ABSTRACT

Neurovascular bundle (NVB) sparing during robotic radical prostatectomy (RARP) involves various steps. No cautery is used during dissecting tips of the seminal vesicles (SVs) to prevent thermal injury to the NVBs. In order to control bleeding in this area endoclips are applied. Following opening Denovilliers’ fascia, one layer of the Denovillier’s fascia could be left in place over the rectum and dissection could be extended up to prostatic apex. This might spare more nerves in the midline over the rectum and leave them untouched. In high anterior release NVB sparing, for oncological reasons, the author prefers to perform an interfascial NVB sparing that leaves a layer of the fascia intact on the prostate. The author suggests performing a slow dissection rather than a fast dissection that could lead to tearing of the fascia and also inadvertent entry into the prostate that could lead to capsular incision and positive surgical margins. Prostatic pedicles could be dissected and cut close to the prostatic capsule following endoclip application for a maximum NVB sparing. It is important not to apply too much traction in order not to cause neuropraxia during prostatic pedicle dissection. During NVB sparing while prostatic apical dissection, the console surgeon carefully pushes the preserved NVBs to the lateral sides with little traction application in order to prevent NVBs damage.

Key Words: Neurovascular bundle, Sparing, Robotic surgery, Prostate cancer

PATIENT POSITIONING

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

ABDOMINAL PORT PLACEMENT

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

Correspondence Address

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

Phone: +90 506 763 54 66        E-mail: erdemcanda@yahoo.com

Received : 10 December 2015
Accepted : 26 December 2015
ANATOMY OF PELVIC PLEXUS AND NVBS

Pelvic plexus and NVBs run on the either side of the pelvis with close proximity to the prostate (Figures 3 and 4).

NVB SPARING DURING DISSECTING SEMINAL VESICLES

The procedure is started by making an incision on the anterior peritoneal covering of the Douglas pouch, approximately 1 cm proximal to its reflection on the rectum. Thereafter, vasa deferentia (VD) and seminal vesicles (SV) are identified and dissected. No cautery is used during dissecting tips of the SVs to prevent thermal injury to the NVBs. In order to control bleeding Hem-o-lok® polymer locking endoclips (Teleflex®) are applied (Figure 5).

OPENING DENONVILLIERS’ FASCIA AND NVB SPARING:

By using monopolar curved scissors, Denonvilliers’ fascia is opened and pararectal fat tissue is identified (Figure 6). Incision is extended on both sides (Figure 7). At this stage shifting to 30° up lens would lead a better exposure of this plane between rectum and prostate. In addition, holding one layer of the Denonvillier’s fascia with the prograsp forceps and lifting the prostate up would lead to a much more better exposure (Figure 8). For a better NVB sparing, one layer of the Denonvillier’s fascia could be left in place over the rectum and dissection could be extended up to prostatic apex (Figure 9). This might spare more nerves in the midline over the rectum and leave them untouched. One layer of the Denonvillier’s could be left on the prostate for oncological reasons.

HIGH ANTERIOR RELEASE NVB SPARING

Prostatic fascias overlying the prostate are demonstrated in Figure 4. It is not always possible to differentiate all fascial layers easily on the prostate. As an example, during the presence of a large prostate, it might be difficult to go between the fascial planes on the prostate. For oncological reasons, the author
prefers to perform an interfascial NVB sparing that means leaving a layer of the fascia intact on the prostate (Figure 10). High-anterior release NVB sparing is initially started by incising the fascia on the prostate on the anterior side close to the bladder (Figure 10). Then dissection is deepened down and minimal traction is applied on the fascia in order to prevent tearing and NVB damage (Figures 10-13). Dissection is then extended up to the apex (Figure 14). The bedside assistant surgeon helps the console surgeon by aspirating blood that could interfere with dissection as this type of dissection might lead to some bleeding that could blur the vision (Figure 13). The author suggests performing a slow dissection rather than a fast one as fast dissection could lead to tearing of the fascia and also inadvertent entry into the prostate that could lead to capsular incision and positive surgical margins.

**NVB SPARING DURING PROSTATIC PEDICLE DISSECTION**

Prostatic pedicles and NVBs are closely related therefore, particularly in patients with low risk disease and a low volume disease due to preoperative prostatic biopsy management, multiparametric magnetic resonance imaging (MRI) findings and digital rectal examination (DRE), prostatic pedicles could be dissected and cut close to the prostatic capsule following
Figure 7: Incision is extended on both sides.

Figure 8: Holding one layer of the Denonvillier’s fascia with the prograsp forceps and lifting the prostate up.

Figure 9: Dissecting up to the apex over the rectum.

Figure 10: Interfascial high-anterior release NVB sparing.

Figure 11: Interfascial high-anterior release NVB sparing.

Figure 12: Interfascial high-anterior release NVB sparing.
endoclip application for a maximum NVB sparing. It is important not to apply too much traction in order not to cause neuropraxia (Figure 15).

**NVB SPARING DURING PROSTATIC APEX DISSECTION**

NVBs run very close to the prostatic apex and the urethra therefore, during prostatic apical dissection it is easy to damage the preserved NVBs. During this step, in order to prevent NVBs damage, the console surgeon carefully pushes the preserved NVBs to the lateral sides with little traction application. Any bleeding during dissection might blur the vision and might lead to accidental NVB injury. Therefore, assistant surgeon should be actively aspirating bleeding if it occurs and clear the surgical field. Lastly, quick dissection might also cause inadvertent NVB damage therefore, meticulous and careful dissection is important (Figure 16).

**TAKE HOME MESSAGES**

1. No cautery is used during dissecting tips of the SVs to prevent thermal injury to the NVBs. In order to control bleeding endoclips are applied.

2. For a better NVB sparing, one layer of the Denonvillier’s fascia could be left in place over the rectum and dissection could be extended up to prostatic apex following opening Denonvilliers’ fascia. This might spare more nerves in the midline over the rectum and leave them untouched.
3. In high anterior release NVB sparing, for oncological reasons, the author prefers to perform an interfascial NVB sparing that means leaving a layer of the fascia intact on the prostate. The author suggests performing a slow dissection rather than a fast dissection that could lead to tearing of the fascia and also inadvertent entry into the prostate that could lead to capsular incision and positive surgical margins.

4. Prostatic pedicles could be dissected and cut close to the prostatic capsule following endoclip application for a maximum NVB sparing. It is important not to apply too much traction in order not to cause neuropraxia during prostatic pedicle dissection.

5. During NVB sparing while prostatic apical dissection, the console surgeon carefully pushes the preserved NVBs to the lateral sides with little traction application in order to prevent NVBs damage.

REFERENCES
