Robotic Salvage Prostatectomy Following Prostate Brachytherapy or Radiation Therapy

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Title Slide
Biochemical recurrence after radiotherapy or permanent brachytherapy for localized prostate cancer occurs in approximately 40-50% of treated patients. Uncontrolled local disease is a significant risk factor for metastatic progression, cancer specific mortality, and present considerable morbidity to patients who failed radiation.
Local salvage therapy represents the only approach with curative potential in this clinical situation; however, in the United States nearly 90% of these men will receive systemic androgen ablation with fewer than 2% of patients treated with salvage radical retropubic prostatectomy.

(Slide 2) Historically salvage RP has been associated with major complication rates of 33-50%, 15% risk for rectal injury and incontinence rates of 58-65% following the procedure.

(Slide 3) However, in contemporary salvage RP series, expert surgeons reported improvement in the complication rates. Nonetheless, salvage RP remains a technically demanding procedure and is still associated with higher than normal complications rates when compared to standard RP series. (back to Dr. Kaouk)

These improved results led us to study if there is a role for salvage robotic surgery in the management of locally recurrent prostate cancer after radiation therapy. Can the advantages of robotic surgery improve the morbidity profile associated with a salvage RP?

To assess the feasibility of performing robotic surgery on previously irradiated prostates; our initial two patients underwent a robotic cystoprostatectomy for treatment of bladder cancer who also had a previous history of brachytherapy for prostate cancer. Subsequently four consecutive patients underwent a salvage prostatectomy following permanent interstitial brachytherapy.

(Slide 4) Selection criteria for salvage robotic radical prostatectomy include biochemical recurrence in patients with life expectancy greater than 10 years, Biopsy proven recurrence of the prostate cancer, clinically localized disease and a negative metastatic evaluation for systemic disease.

(back to Dr. Kaouk) Our technique of Robotic radical prostatectomy was applied during salvage prostatectomy with minor modifications.

Here is an animation presenting our technique
Start animation video at 00:18 and play to end. Dr. Kaouk narrates this section.

(Dr. Kaouk on camera) Technical challenges encountered during robotic salvage prostatectomy stem from adhesions and obliterated facial plans caused by previous radiation.

(Slide 5) For example, incision of Endopelvic fascia shown here is usually simple to perform in primary surgery.

(Slide 6) However, after radiation Note pale color of levator muscle fibers. Surgical planes may not be easily identified due to radiation effect and extraprostatic placement of brachytherapy seeds. As such, Surgical dissection should be towards identified pelvic muscles away from prostate capsule.
In another critical step, development of the plan between the prostate and the rectum and opening of the denonviel fascia as shown here (Slide 7) may be challenging.

Here (Slide 8) is an intraoperative image during a robotic salvage prostatectomy. Note that the rectum is tented up significantly with prostate retraction due to significant adhesions at the prostate-rectal plane. Lack of prerectal fat warrants careful dissection to avoid rectal injury. 3-D magnification in a bloodless field provided with robotic surgery improve surgical precision.

Apical dissection is critical to achieve negative margins and preserve continence. (Slide 9) Again, 3d magnified image in a relatively bloodless field is critical for this step deep in the pelvis.

(Slide 10). In this intraoperative image note A urethral metal dilator is inserted in the urethra to aid identifying the apex of the prostate and avoid surgical margins while preserving the maximum possible length of the urethral stump. The urethra is incised using cold scissors.

(back to Dr. Kaouk) Two Robotic cytoprostatectomies and four salvage radical prostatectomies were successfully completed. Adenocarcinoma of the prostate was identified in all salvage prostatectomy specimens. No intra-operative or immediate post operative complications were noted resulting in a mean length of stay of 48 hours in all but 1 patient who had arrhythmias and was discharged 5 days post surgery.

(Slide 11) Mean operative time was 125 minutes with a mean blood loss of 120 cc (range: 50-250 cc). A standard bilateral obturator pelvic lymph node dissection was performed in all patients revealing node negative disease.

(Slide 12) Two of the three patients who had pathological extra-prostatic extension (EPE) also had seminal vesicle (SV) involvement. We had 2 positive margins. Another Two patients who had negative margins, including one who had both EPE and SV involvement, had their surgery later in the series. No patient was transfused nor had rectal injuries and mean Foley catheter drainage averaged 2 WEEKS.

(Slide 13) Within 1 month followup, 3 patients had good urine control with NO pads or only 1 pad used for security while 1 patient continue to use 2 to 3 pads per day 3 weeks after surgery with noted improvement.

(Slide 14) PSA post op was undetectable after a mean followup of 5 months (range 1-9 months) in all but 1 patient despite having negative margin but documented EPE and SV positive involvement.

(back to Dr. Kaouk) We acknowledge that this is a small series however Urine control results and low complication rates are very encouraging. With continued experience in robotic radical prostatectomy, robotic salvage prostatectomy may provide equal if not superior oncological and functional results to that of open salvage RP.