Outcome of Open Prostatectomy

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ABSTRACT

Objective — *To determine the outcome of open prostatectomy in the general surgery department of rural setup.*

Study design — *Descriptive case series.*

Place & Duration of study — *Department of Surgery, Fatima Hospital and Baqai Medical University Karachi, from June 2004 to May 2011.*

Methodology — *All patients with bladder outlet obstruction due to benign prostatic hyperplasia (BPH), operated by transvesical route were included. The parameters evaluated were improvement in International Prostate Symptom Score (IPSS), peak urinary flow (Qmax), postvoid residual urine (PVRU), blood transfusion rate, operative time, duration of catheterization, hospitalization and postoperative complications.*

Results — *There were 107 patients in the series. Mean age was 67 ±6 year (SEM=1). The IPSS improved from 26.53±3.920 preoperatively to 9.13±1.797 postoperatively, PVRU from 136.094±31.802 to 18.86±5.694, and Qmax from 9.032±1.940 to 19.952±2.555. The postoperative complication rate was 46.7%. It included hemorrhage requiring transfusion (n=13 -15%), urinary tract infection (n=10 - 9.3%), wound infection (n=7 - 6.5%), clot retention (n=5 -4.7%), temporary urinary incontinence (n=3 -2.8%), bladder neck stenosis (n=3 - 2.8%), urethral stricture (n=2 -1.9%), suprapubic urinary fistula (n=2 - 1.9%), and epididymo-orchitis (n=1 - 0.9%). The mortality rate was 0.9%. The mean operative, catherterization and hospitalization duration were 56.23±9.77 minutes, 7.12±.81 days, and 8.41±2.28 days, respectively.*

Conclusion — *Open prostatectomy is still a good option for BPH where endourology facilities are not available.*

Key words — *Benign prostatic hyperplasia, Open prostatectomy, Transvesical prostatectomy.*

INTRODUCTION:

Benign prostatic hyperplasia is the most common cause of bladder outlet obstruction and voiding symptoms in elderly men. It has significant impact on their daily lives. Pathological changes of BPH are evident in 50% of men in the 5th decade of life and 90% of men in the 9th decade. In patients with BPH, active monitoring and watchful waiting is recommended for mild symptoms with International Prostatic symptoms score (IPSS 0-7). Pharmacotherapy or minimal invasive therapy is advised for moderate symptoms score (IPSS 8-19) and small to medium size prostate. Surgery is advised for severe symptoms (IPSS 20-35) with acute urinary retention, persistent or recurrent UTI, gross haematuria and renal insufficiency from enlarged prostate.

Although transurethral resection of prostate (TURP) is the commonest surgical procedure practiced and described as a gold standard treatment for BPH, open prostatectomy (OP) is still popular in places with no endourology facilities, in large prostates

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(greater than 80 cm^3), and in cases of associated pathology e.g. vesicle calculus, diverticulum and inguinal hernia.[1] The morbidity and mortality of open prostatectomy are higher than TURP, but it provide good symptoms relief, and has lesser recurrence rate.[2] Open prostatectomy can be done with either a suprapubic transvesical, retropubic transcapsular (Millin's) or perineal (Young's) approaches. Suprapubic transvesical route is the operation of choice in dealing with concomitant bladder pathology. OP has gained new interest since watchful waiting and oral medicines in patients with mild prostatism can result in increased prostate size at surgery.[1]

Incidence rates of open prostatectomy in developed countries are 3% to 40% (United States 3%, Sweden 12%, France 14%, Italy 32% and Israel 40%).[1-7] Pakistan with as many as 50% of the 2 million men older than 65 year are at risk of bladder outlet obstruction from BPH.[8] Further 65% Pakistanis live in rural areas without the financial resources or facilities to receive either pharmacologic treatment or transurethral surgery to which their counterparts in the West have ready access, making OP the treatment of choice.[8]

METHODOLOGY:

This descriptive study was conducted at Surgery Department, Fatima Hospital and Baqai Medical University Karachi from June 2004 to May 2011. Transvesical prostatectomy for BPH was performed. The inclusion criteria were patients of bladder outflow obstruction (BOO) due to BPH with IPSS >20-35. Those with complications in addition to BPH eg, vesical calculi, diverticula, acute urinary retention, persistent or recurrent UTI, hematuria and renal insufficiency, were also enrolled. Also included were patients of BPH with co-existing inguinal hernia and those with marked ankylosis of hips that prevent lithotomy position for TURP.

Patients with clinical or biochemically suspicious carcinoma of prostate, or its detection on histopathology, those with small fibrotic prostate, not willing for open prostatectomy, not fit for open surgery, with previous prostatectomy, previous pelvic surgery preventing access to the prostate gland, were excluded. Cases with incomplete data and those who were lost to follow-up were also excluded.

An informed written consent was taken and patients counseled about the merits and demerits of the procedure. A thorough record of patients' data was kept. This included the history, International Prostate Symptom Score (IPSS), and physical examination, including digital rectal examination. Investigations included blood complete picture (CP), fasting blood sugar (FBS), hepatitis B surface antigen (HBsAg), anti-hepatitis C virus (anti-HCV), blood urea nitrogen (BUN) and creatinine level, urinalysis, prostate-specific antigen (PSA) level, x-ray chest, uroflowmetry, and ultrasound for kidneys, ureters, bladder, prostate volume and postvoid residual urine.

The indication for surgery was determined by the IPSS, prostate volume, PVRU and the presence of associated pathology ie bladder calculi, diverticuli, inguinal hernia. All the patients were operated under spinal anesthesia. Antibiotic prophylaxis was given using 200 mg ciprofloxacin at the time of induction of anesthesia; the dose was repeated once after 12 hours post-operatively.

Operative details recorded included operating time, operative findings (ie number, size and consistency of nodules, vesical calculus or diverticulum), and complications. Satisfactory hemostasis was achieved in each case, initially with ribbon gauze packing and finally with balloon tamponade; 50 ml balloon of 3-way Foley catheter (Bardia Inc) was placed in the prostatic bed for tamponade effect. Retropubic drain was placed and brought out through a separate stab incision); it was removed, when the discharge was <5 ml in last 24 hours.

The post-operative complications were divided as early (that observed in ward) and late (that reported after discharge), and were assessed by history, clinical examination and related investigations. Severity of pain was defined using verbal rating scale (VRS). All patients received diclofenac suppository 50 mg at the induction of anesthesia, and bupivacaine (0.2%) was infiltrated into the wound to decrease postoperative pain. Diclofenac 75mg intramuscular injection was given 12-hourly for 24 hours, followed by diclofenac oral 50mg 8-hourly for next 24 hours. Patients were put on constant external irrigation with normal saline to prevent clot retention. On oral resumption, patients were encouraged to drink plenty of fluids to provide internal irrigation. Patients were given transfusion when clinically indicated or at a hemoglobin value of <10 gm/dl. Catheter was removed, once the patient's urine remained clear for 24 hours, usually between 5^{th} to 9^{th} days. Patients were discharged on 6^{th}-10^{th} postoperative day. Skin sutures were removed between 8^{th}-10^{th} post-operative days. The follow-up schedule included initially weekly follow-up in 1^{st} month and then monthly follow-up for 3 months and a quarterly follow-up for one year. The patients were then advised to come in case of any problem/complication related to operation. IPSS, peak flow rate (Qmax) and PVRU were assessed at 1, 3 and 12 months postoperatively.

The parameters evaluated included improvement

in IPSS, Qmax, PVRU, BUN and creatinine, blood transfusion rate, catheterization time, hospitalization time, and postoperative complications. Statistical analysis was done using SPSS 16. The inferential statistics were calculated using Student's t tests. A p-value of <0.05 was considered significant.

RESULTS:

During the 6 years study period transvesical prostatectomy was performed for BPH in 119 patients. Twelve patients were excluded due to lost to follow-up (n=6), incomplete data (n=5), and postoperative histopathology showing carcinoma of prostate (n=1). A total of 107 patients were available for final analysis. Mean age of the patients was 67±6 year, SEM=1 (range=56-92 year).

The presentation was as follows: prostatism (n=64 -59.8%), acute retention (n=28 -26.2%), chronic retention (n=13 - 12.1%), and hematuria (n=2 - 1.9%). The patients with acute or chronic retention (38.3%) were catheterized preoperatively for 7-14 days. All these patients were put on oral ciprofloxacin. The concomitant surgical diseases were found in 13 (12.1%) patients, which included inguinal hernia in 6 (5.6%), vesical calculus in 4 (3.7%), and hemorrhoids in 3 (2.8%) cases. The comorbid diseases were present in 35 (32.7%) patients: hypertension in 11 (10.3%), ischemic heart disease in 10 (9.3%), diabetes mellitus in 8 (7.5%), hepatitis B/C in 4 (3.7%), and chronic obstructive pulmonary disease in 2 (1.9%).

Table I summarizes the paired preoperative and postoperative variables. Table II shows independent variables while table III summarizes early and late postoperative complications. The most common complication was hemorrhage requiring transfusion which occurred in 16 (14.9%) patients. Wound infection occurred in 7 (6.5%) patients. Five patients settled with local wound care. Two patients required wound opening for release of pus, followed by secondary suturing. Clot retention occurred in 5 (4.7%) patients, all of whom were diabetics. Bladder wash through the catheter was successful in 3 patients, but 2 patients developed repeated clot retention and ultimately urinary fistula occurred through the incision. In both cases, the fistula closed spontaneously in 4 weeks. Urinary tract infection (UTI) occurred in 10 patients. All were treated according to the results of urine culture and sensitivity. On removal of urethral catheter, 3 patients developed temporary incontinence; they were improved within 2 weeks on pelvic floor exercises. One patient with previous history of IHD died 18 hours postoperatively due to acute myocardial infarction. Bladder neck stenosis (n=3) and urethral stricture (n=2) were diagnosed 2-4 months after operation, on retrograde urethrography. Patients with bladder neck stenosis were referred to another urology centre for bladder neck incision, while urethral strictures were dilated using metal sounds.

Table I: Analysis of Paired Preoperative and Postoperative Variables

	No. of Patients	Mean	Std. Dev.	Pair differences: Mean	95% Confidence interval: Lower	95% Confidence interval: Upper	P value
Preoperative IPSS	107	23.08	2.21	13.97	13.41	14.53	.000
Postoperative IPSS	107	9.11	1.81				
Preoperative PVRU (ml)	107	143.71	28.42	124.85	119.18	130.51	.000
Postoperative PVRU (ml)	107	18.86	5.69				
Preoperative Qmax (ml/sec)	73	7.96	1.62	-13.65	-14.20	-13.10	.000
Postoperative Qmax (ml/sec)	73	21.61	1.42				
Preoperative BUN (mg/dl)	107	14.96	5.78	1.31	.85	1.75	.000
Postoperative BUN (mg/dl)	107	13.65	3.99				
Preoperative creatinine (mg/dl)	107	1.09	.25	.10	.05	.14	.000
Postoperative creatinine (mg/dl)	107	.99	.17				
Preoperative hemoglobin (gm/dl)	107	11.73	1.21	1.79	1.60	1.98	.000
Postoperative hemoglobin (gm/dl)	107	9.93	.78				

Table II: Analysis of Independent Preoperative and Postoperative Variables

	Mean	Std. Dev.	95% Confidence interval		
			Lower	Upper	P value
Prostate weight (gm)	83.487	14.735	80.663	86.311	.000
Prostate specific antigen (ng/dl)	4.584	.658	4.457	4.710	.000
Urethral Foley catheter (days)	7.12	.809	6.97	7.28	.000
Retropubic drain (days)	2.17	.637	2.05	2.29	.000
Operative time (minutes)	56.23	9.766	54.36	58.11	.000
Pain VRS score	3.46	.816	3.30	3.61	.000
Hospital stay (days)	8.41	2.282	7.97	8.85	.000

Table III: Early and Late Postoperative Complications

Early complications	No.	%	Late complications	No.	%
Hemorrhage requiring transfusion	16	15.0	UTI	7	6.5
Wound infection	7	6.5	Bladder neck stenosis	3	2.8
Clot retention	5	4.7	Urethral stricture	2	1.9
UTI	3	2.8	Epididymo-orchitis	1	0.9
Temporary incontinence	3	2.8			
Urinary fistula	2	1.9			
MI	1	0.9			
Total	37	34.6	Total	13	12.1
Grand total				50	46.7

DISCUSSION:

Open prostatectomy remains a cornerstone in the management of symptomatic BPH as it gives excellent symptomatic relief in majority of patients.[1,2] But its higher morbidity and development of endoscopes has made TURP as the gold standard treatment for BPH. However, it is still advisable in cases of large prostate glands (> 80g) and cases associated with concurrent pathology.[9] In developing countries, as in our setup, the selection of OP is usually dictated by the lack of transurethral instruments and endourologic expertise.[2,10]

The mean age of the patient in this series was 67 year which is similar to that reported in other studies.[11-15] Majority of our patients presented with prostatism (59.8%), followed by acute retention (26.2%). Ghali et al reported acute retention as the main presentation (54%), followed by prostatism (39%), and chronic retention (6.8%).[16] Luttwak et al reported urinary retention in 72.4%.[15] Zargooshi reported acute retention in 60.8%, and urge/overflow urinary incontinence in 11.7%.[12] In this series 38.3% patients were either admitted with catheter or required catheterization on admission. Suer et al reported 31% admission with an indwelling urethral catheter.[11] Kiptoon et al reported hypertension in 29% and diabetes mellitus in 13% of their patients.[13] In this series comorbid diseases were present in 32.7% patients.

The mean preoperative PSA in this series was 4.58 ng/mL (range 4.10-7.90). This is lower than reported by Suer et al 9.6 ng/mL (range 1.65-45.6), but higher than reported by Serretta et al 3.7 ng/mL.[11,17] Traditionally, patients with prostate volume 80-100 cm^3 and lower urinary tract symptoms unresponsive to medical treatment are the candidates for open prostatectomy.[11] The mean prostate volume in this series was 83.49 cm^3 (range 48.4^3 –126.8^3 cm).

Other studies reported a mean weight/size of 88.7 g, 71 ml, 96.3 ml.[1,11,12] The lowest prostate volume of 56 cm^3 in OP series was reported by Tubaro et al.[18] In larger size prostates TURP is avoided, because the resection time it required would increase the risk of transurethral resection syndrome and other complications.[19] Enucleating a large prostate can be much faster than removing it transurethrally.[2] Mean operative time in this series was 56.23 minutes, a reflection of experience gained over years. Gratzke et al reported mean operative time of 80.8 minutes.[1] The mean postoperative catheterization and hospitalization in this series was comparable to that reported by other studies.[11,13,14,17]

Peroperative and postoperative hemorrhage remained a serious problem in open prostatectomy. A dramatic improvement in urinary flow within a short period is partly due to more complete removal of prostatic tissue compared with transurethral removal. The mean preoperative and postoperative IPSS, PVRU and Qmax were comparable to that reported in other studies.[1,2,11]

The low reoperation rates is another factor used to persuade patients to select the open procedure.[2] Gratzke et al reported surgical revision rate (endoscopic or open revision) of 3.7%, due to severe bleeding or wound complications (abscess or seroma). They relate it to the surgeon's experience as most of the operations were performed by urological residents.[1] In this series 5 (4.7%) patients required re-operation.

Condie et al reported complication rate of 14% (early 8%, late 6%), and mortality rate of 1%.[8] Gratzke et al reported complication rate of 17.3%, and the most significant were bleeding requiring transfusion (7.5%).[1] Meier et al reported overall early complication rate of 19.6%.[20] Though the overall complication rates in this series was higher (46.7%), the individual complication rates were similar to those reported in the recent literature.[11-13,15,21]

The complication purely attributable to OP is wound related morbidity, occurring at a rate 8.4% in this series. Temporary incontinence occurred in 2.8% patients, but no patient was seen with stress incontinence (permanent). This may be due to sharp dissection near the apex of bladder (external sphincter) rather than avulsion.

Emerging new techniques for larger prostates, such as HoLEP or the laparoscopic approach, show convincing results but they lack broad application due to the long learning curve, cost, lack of expertise and availability of endoscopic equipment.[1] Baumert et al in a comparative study of laparoscopic and open prostatectomy reported longer operative time (115 vs 54 minutes, P <.01), but less blood loss (367 vs 643 mL) and shorter catheterization time (4 vs 6.8 days) in the laparoscopy group than in the open prostatectomy group.[22]

CONCLUSIONS:

Open prostatectomy is an important treatment option in dealing with large benign prostatic enlargement especially with additional bladder pathology, and in setups where endoscopic treatment modalities are not available. It showed a satisfactory early postoperative outcome with a complication rate that was within the expected range compared to that reported in the recent literature.

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