High volume, fellowship-trained single surgeon robotic-assisted laparoscopic radical prostatectomy experience: 220 cases in 2 years

Robert I. Carey MD PhD, Tariq Hakky, MS

Urology Treatment Center, Florida State University College of Medicine, Sarasota, FL, USA

INTRODUCTION & OBJECTIVE

Robotic-assisted laparoscopic radical prostatectomy (RALRP) is a complex, technically demanding operation where surgical outcomes are likely to depend upon the experience of surgeon and hospital. We report the high volume experience of a single surgeon fellowship-trained in endourology and robotic surgery leading a novice hospital through the RALRP learning curve.

METHODS

A total of 220 patients underwent RALRP over a period of 23 months. Prospective data collection included Expanded Prostate Cancer Index Composite (EPIC), PSA, Gleason grade, and clinical stage. Operative parameters were estimated blood loss, length of surgery, and complications. Post-operative parameters included length of hospital stay, pathology, return to continence, catheter time and PSA.

RESULTS

The mean patient age was 63.4 years (46-79), mean BMI 28.9 (20.9 – 43.8), mean prostate size 55.5 (23.1-131), mean preoperative PSA 6.0. The mean follow-up is 12.0 months. Pathology stages were T2a-T2b (44, 20%), T2c (151, 68.7%), T3a (15, 6.8%), T3b (7, 3.2%), and T4 (3, 1.4%). Gleason scores were 5 (2, 0.9%), 6 (118, 53.6%), 7 (83, 37.7%), 8 (8, 8.6%), 9 (9, 4.1%). Bilateral pelvic lymph node dissections were performed in 131 (60%) of patients with positivity identified in 6 (2.7%) patients. The length of surgery improved from 213 min for cases 1-50 to 117 min for cases 150 – 220. 92% of patients went home on post-operative day 1. The estimated blood loss for cases 1 – 50 was 170 mL, and for cases 150 – 220 was < 100 mL. The overall positive margin rates for this study were 13.2%, although this fell to 5.7% for cases 150 – 220. No positive margins were obtained for T2b or lower disease. Early continence rates (no pads within one month) was 63% with only 2% have significant continence issues (>1 pad per day) at 12 months. No artificial urinary sphincters have been indicated. There were no (0%) intra-operative transfusions and only 2 (0.9%) post-operative transfusions. Adjuvant radiation therapy for biochemical recurrence occurred has been undertaken in 2.3% (n = 5) patients. Adjuvant androgen deprivation has been started in two patients with lymph node positive disease, one of which has bony metastasis at t = 20 months.

POTENCY

Return to spontaneous erectile function satisfactory for sexual intercourse is observed in 80% of patients less than age 70 years who had a nerve sparing operation and who have a willing sexual partner.

Keys to the return of early potency involve early penile rehabilitation:

1. Vacuum Erection Device Therapy with or without PDE-V inhibitor therapy on at least a three times per week schedule.
2. Intracavernosal injection therapy from a compounding pharmacy with a set twice or three times weekly injection schedule. Patient compliance involves beginning therapy with a low doses escalating to effective dose over time and avoidance of priapism.
3. Monotherapy with daily or intermittent PDE-V inhibitor therapy.

Figure 1. Robotic surgery is a team effort

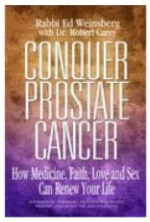
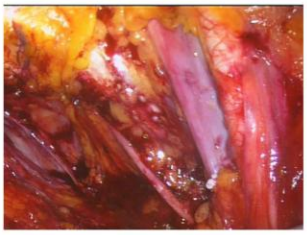


Figure 1. Team members for the Sarasota Memorial Hospital da Vinci robotic surgery center pose with Dr. Carey (seated far right) and with author Rabbi Ed Weinsberg after the publication of "Conquer Prostate Cancer: How Medicine, Faith, Love, and Sex Can Renew Your Life."



Above left. Dissection of the apex to provide maximal urethral length for continence. Note preservation of aberrent pudendal artery on left.
Above right. Perform quality lymph node dissection, exposing obturator nerve and iliac vessels. Address zones above and below the nerve and extend to the bifurcation of the iliac vessels in high risk cases.
Left. Attention to bladder neck, especially with prostates larger than 100 cc or with large median lobes. Median lobe, vasa, and seminal vessicles are excised en bloc with prostate specimen

TECHNIQUES FOR HIGH RATES OF EARLY CONTINENCE

1. Placement of a suspension stitch attaching the anterior urethral tissue to the pubic arch at the time of dorsal vein ligation.
2. Posterior reconstruction approximating the cut edge of Denonvillier's fascia and the base of the bladder to the rhabdosphincter.
3. Routine apical dissection to achieve maximal urethral length.
4. Use of athermal technique for the dissection of the urethra, pedicle ligation, rhabdosphincter and release of neurovascular bundles.
5. Bladder neck tubularization for high-risk patients with hostile bladders arising from prostates > 100 cc or large intravesical adenomas.
6. Use of fine suture (3.0 monocryl) and needles (RB1) to effect mucosa to mucosa watertight closure.

CONCLUSION

- **Minimal blood loss (<100 mL)** and **low patient pain scores** were achieved early**. 97% of patient released within 48 hours.**
- Operative times and positive surgical margins improved markedly between the first fifty cases and cases 150-220, at which time the **positive surgical margin rate = 5.7% and OR time = 117 min.**
- **Complications are rare**. **No intra- or peri-operative deaths**. DVT in 3 cases (1.3%). Prolonged urine leak, drain for more than 48 hours, in 3 cases (1.3%). One rectal injury in a pT4, Gleason 5+4 = 9 cancer who had undergone a previous TURP.
- **No bladder neck contractures (0%) have occurred**.
- **Excellent continence (no pads, no leakage) within 3 months for 95%. No artificial urinary sphincters, slings, or bulking agent injections have been performed.**
- **Blood transfusion rates less than 1%.**
- **Rate of PSA recurrence and adjuvant therapy is low** (<3%) despite relative high risk patient population (T2c or higher in >80%).

CONTACT

Robert I. Carey, MD PhD
Urology Treatment Center
Florida State University of College of Medicine
1921 Waldemere Street, Suite 310
Sarasota, FL 34238
941-917-8488, rcareyc@juno.com**, www.conquerprostatecancer.com**

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