

The Safety and Efficacy of Trans-Vesical Prostatectomy Done at a Primary General Hospital Setting in Ethiopia

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Background: BPH is a common problem in aging men. It is characterized by lower urinary tract symptoms (LUTS) and some time may be associated with urinary incontinence and sexual dysfunction. to investigate the safety and efficacy of trans-vesical prostatectomy done in a primary general hospital setting with limited facilities in Ethiopia.

Methods: This was a prospective cross sectional hospital based non-randomized study with a mean follow up of three months after operation. A total of 64 men were listed for Trans-vesical elective prostatectomy because of LUTS due to BPH. Co-morbidity, I-PSS, Indications, complications of anesthesia, weight of Prostate adenoma, duration of surgery, complications of surgery and patient satisfaction after surgery were studied.

Results: the mean age of presentation was 63.8 +/- 9.9 years. Fifty four (84.4%) presented with one or more complication of Bladder out flow obstruction (BOO), of which acute urine retention (AUR) was the leading complication occurring in 52 (81.3%) followed by recurrent UTI in 39 (60.9%) patients. The average duration of indwelling catheter before surgery was 6.5 weeks, with a median of 4 weeks and a range of 3 days to 52 weeks. Spinal anesthesia was used in all except three patients and the average weight of prostate adenoma enucleated was 73.6 +/- 32.2 grams. An indwelling three way Foley catheter was required postoperatively for 4.7 +/- 1.7 days. The mean operative time was 49.7 +/- 13.2 minutes and no death was encountered in this series. There was no early complication seen in 54 (84.3%) patients and blood transfusion was needed for only 3 (4.6%). Only one patient required re-admission for bladder neck stenosis. The international prostate symptom score (I-PSS) decrease from 32.8 +/- 3.1 to 2.4 +/- 1.1 and patients were generally satisfied with the out come of surgery.

Conclusion: Trans-vesical prostatectomy is still safe and effective method of relieving BOO due to BPH in the primary general hospital setting with comparable outcome to the current alternative treatment.

Introduction

BPH is a common problem in aging men. It is characterized by lower urinary tract symptoms (LUTS) and some time may be associated with urinary incontinence and sexual dysfunction. Apart from the daily misery of these symptoms, if patients seek medical advice late, they could also suffer from complications like UTI, Pyelonephritis, stone formation, hydronephrosis and even renal failure¹. The incidence of BPH rises dramatically with age. Autopsy studies have shown that the prevalence of histological benign prostate hyperplasia increase with age from approximately 8% for men aged 30-39 years to 40-50% of men aged more than 80 years.² Population based studies have also shown that prostate volume increase with age.^{3,4}

In the last 25 years treatment options for BPH with concurrent BOO have greatly expanded to encompass medical and minimally invasive therapies. However these modalities are useful only for simple or moderate symptoms with small to medium sized prostate gland.⁵ For most of patients living in developing nations like Ethiopia, who suffer not only from severe symptoms of BPH but also seek medical advice late after they develop complications like acute urinary retention, persistent /recurrent UTI, severe hemorrhage from the prostate, bladder calculi and / or renal insufficiency TURP or open prostatectomy is the treatment of choice⁶. Though TURP gained more popularity and is considered the gold standard, open prostatectomy still offers the advantage of lower re-treatment rate with complete removal of prostate adenoma and avoids the risk of dilution hyponatremia.^{7,8,9} In addition most of the hospitals in Ethiopia lack the necessary materials and trained urologist to do TURP. Therefore, under such circumstances,

open prostatectomy will continue to be the norm for surgical treatment of BPH. Among the different types of prostatectomy, the trans-vesical approach is the most commonly performed one. However, the results of this procedure are not well studied in Ethiopian context. Review of literatures from a Med-line search using key word 'transvesical prostatectomy' shows few studies from Sub-Saharan countries and only one from Ethiopia.^{10,11,12} Knowing the economic impact of BPH, patients suffering enormously from poor health and its treatment being substantial, it is absolutely essential to understand the impact of our treatment protocol. Besides, this study will add to the existing limited scientific papers available on the subject matter. Based on this objective, an attempt was made to assess the clinical indications, operative outcomes, and complications of trans-vesical prostatectomy, done by a general surgeon at a rural primary general hospital setting with limited facilities.

Patients and Methods

A prospective analysis of 64 consecutive patients presenting with symptomatic BPH between Jan 1, 2005 and September 10, 2006 at Glenn C Olsen memorial primary general hospital was done. The hospital is a rural missionary hospital placed about 140 km south of Addis Ababa meant to serve the rural population. The operation room team is staffed with one general surgeon, one nurse anesthetist, one surgical nurse and two clinical nurses. All surgeries were done by a single general surgeon and patients were followed for 3 months post-operatively. Patients were initially evaluated by history, physical examination (including digital rectal examination) and I-PSS. The following investigations were done for all patients, CBC, blood group, BUN, creatinine, urine analysis, and abdominal ultrasound before surgery and during follow-up visit. Because of the lack of biplane endocavitary probe, prostate volume measurements were not done. Urodynamic studies were also not done due to lack of equipment.

After obtaining informed consent, open trans-vesical prostatectomy was done using either spinal or general anesthesia. The bladder was approached through extra peritoneal supra-pubic mid line incision. Longitudinal cystostomy was performed and the bladder inspected. If there were foreign body fragments from long standing catheter or stones found, they were removed. If there were diverticulae, the larger ones were excised while smaller ones were obliterated. A Transverse incision using electrocautery posteriorly through bladder neck mucosa between the trigon and prostate was made. Digital enucleation of the prostate adenoma was made beginning from the 10' O'clock position by developing a plane between the adenoma and the prostatic false capsule.

A haemostatic suture of either 2/0 or 3/0 chromic catgut was used routinely at 5 and 7 O'clock position. A three way Trans-urethral Foley catheter of number 20 or 22 FR was positioned inside the prostate fossa which was inflated to 20-40 ml according to the size of adenoma (This balloon was gradually deflated next day). The bladder was then closed with 1/0 or 2/0 chromic catgut running continuously in two layers. A Penrose drain was then placed in retroperitoneal area and brought out through a separate small incision laterally. Layered closure of abdominal wall incision was done. Post-operatively the catheter was connected to a sterile urine bag and intermittent irrigation done using normal saline. Once the urine was clear, catheter was removed at or after post operative day four. Hetrologous blood was given if clinically indicated. The adenoma was weighed and then sent for histological examination. If an incidental carcinoma was found the patient was excluded from the analysis. Patients were followed monthly for three months and during the final follow up visit they were interviewed for I-PSS, long term complications, sexual function, satisfaction with the outcome of operation and its impact on the change of work ability and family life. After final data collection, data were entered in to a computer and analysis was done using SPSS version-15 software.

Results

A total of 624 major operations were done during the study period of which transvesical prostatectomy done for BPH accounted for 64(10.5%). The mean age of presentation was 63.8 +/- 9.9 years (range 46-90). The highest age specific prevalence was in the age group 60-65 years(Fig 1).At presentation all patients were severely symptomatic with mean I-PSS of 32.8 +/- 3.1 (Range 23-35). Out of the 64 patients, 54 (84.4%) of them presented with one or more complications of BOO. Of this 52/64 (81.3%) presented with AUR, 39(60.9%) with recurrent UTI, 21/64 (32.8%) with severe hemorrhage from prostate, 8/64(12.5%) with renal insufficiency(creatinine >1.5mg/dl) and 5/64 (7.8%) with bladder stones. All patients with high creatinine value were first treated by close continuous drainage before surgery.

The average duration between initial catheterization for AUR and surgery was 6.5 weeks and median of 4 weeks (range 3 days-52 weeks) (Table 1). Delay in surgery was because patients were either referred from other health care units or were unable to meet the financial obligation for operation. Three patients came to us with suprapubic cystostomy, and one of them had supra-pubic catheter for one year with out even being changed which finally formed a big intra-vesical stone around the tip of the catheter (Figure 3). As many as 45/64 (70.3%) patients had associated other co-morbidity. The most common co-morbidities identified before surgery were Hypertension 39/64 (60.9%), UTI 26/64 (32.7 %), PUD and other intestinal parasitosis 9/64 (14.1%), pulmonary disease 6/64 (9.4%), CVS disease 5/64 (7.8%) and sepsis with leukocytosis 4/64 (6.2 %). Transabdominal ultrasound examinations demonstrated mild/ moderate hydronephrosis in 14/64 (21.8%) patients and severe hydronephrosis in 1/64(1.6%).

All patients received 1 gram of ceftriaxon 30 minutes before surgery and it was maintained with 1gram every 12 hours for 5 more days after surgery. Most of the surgeries, 61/64(95.3%), were conducted with spinal anesthesia. General anesthesia was used for only 3/64(4.7%) patients.

Table 1. Descriptive Statistics in Age, Symptoms, Duration of Catheterization, Hospital Stay, I-PSS, Weight of the Prostate and Time Of Surgery.

	N	Minimum	Maximum	Mean	Std. Deviation
Age of the patient (years)	64	46	90	63.86	9.901
Duration of symptom (months)	64	2	36	13.88	9.833
Duration of catheterization (weeks)	64	0	52	6.55	9.616
Duration of hospital stay (days)	64	4	14	6.94	1.717
IPSS (pre-operative)	64	23	35	32.08	3.189
IPSS (post-operative)	64	1	5	2.26	1.072
Weight of the prostate (grams)	64	25	190	73.66	32.263
Duration of surgery (minutes)	64	35	90	49.77	13.197
Duration of catheter stayed post-op (days)	64	4	8	4.77	.729
Retro pubic drain stayed (hours)	64	24	72	35.09	14.422

Table 2: Comparison in the out comes of Trans-vesical Prostatectomy Conservative Management, Laser Therapy and TURP

	TVP†	TURP‡	Laser therapy‡	Conservative‡ Treatment
Base line character				
No. Patients	64	117	117	106
Mean Age +/- SD	63.8 +/- 9.9	66.4 +/- 7.9	67.4 +/- 8.1	67.2 +/- 7.8
Mean I-PSS	32.8 +/- 3.2	19.2 +/- 6.7	19.1 +/- 6.6	18.8 +/- 6.5
Follow up time	3 month	7.5 month	7.5 month	7.5 month
Primary outcome				
Mean I-PSS change from baseline	-30.4	-12.3	-10.8	-1.3
Secondary out come				
No .of policy failure*	No	13	16	9
Average Hospital stay (days)	6.9	3.9	2.2	No
Catheter duration (Post operative in days)	4.7	2.4	11.8	No
Major complications				
Blood Transfusion (Number)	3	1	1	No
Septicemia	1	2	3	No
Prostatic capsule perforation	No	2	1	No
Death	N	No	No	No

- Policy failure – Failure to complete treatment or need for further treatment before the initial follow up appointment.

† Data collected from the present trans-vesical prostatectomy study

‡ Date collected from a study done in United Kingdom by Donovan JL et al¹⁵

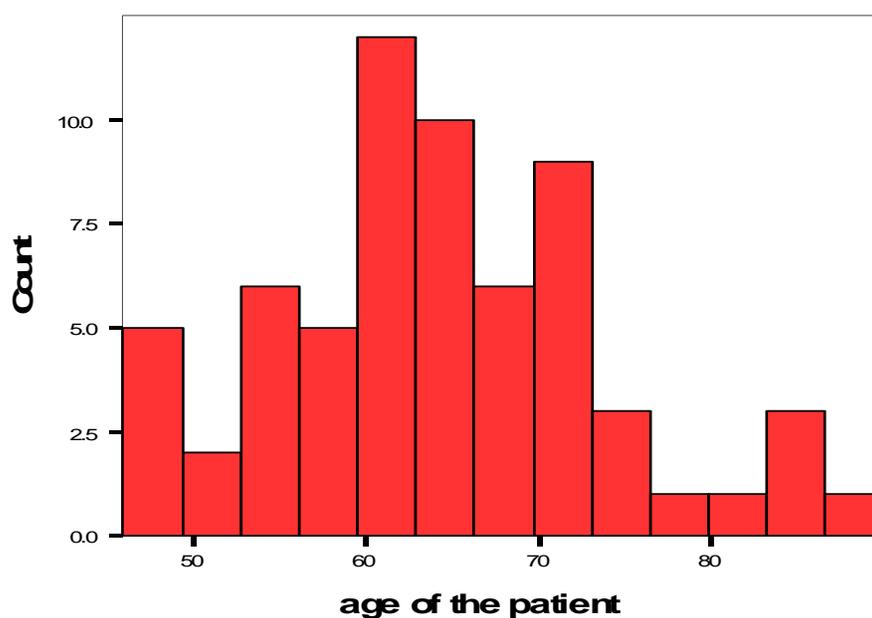
Figure 1. Interactive Graph showing the age specific prevalence of 64 patients operated for BPH

Fig-2 Age versus weight of adenoma of the prostate removed from 64 BPH patients

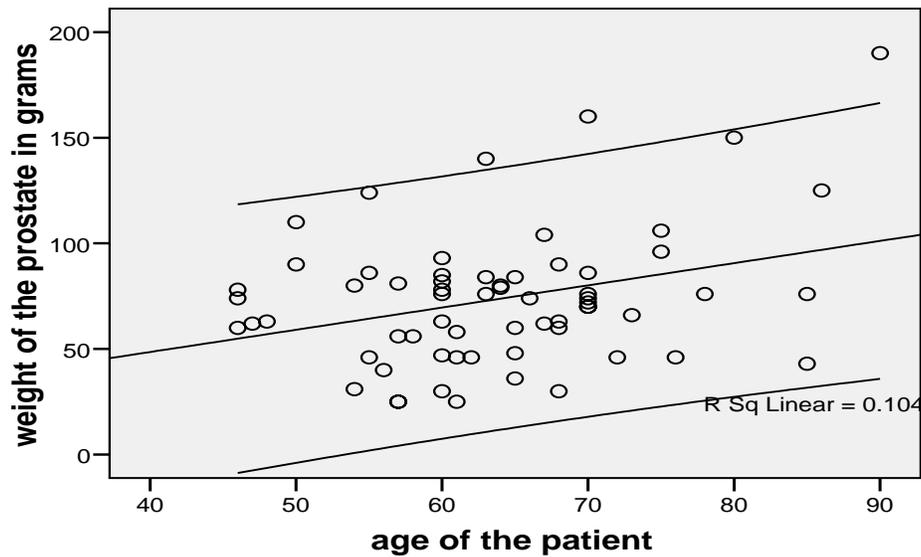


Figure 3 Supra-pubic catheter which had stayed for one year with stones forming at the tip of catheter and Prostatic adenoma removed in a 65 years old patient



Transvesical prostatectomy was done for all patients and gross anatomic appearance showed 5/64 (7.8%) isolated middle lobe, 39/64 (60.9%) isolated lateral lobe, 19/64 (29.7%) both middle and lateral lobe enlargement, and 1/64(1.6%) shows posterior commissural hyperplasia. The operative specimen weight was 73.6 +/- 32.2 grams (range 25- 190). (Figure 2) Fifty four patients (84.3 %) had detrusor muscle hypertrophy and bladder mucosal trabecula. Eight patients (12.5%) had diverticulae of the bladder wall. The mean operative time was 49.7 +/- 13.2 minutes (range 35-90 minutes). All tissue was sent for routine pathological evaluation and incidental prostate carcinoma was found in one patient who was then excluded from final data analysis. There was no death and no early complications seen in 54/64(84.4%) patients. The only intra operative complications encountered were blood loss requiring transfusion, which was needed for only 3/64(4.6%) patients. No intra/post operative cardiovascular event like arrhythmias was seen. Five patients (7.8%) had clot retention with in 24 hours of operation and all except one responded to intermittent syringe irrigation. One patient was returned to the operating room for repeat cystostomy and was found to have the urethral catheter balloon displaced out from prostatic fossa.

Evacuation of the clot and placement of suprapubic cystostomy for continuous irrigation was done. Other early complications encountered were wound infection 5/64(7.8%), epididymo-orchitis 2/64(3.2%), and pneumonia 1/64 (1.6%). No urine retention or leakage of urine via abdominal wound was encountered after removal of catheter. Average hospital stay was 6.94 +/- 1.7 days (range 4-14 days) and three way transurethral Foley catheters remained in place for an average of 4.7 +/- 0.7 days (range 4-8 days). Postoperatively all patients were followed for 3 months. Significant improvement in LUTS was observed as measured by post operative I-PSS. The mean I-PSS two weeks after surgery was 2.46 +/- 1.2 (range 1-5). And this value was significantly different from the pre-operative value ($P < 0.001$). During the follow up time only one patient required re-admission for bladder neck stenosis and transvesical incision of bladder neck was done on him. Thirteen patients (20.3%) had temporary stress incontinence which ceased in the course of 12 weeks follow-up time.

Analysis of sexual function showed that 53/64 (82.8%) had normal erection before surgery and post-operatively 47/53 (88.6%) were able to maintain their penile erection. Of this 9/47 (19.1%) had developed retrograde ejaculation. It was found that all patients experienced marked improvement of symptoms after transvesical prostatectomy and were happy with the result of the operation. All of them have said their ability to work and their family life is much better than it was before. Finally, comparative presentations of data's were made to show the safety and effectiveness of trans-vesical prostatectomy of the present analysis versus other data's obtained from United Kingdom by Donovan JL. et al¹⁵ using other methods like contact laser therapy, the standard TURP and conservative management. (Table 2)

Discussion

The American guide line group⁷, the UK British prostate group¹³, and the WHO sponsored International consensus committee (ICC)¹⁴, concur that in the diagnosis of BPH mandatory work-up which should be included are full medical history, digital rectal examination (DRE), urine analysis and serum creatinine. All this mandatory work-up for the diagnosis of BPH was used in all patients. Therefore the results of this study can provide useful information for comparison with other treatment outcomes. The mean I-PSS at presentation found in this study (32.8 +/- 3.1) was significantly higher than similar studies done in the developed countries by Helfand B⁵ (18.5 +/- 1.3), Donvan JL¹⁵ (19.2 +/- 6.7) and Tubaro A¹⁹ (19.9 +/- 4.4). This could be due to the high incidence of BOO related complications seen and patients usually seek medical advise late in the course of illness.

Compared to the UK national prostatectomy Audit¹⁶, complication related to BOO at presentation were found in less than 62%, versus 84.3 % of this study. Similar lower incidence (70%) was also documented in a hospital based study done by Nouri M¹⁷. This could be attributed to the large study population of the UK National prostatic Audit and Nouri M studies who reviewed 5361 and 1280 cases respectively. However hospital based studies with a similar number of cases showed comparable results. Helfand B found AUR (80.4%), bladder calculi (19.6%) and recurrent UTI (14.3%), Ahmed AA¹⁰ and Hill AG¹⁸ found 79% and 78% of AUR respectively before surgery. In a study done by Maier DE¹¹ all had AUR at presentation. The highest incidence of co-morbidity, especially hypertension seen here is because of the inclusion of mild hypertension and isolated systolic hypertension patients. Similar to other studies^{5, 11, 18, 19}, spinal anesthesia is once again proved to be safe and effective way of anesthesia for transvesical prostatectomy. The average weight of adenoma removed and the operation time is similar to studies done by Seretta V.²⁰ and Hill AG. The prostate weight and operating time were much lower than those found by Helfand B (112.3 gram and 213.8 minutes respectively). The transfusion rate to replace blood loss during or after operation in this study (4.6%) was lower than reports from either developed nations or old African studies. McConnel⁷ (35%), and Helfand B (36%) from USA; Ahmed AA from Ethiopia and Jumbe²⁴ from Zanzibar had similar

experience of 31% of cases requiring blood transfusion to replace blood loss following operation. Recent publications from Africa, like Hill AG (4.7%) of Kenya, Meier DE¹¹ (4.6%) of Nigeria and Mohammed A. Labib²¹ (0%) of Zambia showed a similar or lower incidence.

Using these old African studies as a historical control for comparison with current results could be difficult, because HIV has changed the outlook on blood transfusion and decisions are not based just on the surgical technique alone. However such discrepancy between the north and south nations could be due to the infrequent use of open prostatectomy in developed nations probably resulting in time the progressive loss of art²². History has shown that there has been a steady decline in mortality with this procedure.²³ No patient died in this series while other studies showed a mortality of 3% and 0.9%^{10,18}. According to Wasson⁶, the mortality for TURP ranges between 0.4 to 2.52 % for different age groups.

The surgical complication rate found in this study is either similar or lower than those reports made in developed nations. For example Serrata in Italy reported severe bleeding in 11.6% with 8.2 % transfusion rate, 8.6% sepsis rate and 3.6 % bladder neck stenosis requiring re-intervention within two years. Nouri¹⁷ found a high frequency of the late post operative complications. He found retrograde ejaculation in 100% after trans-vesical prostatectomy and 80% after TURP. The permanent incontinence rate was 1.18% after TURP and 1% after TVP. This low incidence of post operative complication in our study may be attributed to the relatively high incidence of younger patients in good preoperative condition, proper anesthesia monitoring and surgical intervention with careful post operative nursing care.

Conclusion

The finding in this study shows that trans-vesical prostatectomy is still a useful technique in decreasing the prostatic burden of our society and can be carried out even with limited facilities. It also gives improvement in LUTS with comparable outcome to the current alternative treatments.

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