

## 16 Radical Retropubic Nerve Sparing Prostatectomy

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The neurovascular bundle contains nervi cavernosi, lymphatic vessels, arterial branches from prostatic arteries, nerve fibers from the pelvic plexus, and the deep dorsal penile vein. It is covered by a layer of the parietal plane of the pelvic fascia. The striated rhabdosphincter in the pelvic floor is innervated from branches from the pudendal nerve. This nerve runs underneath the levator muscle on the internal obturator muscle in a separate canal (Alcock's canal) and traverses the pelvic floor to reach the dorsal side of the penis.

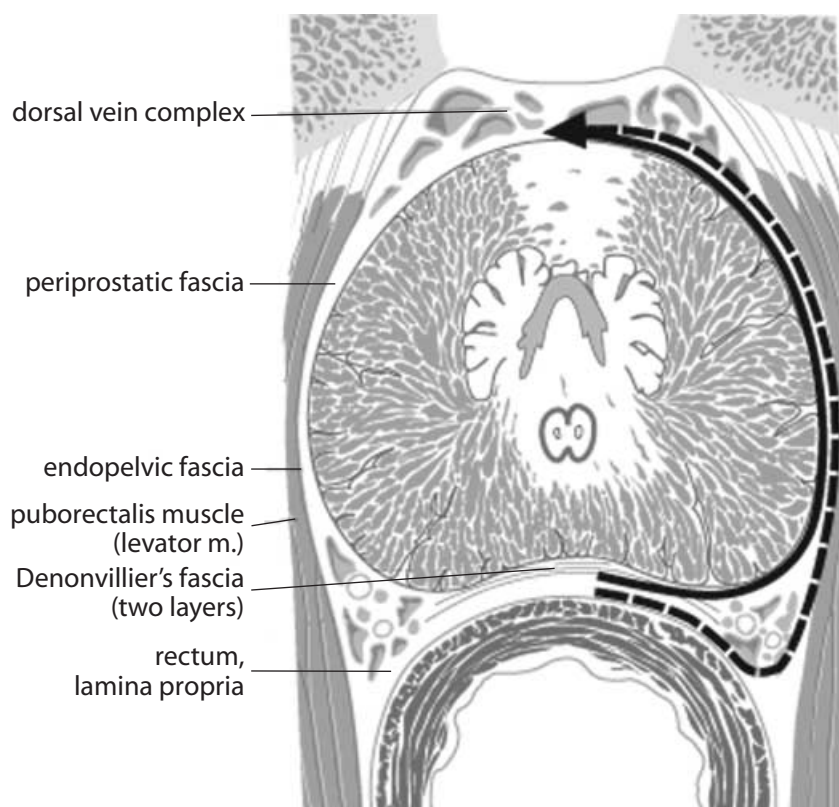
During release of the dorsal vein complex it is not necessary to immediately oversew that structure. Control of bleeding can either be achieved by moderate direct stitching underneath the veins or by letting the divided veins bleed and simply compressing them with a sponge stick. After release of the urethra, the dorsal vein complex can be oversewn to provide stability for the sutures and control backbleeding. The wedge shaped proximal defect can either be left open or sutured in a V-shape. Prior medial stitches may lift up the lateral pelvic fascia covering the lateral aspect and the neurovascular bundle, leaving them prone to later injury. To avoid injury to the nerve bundle, the urethra and striated sphincter should be divided not too closely to the apex of the prostate, because in some patients the neurovascular bundle can be very close to the apex (whereas it runs parallel to the urethra a few millimeters further distally). There may be angulation of the neurovascular bundle medially at the apex of the prostate. For hemostasis, small hemoclips should be used or carefully placed sutures, whereas cautery may lead to nerve damage. The anastomotic sutures should be placed with care at the 4 to 6 and 6 to 8 o'clock positions. Sutures should not go too deep and care has to be taken to avoid the 5 and 7 o'clock positions. A right angle clamp is not used since its application may lead to inadvertent inclusion of the neurovascular bundle into the division of the posterior striated sphincter. For division of the dorsal venous complex it is best to directly place stitches underneath the venous complex and tie instead of undermining with a McDougal clamp.

Nerve sparing technique requires that the medial fascia lateral to the apices be opened and a plane dissected close to Denonvilliers' fascia. The bundles are moved away from the prostate and displaced laterally. Injury to the bundles occurs either by anastomotic sutures at the 5 and 7 o'clock position being placed too deeply or by efforts to achieve hemostasis beneath the urethral stump. In nerve sparing procedures any hemostatic suturing below the urethra should be avoided.

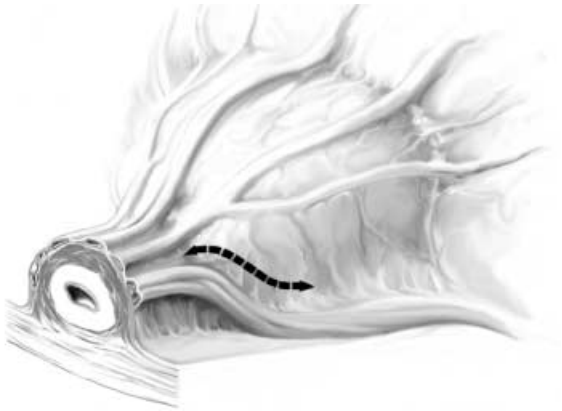
In order to avoid injury to the prostatic plexus dissection proceeds along the prostate close to the seminal vesicles.

The fibers of the neurovascular bundle run cranially to Denonvilliers' fascia between the posterolateral surface of the prostate and the rectum. To mobilize the neurovascular bundle, which lies in the periprostatic fascia over the surface of the prostate, it is necessary to open the thin periprostatic fascia and expose the neurovascular bundle. This structure can be pushed downward after freeing and ligating small vessels originating from the bundle and leading upward to the prostate.

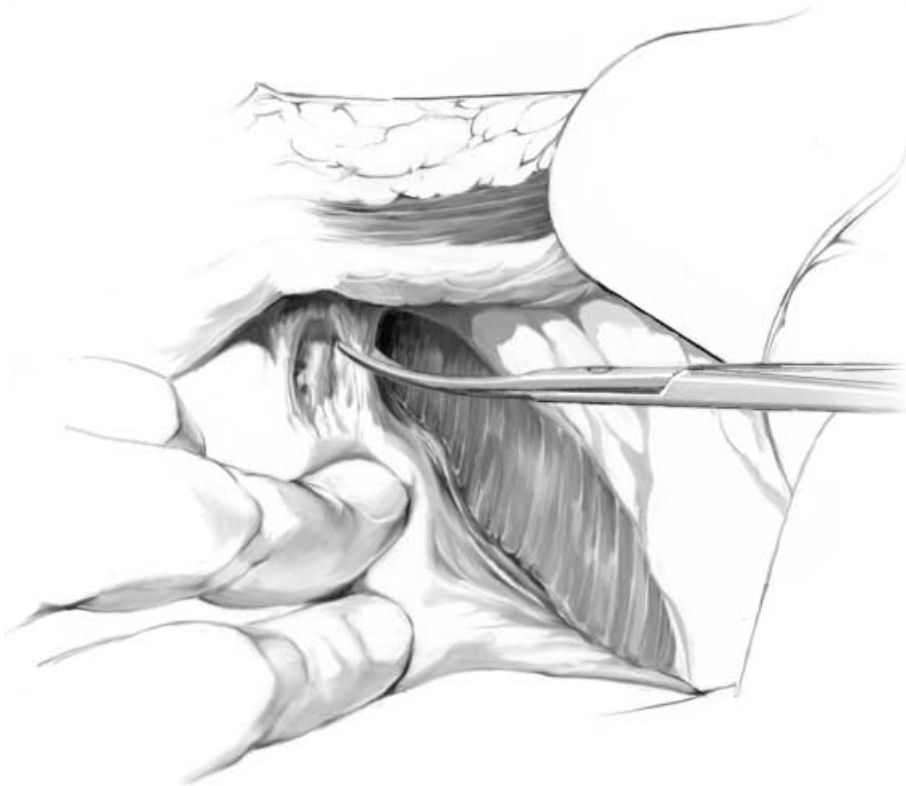
With a peanut dissector, the neurovascular bundle can be gently pushed downwards and laterally. Care has to be taken to stay close to the lateral aspect of the seminal vesicles and leave the DE fascia at the neurovascular bundle to avoid injuring the pelvic plexus.



Axial section through mid prostate. Lines show dissection for retropubic nerve-sparing prostatectomy (—) and non-nerve-sparing radical prostatectomy (-----). The lateral leaf of the periprostatic fascia encases the neurovascular bundle. Anterior laterally it fuses with the endopelvic fascia.



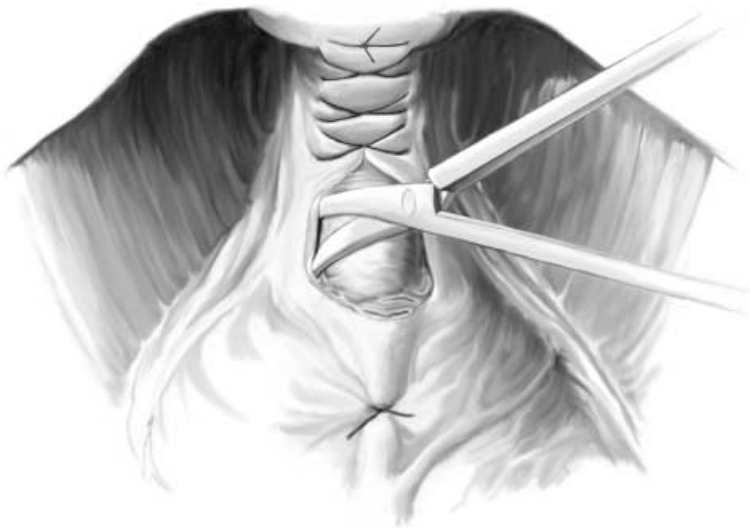
Location of the neurovascular bundle at the apex of the prostate. There may be angulation of the neurovascular bundle medially at the apex. The arrow indicates the plane of dissection.



The puboprostatic ligaments should be exposed bluntly by teasing away fatty tissue with pick-ups. Incision is done close to the symphysis to avoid the dorsal vein complex.



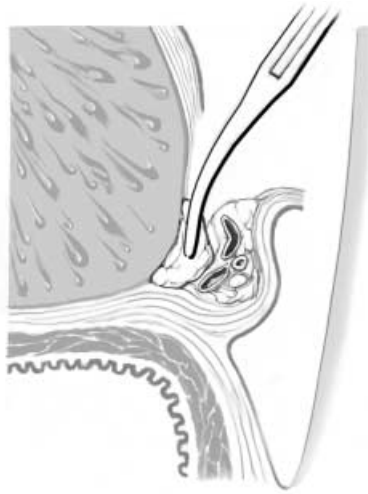
A figure-of-eight suture is placed under the dorsal vein and its tributaries. The suture is tied and the needle left on the suture.



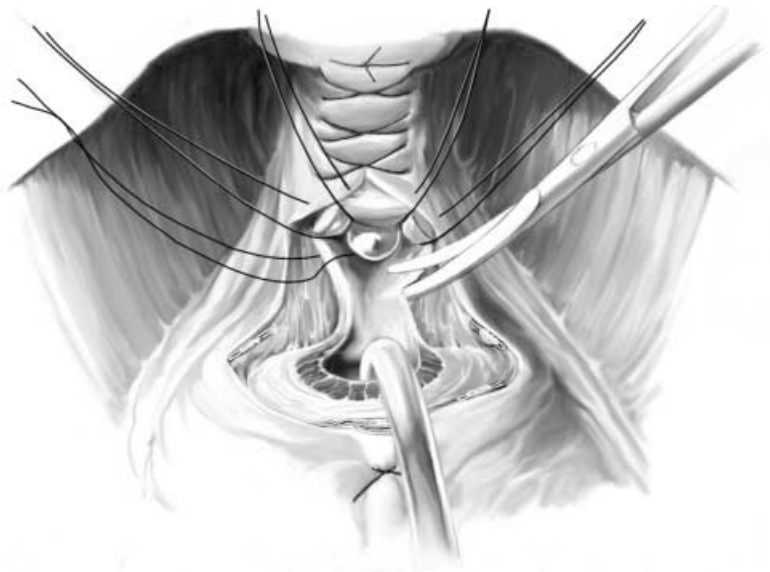
The dorsal vein complex is oversewn to provide stability for the anastomotic sutures and to control backbleeding.



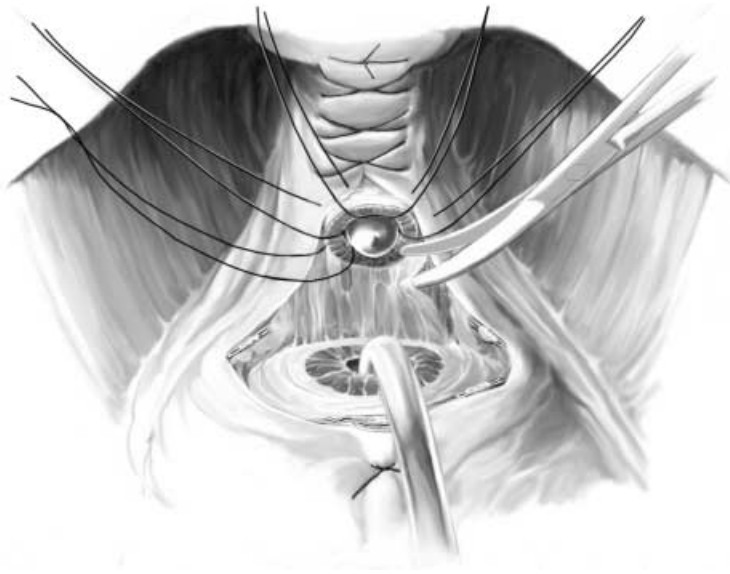
Nerve sparing technique requires that the medial fascia lateral to the apices be opened and a plane dissected close to Denonvilliers fascia. The neurovascular bundle is separated completely from the apex and the proximal 5 mm of the urethra before the urethra is divided from the apex.



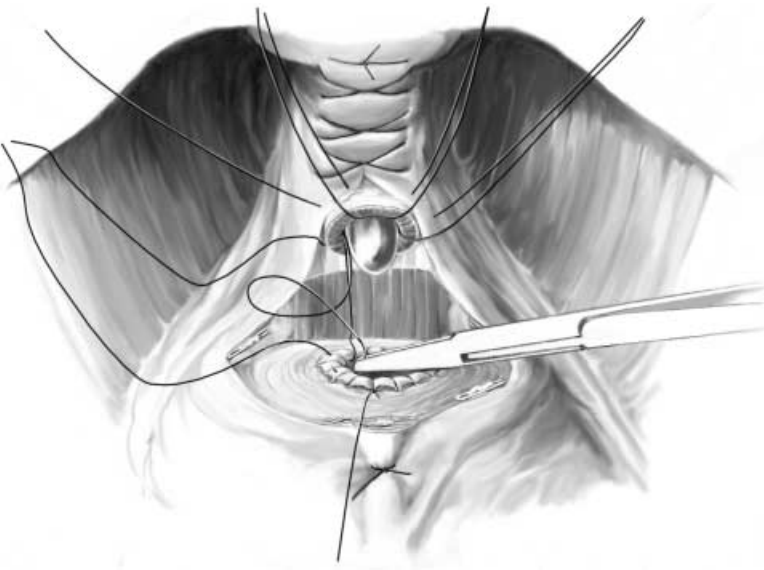
With a peanut dissector, the neurovascular bundle can be gently pushed downwards and laterally.



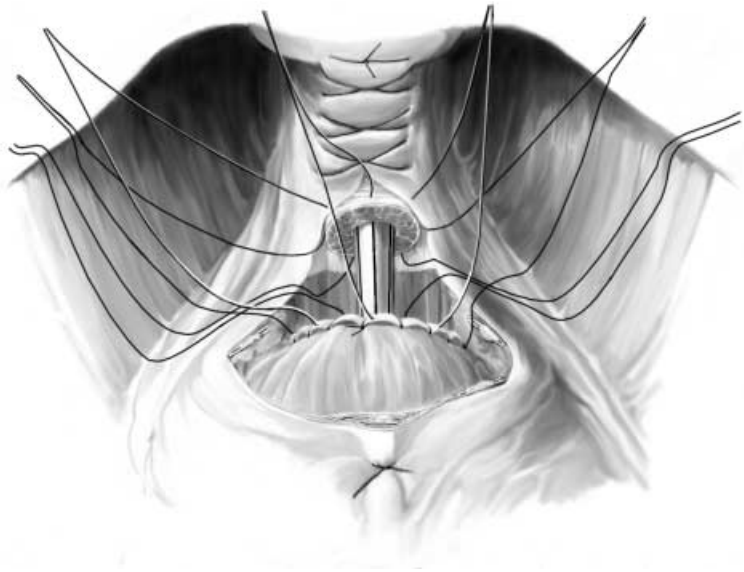
Five anastomotic sutures are placed before dividing the posterior aspect of the urethra.



The two-layered character of Denonvillier's fascia being surgically insignificant, it is divided.



Bladder mucosa is everted by two running semicircular sutures. The five and seven o'clock anastomotic sutures in the urethra are placed appropriately in the everted bladder neck.



The urethral catheter is placed in the bladder, the ballon inflated and pulled cranially. Overall seven anastomotic sutures are placed.



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