AbstractID: 1126 Title: Treatment Planning Parameters and their Dose Relationships for a Balloon Catheter-Based Breast Brachyherapy Using MammoSite® applicator

There is a renewed interest in short-course, partial breast irradiation for early stage of breast cancer using balloon catheter device. This balloon catheter device, MammoSite®, is used with HDR brachytherapy utilizing a single dwell source positioned at the geometric center of the balloon.

Between June 2002 and January 2004 at University of Pittsburgh Cancer Institute, 39 patients with early stage breast cancer (15 with left with breast cancer) underwent lumpectomy followed by high dose rate brachytherpy using MammoSite® applicator (Proxima Therapeutics, Inc.). Each patient was planned with the Nucletron® plato bps V14.2 and treated with Nucletron® V2 afterloader. The radiation prescription was set as in the RTOG-95-17 study, delivering 340cGy per fraction at 1 cm to the balloon surface using BID fractions to 34Gy.

The balloon diameter, distances from the balloon surface to skin, rib, lung, and heart were recorded for planning and doses were calculated. Using SPSS software, descriptive statistical and correlation analysis were done for the above. The mean balloon diameter from CT was 5.08 cm (SD0.34). The mean skin, rib, lung, and heart distances were 1.57 cm (SD0.75), 1.43cm (SD1.17), 1.87 cm (SD1.11), and 6.1 cm (SD2.45) respectively. For one single fraction, their estimated doses from the planning system were 270.9 cGy (SD98.73), 330 cGy (SD112.9), 234.3 cGy (SD81.34), and 67.5 cGy (SD47.9). There was no significant correlation between the diameter of the balloon and the doses to skin, rib, lung, and heart were found.