



DEPARTMENT OF RADIATION ONCOLOGY
Henry Ford Hospital & Medical Centers

Benjamin Movsas, M.D.
Chairman

2799 West Grand Boulevard
Detroit, MI 48202-2689
(313) 916-1021 Appts.
(313) 916-3264 Fax

Henry Ford Medical Center
6777 W. Maple Road
West Bloomfield, MI 48322
(248) 661-6487 Appts.
(248) 661-7164 Fax

JFCC - Downriver
19675 Allen Road
Trenton, MI 48183
(734) 479-3311 Appts.
(734) 479-8009 Fax

Henry Ford Cottage Hospital
159 Kercheval Ave.
Grosse Pointe Farms, MI 48236
(313) 640-2400 Appts.
(313) 640-2410 Fax

Henry Ford Macomb Hospital
Warren Campus
15855 Nineteen Mile Road
Clinton Township, MI 48038
(810) 263-2230 Appts.
(810) 263-2239 Fax

Clinical Division

Education Division

Physics Division

Research Division

To,

Nuclear Regulatory Commission,

RE: NRC Audit at the Henry Ford Wyandotte Hospital, Wyandotte, Michigan, on Wednesday 09.22.10.

Please find enclosed the details on 10 patients that you had requested during your visit.

For Low Dose Rate Prostate Brachytherapy, we follow the guidelines published by the American Brachytherapy Society (ABS), the Radiation Therapy Oncology Group (RTOG), American Association of Physicists in Medicine (AAPM) Task Group TG 43, TG 137 and additional AAPM subcommittee reports, International Commission on Radiation Units and Measurements (ICRU) Report 58, and by other established Prostate Brachytherapy Centers like the Seattle Prostate Institute (SPI). Iodine 125 is our preferred isotope and we have used low activity ¹²⁵I seeds (less than 0.4 mCi activity per seed) in all of our implants over many years.

For all prostate implant patients, we perform a volume study and a pre-plan about 3 to 4 weeks ahead of the actual implant date. Prescription Isodose line chosen on the pre-plan dosimetry, encompasses the prostate plus superior, inferior, lateral and anterior expansion of between 2 to 5 mm (no posterior expansion). This isodose line is almost invariably 100 percent. This is the prescription for the Minimal Peripheral Dose (MPD). It is 145 Grays for Monotherapy and 110 Grays for combined external beam and Brachy therapy. V₁₀₀ is planned to receive the 145 Gy. Towards this goal the D₉₀ is accepted at more than 100 percent during the pre-plan. We use modified peripheral loading to limit the dose to urethra to less than 150% of the prescription dose similar to the SPI guidelines.


We aim to achieve a D₉₀ of at least 90 % or more of the prescribed dose in post-implant dosimetry evaluations. There is clinical information in published papers that supports the co-relation of higher D₉₀ values and better long term PSA control and PSA recurrence free survival. A list of publications is attached with this letter.

The implant is performed under a spinal anesthetic using the transperineal approach with pre-loaded needles. After placement of seeds according to the pre-plan, ultrasound images of the prostate are re-evaluated and additional seeds (up to 5) are placed if indicated. Then the Urologist performs a Cystoscopy. A plain X-ray of the pelvis is obtained on the operating room table to evaluate the seeds and their placements. A CT scan of the pelvis is performed about 4 weeks after the implant for post implant dosimetry.

We routinely follow up our patients on an ongoing long term basis with our Urologists. We have follow up on these 10 patients so far for a range of 1 to 25 months (median 10 months and average 10.2 months). All patients are doing well with PSA responses as expected at this time.

If you need any additional information, please let me know.

Thank you.


Deepak G. Pradhan MD
Senior Staff-Radiation Oncology
Henry Ford Hospital, Detroit,
Josephine Ford Cancer Center-Downriver
19675 Allen Road
Brownstown, Michigan 48183-1021
Phone 734 479 3311

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List of Publications:

1. Stock R G, Stone N, Tabert A, et al. A dose-response study for I-125 Prostate Implants. *Int. J. Radiat. Oncol.Biol.Phy.* 1998; 41:101-108
2. Nag S, Bice W, Wyngaert K, et al. The American Brachytherapy society recommendations for permanent prostate brachytherapy postimplant dosimetric analysis. *Int. J. Radiat. Oncol.Biol.Phy.* 2000; 46:221-230
3. Potters L, Cao Y, Calugaru E et al. A comprehensive review of CT based dosimetry parameters and biochemical control in patients treated with permanent prostate brachytherapy. *Int. J. Radiat. Oncol.Biol.Phy.* 2001; 50:605-614
4. Wallner K, Merrick G, True L et al. ^{125}I versus ^{103}Pd for low risk prostate cancer: preliminary PSA outcomes from a prospective randomized multicenter trial. *Int. J. Radiat. Oncol.Biol.Phy.* 2003; 57:1297-1303
5. Potters L, Huang D, Calugaru E, et al Importance of implant dosimetry for patients undergoing prostate brachytherapy. *Urology* 2003; 62:1073-1077
6. Papagikos M A, deGuzman A F, Rossi P J, Lee R W et al. Dosimetric quantifiers for low-dose-rate prostate brachytherapy: Is V100 superior to D90 ? *Brachytherapy* 2005; 5:252-258.
7. Gillin M T, Dunning B F, Lawton C A et al. Quality assurance methods for the first RTOG permanent prostate implant protocol. *Brachytherapy* 2006; 5:152-156.
8. Lee R W, Kyoungwha B, Lawton C A, et al A descriptive analysis of post implant dosimetric parameters from RTOG P0019. *Brachytherapy* 2006; 5:239-243.
9. Lawton C A, DeSilvio M, Lee R W, et al. Results of a phase II trial of transrectal ultrasound-guided permanent radioactive implantation of the prostate for definitive management of localized adenocarcinoma of the prostate (RTOG 98-05). *Int. J. Radiat. Oncol.Biol.Phy.* 2007; 67:39-47.
10. Sylvester J, Grimm P, Blasko J, et al. 15 year biochemical relapse free survival in clinical stage T1-T3 prostate cancer following combined external beam radiotherapy and brachytherapy; Seattle experience. *Int. J. Radiat. Oncol.Biol.Phy.* 2007; 67:57-64.
11. J. Kao, Stone N, Stock R G et al. ^{125}I Monotherapy using D90 Implant doses of 180 Gy or greater. *Int. J. Radiat. Oncol.Biol.Phy.* 2008, 70, 96-101
12. Stone N, Stock R, Cesaretti J and Unger P. Local Control following permanent prostate brachytherapy: effect of high biologically effective dose on biopsy results and oncologic outcomes. *Int. J. Radiat. Oncol.Biol.Phy.* 2010; 76:355-360.