

AbstractID: 10588 Title: Contura Multilumen Balloon (MLB) Registry Trial: Initial Dosimetric Experience

Purpose: The Contura MLB registry trial is a prospective, non-randomized, multiple site accelerated partial breast irradiation (APBI) study designed to compare the dosimetric efficacy of the Contura™ MLB against a single central lumen balloon device. The preliminary dosimetric comparisons, based on the first 74 patients are presented.

Materials and Methods: All patients are enrolled prior to Contura™ MLB placement based on eligibility criteria. After successful post lumpectomy placement of the Contura MLB is confirmed by CT scan, three dosimetric plans are generated: 1) multi-lumen (ML), 2) central-lumen/multi-dwell (CL-MD) and 3) central-lumen/single-dwell (CL-SD). For similar target coverage ($D_{95} > 95\%$), V150, V200 and maximum skin and ribs dose of the three plans are compared.

Results: The ML plans succeeded in meeting all dosimetric criteria in 78% of the cases whereas the CL-MD and CL-SD plans only succeeded in 54% and 40%, respectively. The ML plan delivered max skin dose $\leq 125\%$ in 92% of cases as compared to 79.7% and 69.9% for the CL-MD and CL-SD plans generated for the same patients. When the balloon-skin spacing measured $\leq 7\text{mm}$, the ML plan delivered a reduced max skin dose in 28.8% of cases compared to CL-MD plans and 34.2% of cases using CL-SD. The mean skin dose reduction was 17.2% and 29.4% respectively. When the rib distance measured $\leq 5\text{mm}$, the ML plan delivered reduced dose to the closest rib in 27.4% of cases compared to CL-MD plans and 32.9% when compared to CL-SD. The mean rib dose reduction was 12.2% and 31.8% respectively.

Conclusion: This initial comparison supports the hypothesis that using multiple offset lumens allows optimization of target coverage while minimizing dose to skin and chest wall. Completion of this trial is needed for the confirmation of this hypothesis, and to explore the clinical scenarios where the Contra MLB can provide the safest solution while extending PBI use in breast conserving therapy.