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Cyberknife Therapy Holds Promise And Appeal



By Maureen Dezell
Beth Israel Deaconess Medical Center Correspondent

Two-and-a-half years ago, Joe Velleca was apprehensive about treating his prostate cancer with CyberKnife radiosurgery. Today, the 71-year-old retired computer services executive says he's amazed at the painless, non-invasive, high-energy radiation treatment he underwent at [Beth Israel Deaconess Medical Center](#) in March 2007.

"My PSA levels have been heading south since – from 11 to 1.1," says Velleca. And his five-day, outpatient procedure wasn't just convenient, it was a cinch, he says. "All I had to do was lie on a table and listen to Frank Sinatra for five straight days."

CyberKnife is a radiology therapy (despite its name, it involves no cutting) that uses real-time, image-guided robotics to target and treat hard-to-reach tumors with pinpoint accuracy. Approved by the FDA in 1999, it is safe, effective, and causes fewer complications than prostate surgery or conventional radiation, according to [Dr. Irving Kaplan](#), a radiation oncologist and co-director of the Beth Israel Deaconess Medical Center [Prostate Care Center](#).

Dr. Kaplan and his associate, [Dr. Joseph Aronovitz](#), have been treating prostate cancer with the CyberKnife of the past three years; to date, the BIDMC team has treated nearly 100 prostate patients. An estimated 3,000 prostate patients across the country have undergone CyberKnife therapy since Medicare began paying for the procedure in 2004. Not all insurers cover the cost of the relatively new treatment because it is still under study, according to Dr. Kaplan, who is a lead researcher in two studies of CyberKnife.

In Dr. Kaplan's estimation, "CyberKnife is proving to be as effective as standard radiation therapy, though additional follow-up is needed before it can become a standard of care among men with early and intermediate-stage prostate cancer."

Many prostate patients experience unpleasant urinary, rectal or sexual side effects from most radiation therapies, says Dr. Kaplan, who points to the prostate's size and position as the source of the problem: it sits at the base of the bladder, just two millimeters in front of the rectum; wraps around the urethra, and has nerves that encourage natural erections attached to it.

CyberKnife delivers high doses of radiation in short periods of time, maximizing radiation on a tumor while minimizing the amount of radiation on nearby tissues. "Because it is more precise – and is administered over shorter period of time -- it has the potential for fewer side effects," according to Dr. Kaplan.

Joe Velleca is one of 83 prostate patients who've undergone CyberKnife therapy at BIDMC, the first New England center to offer the therapy for hard-to reach, difficult-to-treat tumors throughout the body. The medical center has treated 12,500 patients at its Kenneth C. Field Cyberknife center since it opened in 2005, and demand among prostate patients for CyberKnife therapy is high, says Madelyn Stout, CyberKnife Nurse Coordinator in the Department of Radiation Oncology.

BIDMC's track record matters to men like Joe Velleca as they sort through the many daunting questions a prostate cancer diagnosis raises. Velleca, whose urologist recommended surgery or regular radiation treatments at one of a handful of hospitals hospital within driving of his home in Warwick, Rhode Island, researched his options online.

"I found out about CyberKnife, and made an appointment at the Beth Israel Deaconess," he recalls. "I knew that if they did this – if they invested in this treatment – they would do it right."

For Velleca, CyberKnife's chief selling point was convenience. "You're looking at five days instead of five weeks of treatments," he says.

He made two visits to BIDMC to "prep" for his CyberKnife therapy. His first was with a urologist, who inserted three gold seeds into his prostate -- "fiducial markers" that allow doctors to track the position of the prostate during the procedure. Ten days before his initial CyberKnife session, he returned for a "mapping/planning appointment" that included a CT scan, an urethrogram and an MRI – nondiagnostic tests doctors use to determine the prostate's size and shape, and to plan treatment.

That information is downloaded into the CyberKnife's sophisticated software system, which guides the treatment. "The patient lays on a table, while a robotic arm moves around, delivering radiation to the planned areas from any number of angles outside the body," explains Dr. Kaplan. CyberKnife tracks motion throughout the treatment, and automatically corrects for motion of the prostate or patient changes position during treatment.

Each session lasts between 30 to 90 minutes, and most patients, like Joe Velleca, complete therapy within a week.

"The hardest part of the whole thing were the biopsies and the implants. During the treatments, you lie on a table and listen to soothing music," says Velleca, though he admits he there was some trepidation during his treatment.

"The way I look at it, if there's no pain, there's no gain," he says. "Well, there's really no pain with this. They had to keep reassuring me there was gain.

"And now I believe them."

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