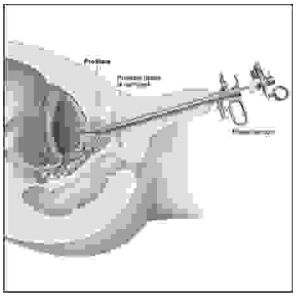
ORIGINAL PROF-1108

TRANSURETHRAL RESECTION;
A CRITICAL EVALUATION OF THE RESULTS.



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ABSTRACT... arif48dr@hotmail.com **Objective:** To establish the current usage and results of transurethral resection of prostate in patients of benign prostatic obstruction (BPO) who presented with severe irritative and obstructive prostatic symptoms. **Setting:** Saleem Medical Complex Hospital Quetta. **Period:** From April 1997 to December 2004 **Patients & Methods:** Transurethral resections for BPO were performed with 5% dextrose water in 500 consecutive patients. All these patients were followed for early and late complications and followed up to 6 months after TURP. **Results:** Significant symptomatic improvement has been observed with minimal morbidity (14 %). None of the patient had significant hematuria and TURP syndrome. Mean operative time was 45.0 minutes. Mean interval to catheter removal was 26 hours. Only 15 patients (3%) revealed neoplastic changes in resected tissues. Incidence of secondary hemorrhage, stricture urethra, epididymo-orchitis, retrograde ejaculation and impotence were observed in 10 (2%), 20 (4%), 10 (2%), 5 (1%) and 20 (4%) patients respectively. Only 15 patients (3 %) who developed post-operative retention and Re-TURP were performed in two patients for the residual prostatic tissue. None of the patient developed incontinence of urine. Pre operative and postoperative history of libido and sexual behavior was also assessed.

INTRODUCTION

Benign prostatic hyperplasia (BPH) is a disease of aging and seldom occurs in men under the age of 40 years[1]. At the age of 80 years, prevalence is as high as 85 % in elderly men is the rule but not necessarily all of those have BPH will experience significant symptoms[2]. It is estimated that about one third of all men require treatment for the relief of symptoms[3]. Multitude of treatment is available for the same ranging from the medical treatment to surgery to endoscopic procedures and has undergone major changes in the last 30 years. Until recently surgery was the mainstay of therapy for BPH. In the early 1970_s, up to a half of prostatectomies were open procedures; 20 years later, over 90 % procedures are transurethral (e.g.TURP). Although mortality rate is low[4] and morbidity is considerable[5]. Transvesical prostatectomies are still performed frequently in Pakistan especially by general surgeons with fairly high morbidity and mortality rate. Since 1990, the range of treatment has broadened considerably as new medications, e.g. more specific α-adrenergic blocking agents and the 5α–adrenergic inhibitor,

finastride, have become available[6,7]. Surgery is still generally considered to be successful[8]. Among the various surgical modalities, TURP is the popular and gold standard[9] and thought to be suitable almost for all cases of BPO[10].

TURP accounts for about 90 % of all the prostatectomies done in western world[11]. It is most useful in patients with compromised cardiac and renal status and in any situation where bleeding would be problem e.g. patients on anticoagulant drugs. Transurethral incision of prostate (TUIP) is also comparable with TURP in elderly patients having poor cardio-pulmonary status[2]. Over the last 5 years, new minimally invasive therapies have been introduced to treat BPO, but few, especially TUIP, have been fully evaluated for their efficacy, safety and cost effectiveness within appropriately designed randomized controlled trials (RCT_s)[13]. Other surgical procedures apart from TUIP[12]or bladder neck incision[14], microwave hyperthermia[15], balloon dilatation[16],open prostatectomy[17], and laser ablation[18] are important options.

TURP provides satisfactory outcome for most patients and is comparable with TUEVAP (transurethral electro vaporization) and TUEVRP (transurethral vapor resection) of the prostate with reference to its morbidity[19]. In the past few years transurethral electro vaporization and vapor resection of prostate are new treatments developed through modification of conventional electro surgical desiccation. They offer prospect of reduced bleeding and lower morbidity from fluid absorption[20].

MATERIALS AND METHODS

This study was conducted in Saleem Medical Complex Hospital, Quetta from April 1997 to December 2004. Total 500 patients (mean age 63.18 years) with symptomatic BPH formed the study group. Symptom scores, residual urine were assessed pre and post-surgically. Patients with stone bladder, carcinoma prostate, stricture urethra, bladder tumors and neurogenic bladder were excluded from this study. American Urological Association (AUA) Symptoms Scoring Index was done which include irritative (frequency, urgency, nocturia and dysuria) and obstructive (poor stream, hesitancy, terminal dribbling, incomplete emptying and retention) symptoms. The answer is assigned points from 0-5. The total symptoms can range from 0-35 and thus classified on the basis of symptoms score. Patients who presented with retention of urine were assigned score 35. A complete physical and systemic examination along with digital rectal examination (DRE) was performed. The investigations like blood CP, urine RE, blood urea, serum creatinine, blood sugar, X-ray KUB and chest and ultrasonography of KUB were carried out routinely. Transabdominal ultrasound of prostate was done to measure the size of gland. The diagnosis was based on clinical assessment and subjective symptoms. All the patients were followed monthly for six months. At each visit symptoms scores, residual urine and grading of 'overall" quality of life assessment was analyzed.

For analysis purpose patients were divided in two groups according to age, intensity of symptoms, size of the prostate and duration of catheter.

RESULTS

Statistical Analysis

After completing the study of 500 patients, all the required information's were fed in a computer programmer spss+ (statistical package for social sciences in an 89 different variables). The relationship and significance of postoperative complications was seen with four variables such as age, resected prostatic tissues weight, preoperative symptoms and catheter removal time. The probability value (p- value) of 0.05 and below was taken as statistically significant.

Hundred patients who underwent TURP had mean age of 63.18 years. Minimum age of a patient was 54 years and maximum age was 89 years. For analysis purpose patients were divided in two Groups according to age. One hundred eighty five patients (37%) were of aged 60 years and below and designated as Group A_1 and remaining 315 patients (63%) were above the age of 60 years and designated as Group A_2.

Minimum operative time was 35 minutes and maximum

time was 68 minutes. The mean time was 45 minutes. The mean interval to catheter removal was 26 hours. The mean weight of prostate as assessed by DRE was 22.76 grams. Minimum weight of prostate was 12 grams and maximum weight was 43 grams. Ultrasonography of prostate revealed mean prostatic size of 43.76 cm^3. Minimum size of prostate was 28.34 cm^3 and maximum size was 73.60 cm^3. Out of 500 patients, 305 (61%) presented with retention of urine. These patients had previous history of prostatisim and were already catheterized. Hundred patients (20%) presented with severe prostatic obstructive symptoms and did not develop retention. Foley's catheters were removed after 48 hours in 70 patients, 72 hours in 120 patients and 5 days in 30 patients according to postoperative bleeding. Pre-TURP minimum symptom score of a patient was 25 and maximum was 35 and was significant at $p>0.05$.

Early postoperative follow up

During TURP procedures none of the patients develop TURP-syndrome. Bleeding was not significant and the all procedures were carried out till the removal of adenomas. Other immediate complications of TURP were reported as failure to void (4%), postoperative hemorrhage (2%), clot retention (1%) and urinary tract infection (2%). Retrograde ejaculation was found in one (1%) patient. Almost none of the patient developed complication likes perforation. The resected prostatic tissue of the patients was weighed and recorded. Two hundred twenty five patients (45%) having resected prostatic tissue weight of 30 grams and less grouped as W_1 and remaining 275 patients (55%) having weight more than 30 grams were grouped as W_2. In 350 patients, catheter was removed after 48 hours and grouped as $C_1$and in 150 patients catheter was removed after 72 hours and grouped as C_2. All patients were followed up to six months starting from day 1 and than on 1st week, 2nd week, 1st month, 3rd month and six month after removal of catheter. At each postoperative visit patients were asked and advised about fever, hematuria, testicular swelling, urinary incontinence and stream problems. All other postoperative complications including the status of libido and potency during the six months period were also documented and dealt with.

Residual prostatic tissues

Fifteen patients (3%) developed retention of urine after removal of catheter. Five of them had clot retention and evacuated with fulguration. Re-TURP was done in ten patients.

Secondary hemorrhage

It was seen in 10 patients (2%). Five patients developed this complication on the 6th day, and other patient developed after 7 day. Five of them were shifted to the operation theatre for the evacuation of clots with resectoscope sheath.

Epididymo-orchitis

Ten patients (2%) developed epidymo-orchitis after four days and were treated with suitable antibiotic.

Incontinence

None of these patients developed this complication in this series. Five patients complained of stress incontinence that was improved conservatively in the 2nd month of follow up.

Late Postoperative Follow up

There is significant morbidity after TURP during first month, i.e. 6% of patients continue to experience off and on mild haematuria and 12% complained of dysuria. Only 3% of patients also complained of some difficulty in control of urine. After 4 weeks 45 patients were assessed as having significant symptoms but only 9 had contacted their GPs. This probably might reflect inadequate instruction at the time of discharge or general reluctant to bother the GPs for what are assumed to be normal symptoms after TURP. Pre-operative mean symptoms score was 35.0. After TURP mean aggregate symptoms score reduced to 10.9, 8.03, 4.95, 4.33, 3.83 and 3.93 during each month of follow up respectively as shown in Table I. In the first month of follow up after TURP, the average irritative symptom score was 9.30 and obstructive symptoms score was 11.30. In the second month of follow up, obstructive and irritative symptoms score was reduced to 0.79 and 7.7 respectively. In the third month of follow up, obstructive symptom score became 0.53 and irritative score was

4.92.

Table-I. Sequential monthly symptoms scores during each month in 500 patients.							
AUA Symptoms Score	**1st Month**	**2nd Month**	**3rd Month**	**4th Month**	**5th Month**	**6th Month**	**Improvement as a whole**
1. Mean obstructive symptoms scores	11.30	0.79	0.536	0.533	0.433	0.400	69.9%
2. Mean irritative symptoms scores	9.30	7.77	4.92	3.82	3.29	2.80	70.3%
3. Mean aggregate symptoms scores	10.9	8.03	4.95	4.33	3.83	3.93	

The significance and relationship of postoperative complications was seen with different variables of this study in Table II and it is shown that higher the complications seen in older age group having a higher prostatic weight with severe pre op symptoms. A total of 14 patients (14%) developed postoperative complications Table III.

Table-II. Percentage of complications in reference to age, prostatic weight, pre-op symptoms and duration of catheter removal								
Complications	**Age**		**Prostatic weight**		**Preoperative Symptoms**		**Catheter removal**	
	A_1	A_2	W_1	W_2	S_1	S_2	C_1	C_2
Secondary Hemorrhage	1.0	1.0	0.0	2.4	1.34	3.0	2.8	0
Stricture Urethra	1.0	3.0	0.0	4.0	2.0	2.0	7.4	3.0
Epidymo-Orchitis	1.0	2.0	0	3.0	9.75	16.3	11.3	6.0
Incontinence	Nil	Nil	Nil	Nil	-	-	-	-
Residual Prostatic Tissues	Nil	2.0	Nil	2.0	0	4.76	2.0	0
Pre op symptoms; Wt: *S_1: with retention gms* *S_2: without retention gsm*		***Age;*** *A_1: <60 years* *A_2: > 60 years*		***Catheter removal;*** *C_1: 2nd day* *C_2: 1st week*		***Prostatic;*** *W_1: < 30* *W_2 : >30*		

Stricture urethra

Only twenty (4%) patients developed stricture urethra after the removal of catheter. The occurrence of stricture development was as under.

Week four	5 patient	(1%)
Week six	10 patients	(2%)
Week eight	5 patients	(1%)

The site of stricture was bulbous in five patients (1%), bulb- membranous in 10 patients (2%) and membranous in 5 patients (1%) (Table IV). Ten patients were treated with urethral dilatation and remaining was treated with internal urethrotomy.

Sexual behavior

Forty five e patients (9 %) reported impotency following TURP. Failure of retrograde Ejaculation was also reported in five (1%) patients. Grading of quality of life assessment was also sought by interviewing the patients at the end of follow up (Table V).

Table-III. Overall postoperative complications during the six month follow up		
Complications	**No of patients**	**% age**
Post operative retention	15	3.0
Secondary hemorrhage	10	2.0
Residual prostatic tissues needed Re-TURP	10	2.0
Orchitis	10	2.0
Total Incontinence	Nil	Nil
Stricture of urethra	20	4.0
Retrograde ejaculation	05	1%
Total	70	14.0%

Table-IV. Postoperative stricture urethra		
Site of stricture	**No. of pts**	**%age**
Bulbar	5	1
Bulb membranous	10	2
Membranous	5	1
Total	20	4%

Table-V. Grading of satisfaction with reference to their urination behavior.		
Improvement in urinary symptoms	**No. of pts**	**%age**
Not much satisfied	30	6%
Fairly satisfied (Mixed)	85	17%
Very much satisfied and pleased	385	77%
Total	500	100%

DISCUSSION

When evaluating surgical treatment modalities for BPH, it is important to assess the impact of each treatment, has on both the direct (peak urinary flow rate and residual urine) and indirect outcomes, the latter being those outcomes that are of greater relevance to the patient as they more or less directly affect either the extent or quality of his life[21]. The following discussion of the outcome is expanded from the analysis carried out for the AHCPR (Agency for Health Care Policy and Research) Guidelines[22]. Outcome estimates are derived from a combinations of outcomes reported in the peer-reviewed literature following TVP, TURP and TUIP. In this series, the selection criteria for TURP were the subjective clinical presentation as assessed by AUA scoring method. However we carried out DRE of prostate and abdominal ultrasound to every patient. Conventionally, patients are reviewed in out patients between 6 weeks and 3 month after TURP. The 3-month appointment is a compromise, as with limited outpatient time, most surgeons hope that irritative symptoms will have settled in most of there patients by the time of their outpatient appointment. Obstructive symptoms show the maximum improvement at the end of 3rd month. (Table I).

In this series the range of age was 54 to 89 years. Mean age of patients (63.18%) was similar in many studies. Mebust (1989) identified the average age of 69 years in his series of patients[23]. Prostatic size estimation by digital rectal examination is a reliable procedure for many workers[24]. It's subjective one and depends upon the skill and experience of the examiner[25]. In our series the mean prostatic size was 43.76 cm^3 as assessed by abdominal ultrasound, combined with DRE and it, which was not in consistent significantly with the resected, mean tissues removed surgically[26]. Another worker found the accuracy of prostate size by DRE and actual weight of prostate removed by TURP[27]. Another showed no relationship between the size of prostate and the degree of bladder out let obstruction[28] . Overall morbidity of TURP is approximately 14 % in this series. Morbidity and mortality are higher in patients over age 80 and occur due to cardiovascular and septic complications in debilated patients. Immediate complications are related to the size of the adenoma, resection time, technique, age of patients and the presence of severity of pre-TURP symptoms. The incidence of residual prostatic tissues was found in 10 patients (2%). Five of these patients presented with retention of urine and other had difficulty

in voiding postoperatively. The incidence found statistically significant (p=0.0101). Catheter trial was also failed after one week, and Re-TURP were performed particularly at the apical tissues, which probably left behind for the fear of perforation of sphincter. Secondary hemorrhage was although not significant, seen in 10 (2%) patients requiring readmission for the evacuation of clots. Our incidence of this complication is comparable to other studied where the incidence was described as 2.1% and 3.9%[4,29,30]. Urethral stricture can develop at any site from the external meatus to posterior urethra but it is un common in the membranous urethra[31]. Epididymo-orchitis was seen in 10 patients (2%) and it was similar to the studies of many other authors[4,34]. Many workers described the cause of this complication as infection tracking through seminal vesicles to the vas and epididymus[35]. It is not significant in this study. In all our patients amino glycosides were given 6 hours before surgery and for 24 hours after surgery and then the patients were discharged on Quinolone salts for two weeks postoperatively. Off and on stress incontinence were reported in 30 patients (6%) and relieved later on.

In our study, urethral stricture developed in 20 patients (4%) and is similar to studies where it has been found as 20 to 29%[32]. Five patients developed stricture at bulbous, 10 developed at bulbo-membranous and one developed at membranous region. Though the exact cause of this complication was not clearly understood but some workers claimed that it may be due to overwhelming use of resectoscope sheath and pre and postoperative prolong use of catheter[33] and presence of pre existing urinary tract infection[31]. We also did not found significant relationship of urethral stricture formation with age of patients, duration of catheterization and resected prostatic tissue weight. Total incontinence was not found in the present study although it has been reported in many other series[36,37]. It could be due to sphincter damage or edema of sphincter tissues[34].

CONCLUSION

The morbidity rate was lower in our patients as compared to the international studies. But there was no statistically significant relationship with the variables of our study such as age of patients, resected prostatic weight, pre operative symptoms and postoperative catheter removal duration. The decreased morbidity in this series may be due to extra care regarding sterilization, catheter care, good patients compliance and evaluation and management of the associated risk factors such as medical diseases preoperatively.

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