

## **INTERSTITIAL HYPERTHERMIA IN CONJUNCTION WITH EXTERNAL BEAM RADIOTHERAPY AND TEMPORARY INTERSTITIAL IMPLANT IN THE TREATMENT OF ADENOCARCINOMA OF THE PROSTATE (ACP)**

**DANIEL J. HOMMEL, M.D., JEFFREY C. CARLTON, M.D., KENNETH W. WOHLT, M.S. DEPT. OF RADIATION ONCOLOGY, UNITED MEDICAL CENTER, CHEYENNE, WY USA**

**PURPOSE:** The optimal treatment for adenocarcinoma of the prostate remains controversial. There are even fewer reports regarding combined external beam radiotherapy (EBRT), interstitial brachytherapy (IBT), and interstitial microwave hyperthermia (IMHT). The following study was initiated to evaluate the efficacy, as well as chronic complications, associated with EBRT, IBT and IMHT in the treatment of adenocarcinoma of the prostate.

**MATERIALS AND METHODS:** From 1992 to present, 43 patients (39 of whom have follow-up > 3 months.) with localized and/or locally advanced ACP (T1a – T3c) were treated with EBRT, IBT and IMHT. EBRT consisted of either full pelvis or small field delivering a dose of 45 – 50 Gy. The interstitial implant delivered 22-36 Gy over 45 – 50 hrs to a volume encompassing the prostatic capsule. The interstitial implant was performed under dual plane ultrasound. IMHT consisted of 43 C for 45 min. Prior to brachytherapy simulation, all patients underwent CT scanning of the implant to ensure proper catheter placement. Gleason score ranged from 2-9 (mean 6, median 6) PSA ranged from 3.8 – 80.4 (mean 17.6, median 11.1) No patients have been lost to follow-up with a range of 1 – 35 months (mean 11 mos, median 13 mos).

**RESULTS:** As of this writing, all patients except 3 have a normal PSA and normal DRE. One patient has had a biopsy proven recurrence with re-implant and now has a normal PSA. One patient has a rising PSA (>0.75ng/ml/yr), but is still less than 4ng/ml. All other patients have stable or decreasing PSA's. Twenty-four pts have a PSA ≤ 2ng/ml; 10 pts. Are > 2 ≤ 4; 4 pts are >4 ≤ 10 and 1 pt. is > 10ng/ml. Complications have been exceptionally infrequent, Five pts. have reported an RTOG Grade 1 rectal complication. There have been no chronic bladder complications. With regard to impotence, 10 pts report a slight worsening of their erectile function and 2 pts report a >50% worsening of their impotence with 2 pts reporting complete impotence.

**CONCLUSIONS:** IMHT in conjunction with radiotherapy as delivered by our technique has shown excellent early results with exceptionally few side effects. This procedure shows an excellent means of delivering aggressive local therapy to the prostatic volume, which appears necessary for long term local control. In addition, by utilizing our customized treatment methods (i.e. CT scanning post implant) we can not only provide tailored brachytherapy dose delivery, but also customized and accurate heat delivery, which to our knowledge had never been described before in this location. We will describe our procedure in detail along with more current follow-up as well as including pts. treated by this technique palliatively who have also shown extremely positive results.