Transvesical prostatectomy in the management of benign prostatic hyperplasia in a developing country

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Abstract

Context: The surgical management of benign prostatic hyperplasia (BPH) is evolving away from open surgery. In developing countries however majority of cases are managed by transvesical prostatectomy (TP).
Aims: This study aims to describe our experience regarding the efficacy, complication profile and outcome of TP in the management of BPH in Nigeria.
Settings and Design: A descriptive, retrospective study carried out in three tertiary centers.
Subjects and Methods: Two hundred and ninety-seven patients were studied. Parameters examined included age, clinical features, investigations, type of postoperative bladder irrigation, prostate gland volume, duration of hospital stay, complications and outcome.
Statistical Analysis Used: Simple means and percentages with SPSS 16.
Results: Mean age was 65.2 ± 6.8 years (range 47-93 years). Presentation with severe lower urinary tract symptoms only occurred in 76 patients (25.7%); acute urinary retention was seen in 106 patients (35.7%). Chronic urinary retention, impaired renal function and haematuria occurred in 47 (15.8%), 37 (12.5%), and 31 patients (10.4%) respectively. On comorbidity, 63 patients (21.2%) were hypertensive and 24 patients (8.1%) had diabetes mellitus. Two hundred and twenty three patients (75%) had indwelling catheters at the time of surgery. Preoperative urinary catheter duration was 1 week-35 months. Mean duration of hospital stay was 8.8 days. Complications were transient urinary incontinence 33 patients (11.1%), urinary tract infection 38 patients (12.7%), and acute epididymoorchitis 15 patients (5.1%). Clot retention occurred in 40 patients (13.5%). Mortality rate was 1%.
Conclusions: TP remains useful in developing climes. There is a need to emphasize effective preoperative workup so as to limit morbidity. Emphasis on variety of techniques for hemostasis is necessary.

Key words: Benign prostatic hyperplasia, management, Nigeria, transvesical prostatectomy

Introduction

Urinary bladder outlet obstruction secondary to benign prostatic hyperplasia (BPH) is a common problem in the sub-Saharan region of Africa.[1] Patients often present when they have developed acute urinary retention (AUR), severe lower urinary tract symptoms (LUTS),[2] or other complications, despite having progressive diminishing caliber and strength of urinary stream for months.[1]

After relief of urinary retention, appropriate definitive treatment of the bladder outlet obstruction must be selected.[1] This would usually be pharmacologic treatment with attendant poor compliance due to the relatively high cost of the drugs, open prostatectomy or transurethral resection of the prostate (TURP). Frequently, patients are maintained on indwelling catheters as temporary measure before surgery.

In developed countries, TURP is the most frequently used modality of surgical treatment for BPH.[3] In sub-Saharan

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Africa, however, high cost of requisite technology, poor maintenance culture, and absence of clear policies for replacement of broken items, limits its usage to few tertiary centers. Where available, patients often lack resources to access TURP or sustained pharmacologic treatment,[4] thus open prostatectomy remains a useful option, even as migration to minimally invasive methods continue.

This study aims to describe our experience regarding the efficacy, complication profile and outcome of transvesical prostatectomy (TP) in the management of BPH in Nigeria.

Subjects and Methods

Between January 1997 and December 2010, 323 patients that had TP at the University of Nigeria Teaching Hospital, Royal Hospital and Saint Mary's Hospital hospitals, were identified through ward admission registers and theatre registers. Of these, 297 case notes were retrieved and evaluated using a data collection form. Information retrieved included patients' age at presentation, clinical features, and investigations performed, intraoperative and postoperative details. Other clinical details collected were histopathology result, length of postoperative hospital stay, complications, and outcome. Research ethics committee approval was obtained. The data were analyzed using Statistical Package for Social Sciences SPSS version 16 (SPSS Inc., Chicago, Illinois, U.S.A).

Results

The mean age of patients was 65.2 ± 6.8 years (range 47-93 years) [Table 1]. Patients were predominantly farmers 136 (45.7%), while 83 (27.6%) and 78 (26.2%) were retired civil servants and traders, respectively. Patients' presenting symptoms were severe LUTS in 25.7% (76 patients) and AUR in 35.7% (106 patients) [Table 2].

Digital rectal examination findings were commonly reported as enlarged and benign. Abdominal ultrasonography reports were available in 250 patients (84.1%) only. All showed features of benign enlargement with a mean volume of 100.7 ml (range 71-363). Twenty-three (9.2%) showed features of hydroureter and hydronephrosis. Thickened bladder wall and diverticulum formation were seen in 211 (84.4%) and 69 (27.6%) patients respectively. Urine culture results were available in 171 (57.6%) patients. Organisms isolated were *Escherichia coli* in 67 (22.6%), *Pseudomonas* in 24 (8.1%) and *Staphylococcus aureus* in 12 (4.0%). No growth was reported in 68 (22.9%) patients.

Concerning co-morbidity, 116 (39%) were hypertensive, 24 patients (8.1%) were diabetic, eight (2.7%) had been treated for congestive cardiac failure, nine (3%) and five patients (1.7%) had chest pain/angina, and chronic obstructive airway disease respectively.

Intravenous urography (IVU) was done in 49 patients (16.4%) and the most frequent finding was elevation of the bladder base with prostatic filling defect. Postero-anterior chest radiographs were done preoperatively in 177 patients and showed hypertensive changes (increased cardio thoracic ratio and aortic unfolding) in 58 patients (32.7%). Intra and postoperative blood transfusion was given to 91 patients.

One hundred and thirteen patients (38%) had indwelling catheters at the time of surgery, (97 urethral; 16 suprapubic). Reasons for catheter placement were failed trial without catheter (TWOC) post AUR in 74 patients (24.9%), obstructive nephropathy in 37 patients (12.4%), and significant gross hematuria in two patients (0.7%). Duration of preoperative indwelling urinary catheter use ranged from 1 week to 35 months [Table 3].

Prophylactic antibiotics used were combination of ceftriaxone, gentamicin and metronidazole in 240 (80.8%) and ciprofloxacin/levofloxacin and metronidazole

Table 1: Age range of patients

Age (years)	Number of patients	Percentage
40-49	10	3.4
50-59	43	14.5
60-69	150	50.5
70-79	89	30.0
80-89	4	1.3
90-99	1	0.3
Total	297	100.0

Table 2: Presenting symptoms of BPH seen

Symptom	Number of patients	Percentage
Storage LUTS	37	12.5
Voiding LUTS	21	7.1
Acute urinary retention	106	35.6
Chronic urinary retention	47	15.8
Hematuria	31	10.4
Impaired renal function	37	12.5
Mixed LUTS	18	6.1
Total	297	100.0

BPH=Benign prostatic hyperplasia; LUTS=Lower urinary tract symptoms

Table 3: Complications observed

Complication	Number of patients	Percentage
Clot retention	40	13.5
Wound infection	36	12.1
Urinary tract infection	38	12.7
Bladder calculi	49	16.5
Acute epididymoorchitis	15	5.1
Vesicocutaneous fistula	12	4.0
Transient incontinence	33	11.1
Bladder neck stenosis	19	6.4
Urethral stricture	9	3.0

in the remainder. Spinal anesthesia was used in 149 patients (50.2%), general anesthesia in 121 (40.7%) and epidural in 27 patients (9%). The mean duration of hospital stay from operation to discharge was 8.8 days, (range 6-29 days).

Some complications observed were mild transient urinary incontinence 33 (11.1%), urinary tract infection (UTI) 38 (12.7%), acute epididymoorchitis 15 (5.1%) and clot retention in 40 patients (13.5%).

Duration of follow-up was 4-21 months (mean 8 months). Mortality rate was 1%.

Discussion

In the Western world, the surgical management of BPH continues to evolve with declining rates of TURP and increased use of various laser prostatectomy techniques.[5] In developing countries, most BPH surgery is done by the open approach with TURP constituting < 20%.[6] Despite this, open prostatectomy is attended by lower reoperation rate than TURP and similar mortality rates.[7] Some also suggest that TURP is attended by a higher mortality rate and may be less effective than open prostatectomy in relieving urinary obstruction from BPH.[8]

The mean age of patients in our series was 65 years which is similar to that of earlier studies.[4,6] Common presentations were severe LUTS, AUR, chronic urinary retention, gross hematuria and renal impairment. This agrees with earlier observations,[1,2,4] and may be a reflection of poor access to healthcare and poor health seeking behaviour.

Over a third of our patients had indwelling urethral catheters at the time of surgery. The leading indication for catheter placement was recurrent AUR (failed TWOC) and significant gross hematuria. This high occurrence of preoperative catheterization was noted by Meier *et al.*,[1] and others.[2,4] Though the most frequently observed preoperative catheter time in our series was 2-4 weeks, we noted that 47.7% had indwelling catheter duration of between 5 months and 35 months. Problems of long catheter time such as UTI, bleeding, vicarious denial of sexual intercourse and urethral discomfort have been observed by other authors.[9] We noted preoperative UTI and bleeding in our series and suspect that the frequent requests for catheter removal preoperatively may be to facilitate sexual intercourse. Patients also complained often of urethral discomfort attributable to the catheter.

Regarding urine culture, the commonest isolate was *E. coli,* seen mostly in those patients with indwelling catheters. This is similar to the findings of Heyns who noted that BPH was associated with preoperative bacteriuria and this was worsened by preoperative catheterization as well as duration of same.[10] Ultrasonography was done most often due to its availability, low cost and nonrequirement for special preparation. Ultrasound assessment of prostate volume interestingly revealed a mean volume of 100.7 ml (range 71-363). Though there was paucity of data about prostatectomy specimen weight, these ultrasonic assessments may suggest that our study population had significantly large prostatic volumes. A study of ultrasonic determination of prostate volume in men with symptomatic BPH had revealed a mean volume of 83.79 ml,[11] which was higher than similar studies from the West that reported lower prostate volumes.[12] These observations may suggest the continued relevance of open prostatectomy in developing climes, without necessarily retarding the emergence of endoscopic techniques. It is also noteworthy that 84.4% of patients (211) and 27.6% (69) patients showed evidence of bladder wall thickening and bladder diverticulum respectively. This relates to the severity of symptoms as suggested by other workers,[13] and appears to suggest that late presentation may be the norm in our setting. The finding of 7.7% of patients with hydronephrosis is also in keeping with an earlier determined incidence of upper tract complications in BPH.[14]

Intravenous urography was done in 49 patients (16.4%), and the most frequent finding was elevation of the bladder base. The common indications for requesting IVU were preoperative hematuria, calculus and surgeon preference. Those without preoperative IVU were not observed to have other lesions discovered intraoperatively. This observation seemed to support earlier findings[14,15] that concluded that routine preoperative IVU adds little value to the diagnostic workup and may be dispensed with.[16]

Earlier authors had reported various blood transfusion rates of up to 31-36.8%.[17,18] We noted a blood transfusion rate of 30.6% that is similar to earlier findings.[17,18] Our observed blood transfusion rate may be due to the fact there was no uniform hemostatic technique adopted in all cases, large prostate size may also have been contributory. Furthermore, transfusion triggers were not uniformly set and varied widely between cases. This calls for clearly defined transfusion triggers and the wider use of adjunctive hemostatic techniques. We observed that 36 of these patients received only one unit blood which meant in our view that the transfusion was probably not required. This raised the issue of transfusion trigger. Exclusion of this no would have given a transfusion rate of 18.5%. Postoperative bladder irrigation was by the "through and through" method (combination of urethral and suprapubic catheter) in majority of cases. This appeared to be because of an observed lower incidence of catheter blockage and may be useful in developing countries where workload: Nursing staff numbers ratio is high.

Concerning comorbidity, the most commonly observed comorbid factors were hypertension and diabetes mellitus.

This is similar to the observations of others where a similar pattern of cardiovascular morbidity predominated.[2,4] Impaired renal function was managed preoperatively with urethral catheterization and continuous bladder drainage until creatinine levels returned to normal. This complication of renal impairment secondary to BPH was observed by Hill *et al.* who noted that return of renal function to normal after prostatectomy was not invariable and contributed to substantial postoperative morbidity.[19] We adopt the practice of allowing time for return of normal renal function, while on continuous bladder drainage. This is done on an outpatient basis and may reduce perioperative morbidity and mortality from renal failure.

Prophylactic ceftriaxone and genticin was used in majority of cases and ciprofloxacin only in the remainder. These regimens have been shown to reduce the incidence of bacteriuria and septicemia in men with preoperative sterile urine.[10] Many patients had long-term indwelling catheters and positive urine culture at the time of surgery. This challenge may be remedied by better access to care.

Mean duration of hospital stay was 8.8 days. This is similar to the findings of Kiptoon *et al.*[6] Wound infection was a major contributor to hospital stay >8 days.

Some complications observed included mild transient urinary incontinence, wound infection and clot retention as also noted by Kiptoon *et al.*[6] The wound infection rate is probably attributable to preoperative bacteriuria of which long-term catheterization contributed greatly. This was managed with regular change of dressing and culture directed antibiotic therapy. Clot retention rate was higher than the 0.9% noted by Hill,[2] but his series deployed the Malament suture in all cases. Mild transient urinary incontinence has been noted to be the "Achilles heel" of the transvesical procedure;[2] this resolved in all cases with pelvic floor exercises.

Vesicocutaneous fistula occurrence was similar to that noted by others[2] and resolved on catheter drainage only. Bladder neck stenosis was seen in 6.4% of patients in this series. Earlier workers had shown a rate of between 8.6% and 13.9%, respectively.[20] When observed it requires open or endoscopic revision. Some long segment anterior urethral strictures were observed after prostatectomy. This is probably due to poor quality latex catheters that induce an intense urethral inflammation resulting in stricture. The toxicity of latex has been shown previously and it has been suggested that it should no longer be used for urinary catheters.[21,22]

A mortality rate of 1% is comparable to other series.[4,18] One case had significant postoperative hemorrhage, this was also observed by Ngugi and Saula[18] and highlights the need for awareness of this potential complication and deploy preventive hemostatic maneuvers. Another mortality occurred as a result of pulmonary embolism, which has been associated with open prostatectomy.[23]

Conclusion

The utility and relevance of open prostatectomy in developing climes remain valid. There is a need to emphasize the value of good preoperative workup and anticipation of possible challenges in order to limit morbidity. Long-term preoperative catheterization should be avoided where feasible. Hemostatic techniques should be highlighted in training in the event they are required.

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