MINIMALLY INVASIVE AND ENDOSCOPIC MANAGEMENT OF BENIGN PROSTATIC HYPERPLASIA

Essay

Submitted for partial fulfillment of
Master degree in Urology

By
Mohamed Fawzy ElSayed Ali

M.B., B.Ch.
Faculty of Medicine – Ain Shams University

Supervised by

Prof. Dr. Abdallah Ahmed Abdelaal

Professor of Urology
Faculty of Medicine, Ain Shams University

Dr. Mohamed Wael Safa

Lecturer of Urology
Faculty of Medicine, Ain Shams University

Faculty of Medicine
Ain Shams University
2011

Acknowledgment

First of all, I wish to express my sincere thanks to Allah for his care and generosity throughout of my life.

I would like to express my profound gratitude and great appreciation to Prof.Dr. Abdallah Ahmed Abdelaal, Professor of Urology, Faculty of Medicine, Ain Shams University, for his valuable guidance and continuous support throughout this essay.

My deep thanks go to Dr. Mohamed Wael Safa, Lecturer of Urology, Faculty of Medicine, Ain Shams University, for his generous help, advice and meticulous revision helped to bring this simple work to the light.

Mohamed Fawzy ElSayed

الطرق الغير جائرة واستخدام المنظار لعلاج تضخم البروستاتا الحميد

رسالة

توطئة للحصول على درجة الماجستير في
جراحة المسالك البولية

مقدمــة من

الطبيب/ محمد فوزي السيد علي

تحت إشراف

الأستاذ الدكتور/ عبد الله أحمد عبدالعال

أستاذ جراحة المسالك البولية
كلية الطب- جامعة عين شمس

الدكتور/ محمد وائل صفا

مدرس جراحة المسالك البولية
كلية الطب – جامعة عين شمس

كلية الطب
جامعة عين شمس
القاهرة ٢٠١١

Minimally Invasive and Endoscopic Management of Benign Prostatic Hyperplasia

Presented by

Mohamed Fawzy ElSayed Ali
(M.B, B.Ch)
Ain-Shams University

Abstract

Benign prostatic hyperplasia is considered one of the most common morbidity among older men. The aim of the minimally invasive management for lower urinary tract symptoms (LUTS) due to BPH is the removal of as much of the benign prostatic adenoma as possible with minimal peri- and post-operative morbidity and short hospitalization and catheterization time**.** In contrary with other medical diseases, BPH mangement has numerous improving modalities of treatment with different techniques. Unfortunately, each of which has a characteristic advantage with some disadvantages as regard safety, efficiency, durability and cost-effectiveness. TUNA, TUMT and Intra-prostatic stents have been established as valuable ambulatory treatments mainly in patients with poor surgical fitness. Laser techniques, mainly the evolving challenging HoLEP and Diode Laser vaporization are trying to replace the Gold standard TURP, by their safety, efficiency, durability. The introduction of the evolving bipolar technology presents the improving bipolar plasma kinetic resection and vaporization of the prostate (TURis & PKVP). They are unique in being extremely safe, efficient, durable and have wide range of use with acceptable cost-effectiveness, spread, acceptance by hospitals and urologists. They have actually reinforced the position of TURP as the cornerstone of all minimally invasive surgical management of BPH.

CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

AUA	American Urological Association
BONT-A	Botulinum Toxin type A
BOO	Bladder Outflow Obstruction
BPH	Benign Prostatic Hypertrophy
BPO	Benign Prostatic Obstruction
CLAP	Contact Laser Ablation of the Prostate
CPG	Clinical Practice Guidelines
DRE	Digital Rectal Examination
EAU	European Association of Urology
FDA	US Food and Drug Administration
HIFU	High-intensity Focused Ultrasound
Ho:YAG	Holmium:Yttrium Aluminium Garnet
HoBNI	Holmium Laser Bladder Neck Incision
HoLAP	Holmium Laser Ablation of the Prostate
HoLEP	Holmium Laser Enucleation of the Prostate
HoLRP	Holmium Laser Resection of the Prostate
ICS	International continence society
ILC	Interstitial Laser Coagulation of the prostate
I-PSS	International Prostate Symptom Score
KTP:YAG	Potassium Titanyl Phosphate:Yttrium Aluminium Garnet
LUTS	Lower Urinary Tract Symptoms
MIT	Minimally Invasive Treatment

MRI	Magnetic Resonance Imaging
Nd:YAG	Neodymium:Yttrium Aluminium Garnet
PKVP	bipolar Plasma-Kinetic Vaporization of the Prostate
PVP	Photoselective Vaporisation of the Prostate
PVR	Post-void Residual volume
Qmax	Maximum Flow Rate
QoL	Quality of Life
RCT	Randomised Controlled Trials
RFNA	transurethral Radiofrequency Needle Ablation
TEAP	Transurethral Ethanol Ablation of the Prostate
Tm:YAG	Thulium: Yttrium–Aluminium–Garnet
TUEP	Transurethral Evaporation of the Prostate
TUEVP	Transurethral Electrovaporization of the Prostate
TUIP	Transurethral Incesion of the Prostate
TUMT	Transurethral Microwave Thermotherapy
TUNA	Transurethral Needle Ablation
TUPVP	Transurethral Plasma Vaporization of the Prostate
TURis	bipolar Transurethra Resection in saline
TURP	Transurethral Resection of the Prostate
TUVP	Transurethral Vaporation of the Prostate
UTI	Urinary Tract Infection
VLAP	Visual Laser Ablation of the Prostate
WIT	Water-induced Thermotherapy

AIM OF THE WORK

Aim of work in this essay is to discuss the efficiency, durability and safety of different modalities of minimally invasive and endoscopic techniques in management of benign prostatic hyperplasia, which is considered one of the most common morbidity among older men.

INTRODUCTION

The aim of the surgical treatment for lower urinary tract symptoms (LUTS) due to benign prostatic hypertrophy (BPH) is the removal of as much of the benign prostatic adenoma as possible with minimal peri- and postoperative morbidity and short hospitalization and catheterization time**. (Vassilios et al., 2009)**

Minimally invasive treatment (MIT) is defined as any surgical procedure less invasive than open surgery that is used to achieve the same purpose. Transurethral resection of the prostate (TURP) is currently considered to be the reference standard MIT; however, it is associated with a 10% complication rate due to bleeding, transurethral resection (TUR) syndrome, urethral stenosis, bladder neck contractures, and sexual dysfunction**. (Rassweiler et al., 2006)**

Laser technology was applied to treat Benign Prostatic Hyperplesia for more than 15 years ago. Techniques consist of resection, coagulation and vaporization depending on the wavelength, power, and type of laser emission. **(Kuntz, 2007)**

Holmium laser enucleation of the prostate (HoLEP) has been increasingly gaining popularity because of its similar efficacy and the low rate of complications compared with transurethral resection of the prostate (TURP)**. (Wilson et al., 2006)**

Furthermore, the use of HoLEP for treatment of lower urinary tract symptoms (LUTS) due to benign prostatic enlargement (BPE) in patients with extremely large prostates has shown very good short term results compared with open prostatectomy. **(Naspro et al., 2006)**

Green Laser or Potassium-titanyl-phosphate (KTP) laser photoselective vaporization prostatectomy (PVP) constitutes one such alternative and has shown equivalent improvement of symptom scores and urinary flow rates when compared to the TURP and is accepted as a safe and effective means for the treatment of LUTS secondary to BPH. **(Levy et al., 2007)**

The concept of placing a stent in the prostate to relieve bladder outlet obstruction from BPH was introduced for more than 20 years ago. And due to the technological advances and developments in their design, stents are yet to find wide acceptance in the urological community. Their use has been restricted to older men with significant co-morbidity in whom surgery is too hazardous**. (Armitage et al., 2007)**

The Intra Urethral Stent can be inserted using local anesthesia in the outpatient clinic. When placed in the prostatic urethra, it exerts a radial force that holds the lumen patent and permits spontaneous voiding. It's mesh structure allows epithelial incorporation which offers advantages, such as decreased rates of infection, stone formation and stent migration or slippage. Conversely epithelial incorporation may permit prostatic regrowth that can lead to recurrent LUTS and make stent removal difficult if required**. (Rashidian et al., 2006)**

Transurethral Plasma vaporization of the prostate (TUPVP) is performed using endoscopic electrosurgical equipment to remove prostatic tissue with limited coagulation. The procedure provides urinary symptom reduction similar to that of TURP, with less postoperative irritation, urinary retention, blood loss, or risk of hyponatremia. But no tissue is obtained for pathological analysis; thus, it is not possible to assess patients for concurrent prostatic malignancy. **(Hammadeh et al., 2003)**

Transurethral ethanol ablation, also called transurethral chemoablation injection therapy, involves the insertion of an endoscopic injection needle through the urethral wall into the prostatic tissue and alcohol is injected at two to five points, depending on the size of the prostate. Thus induces sclerosis and necrosis of the obstructing prostatic tissue. It is an outpatient procedure usually performed in about 30 minutes with local anesthesia. Postprocedural catheterization for one to two days is required. **(Ditrolio et al., 2002)**

Transurethral microwave thermotherapy (TUMT) is a single-session, minimally invasive outpatient treatment in which a microwave antenna is placed in a urethral catheter. Microwave energy causes deep, rapid tissue heating, while a cooling system circulates water to protect adjacent tissue. General or spinal anesthesia is not needed, and the procedure takes about one hour. Two years after undergoing TUMT, 10 percent of patients may require retreatment. No major complications, including incontinence and sexual dysfunction, have been reported in patients treated with TUMT. **(Yu et al., 2008)**

Transurethral needle ablation of the prostate (TUNA) involves the placement of radiofrequency needles in the prostate. The procedure is safe and can be performed using local anesthesia. However, results may be limited, because the bladder neck and median prostate lobe cannot be treated. Recently the use of TUNA and TUMT is limited, as they do not reach the same level of efficacy and durability as TURP. **(Cimentepe, 2003)**

With the wide range of the minimally invasive and endoscopic treatments that are available for BPH, patient preference plays an important role. Some patients may be willing to live with the residual symptoms of a less efficacious therapy that has fewer side effects, whereas others may consider the same symptoms to represent treatment failure. **(Ramsey et al., 2000)**