Comparing Treatment Results Of PROSTATE CANCER

Prostate Cancer Results Study Group
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Problem: Patients, physicians and carriers need a simple, unbiased means to compare the cancer control rates of modern prostate cancer treatment methods.
To solve this problem, we have assembled experts from key treating disciplines: Surgery, External Radiation, Internal (or Brachytherapy), High Frequency Ultrasound, and Proton Therapy.

The purpose of this work is to do a complete review study of the current literature on prostate cancer treatment.
Prostate Cancer Results Study Group

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38,200+ prostate studies were published between 2000 and 2014.
1,292 of those studies featured treatment results.
179 of those met the criteria to be included in this review study.
Some treatment methods are under-represented due to failure to meet criteria.
“Will I be cured?” or “Will my treatment make me cancer free?” are valid patient questions. The indicator of cancer free or cancer control is a low PSA level. Five years after treatment, a low PSA level indicates cancer is controlled and there is a high likelihood the cancer will not return.
About This Study

- After prostate removal, PSA numbers usually fall rapidly to very low numbers and stay low.
- After radiation, PSA numbers usually come down slower, might increase then fall in the 1 to 3 year range (called a “PSA Bump”), and then usually level out at a higher number than the surgery patient.
- These different PSA expectations result in dissimilar ways to review a man’s PSA history to judge treatment success.
- This study makes no attempt to standardize those evaluation systems.
Abbreviations

Brachy = Seed Implantation (Brachytherapy, either permanent or temporary seeds
EBRT= External Beam Radiation Therapy, includes
   IMRT = Intensity Modulated Radiation Therapy
RP = Standard Open Radical Prostatectomy
Robot RP = Robotic Radical Prostatectomy
HIFU = High Intensity Focused Ultrasound
Cryo= Cryotherapy
Protons = form of External Radiation using Protons
ADT= Hormone Therapy
Criteria for Inclusion of Article*

1. Patients should be separated into Low-, Intermediate-, and High-Risk Groups

2. Success must be determined by PSA analysis

3. All Treatment types considered: Seeds (Brachy), Surgery (Standard or Robotic), EBRT (including IMRT), HIFU (High Intensity Frequency Ultrasound), CRYO (Cryo Therapy), Protons, HDR (High dose Rate Brachytherapy)

4. Article must be in a Peer Reviewed Journal

* Expert panel consensus
5. Low Risk articles must have a minimum of 100 patients.

6. Intermediate Risk articles must have a minimum of 100 patients.

7. High Risk articles, because of fewer patients, need only 50 patients to meet criteria.

8. Patients must have been followed for a median of 5 years.

For additional criteria information contact: l.grimm@pctrf.org
### % Articles Meeting Criteria

<table>
<thead>
<tr>
<th></th>
<th>RP</th>
<th>EBRT/IMRT</th>
<th>Cryo</th>
<th>Brachy/HDR</th>
<th>Robot RP</th>
<th>Proton</th>
<th>HIFU</th>
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<td>8.7%</td>
<td>14.6%</td>
<td>6.5%</td>
<td>23%</td>
<td>3.5%</td>
<td>22%</td>
<td>13.6%</td>
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Total of 1,292* Treatment Articles. Some articles addressed several treatments and were counted as separate articles for each treatment. *Some articles evaluated other/minor treatments that are not listed here and are therefore not included in these calculations.
How to Interpret the Results

- Each treatment is given a symbol. For example, Seed implant alone (Brachytherapy) is given a blue dot.
- Treatment Success % = Percent of men, whose PSA numbers indicate no cancer progression. (progression free) at a specific point in time.
- The bottom line indicates the number years the study is out.
- An example, a blue dot positioned at 12 years by 97% indicates that, 97% of the patients treated with seeds alone in low risk patients at 12 years were free of disease progression according to PSA numbers.
Treatment Symbols Ledger - for all risk groups graphs

Brachytherapy
• ● Brachytherapy alone
• ★ Brachytherapy & EBRT
• ◆ Brachytherapy, EBRT, & ADT
• ■ HDR (Brachytherapy)
• ▲ HDR & ADT (Brachytherapy)

EBRT/IMRT
• □ EBRT alone
• ★ EBRT & ADT
• ◼ Hypo EBRT

Protons
• ▼ Protons

Surgery
• ▲ RP Surgery
• ▼ Robotic Surgery

Cryotherapy
• ● Cryotherapy

HIFU
• ■ HIFU
References and Symbol Identification Ledgers for all included articles can be found on the Prostate Cancer Treatment Research Foundation’s website: www.pctrf.org in the “Comparing Treatments” section under the “For Patients” tab, as well as interactive versions of all risk group graphs.

In general: Brachytherapy symbols are blue
EBRT/IMRT symbols are green
Protons symbols are yellow
Surgery symbols are red
Cryotherapy symbols are purple
HIFU symbols are gray
How to Interpret the Results

- First establish your clinical risk group* by looking at the definitions or ask your physician. Refer only to those slides for your risk group.
- Make your own judgment and then ask a doctor in each discipline (Seeds, External Radiation, Surgery, etc.) to tell you where his/her own peer reviewed published **Treatment Success %** would fit on this plot.

*Next Slide
Treatment results for a treatment are grouped and mathematically analyzed to see if the data clusters. These “ellipses” outline the treatment results allowing you to see the average result and trend of the treatment over time. Ellipses can only be done if there are 4 or more reported studies, so some treatments may not appear on the slides as ellipses.
Low Risk

Stage: T1 or T2a,b
Gleason Sum ≤ 6
PSA ≤ 10 ng/ml
Low Risk Results

Shorter <-- Years from treatment --> Longer

Worse <-- Treatment Success --> Better

% PSA Progression Free
Intermediate Risk Patient Definition

- Zelefsky definition
  - Only 1 factor
    - Clinical Stage T2c
    - Gleason score \( \geq 7 \)
    - PSA > 10 ng/ml

- D’Amico definition
  - PSA 10-20  Gleason Score 7 or Stage T2b
High Risk Patient Definition

- Zelefsky definition
  - 2 or more factors
    - Gleason > 7
    - PSA 10-20 Clinical Stage T1c-T2b
- D'Amico
  - Gleason Score 8-10
  - PSA >20
For most low risk patients, most therapies will be successful.

There appears to be a higher cancer control success rate for Brachy over EBRT and Surgery for all groups. Patients are encouraged to look at graphs and determine for themselves.

Serious side effect rates must be considered for any treatment.
Risk Group Definitions

Low Risk
Stage: T₁ or T₂a,b
Gleason Sum ≤ 6
PSA < 10 ng/ml

Intermediate Risk
Stage T₁ or T₁-2 Stage T₁-2
Gleason Score 7 or Gleason 6
PSA < 10 PSA 10-20

High Risk
Stage T₂c or T₃
Gleason score ≥ 8
PSA > 20 ng/mL
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- Prostate Cancer Treatment Research Foundation website: www.pctrf.org