Holmium Laser Ablation of the Prostate

with DuoTome™ SideLite™ Laser Fiber

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Holmium Laser Ablation of the Prostate for the Treatment of BPH

As the population continues to age, the prevalence of BPH will grow as well. Currently, millions of men suffer from the symptoms of BPH, however, only a small portion will ever receive treatment, most of those being medically managed. Surgery for BPH is utilized in a small fraction of patients diagnosed, however, over the past 5 years, surgical laser treatments have been the fastest growing segment in the management of BPH.

Laser ablation of the prostate is a minimally invasive surgical alternative to TURP for the treatment of BPH symptoms. Although different surgical lasers are marketed for the treatment of BPH, holmium laser ablation and enucleation of the prostate are perhaps the most studied to-date. Clinical data supporting holmium laser ablation of the prostate (HoLAP) shows its equivalency to TURP with fewer potential complications\(^1\), and long-term durability up to 7 years\(^2\).

Globally, physicians have embraced the holmium laser technology for treating BPH. Treatment with the holmium laser has allowed urologists to treat a wider array of patients, and achieve successful clinical outcomes with fewer potential complications than the traditional TURP procedure.

The following is a detailed description of the HoLAP surgical technique that has been effectively employed to achieve successful clinical outcomes for over 200 patients in my surgical practice.
SURGICAL TECHNIQUE

Pre-operative assessment of the patient is critical to success. It is important to particularly assess and note the following clinical items:

1. Prostate Size
2. Prostate Length
3. Presence of Median Lobe
4. Enlargement of Lateral Lobes
5. Vascularity of Prostatic Urethra
6. Elevation of Bladder Neck
7. Preoperative Overactive Bladder
8. Hypertonic vs. Atonic Bladder

STEP 1: Introduction of Resectoscope into Prostate

Visualize the appropriate landmarks, which include the bladder neck, ureteral orifices, and trigonal ridge of the bladder. You will reference these landmarks throughout the procedure. Multiple passes over the bladder neck can induce scope trauma, which may cause increased and unnecessary bleeding (Figure 1).

STEP 2: Ensure Proper Irrigation

Continuous water flow is a very integral component of the procedure. Begin by distending the bladder with irrigant. Ensure continuous flow by either using suction or gravity drainage. Raise irrigation height to improve flow and visualization.

TECHNIQUE: Patients with atonic bladders or with a strong history of retention should have outflow placed to suction, as their bladders will not empty irrigant as quickly. Failure to recognize this may lead to decreased visualization.

STEP 3: Insertion of the DuoTome SideLite Laser Fiber

Prior to advancing the laser fiber through the scope, ensure that the scope port has been opened, reducing potential damage to the fiber during insertion. Check for presence of the red aiming beam at the fiber tip. Slide the adjustable handpiece further down along the fiber allowing for adequate fiber length through the scope. Tighten the handpiece so that it can be manipulated during the case to rotate the fiber.

TECHNIQUE: Fiber Extension from Scope - If the solid circumferential line on the fiber cap is not visible, the fiber is not extended far enough out of the scope. Activation of the laser fiber without adequate extension may cause damage to the scope lens. If the fiber is extended too far beyond the scope, excess vibration during ablation may occur, which can potentially damage the fiber (Figure 2).

STEP 4: Bladder Neck Incision

TECHNIQUE: Coagulation of Prostatic Urethra

Prior to the bladder neck incision, this technique can be utilized to reduce intraoperative bleeding, particularly bleeding caused by scope trauma. Hold the fiber away from the tissue, which defocuses the beam. Lightly paint the tissue looking for change from pink to white.

The recommended setting for this technique is 2J and 50Hz, resulting in 100W of power (Figure 3).

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**STEP 4: Bladder Neck Incision**  
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Assess the prostate and begin at the bladder neck creating deep grooves at the 5 and 7 o’clock positions utilizing the 100W settings previously mentioned. Continue ablation until the capsular fibers appear. Widen and deepen grooves to better identify the bladder fibers. This technique will allow for maximum flow through the prostate. Continue these grooves out to the verumontanum. Next, connect the 2 channels by ablating the central remaining tissue. Ablate the floor of the prostate within the grooves above (Figure 4).

**TECHNIQUE:** It is important not to extend too deeply into the tissue, as the vascular bed of the prostate is between the 5 and 7 o’clock positions.

**TECHNIQUE:** Fiber Tip Distance From Tissue - This is a very important procedural technique. Ideally, the fiber tip should be near, but not touching tissue. Be careful not to bury the fiber tip into tissue, which may cause the fiber to overheat and potentially degrade (Figure 5).

**STEP 5: Approaching the Lateral Lobes**
After the capsular fibers have been identified, proceed from the 5 and 7 o’clock positions, ablating laterally and upward to the 11 and 1 o’clock positions. Follow the capsular fibers while ablating (Figure 6).

**TECHNIQUE:** Fiber Rotation - When approaching the lateral lobes, make sure to utilize a slow sweeping motion of the laser fiber. This will result in a smooth, clean, even appearance to the prostatic tissue upon completion.

**Median Lobe Ablation:** If the presence of a large median lobe exists, grooves along the 5 and 7 o’clock areas are created, as discussed above. This will isolate the median lobe and allow for complete removal of the tissue. Typically, this tissue is ablated prior to engaging the lateral lobes.

**TECHNIQUE:** Foot Pedal Control - Continuous depression of the foot pedal creates continuous pulsed energy. Creating this energy effect may provide a more consistent, controlled approach to ablation.

Confirm landmarks again, and continue linking up capsular fibers and ablating laterally.

**STEP 6: Ending Ablation**
Ensure removal of any remaining obstructive tissue prior to ending ablation. The creation of a large open cavity with visualization of the capsule, completes the ablation procedure (Figure 7).

**SURGICAL RESULT**
Large open cavity and symptomatic relief for patient.