, 10 = requiring narcotic analgesics). In 37/38 patients, pain was graded \leq 3 at the time of catheter insertion. Four breast infections (11%) and one transient symptomatic seroma (3%) developed.

Conclusion: Adjuvant APBI using the Contura™ MLB catheter exhibited similar toxicities to standard single-lumen balloon brachytherapy with improvements in dosimetric capabilities (i.e., reduced skin and rib doses and improved PTV coverage).

Objectives

We reviewed our institution's experience treating patients with a multi lumen balloon (MLB) breast brachytherapy catheter to deliver accelerated partial breast irradiation (APBI) to determine short-term treatment efficacy, cosmesis, toxicity and additional dosimetric capabilities of the MLB.

Materials and Methods

From 05/07 to 05/08, 41 patients, from a single surgeon (PI), were treated with breast conserving therapy (BCT) received adjuvant radiation using the Contura catheter (34 Gy in 3.4 Gy fractions). 13/41 patients (31.7%) had state 0 disease, 21 (51.2%) had stage 1 and 7 (17.1%) had stage II breast cancer.

Results

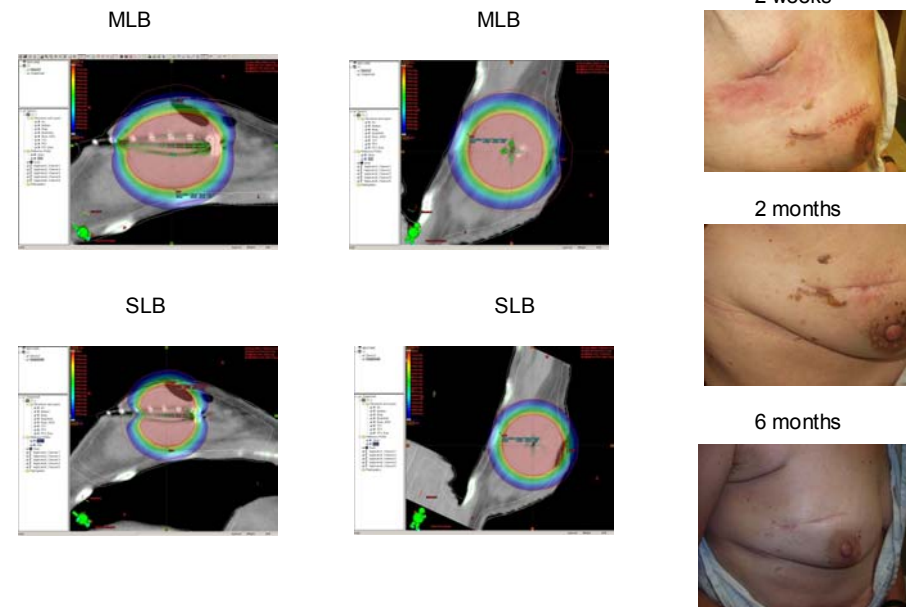
Median, minimum skin spacing was 10mm (range 2 to 17). The Median maximum skin dose (% of prescribed dose (PD)) was 99.7 (57.1 to 124.1). Eight patients were able to be treated with a skin spacing of 5mm or less, 2 had spacing of 2mm. The median maximum rib dose was 102.6% of PD (10.0 to 187.7), median percentage of the planning target volume (PTV) receiving 95% of the PD was 98.8 (79.4 to 107.4) and the median volume receiving 200% of the PD was 5.7cc (range 1.3 to 9.9)

The percentage of patients with excellent/good cosmetic results at 3 and 6 months was 94% (16 evaluable patients) and 89% (9 evaluable patients), respectively. One patient developed skin ulceration after receiving chemotherapy. Patient tolerance was assessed on a scale 0-1- (0=no pain, 10=requiring narcotic analgesics). In 37/38 (97.3%) patients, pain was graded \leq 3 at the time of catheter insertion. Four transient breast infections (11%) developed and one transient symptomatic seroma developed (3%)

Dosimetry and Cosmesis Examples

Patient A with a 2 mm skin spacing:

MLB dosimetry with associated cosmesis compared to a SLB dosimetry which would not be able to be treated secondary to the inability to meet required treatment criteria.



Conclusions

Adjuvant APBI using the Contura MLB catheter exhibited similar toxicities to Standard single lumen balloon (SLB) brachytherapy with absolute improvements in Dosimetric capabilities (i.e., Reduced skin dose, improved PTV coverage and normal avoidance). With multiple lumen planning, more conformal dosimetry was achieved as compared to single lumen balloon treatment. This allowed the treatment of 8 patients with skin spacing of 5 mm or less, normally not achievable with single lumen balloon treatment.

References

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