

Open prostatectomy: the safety and efficacy of this procedure in developing countries

Abstract

Objective: To propose the efficacy and safety of open suprapubic transvesical prostatectomy. Benign prostate hypertrophy (BPH) affects the majority of men in their life after the age of 40 years and is the most common cause of lower urinary tract symptoms (LUTS). Despite the popularity of transurethral resection of the prostate (TURP), open prostatectomy remains suitable surgical options for the management in patients with benign prostate hypertrophy living in developing countries due to scarcities of endoscopic tools.

Method: In May 2018 to January 2020, 24 cases of benign prostate hypertrophy underwent suprapubic transvesical open prostatectomy at Mogadishu Somali Turkey Recep Tayyip Erdogan Training and Research Hospital. The outcome of these cases was prospectively analyzed. All patients with a suspect of prostate cancer, and abnormal coagulation profile and patients with a high-risk group (high-risk comorbidities) were excluded from the study.

Result: The mean age of patients was 70.5 years with an age range of 50-90. The average prostate size was 146.5gr. Acute urinary retention was the predominant presentation followed by nocturia and urgency. The mean preoperative hemoglobin of the patients was 13.3±1.8 mg/dl. The average intraoperative bleeding was 550ml and the mean postoperative hemoglobin was 10.6±1.6mg/dl. The commonest postoperative complication was clot retention and the predominant concomitant condition was bladder stones. The mean hospital stay was 3.4±1.5 days.

Conclusion: Open prostatectomy is safe and effective operative management for benign prostate hyperplasia in developing countries due to scarcities of endoscopic equipment and larger sizes of the prostate gland on presentation.

Keywords: prostate, open prostatectomy, clot, acute urinary retention, bleeding, nocturia

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Abbreviations: LUTS, lower urinary tract symptoms; BPH, benign prostate hypertrophy; TURP, transurethral resection of the prostate; TPSA, total prostate-specific; DRE, digital rectal examination

Introduction

Transurethral resection of the prostate (TURP) is the gold standard surgical management of benign prostate hyperplasia and became more popular over the world. Despite this, open prostatectomy still offers the benefit of lower failure rates, less risk of TURP syndrome compared with TURP. Due to the scarcities of endoscopic equipment in developing countries, open prostatectomy may be safely performed in this era while simple suprapubic transvesical open prostatectomy is the preferred approach.^{1,2} Age is the most common risk factor associated with benign prostate hyperplasia (BPH) and the incidence of BPH rises with age. The estimated prevalence is 25 % in men aged 40 to 79 years.³ Benign prostate hyperplasia characterized by symptoms that disrupt the patient's normal urination, sexual function, and quality of life.^{4,5} The aim of our study is to propose the efficacy and safety of open suprapubic transvesical prostatectomy in developing countries.

Methods

In May 2018 to January 2020, 24 cases of benign prostate hypertrophy presenting with either acute urinary retention or lower urinary tract symptoms due to bladder neck obstruction underwent suprapubic transvesical open prostatectomy at Mogadishu Somali Turkey Recep Tayyip Erdogan Training and Research Hospital. All

routine preoperative investigations were made including complete blood count, metabolic panel, total prostate-specific antigen (TPSA), urine analysis, and abdominal ultrasound. All patients with a suspect of prostate cancer (high TPSA, abnormalities of digital rectal examination), abnormal coagulation profile and patients with a high-risk group (high-risk comorbidities) were excluded from the study. Approval form was obtained from the ethics committee of Mogadishu Somali Turkey Recep Tayyip Erdogan Training and Research Hospital and all patients were taken informed consent.

Procedure

Spinal anesthesia or general anesthesia was used. The patient was positioned on a supine position, after preparing and draping under the sterile procedure, a urethral catheter has inserted the patient with 200-300ml saline into the bladder. Midline vertical incision about 10cm or Pfannenstiel incision was made. The bladder was gained after dissection of the rectus abdominus muscle laterally and exposing the space of retzius. After cystostomy, the bladder was better visualized and cauterization of median lobe borders was performed to protect the ureteral orifices and to prevent unwanted sequels; blunt digital enucleation was performed and 5 and 7 O'clock hemostatic 2-0 Vicryl absorbable sutures and other visible bleeding sites were performed. Three-way urethral catheter inflating 20-40cc and cystostomy catheter when needed was placed on the patient. The irrigation channel of the three-way catheter was connected to the normal saline for irrigation until the urine becomes clear mostly for 24 hours. The bladder was closed in double-layer fashion using 2-0 vicryl absorbable sutures. The drain was placed in the space of retzius. Standard traction was

used as needed. None of the patients need a blood transfusion in the perioperative period. SPSS version 23 was used for analyzes of parameters.

Results

A total of 24 cases of benign prostate hypertrophy underwent suprapubic transvesical open prostatectomy at Mogadishu Somali Turkey Recep Tayyip Erdogan Training and Research Hospital. All patients take a single dose of cephazolin injection 1 gram with 1 hour of operation. The mean age of patients was 70.5 years with an age range of 50-90. The average prostate size was 146.5gr. Four patients needed a preoperative blood transfusion (16.7%). Acute urinary retention was the predominant presentation followed by nocturia and urgency. The mean preoperative serum creatinine was 1.26mg/dl. Six patients had renal failure and 3 patients had hydronephrosis on ultrasound preoperatively. The mean preoperative hemoglobin of the patients was 13.3 ± 1.8 mg/dl. The average intraoperative bleeding was 550ml and the mean postoperative hemoglobin was 10.6 ± 1.6 mg/dl (Table 1). Two patients needed blood transfusion postoperatively (8.3%). Clot retention was the most common postoperative complication encountered in 5 patients (20.8%). Most patients with clot retention postoperatively were managed with intermittent manual irrigation; one patient with clot retention needed cystoscopic evacuation (Table 2). One patient developed surgical site infection and were treated with systemic antibiotics after culture results (4.1%). One patient developed fascial dehiscence needing secondary suture. Bladder stones were the most common concomitant condition associated with benign prostate hyperplasia in our study and there were 7 patients (29% of the cases) having concomitants of bladder stones. The mean hospital stay was 3.4 ± 1.5 days and catheterization time was 7 days. Two patients had prostate cancer found after histopathology examination (8.3%). Diabetes was the most common comorbidities encountered in three patients (12.5% of the cases), 8.3% of the cases (two patients) having hypertension, one patient having heart failure, 1 patient having Chronic Obstructive Pulmonary Disease (Table 3).

Table 1 Preoperative, intraoperative and postoperative average hemoglobin loss

Perioperative hemoglobin	Hemoglobin levels and average changes
Preoperative average hemoglobin	13.3 ± 1.8 mg/dl
Postoperative average hemoglobin	10.6 ± 1.6 mg/dl
Intraoperative average hemoglobin loss	2.7 mg/dl
Intraoperative average bleeding	550ml

Table 2 Occurrence of clot retention

Clot episodes	Number of patients	Percentage
Yes	5	20.80%
No	19	79.20%

Table 3 Patient's comorbidities

Comorbidities	Number of patients	Percentage
Renal failure	6	25%
Diabetes	3	12.50%
Hypertension	2	8.30%
Chronic Obstructive Pulmonary Disease	1	4%
Heart failure	1	4%

Discussion

There is no available data regarding the prevalence of BPH in Somalia. Most of the Somali people live in rural areas living with some financial problems that lead less access for medical and surgical management of BPH and this reason, the majority of these men do not seek medical care until they develop bladder outlet obstruction related sequels including acute urinary retention, recurrent/chronic urinary tract infections, bladder stones and bladder diverticula, hydronephrosis, and renal insufficiency. The average prostate weight in our study is 146.5gram and larger than all other reported studies in the literature. In a study from Seretta V presented an average prostate weight of 112.3gram.⁶ In another study from Tubaro A et al.⁸ reported an average prostate weight of 63 gram.⁷ N.A. Berhanu reported an average prostate weight of 73.6gram in their study.⁸ The indications of open prostatectomy in our series were larger sizes of prostate gland, concomitant bladder stones or bladder diverticula, and the scarcities of available endoscopic equipment and patients not willing reoperations.^{7,9}

Suprapubic transvesical prostatectomy, simple retropubic prostatectomy, and perineal prostatectomy are the three operative techniques for open simple prostatectomy. A substantial finding noted in our study is that the greatest advantage of the suprapubic transvesical open prostatectomy approach over the other two approaches is that it is suitable for synchronized management of other concomitants including bladder stone or bladder diverticula. Also it is a better choice for larger median lobes that protrude in the bladder and better visualization of ureteral orifices to prevent unwanted events that can lead obstruction of the ureteral orifices and secondary renal failure. TURP is the gold standard for the management of BPH and became popular over the world. One significant finding confirmed in our study is that open prostatectomy has advantages over transurethral prostate resection including fewer rates of reoperation, lower mortality rate, not associated with TURP syndrome and lower health-related costs.¹⁰ Open prostatectomy is superior over TURP for symptomatic relief and improvement of urination, but it is an invasive procedure and high morbidity compared to transurethral prostate resection.¹¹

Complete medical history, physical examination including the digital rectal examination (DRE), laboratory investigations including Total Prostate Specific Antigen (TPSA), renal function tests, and urine analysis and ultrasound are obligatory work-up for the diagnosis of BPH as coincided by the World Health Organization (WHO) sponsored International consensus committee (ICC), UK British prostate group and American guideline group.⁸ Suspect or presence for bladder cancer and/or prostate cancer is contraindicated of open

simple prostatectomy. Complete enucleation of the prostate adenoma was achieved by Fuller before Fuller, McGill, and Belfield in the 1800s performed for partial enucleation of prostate adenoma. Lower and Harris proposed the use of hemostatic sutures^{12,13} and modified by Hryntschak.

Hemostatic 2:0 Vicryl absorbable sutures at 5 and 7 O'clock and other visible bleeding sites were performed for the patients of the current study and it is associated with lower bleeding rates and lower mortality rates. As reported in the literature and noted in our study, closing of the bladder in double-layer fashion with 2-0 absorbable vicryl suture may prevent urine leak in most of the patients. Dela Pena presented the use of removable purse-string suture in 1962 to decrease bleeding associated complications.¹⁴ Our study advocate the use of continuous bladder irrigation via urethral catheter until the urine became clear up to 24-48 hours while some studies in the literature support the use of suprapubic catheter.¹⁴ Clot retention was the most common postoperative complication in our study encountered in five patients (20.8%). Most patients with clot retention postoperatively were managed with intermittent manual irrigation; one patient with clot retention needed cystoscopic evacuation. Some studies support removing the urethral catheter firstly after three days postoperatively and the cystostomy clamped and removed after that and then drain removed lastly. Cystostomy catheter when used was removed by the second day postoperatively in this study. Following the next days, drain was removed. On day seven, the urethral catheter was removed. There was no significant morbidity associated with this method compared to the above mentioned method.

Meier et al.¹⁵ reported the findings of their study with the comparison for their study with a study series of TUR-P reported by Mebust et al. Meier's study was related lower early complication rate including clot retention, intraoperative bleeding, need for blood transfusion and other early complications and accounted about 19% and mortality rate of 0% compared with Mebust's study ranging about 25% and 02% respectively. Clot retention is common in the open prostatectomy group compared to the TURP group.¹⁵ Besides these studies, we achieved lower complication rate compared to these studies and accomplished a 0% mortality rate as the goal is to reach no mortality associated with open prostatectomy. Condie et al.¹⁰ reported in their study a 1% blood transfusion rate while Kadir Ceylan reported a 10% blood transfusion rate. In our series, 8.3% of the cases needed blood transfusion postoperatively which is lower than the study from Kadir Ceylan.^{10,11} The mean hospital stay was 3.4±1.5 days. Most of the patients were discharged home with a urethral catheter by day 3 or 4 postoperatively.

Conclusion

Open prostatectomy is safe and effective operative management for benign prostate hyperplasia in developing countries due to scarcities of endoscopic equipment and larger sizes of prostate gland on presentation.

Acknowledgments

None.

Conflicts of interest

The authors declare no conflict of interest and this study received no financial support.

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