



# Prostate and Renal Cryoablation

## CLINICAL REVIEW GUIDE

The information contained in this booklet is being provided for informational purposes only and does not contain all available published data on cryotherapy.

No specific claims (e.g. treatment of prostate cancer) are being made.

*This Clinical Review Guide is made possible by a grant from Endocare, Inc.*



# INTRODUCTION

As cryosurgery continues to grow as a therapy for cancer ablation, it is important to continue to review the published literature. The International Society of Cryosurgery (ISC) is pleased to present this clinical review guide which focuses on studies with 2-10 year perspectives for prostate cancer and 0.5 - 7 year perspectives for renal cancer.

In order to facilitate quick review, the summaries are presented in tabular format. The data primarily reflect the current version of cryosurgery (argon-based), but some long term follow-up data are included for patients that were treated with the old version of cryosurgery (nitrogen-based).

The ISC would like to thank Endocare, Inc. for its help in sponsoring the development of this clinical review guide.

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# TOTAL GLAND CLINICAL DATA HIGHLIGHTS

- Timeframes up to 10 years<sup>1,2</sup>
- Over 5,000 patients studied<sup>1-7</sup>
- Overall BDFS = 80%-90%<sup>1-7</sup>
  - Lowest efficacy from 2001 study included old technology<sup>7</sup>
- Return to potency > 50% after 4 years<sup>3</sup>
  - Increased using Ellis' rehabilitation approach<sup>3</sup>
- Rectal injury  $\leq 0.5\%$ <sup>1,3,5-7</sup>
- Incontinence < 5% for post-2001 studies<sup>1,3-6</sup>
- Favorably compares to other treatments<sup>7,11,12</sup>

# TOTAL GLAND CLINICAL DATA SUMMARY

Publication	Author	Average Follow-Up (months)	Number of Patients	Timeframe (years)	BDFS	Failure Basis	Rectal Injury	Incontinence	Potency
2008 <i>J Urology</i> <sup>1</sup>	Katz, <i>et. al</i> (COLD Reg)	29.7±25.7	2558	10	89% (L) 84% (M) 80% (H)	ASTRO (3 cons ↑)	0.2%	1.6%	41% (24 mo)
2008 <i>Urology</i> <sup>2</sup>	Cohen, <i>et. al</i>	147±33	370	10	80% (L) 74% (M) 46% (H)	ASTRO II (Nadir + 2)	N/A	N/A	N/A
2007 <i>Urology</i> <sup>3</sup>	Ellis, <i>et. al</i>	20.4±14.7	416	4	84% (L) 82% (M) 69% (H)	ASTRO (3 cons ↑)	0.0%	4.0%	51% (48 mo)
2005 <i>Cancer</i> <sup>4</sup>	Prepelica, <i>et. al</i>	35	65	6	82% (H)	ASTRO (3 cons ↑)	N/A	3.1%	N/A
2002 <i>Urology</i> <sup>5</sup>	Donnelly, <i>et. al</i>	50	76	5	75% (L) 89% (M) 76% (H)	>1.0 ng/mL	0.0%	1.3%	47% (36 mo)
2002 <i>Urology</i> <sup>6</sup>	Bahn, <i>et. al</i>	68	590	7	92% (L) 89% (M) 89% (H)	ASTRO II (3 cons ↑)	<0.1%	4.3%	5% (Unaided)
2001 <i>Urology</i> <sup>7</sup>	Long, <i>et. al</i>	24±16.5	975	5	76% (L) 67% (M) 41% (H)	>1.0 ng/mL	0.5%	7.5%	7% (Unaided)

# SALVAGE CLINICAL DATA HIGHLIGHTS

- Timeframes up to 10 years<sup>9</sup>
- Close to 900 patients studied<sup>8-14</sup>
- Overall BDFS = 40%-69%<sup>8-14</sup>
  - 40% BDFS still had 80% disease-specific survival<sup>9</sup>
- Potency for largest study = 38%<sup>8</sup>
- Rectal injury  $\leq$  2.2%<sup>8,10,14</sup>
- Incontinence for largest study = 6.3%<sup>8</sup>

# SALVAGE CLINICAL DATA SUMMARY

Publication	Author	Average Follow-Up (months)	Number of Patients	Timeframe (years)	BDFS	Failure Basis	Rectal Injury	Incontinence	Potency
2008 <i>J Urology</i> <sup>8</sup>	Pisters, <i>et. al</i> (COLD Reg)	N/A	413	5	59%	ASTRO (3 cons ↑)	0.8%	6.3% (12 mo)	38%
2008 <i>J Urology</i> <sup>9</sup>	Hamoui, <i>et. al</i>	95	110	10	40% (DFS) 80% (DSS)	ASTRO II (Nadir + 2)	N/A	41%	N/A
2008 <i>J Urology</i> <sup>10</sup>	Ismail, <i>et. al</i>	33.5	100	5	73% (L) 45% (M) 11% (H)	ASTRO (3 cons ↑)	1%	13%	14%
2005 <i>Pros Can PD</i> <sup>11</sup>	Donnelly, <i>et. al</i>	N/A	46	2	58%	>1.0 ng/ mL	2.2%	4.3%	85%
2003 <i>Clin Pros Ca</i> <sup>12</sup>	Bahn, <i>et. al</i>	N/A	59	7	69%	>1.0 ng/ mL	N/A	N/A	N/A
2002 <i>J Clin Oncol</i> <sup>13</sup>	Izawa, <i>et. al</i>	57.6	131	5	57% (L) 23% (H)	ASTRO II (Nadir + 2)	N/A	N/A	N/A
2002 <i>Rvw Urology</i> <sup>14</sup>	Katz, <i>et. al</i>	N/A	38	3	65%	Nadir + 0.3 ng/mL	0.0%	7.9%	N/A

# PARTIAL GLAND CLINICAL DATA HIGHLIGHTS

- Timeframes up to 10 years<sup>17</sup>
- Over 500 patients studied<sup>15-19</sup>
- Overall BDFS = 80%-93%<sup>15-19</sup>
- Return to potency > 70% after 1 year<sup>15-19</sup>
  - Ranges as high as 89%<sup>19</sup>
- Rectal injury  $\leq$  0.3%<sup>15-19</sup>
- Incontinence < 4%<sup>15-19</sup>
  - Several studies report no incontinence in cases in which no prior treatment of the prostate had occurred<sup>17-19</sup>

# PARTIAL GLAND CLINICAL DATA SUMMARY

Publication	Author	Average Follow-Up (months)	Number of Patients	Timeframe (years)	BDFS	Failure Basis	Rectal Injury	Incontinence	Potency
2008 <i>J Urology</i> <sup>15</sup>	Ellis, <i>et. al</i> (COLD Reg)	16.3±12.5	341	4	83%	ASTRO (3 cons ↑)	0.3%	1.6% (12 mo) 0% (24 mo)	51% (6 mo) 74% (36 mo)
2007 <i>Urology</i> <sup>16</sup>	Ellis, <i>et. al</i>	15.2±7.4	60	2	80% (1st) 93% (2nd)	ASTRO (3 cons ↑)	0.0%	3.6% (6 mo)	71% (12 mo)
2007 <i>Urology</i> <sup>17</sup>	Onik, <i>et. al</i>	43	55	10	90%	ASTRO (3 cons ↑)	0.0%	0.0%	85%
2007 <i>Urology</i> <sup>18</sup>	Lambert, <i>et. al</i>	28	25	3	88%	ASTRO II (Nadir + 2)	0.0%	0.0%	71%
2006 <i>Endourology</i> <sup>19</sup>	Bahn, <i>et. al</i>	70	31	6	93%	ASTRO (3 cons ↑)	0.0%	0.0%	89%

# LAP RENAL CLINICAL DATA HIGHLIGHTS

- Up to 7 years of follow-up<sup>20</sup>
- Over 500 patients studied in last 2 years<sup>20-26</sup>
- Efficacy = 85%-100%<sup>20-26</sup>
- No significant renal impairment following the procedure<sup>25</sup>
- Efficacy data suggest better outcomes from cryoablation than radiofrequency ablation<sup>22,25</sup>

# LAP RENAL CLINICAL DATA SUMMARY

Publication	Author	Method	Average Follow-Up (months)	Number of Patients	Radiographic Efficacy	Bleeding	Other Complications
2008 <i>J Urology</i> <sup>20</sup>	Aron, <i>et. al</i>	Laparoscopic	83	88	94%	N/A	N/A
2008 <i>J Urology</i> <sup>21</sup>	Finley, <i>et. al</i>	Percutaneous Laparoscopic	10.2 6.2	18 19	95% 96%	11% 21%	5.5% 5.3%
2008 <i>J Urology</i> <sup>22</sup>	Weight, <i>et. al</i>	Laparoscopic	6	139	90%	N/A	N/A
2007 <i>AUA Poster</i> <sup>23</sup>	Landman, <i>et. al</i>	Percutaneous Laparoscopic	16 7	53 35	96% 100%	0% 23%	0% 11.4%
2006 <i>Urology</i> <sup>24</sup>	Davol, <i>et. al</i>	Laparoscopic/ Open	36	40	85%	4%	10.4%
2006 <i>Urology</i> <sup>25</sup>	Hegarty, <i>et. al</i>	Laparoscopic/ Open	35	161	96%	3%	3.7%
2006 <i>Urology</i> <sup>26</sup>	Schwartz, <i>et. al</i>	Laparoscopic/ Open	10	84	96%	1.2%	3.6%

# PERC RENAL CLINICAL DATA HIGHLIGHTS

- Approaching from minimum 1.5 year follow-up up to 5 years<sup>23,27</sup>
- ~ 300 patients studied in last 2 years<sup>21,23,27-31</sup>
- Efficacy  $\geq 89\%$  (range 89-100%)<sup>21,23,27-31</sup>
- Efficacy can be improved to 100% with second cryoablation of persistent disease<sup>30</sup>
- Mean increase of creatinine = 0.1mg/dL (range -0.4 – 2.0)<sup>27</sup>
- Fewer complications compared to laparoscopic renal<sup>21,23</sup>

# PERC RENAL CLINICAL DATA SUMMARY

Publication	Author	Method	Average Follow-Up (months)	Number of Patients	Radiographic Efficacy	Bleeding	Other Complications
2008 <i>J Urology</i> <sup>27</sup>	Atwell, <i>et. al</i>	Percutaneous	13.3	80	96%	2.7%	3.6%
2008 <i>J Urology</i> <sup>21</sup>	Finley, <i>et. al</i>	Percutaneous Laparoscopic	10.2 6.2	18 19	95% 96%	11% 21%	5.5% 5.3%
2008 SIR Podium <sup>28</sup>	Saad, <i>et. al</i>	Percutaneous	6.4	32	94%	6.2%	3.1%
2008 SIR Podium <sup>29</sup>	Auon, <i>et. al</i>	Percutaneous	15.6	65	94%	N/A	4%
2008 SIR Poster <sup>30</sup>	Gibson	Percutaneous	11	27	89%	0%	0%
2007 AUA Poster <sup>23</sup>	Landman, <i>et. al</i>	Percutaneous Laparoscopic	16 7	53 35	96% 100%	0% 23%	0% 11.4%
2006 <i>J Urology</i> <sup>31</sup>	Permpong- kosol, <i>et. al</i>	Percutaneous	12.3	21	90%	9.5%	14.3%

# GLOSSARY

- ASTRO criteria for biochemical failure
  - 3 consecutive increases in PSA
- ASTRO II (Phoenix) criteria for biochemical failure
  - PSA Nadir + 2 ng/mL
- BDFS
  - Biochemical Disease-Free Survival
- DSS
  - Disease-Specific Survival
- L, M, H
  - Low Risk Patients, Moderate Risk Patients, High Risk Patients
- Lap Renal
  - Laparoscopic Renal Cryoablation
- Nadir
  - Lowest post-treatment PSA level
- Perc Renal
  - Percutaneous Renal Cryoablation
- Radiographic efficacy
  - No signs of tumor with contrast-enhanced CT or MRI

# AUTHORS

- Aron M (Cleveland Clinic)  
Atwell TD (Mayo Clinic, Rochester, MN)  
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# REFERENCES

- 1 Katz AE, Jones JS, Ellis D, Donnelly B, Pisters LL, Dineen M, Scionti S, Lugnani F, Jackson DM: Primary Prostate Cryoablation: Updated Results from 2558 Patients Tracked with the COLD Registry. *J Urology* 2008; 179(4 Supplement): 395-396 Abstract 1150.
- 2 Cohen JK, Miller RJ Jr, Ahmed S, Lotz MJ, Baust J: Ten-Year Biochemical Disease Control for Patients with Prostate Cancer Treated with Cryosurgery as Primary Therapy. *Urology* 2008; 71(3): 515-518.
- 3 Ellis DS, Manny TB Jr, Rewcastle JC: Cryoablation as Primary Treatment for Localized Prostate Cancer Followed by Penile Rehabilitation. *Urology* 2007; 69(2): 306-310.
- 4 Prepelica KL, Okeke Z, Murphy A, Katz AE: Cryosurgical Ablation of the Prostate: High Risk Patient Outcomes. *Cancer* 2005; 103(8): 1625-1630.
- 5 Donnelly BJ, Saliken JC, Ernst DS, Ali-Ridha N, Brasher PMA, Robinson JW, Rewcastle JC: Prospective Trial of Cryosurgical Ablation of the Prostate: Five-Year Results. *Urology* 2002; 60(4): 645-649
- 6 Bahn DK, Lee F, Badalament R, Kumar A, Greski J, Chernick M: Targeted Cryoablation of the Prostate: 7-Year Outcomes in the the Primary Treatment of Prostate Cancer. *Urology* 2002; 60(Supplement 2A): 3-11.
- 7 Long JP, Bahn DK, Lee F, Shinohara K, Chinn DO, Macaluso JN Jr: Five-Year Retrospective, Multi-Institutional Pooled Analysis of Cancer-Related Outcomes After Cryosurgical Ablation of the Prostate. *Urology* 2001; 57(3): 518-523.
- 8 Pisters LL, Jones JS, Ellis D, Donnelly B, Katz AE, Dineen M, Scionti S, Lugnani F, Jackson DM: Salvage Prostate Cryoablation for Prostate Cancer: Updated Results and Longer Follow-Up Based on the COLD Registry. *J Urology* 2008; 179(4 Supplement, AUA Abstracts): 399, Abstract 1159.
- 9 Hamoui O, Wiegard L, Pisters LL, Bossier J, Hernandez M, Spiess PE: Ten-Year Treatment Outcomes of Salvage Cryotherapy for Locally Recurrent Prostate Cancer. *J Urology* 2008; 179(4 Supplement, AUA Abstracts): 253, Abstract 723.
- 10 Ismail M, Hicks M, Ahmed S, Davies J: Salvage Cryotherapy for Recurrent Prostate Cancer After Radiation Failure. The UK Experience. *J Urology* 2008; 179(4 Supplement, AUA Abstracts): 184, Abstract 525.
- 11 Donnelly BJ, Saliken JC, Ernst DS, Weber B, Robinson JW, Brasher PM, Rose M, Rewcastle JC: Role of Transrectal Ultrasound Guided Salvage Cryosurgery for Recurrent Prostate Carcinoma After Radiotherapy. *Prostate Cancer Prostatic Dis* 2005; 8(3): 235-242.
- 12 Bahn DK, Lee F, Silverman P, Bahn E, Badalament R, Kumar A, Greski J, Rewcastle JC: Salvage Cryosurgery for Recurrent Prostate Cancer After Radiation Therapy: A Seven-Year Follow-Up. *Clinical Prostate Cancer* 2003; 8(3): 111-114.
- 13 Izawa JI, Madsen LT, Scott SM, Tran JP, McGuire EJ, Von Eschenbach AC, Pisters LL: Salvage Cryotherapy for Recurrent Prostate Cancer After Radiotherapy: Variables Affecting Patient Outcome. *J Clinical Oncology* 2002; 20(11): 2664-2671.
- 14 Katz AE, Ghafar MA: Selection of Salvage Cryotherapy Patients. *Reviews in Urology* 2002; 4(Supplement 2): S18-S23.
- 15 Ellis DS, Jones JS, Pisters LL, Katz AE, Scionti S, Lugnani F, Jackson DM, Dineen M: Subtotal/Partial Gland Prostate Cryoablation: Results of 341 Patients from Multiple Center Tracked with the COLD Registry. *J Urology* 2008; 179(4 Supplement, AUA Abstracts): 397, Abstract 1154.
- 16 Ellis DS, Manny TB Jr, Rewcastle JC: Focal Cryosurgery Followed by Penile Rehabilitation as Primary Treatment for Localized Prostate Cancer: Initial Results. *Urology* 2007; 70(Supplement 6A): 9-15.

## REFERENCES (CONT'D)

- 17 Onik G, Vaughan D, Lotenfoe R, Dineen M, Brady J: "Male Lumpectomy": Focal Therapy for Prostate Cancer Using Cryoablation. *Urology* 2007; 70 (Supplement 6A): 16-21.
- 18 Lambert EH, Bolte K, Masson P, Katz AE: Focal Cryosurgery: Encouraging Health Outcomes for Unifocal Prostate Cancer. *Urology* 2007; 69(6): 1117-1120.
- 19 Bahn DK, Silverman P, Lee F, Badalament R, Bahn ED, Rewcastle JC: Focal Prostate Cryoablation: Initial Results Show Cancer Control and Potency Preservation. *J Endourology* 2006; 20(9): 688-692.
- 20 Aron M, Kazumi K, Habar GP, Desai MM, Canes D, Kauok JH, Gill IS: Laparoscopic Renal Cryoablation: Long-Term Oncologic Outcomes with Minimal 5-Year Follow-Up. *J Urology* 2008; 179(4 Supplement, AUA Annual Meeting Abstracts):209-210 Abstract 596.
- 21 Finley DS, Beck S, Chu W, Box GN, Vajgrt D, McDougall E, Clayman RV: Percutaneous vs. Laparoscopic Cryoablation of Small Renal Masses: Percutaneous is Better! *J Urology* 2008; 179(4 Supplement, AUA Annual Meeting Abstracts): 327-328 Abstract 951.
- 22 Weight CJ, Kaouk JH, Hegarty NJ, Remer EM, O'Malley CM, Lane BR, Gill IS, Novick AC: Correlation of Radiographic Imaging and Histopathology Following Cryoablation and Radio Frequency Ablation for Renal Tumors. *J Urology* 2008; 179: 1277-1283.
- 23 Landman J, Lehman DS, Hrubby GW, Phillips CK, Shingleton B: Efficacy and Complications of Cryoablation for Renal Masses: Percutaneous vs. Laparoscopic Ablation. American Urological Association 2007 Annual Meeting Poster, Abstract 1299.
- 24 Davol PE, Fulmer BR, Rukstalis DB: Long-Term Results of Cryoablation for Renal Cancer and Complex Renal Masses. *Urology* 2006; 68(Supplement 1A): 2-6.
- 25 Hegarty NJ, Gill IS, Desai MM, Remer EM, O'Malley CM, Kaouk JH: Probe-Ablative Nephron-Sparing Surgery: Cryoablation vs. Radiofrequency Ablation. *Urology* 2006; 68(Supplement 1A): 7-13.
- 26 Schwartz BF, Rewcastle JC, Powell T, Whelen C, Manny T Jr, Vestal JC: Cryoablation of Small Peripheral Renal Masses: A Retrospective Analysis. *Urology* 2006; 68(Supplement 1A): 14-18.
- 27 Atwell TD, Farrell MA, Leibovich BC, Callstrom MR, Chow GK, Blute ML, Charboneau JW: Percutaneous Renal Cryoablation: Experience Treating 115 Tumors. *J Urology* 2008; 179: 2136-2141.
- 28 Saad NEA, Bhayani SB, Figenshau RS, Brandes SB, Venkatesh R, Glaiberman CB, Brown DB: CT-Guided Percutaneous Cryoablation of Unresectable Renal Tumors: Initial Outcomes. Society of Interventional Radiology 2008 Annual Meeting Podium Presentation, Abstract 103.
- 29 Auon HD, Littrup PJ, Cyriac D, Jallad B, Adam B: Percutaneous CT-Guided Cryotherapy of Renal Masses: Long-Term Follow-Up and Morbidity. Society of Interventional Radiology 2008 Annual Meeting Podium Presentation, Abstract 101.
- 30 Gibson MA: CT Guided Percutaneous Cryoablation of Renal Tumors. Society of Interventional Radiology 2008 Annual Meeting Poster, Abstract 329.
- 31 Permpongkosol S, Link RE, Kavoussi LR, Solomon SB: Percutaneous Computerized Tomography Guided Cryoablation for Localized Renal Cell Carcinoma: Factors Influencing Success. *J Urology* 2006; 176: 1963-1968.

# ISC OVERVIEW

The International Society of Cryosurgery (ISC) was founded in 1974 to promote continuing medical education in the field of cryosurgery from an experimental and clinical point of view. The overall aim of the ISC is to continue to develop and expand membership of the society.

The headquarters of the Society are based in Casa di Cura Salas, Trieste, Italy. The Society corresponds with approximately 700 members worldwide. Membership is open to anyone who has a professional interest in research and education in the fields of cryosurgery, cryobiology, cryopreservation and other disciplines related to the use of low temperature in medicine.

A major world congress (autumn) is held in different continents every 2 years with a wide-ranging scientific program covering all areas of cryosurgery and cryobiology. The Society also recognizes significant scientific achievements by younger researchers via special awards.

Apart from the main meeting, the ISC organizes regional activities and meetings in each continent (Europe, Asia and Far East, Americas, Australasia, Africa and Middle East). These meetings are organized by members of the ISC Board who are based on the respective continent. These activities can be viewed at [www.societyofcryosurgery.org](http://www.societyofcryosurgery.org).

The Society produces a biannual publication Cryosurgery which is available at [www.societyofcryosurgery.org](http://www.societyofcryosurgery.org) and covers all aspects of cryosurgery and cryobiology.

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