Holmium laser resection of the prostate: a comparative study with TURP

Amr Mahamed Salah El Din Fayad , Khaled Fawzy , Omar Abdel Razzak ,
Cairo University
Giza, Egypt
Doctorial (PhD) Thesis., 2001

Abstract

Transurethral resection of the prostate (TURP) is an excellent method for treatment of patients with symptomatic BPH, who actually need surgery. Due to its associated morbidity, many other minimally invasive procedures were introduced aiming to replace TURP. The mechanism of action of these methods is to subject the prostate to high temperature causing shrinkage of the prostatic adenoma, thereby reducing the static element of bladder outlet obstruction. The main advantage of these minimally invasive procedures is the possibility to be performed as outpatient procedures, with minimal anesthetic requirements and minimal complications. However, not all patients with BPH are suitable candidates for all minimally invasive procedures, and patient selection is an important critical parameter to ensure successful treatment. Also, attempts to increase efficiency of these modalities were associated with an increase in the associated complications rate. Another major disadvantage is that none of these modalities is able to provide a postoperative specimen for histological examination, thereby missing all cases of Stage A prostate cancer. This explains why many of these minimally invasive therapies have already faded into therapeutic twilight, despite the initial enthusiastic approval.

The holmium:YAG laser was introduced in the early nineties. It seemed to provide many advantages in treatment of bladder outlet obstruction due to BPH, which made it a potential candidate to compete with TURP for being the gold standard therapy. In spite of this fact, very few studies were done comparing both modalities and this was the initiative reason for this study. This prospective study was performed in Auguste-Victoria Hospital in Berlin, Germany, to assess the efficiency of holmium:YAG laser as a method for bloodless volumetric ablation of prostate tissue and to compare the intra-operative course, complications and postoperative outcome to that following TURP. This urodynamic-controlled study included 150 patients with bladder outlet obstruction due to BPH. 100 patients underwent holmium laser prostatectomy (HoLRP, HoLEP), and 50 patients were treated using TURP. 8 patients from the holmium laser group were excluded from the comparative study because they had a preoperative prostate size larger than 100 grams (as measured by transrectal ultrasound). However, they were separately evaluated in order to assess the role of holmium laser in treatment of larger prostate glands (100 grams). No patient selection was performed in this study, as all patients who are appropriate candidates for TURP can be treated using holmium laser. The results of this study showed that holmium laser prostatectomy is associated with longer operation time, less blood loss, less peri-operative morbidity, shorter postoperative catheterization time and shorter postoperative hospital stay in comparison with TURP. The follow-up results (up to six months) showed that both groups were comparable to each other. However, longer follow-up is still required to assess long-term results. Holmium laser enucleation of the prostate (HoLEP) involves using the laser fiber like a transurethral index finger sweeping the intact entire adenoma off the surgical capsule using a retrograde approach similar to open prostatectomy. The problem of retrieving these large fragments from within the bladder is being solved by devices for intracavitary morcellation. Prototypes have been developed which enable large volumes of prostate tissue to be extracted efficiently from within the bladder, resulting in dramatic reduction in operation time. In the future, the combination of laser and mechanical morcellation technique might allow the surgeon to treat prostates of virtually any size endoscopically in a safe manner, with minimal postoperative morbidity, shorter postoperative catheterization time and shorter postoperative hospital stay. This could give the holmium:YAG laser the potential ability not only to replace TURP as being the gold standard therapy in treatment of bladder outlet obstruction due to small sized prostate glands, but also to replace open prostatectomy in treatment of larger prostate glands (100 grams).

Keywords

Holmium laser, prostate, BPH, TURP.