A Simplified Technique for GreenLight Laser Enucleation of the Prostate

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OBJECTIVE To present a simplified technique for GreenLight laser enucleation of the prostate (GreenLEP), designed to reduce the learning curve commonly associated with endoscopic prostate enucleation.

MATERIALS AND METHODS GreenLEP is a novel endoscopic treatment for BPH which allows for durable resection of large glands with minimal energy use, minimal bleeding and has been shown to be non-inferior to holmium laser enucleation of the prostate (HoLEP). Furthermore, GreenLEP has been shown to be superior to GreenLight PVP For glands > 80 g with respect to operative time, unplanned hospital readmission and decrease in post treatment PSA and prostate size. Unfortunately, a steep learning curve has remained a roadblock for adaptation by many urologists. Our technique for lobe-by-lobe GreenLEP is described and shown.

RESULTS GreenLEP allows for removal of the entire transition zone in patients with large glands traditionally best treated with staged TURP or simple prostatectomy. A lobe-by-lobe approach allows the urologist to learn the procedure in a stepwise fashion as they become increasingly comfortable with the technique. During the learning process, some lobes may be addressed by enucleation while others by vaporization.

CONCLUSION This simplified technique allows novice enucleators with GreenLight experience to feel more comfortable with GreenLEP, simplifying the learning curve. UROLOGY 123: 293–294, 2019. © 2018 Elsevier Inc.

VOICE-OVER TRANSCRIPT

(0:00) Greenlight Laser Enucleation of the Prostate (GreenLEP).

(0:04) Endoscopic prostate laser enucleation has continued to gain popularity as a minimally invasive technique for treating benign prostatic hyperplasia (BPH) with large prostate glands. A steep learning curve has remained a roadblock to adaptation for many urologists.

(0:18) GreenLEP allows for the use of a side-firing Greenlight laser fiber which is familiar to many urologists around the country. We present our simplified GreenLEP technique optimized for adaptation by novice enucleators.

(0:36) The procedure begins with a preoperative transrectal ultrasound (TRUS) and the general configuration as well as the ratio of peripheral to transition zone is examined. The prostate is measured. An image of the pre-enucleation TRUS is stored for comparison postoperatively and to assess for residual transition zone at the end of the case.

(1:00) A 26 Fr Wolf cystoscope is then inserted, and a thorough cystoscopy is performed. The configuration of the prostate lobes is noted and the ureteral orifices are identified.

(1:12) We begin the enucleation by using a 10-2090 fiber at 35 W coagulation setting to mark the distal extent of the enucleation at the proximal verumontanum. Grooves are then incised at the 80 W setting into the prostate at 5 and 7-o'clock, beginning at the bladder neck and terminating at the proximal verumontanum, just as would be performed in a typical photoselective vaporization of the prostate (PVP). This effectively separates the median lobe from the lateral lobes. The plane between the median lobe and prostatic capsule is developed in a retrograde fashion from the proximal verumontanum toward the bladder neck. Using a combination of blunt dissection with the fiber and beak of the cystoscope, along with intermittent coagulation of vessels and attachments using the laser, the median lobe is separated from the capsule.

(2:15) This dissection continues until the median lobe is entirely enucleated. The grooves at 5 and 7-o'clock are deepened, starting at the capsule and moving into the lumen. We continue to separate the median lobe from the lateral lobes until the grooves are flush with the floor of the bladder. Once the median lobe is separated to the bladder neck, it is lifted into the bladder and transected laterally to medially, taking care to avoid the ureteral orifices. The median lobe is pushed into the bladder for later morcellation.

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(2:55) Attention is then turned to the anterior prostate where the distal extent of enucleation is once again demarcated. This is then followed along the lateral lobes. An anterior median commissurotomy may be created to separate the lateral lobes from one another. This incision should be shallow to avoid entry into the dorsal venous complex. Enucleation of the lateral lobes is then performed one lobe at a time.

(3:29) The plane of the prostatic capsule is entered apically, and is carried along the lateral edges of the capsule, and then anteriorly toward the bladder neck. The adenoma is peeled away from the capsule bluntly using the beak of the scope, and the coagulation setting is used to address any attaching fibers.

(3:54) The laser fiber is used to sweep around the adenoma and develop the capsular plane laterally. The posterior-most attachments of the lateral lobe are maintained to prevent the adenoma from floating anteriorly. The anterolateral dissection is continued using mainly blunt dissection until the bladder lumen is entered, usually at 1 to 3-o'clock for the left lateral lobe and 9 to 11-o'clock for the right lateral lobe. The anterior attachments are then separated laterally to medially.

(4:36) This lateral lobe procedure is then repeated in its entirety on the contralateral side.

(4:43) The anterior-most attachments are then divided. Once all attachments other than the posterior are addressed, the posterior attachments are transected. Once the adenoma appears free, the laser fiber is used as a probe and swept around the entire adenoma to identify any remaining attachments. The adenoma is then pushed into the bladder.

(5:11) Once all 3 lobes have been pushed into the bladder and adequate hemostasis is ensured, a Wolf (Knittlingen, Germany) Piranha morcellator is inserted and utilized to morcellate and extract the adenoma. In order to minimize bleeding due to bladder decompression during morcellator insertion, removal of the visual obturator and insertion of the morcellator is performed only after attachment of a second irrigation tubing to the sheath. Morcellator insertion should be done as quickly as can be done safely, and while occluding the outflow of the sheath to prevent bladder decompression. After morcellation, hemostasis may be addressed once more using the GreenLight fiber, if necessary.

(5:57) A postenucleation TRUS is performed to assess for the presence of any residual adenoma and an image is printed for side-by-side comparison. If residual adenoma is noted, this may be immediately addressed by vaporization. Morcellated prostate tissue is sent for pathologic examination.

(6:21) This simplified GreenLEP technique can be adopted by any urologist who is experienced with using a side-firing endoscopic laser. Novice enucleators can start with median lobe enucleation and work toward the more challenging lateral lobes as they become more experienced. If enucleation proves challenging, the surgeon can easily switch to a traditional prostate photovaporization at any point using the GreenLight laser.

The video related to this article can be found online at: doi:10.1016/j.urology.2018.09.031.