Video Article

ROBOTIC RADICAL PROSTATECTOMY FOLLOWING TURP AND MULTIPLE PROSTATE BIOPSIES: SURGICAL TIPS AND TRICKS

Abdullah Erdem Canda*
Yildirim Beyazit University, School of Medicine, Ankara Ataturk Training & Research Hospital, Department of Urology, Ankara, Turkey

Dr. Canda is a board member of European Association of Urology (EAU) Robotic Urology Section (ERUS)

ABSTRACT

It is expected that Robot-assisted radical prostatectomy (RARP) following multiple prostate biopsies and transurethral resection of the prostate (TURP) could be challenging for the console surgeon due to the presence of possible adhesions between prostate base and rectum, bladder neck and prostate. Tissue planes might be distorted and anatomy might also be changed. In this video-article surgical tips and tricks related with RARP following TURP and multiple prostate biopsies are presented.

Key Words: Robotic radical prostatectomy, TURP, Prostate biopsies, Tips, Tricks

Video of this article can be accessed at www.robotictimes.org

Radical prostatectomy provides long-term cancer control in patients with localized prostate cancer (1). Robot-assisted radical prostatectomy (RARP) has increasingly become a preferred treatment of choice both by patients and urologists since its introduction in 2001 (2). We previously published outcomes of our experience in performing RARP (3,4). Herein, surgical technique and tips and tricks related with RARP following TURP and multiple prostate biopsies are explained.

SUMMARY OF THE PATIENT WHO UNDERWENT RARP

A 72-year old patient admitted to the outpatient urology clinic with obstructive lower urinary tract symptoms and with a serum PSA of 26 ng/mL. A transrectal ultrasound guided prostate biopsy (TRUS-Bx) was performed that revealed benign prostate hyperplasia (BPH). A transurethral resection of the prostate was performed that revealed BPH and atypical small acinar proliferation (ASAP). Three months later patient underwent another TRUS-Bx (27 cores) that revealed prostate adenocarcinoma, Gleason score 3+3 positive in 1 core on the left base. Bone scan and abdominal computerized tomography confirmed non-metastatic disease. Patient requested surgical management and was referred for robotic surgery.

PATIENT POSITIONING

A transperitoneal approach was used patient in the steep (30°) Trendelenburg position (Figure 1).

ABDOMINAL PORT PLACEMENT

A total of 5 abdominal ports were placed, four 8 mm sized robotic trocars for robotic instruments and for 3D-HD camera and a 12 mm sized trocar for bedside assistance. Da Vinci Xi Surgical System (Intuitive Surgical, Sunnyvale, CA, USA) was used (Figure 2).
Maryland bipolar forceps was used on the left side of the umbilicus. Whereas, monopolar curved scissors (Hot Shears™) and Prograsp™ forceps were used on the right side of the umbilicus. In addition, a large needle driver was also used on the right side of the umbilicus. A 0° lens was used in most of the procedure.

It is expected that RARP following multiple prostate biopsies and TURP could be challenging for the console surgeon due to the presence of possible adhesions between prostate base and rectum, bladder neck and prostate. Tissue planes might be distorted and anatomy might also be changed.

**POSTERIOR DISSECTION: PRESENCE OF ADHESIONS BETWEEN PROSTATE AND RECTUM**

In our technique, following the dissection of seminal vesicles (SVs) and vas deferences (VDs), Denonvillier’s fascia was opened and prostate was dissected off the rectum. At this area there might be adhesions between rectum and prostate that need to be dissected and released with Monopolar curved scissors without applying energy (Figure 3). In addition, the route of dissection should be from rectum to prostate base rather than from prostate base to rectum in order to prevent any accidental rectal injury. In addition, intra-abdominal pressure could be temporarily increased up to 18 mmHg during this dissection that could be helpful in preventing unnecessary bleeding that could interfere with vision as this area has a very limited space for the console surgeon. In order to have a better vision and to better see the details of the anatomy the author suggests using close up and x4 magnified vision during this dissection that is an advantage of the Da Vinci Xi Surgical System.

**REMOVAL OF PERIPROSTATIC FAT TISSUE**

Removal of periprostatic fat tissue leads to a better exposure of the bladder neck and the junction between prostate and bladder neck. Therefore, the author suggest that the surgeon spends some time during surgery in order to excise and remove all the periprostatic fat which is one of the crucial steps of bladder neck preservation (Figure 4). When the periprostatic fat tissue is excised, the surgeon better identifies the anatomical structures.
OPENING ENDOPELVIC FASCIA: PRESENCE OF ADHESIONS

Due to the previous TURP history, adhesions and fibrotic changes could be detected during opening endopelvic fascia (Figure 5). This might cause distortion of the tissue planes between the lateral side of the prostate and levator muscle fibers. Cautery application might further cause obscuring the anatomy that should also be kept in mind. Sharp dissection is helpful and levator muscle fibers could be pushed back from the prostate to the lateral pelvic side wall.

APEX DISSECTION: ADHESIONS AROUND APEX WITH DISTORTED ANATOMY

Due to the previous TURP, adhesions around apex could be present and these adhesions should be released with Monopolar curved scissors in order to nicely present the apical anatomy. Once again, the author suggests using close up and x4 magnified vision in order to better identify anatomical details that could be helpful for a correct dissection (Figure 6). Dissection of the apex should be performed by taking care of the abnormal apex anatomy. Adhesions and fibrotic changes around apex are dissected carefully without energy application and with minimal traction.

OPENING BLADDER NECK: PRESENCE OF A TURP DEFECT

Bladder is retracted posteriorly with 4th-robotic arm holding the Prograsp forceps and this manoeuvre shows the intersection point of bladder neck and the prostate (Figure 7).
Due to the previous TURP, it is expected that anatomy at the level of the intersection point of bladder neck and prostate had been changed. Therefore, it is important to dissect the tissue planes carefully and superficially without using much cautery. Cautery application might further obscure the changed anatomy. Following opening the bladder neck a TURP defect in the prostate could be seen (Figure 8). In addition, it is also important to identify the ureteral orifices in the bladder (Figure 8).

Urethral catheter is introduced and 4th-arm retracts the urethral catheter up in order to lift up the prostate to present the junction between prostate and bladder neck at 6 o'clock position (Figure 9). However, due to the presence of a large TURP defect, this maneuver was not effective in this case. Therefore, a 3/0 vicryl suture was applied on the 6 o'clock position on the prostate in order to lift the prostate up that nicely demonstrated the junction (Figure 10). During dissection the junction between prostate and bladder neck, fibrosis and adhesions in this area could be identified. Therefore, careful dissection should be performed and too much cautery application should be avoided in order to prevent further distorting the tissue planes.

**PROSTATIC PEDICLE DISSECTION: PRESENCE OF ADHESIONS BETWEEN PROSTATE AND RECTUM**

During prostatic pedicle dissection, severe adhesions due to previous multiple prostate biopsies and TURP surgery might be identified and Denonvillier’s fascia might be thickened (Figure 11). Adhesions should be released without applying any cautery in order not to cause rectal injury and are cut with Monopolar curved scissors.

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**Figure 8:** TURP defect in the prostate (arrow) and ureteral orifices in the bladder (arrowheads).

**Figure 9:** 4th-arm retracts the urethral catheter up.

**Figure 10:** A vicryl suture lifts the prostate up (arrow).

**Figure 11:** Adhesions and thickened Denonvillier’s fascia during prostatic pedicle dissection.
TAKE HOME MESSAGES

1. **Adhesions between prostate and rectum might be present during posterior dissection:** Monopolar curved scissors without applying energy is suggested and route of dissection should be from rectum to prostate base to prevent accidental rectal injury.

2. **Using close up and x4 magnified vision:** Helpful to maintain a better vision with Da Vinci Xi Surgical System.

3. **Removal of periprostatic fat tissue:** Leads to a better exposure of the bladder neck and the junction between prostate and bladder neck.

4. **Opening endopelvic fascia:** Due to the previous TURP history, adhesions and fibrotic changes could be detected, cautery application might further obscure anatomy and sharp dissection is helpful. Levator musche fibers could be pushed laterally.

5. **Apex dissection:** Adhesions around apex should be released with Monopolar curved scissors.

6. **Opening bladder neck:** Anatomy might be changed and it is also important to identify the ureteral orifices. A vicryl suture applied on the 6 o'clock position on the prostate in order to lift the prostate up is helpful to nicely demonstrate the junction.

7. **Prostatic pedicle dissection:** Severe adhesions might be identified and Denonvillier’s fascia might be thickened. Adhesions should be released without applying any cautery with Monopolar curved scissors.

REFERENCES


