

Prostate Cancer Treatment: What's Best for You?

Prostate Cancer: Radiation Therapy Approaches

Andrew Salner, MD

I. Choices

There is really a variety of options in prostate cancer management overall and in radiation therapy. The alternatives for treatment start historically with external beam radiation, and over the last ten years or so the evolution has been to shape the radiation more conformally so that it is sculpted to the prostate. The three types of conformal radiation are 3-D, IMRT, and proton beam radiation. Then there is high-dose or ultra-high-dose conformal radiation. There are two types of brachytherapy that are used, high-dose rate and low-dose rate. In addition, there is a combination of brachytherapy and external beam radiation that is used. Finally, any of the above can be coupled with androgen deprivation or chemotherapy.

1. Conformal

Pretty much anything that is done treatment wise in the area of the prostate can have an impact on the surrounding normal structures, and with conventional radiation we used to encompass a part of the rectal wall and bladder wall. With conformal radiation, however, we can shape the radiation much better and minimize the bladder and rectum that is in the radiation field.

2. IMRT and Proton Beam

In addition, IMRT enables us to shape the treatment to the concavity of the prostate and shield the rectum. Proton beam radiation is also available, but up until now there are no studies to show that proton is any better than IMRT. We will have to wait and see. What we have learned is that as we escalate the radiation dose, we can cause greater injury. With IMRT we can lower the dose to the rectal wall, and if we can sculpt the radiation well enough, we can decrease the toxicity.

3. Tomotherapy

Tomotherapy is one of the linear accelerators that is used to treat prostate cancer. It is actually a linear accelerator that looks like a CT scanner, and it delivers the radiation in a circular fashion like a CT scan does.

4. Contemporary Prostate Brachytherapy

Another type of radiation that is commonly used for prostate cancer is brachytherapy, which is where the radioactive material is implanted into the prostate itself. Seeds are implanted in the prostate under

ultrasound guidance, which deliver radiation over the course of several months after the implant, and the cancer cells gradually die over the course of a couple of years after the implant.

Another technique is high-dose rate “temporary” brachytherapy where instead of implanting the seeds we actually implant little catheters into the prostate. The catheters stay in for two days, and in those catheters we place a radioactive seed, which dwells in the prostate. We can by computer control regulate exactly how that little radioactive seed delivers the dose so that the dose is very much shaped to the prostate.

II. Side Effects

You can’t have a discussion about radiation or any treatment without talking about side effects, and the side effects that can occur after radiation treatment for prostate cancer include sexual dysfunction. We know that for older men there is a higher risk of erectile issues as compared with younger men. There is also a small but finite risk of bowel or bladder problems after radiation.

III. Comparing Treatments

There are no clinical trials available randomizing patients to a radical prostatectomy, brachytherapy or external radiation. They haven’t been done, and they won’t be done because there is too much patient preference involved in determining what kind of treatment men want to have. A group of experts established rigid criteria for comparing groups from all of the available literature, and they compared the outcomes. For intermediate-risk prostate cancer, surgery, external radiation and brachytherapy all kind of overlap, which is what you would expect.

IV. Conclusion

There are many options for the treatment of prostate cancer, and they must be tailored to meet individual patient needs. The radiation has become highly conformal, and it is therefore better in terms of eradicating the cancer cells. It is also better in terms of resulting in fewer side effects, and it is comparable to other therapies over the ten or fifteen years that it has been studied.

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Questions

- I. Robotic surgery is all over the media. How does a patient who is considering this technology go about choosing where to go?**

Ihor Sawczuk, MD

Choosing a physician comes down to word of mouth and groups such as Prostate Net that have experience with physicians. There are outcomes that physicians have based on true data, and it comes down to picking an individual who has a good experience.

- II. There is a lot of advertising regarding CyberKnife treatment. Could you explain what that means?**

Andrew Salner, MD

CyberKnife is a stereotactic, very precise linear accelerator. The basis of the CyberKnife experience is that the treatment can be given in a small number of treatments. With conventional IMRT, we usually will treat the patient daily five days a week over eight weeks. CyberKnife gives prostate cancer treatment in five days. It has now been done for about three years, but there is no long-term data yet showing the efficacy or potential toxicity.

- III. For the patient who has very advanced prostate cancer who now is not responding to hormone therapy, what are the options?**

Daniel Petrylak, MD

You have to assess how quickly a patient is progressing, and what we have been finding is despite the fact that a patient may have a castration level of testosterone in their blood stream, if you take tissue from the prostate or the metastases, there are detectable testosterone levels in the tissue, which is the basis for this concept of androgen-independent or castration-resistant prostate cancer. They are resistant to their primary form of castration, and probably what we should say is failing primary hormone therapy. We can see patients who respond to going on flutamide or Casodex afterwards. Abiraterone has undergone a randomized trial after patients fail chemotherapy, and we are awaiting the results of that study. Another drug is called MDV3100, which actually antagonizes or prevents the testosterone androgen receptor complex from going into the nucleus, causing gene expression and causing cancer cells to grow. Interestingly, Taxotere chemotherapy will do the same thing. The decision to institute chemotherapy is complex. It absolutely should be done for somebody who has symptomatic disease. Giving it earlier is a little bit more controversial.

IV. HIFU is a hot topic right now. What do you think about it?

Daniel Petrylak, MD

We are part of the clinical trial of HIFU at Hackensack University Medical Center, and we do have a HIFU unit but only as part of a clinical trial. It is a new technology that should be available in the United States for use in localized prostate cancer in selected patients. It is like radiation therapy in that very intense ultrasound waves generate heat, and it kills the cells by heat transmission.

V. How do you manage someone who is young whose pathology is such that they have had a radical prostatectomy, have a Gleason's 9, and a positive lymph node. The PSA right after three months was 1.5 or 2.

Daniel Petrylak, MD

The issue is what do we have evidence for, and what can we accomplish in the long-term with these particular patients? The question is when should you institute androgen blockade, and since he has positive lymph nodes we generally will do it right off the bat. There is data that clearly show that earlier androgen blockade in the adjuvant setting after the prostate is out is better than waiting until the patient develops a clinical relapse. The flip side of that is the median PSA at which patients started hormone therapy was 14. There is no evidence at this point that immediate versus waiting until the first PSA rise is any better or worse. In fact, the other complicating issue is should we give hormone therapy intermittently or continuously, and there will be data coming out from a randomized trial next year looking at that issue. Right now the standard answer is to go with immediate androgen blockade based on lymph nodes. The other more interesting question should be when do you institute hormone therapy for a rising PSA? There is no answer for that. We are also identifying more and more that hormone therapy has serious complications, the most published of which is osteoporosis. You have to use clinical judgment.

VI. What patient is a candidate for radiation after radical prostatectomy with rising PSA?

Andrew Salner, MD

Patients who don't have a rising PSA but who have stage 3 disease we might contemplate for adjuvant therapy depending on the pathology findings, and those patients with a rising PSA where we think the disease is highly likely to be just local, we would consider for radiation therapy.

Participant

What is the recurrence rate after primary therapy?

Andrew Salner, MD

It very much depends on the stage of the disease, the Gleason grade and all of the other pathology factors. There is no single answer.