

LOW-RISK ORGAN-CONFINED PROSTATE CANCER



NCH Regional Cancer Institute CyberKnife® Team:

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LOW-RISK ORGAN-CONFINED PROSTATE CANCER

DEMOGRAPHICS

Sex: M
Age: 70
Histology: Prostate Adenocarcinoma: stage T1c

CLINICAL HISTORY

Referred by: Urologist
Past Medical History: Transurethral resection of the prostate (TURP) for benign prostatic hyperplasia (BPH)

Case History

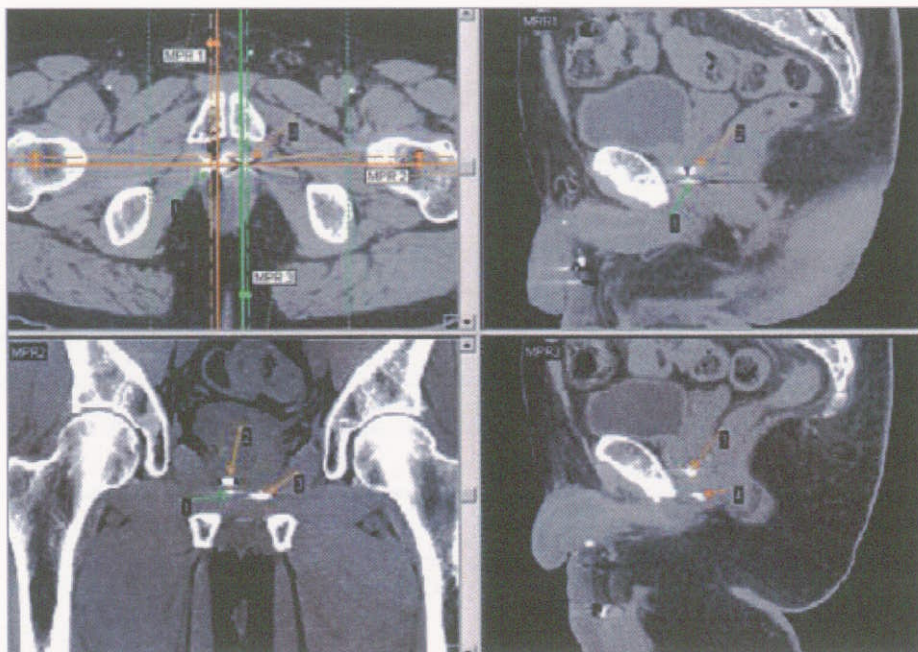
This 70-year-old male with a history of atrial fibrillation, hypertension and benign prostatic hyperplasia (BPH) presented with elevated prostate specific antigen (PSA) of 4.5 ng/ml in January 2005. He had been followed by his urologist for the previous six years with regular PSA monitoring. He had no family history of prostate cancer and underwent a TURP 2 years prior for BPH. His atrial fibrillation and hypertension were managed by Coumadin, Toprol, Lanoxin and Zestoretic.

The patient's symptoms included nocturia times two and a history of erectile dysfunction. Patient denies a history of dysuria, hematuria, urinary incontinence, urinary urgency, urinary frequency or hesitancy. Transrectal ultrasound (TRUS) guided biopsy revealed adenocarcinoma of the prostate in 6 of 12 biopsy cores, all of which were less than 5% positive and a Gleason score of 3 + 3. Tumor was found in both lobes of the prostate, and was staged cT1c by digital rectal examination. A CT scan of the abdomen / pelvis was unremarkable and a bone scan was negative for metastatic disease.

CyberKnife® Treatment Rationale

The patient was evaluated by Urology and Radiation Oncology for his prostate cancer. Treatment options included surgery, external beam radiation therapy (IMRT, conformal) and CyberKnife monotherapy. The patient wanted a less invasive and convenient therapy in order to continue his work and day to day activities and therefore elected for CyberKnife monotherapy.

Current literature suggests that prostate cancer will respond favorably to hypofractionated radiotherapy due to the low α/β ratio of prostate cancer.^{1,2} Several groups have demonstrated that hypofractionation schemes for prostate cancer achieve excellent local control with minimal toxicity to the urethra and rectum.^{3,4} CyberKnife stereotactic radiosurgery has been shown to decrease prostate tumor volume and decrease PSA levels of human prostate cancer cells in a mouse model.⁵ Initial studies of CyberKnife monotherapy have shown beneficial effects, including decreased PSA results and minimal or no toxicities in patients with organ-confined prostate cancer.⁶



Multiplanar pre-treatment planning images show all 4 fiducial markers placed within the prostate.