Day care monopolar transurethral resection of prostate: Is it feasible?

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Abstract

Introduction: Benign prostatic hyperplasia is a common disease accounting for 30% of our OPD cases and about 25% of our surgery cases. Various treatment options are now available for more efficient care and early return to work. We wanted to determine the safety and feasibility of day care monopolar transurethral resection of prostate (m-TURP), by admitting the patients on the day of surgery and discharging the patient without catheter on the same day. We also compared the morbidity associated with conventional TURP where in the catheter is removed after 24-48 h of surgery and day care TURP where in the catheter is removed on the day of surgery.

Materials and Methods: A total of 120 patients who fulfilled the criteria were included in the study which was conducted between November 2008 and December 2010. A total of 60 patients were assigned for day care and 60 for conventional monopolar TURP. There was no significant difference in age, prostatic volume or IPSS score. Day care patients were admitted on day of surgery and discharged the same day after the removal of catheter.

Results: Both the groups were comparable in outcome. Stricture rate was less with day care TURP. Mean catheterization time was similar to laser TURP.

Conclusion: Monopolar TURP is still the gold standard of care for BPH. If cases are selected properly and surgery performed diligently it remains the option of choice for small and medium sized glands and patients can be back to routine work early.

Key Words: Benign prostatic hyperplasia, day care transurethral resection of prostate, HoLEP, monopolar transurethral resection of prostate

INTRODUCTION

Transurethral resection of the prostate has been reported to represent more than 30% of the workload of urologists and remains the dominant major procedure performed by urologists. A number of methods of treatment of bladder outflow obstruction have been proposed over the years, but transurethral prostatectomy remains the standard by which all others must be judged. Open prostatectomy (OP) and monopolar TURP are still the procedures utilized by most urologists, however, laser therapy is emerging as a commonly used technique.

In recent years further developments in the surgical treatment of bladder outlet obstruction have been developed, which include laser enucleation, transurethral vaporization, bipolar TURP, transrectal high intensity focused ultrasound and transurethral microwave thermotherapy. These new methods of treatment of bladder outlet obstruction have attempted to reduce morbidity and length of stay associated with traditional transurethral resection of the prostate. Meta-analysis comparing HoLEP with both OP and transurethral resection...
of prostate (TURP) shows TURP to be as effective. HoLEP and TURP provide a similar improvement in Q max. HoLEP, however, has several advantages over TURP, despite requiring more operating time. It is at least as safe as TURP in terms of adverse events.[4]

Post-operative care of TURP includes prolonged bladder irrigation that immobilizes patient for long hours. The presence of catheter for many days increases the chances of stricture formation and is also a handicap for day-to-day activities of the patients. This also places the patient on financial loss as the long hospital stay prevents him to attend to his work.

Cherrie et al. reported that a disadvantage of transurethral prostatic resection compared with many new treatments for benign prostatic hypertrophy was the necessity for postoperative catheterization, which in turn prevented early postoperative discharge home. Okeke[5] reported that in his series of 180 cases he did not insert a catheter post-operatively and all patients voided spontaneously and were discharged the same day.

Not more than 10 studies have been reported in the literature about day care TURP where in the catheter is removed on the same day following transurethral prostatic resection.

This study was aimed to assess the feasibility of early removal of catheter following m-TURP.

MATERIALS AND METHODS

A total of 120 patients who fulfilled the inclusion and exclusion criteria were included in the study. A total of 60 cases were randomly assigned for day care group and their catheter was removed on the same day of surgery and discharged after two successful voids. Another 60 cases were taken as control group; their catheters were removed on the third day of surgery as conventionally done and were discharged after two successful voids. All the cases were done by single urologist.

A total of 231 TURPs were performed during the study period between November 2008 and December 2010. Of these 81 patients were excluded from the study as they were not eligible according to the exclusion criteria. A total of 27 of those patients were diabetic with neuropathic component, 15 had neurogenic component due to other causes, 17 had altered serum creatinine, 9 had bladder calculi, 7 had associated stricture disease, 4 had history of prior endoscopic surgery for voiding difficulty, and 2 had adenocarcinoma of prostate with retention for which they had undergone TUR channeling. Of the remaining 150 patients, 30 were not included in the study, as they had either intraoperative problem or their post-operative effluent was not clear.

Indications for surgery in the 120 patients included in the study were retention of urine with failed catheter free trial (n =86) and failed medical line of management (n = 34). Of these, 60 were subjected for day care TURP on random basis.

Preoperative evaluation included complete blood count, blood urea, serum creatinine, serum electrolytes, serum prostate specific antigen, ultrasound of KUB region, and urinalysis. No patients were taking anticoagulants, such as heparin or warfarin sodium for at least 1 week prior to surgery.

Procedure

All the patients selected for the study were fully evaluated before TURP, including an assessment of their symptoms using the AUA symptom score, uroflowmetry with Q max, and routine investigations including renal function tests, a PSA estimate, urine analysis and culture, ultrasonography of urinary tract to estimate prostate size, postvoid residual volume and for the presence of backpressure changes in the bladder and the kidneys. Pre-anesthetic check was carried out prior to admission. Patients with S.PSA > 2.5 ng/ml[6] underwent prostatic biopsy and were included in the study only when it was reported benign.

The patients were admitted to the hospital on the morning of the procedure after fasting for 4 to 6 h. They were advised to take two tablets of laxative (bisacodyl) and an anxiolytic (diazepam) during the night. All patients were taken as first case for the day. All patients were given spinal anesthesia 0.5% bupivacaine hydrochloride using a 25 gauge spinal needle at lumbar intervertebral space 2–3. A 26 Fr continuous irrigation transurethral sheath (modified Iglesias) and nesbitts passive cutting working element was used for all resections. Throughout the procedure 1.5% weight per volume glycine
was used as irrigation at a height of 60 cm above bladder level. All patients received parenteral antibiotic prophylaxis.

TURP is performed with adequate removal of apical lobes, lateral lobes, and bladder neck tissue ensuring widely open channel formation. One useful method to help identify significant bleeding points is to slow the irrigation input to a trickle. This allows even small bleeding points to be seen that otherwise are too quickly rinsed away by the irrigation fluid to be visible.

After the completion of the resection, the resectoscope is withdrawn into the bulbous urethra so that the sphincter, verumontanum, and prostatic fossa can be observed. Some additional resection of apical tissue may be necessary. Placing a finger in the rectum to elevate the apex is very useful when examining or resecting apical tissue.

The resectoscope is then reintroduced into the bladder and prostatic fossa to be absolutely certain that all bleeding sites have been controlled. All arterial and venous bleeders of significance are electrocoagulated, except for the venous sinuses, which cannot be controlled by cautery. Hemostasis was secured until effluent of the irrigation fluid from the bladder is totally free of any visible trace of blood. An Ellik evacuator or similar device was then used to remove all the prostatic chips and large blood clots from the bladder.

A 22 Fr tri-way Foley catheter was kept. No traction was given for the cases included in the study group. Postoperatively the catheter is irrigated continuously with 0.9% saline solution and stopped once clear effluent is draining. The decision to remove the catheters is based on the color of the catheter effluent, absence of clots, normal vital signs, and adequate urine output. Return of sensation to the lower limbs and ability to bear weight are necessary before catheter removal.

Intraoperatively, 10 mg furosemide was given if the resection was taking more than 60 min, to flush out excess fluid that has been absorbed so that TUR syndrome is prevented. Post-operatively irrigation is maintained by adding one ampoule of furosemide to one pint fluid so that bladder irrigation can be stopped earlier.

Patients were discharged when two flow rates and post-void residual scans had been performed. Days corresponding to catheter removal and hospital discharge were recorded for each patient.

Patients included in day care group, the catheter was removed on the same day depending on the color of the catheter effluent, absence of clots, normal vital signs, and adequate urine output. Patients included in control group had their catheter removed after 1 or 2 days depending on the same parameters as for day care. Patients were followed up regularly at 1 month, 3 month and 1 year interval post-operatively with IPSS scoring, flow rate and post-void residual volume assessment.

RESULTS

A total of 120 patients undergoing TURP during period of November 2008 to December 2010 were included in the study depending on the intra-operative parameters and post op effluent. A random of 60 patients were included in day care and other 60 were taken as controls.

There were not any significant differences between the two groups in average patient age (67.35 years in Day care vs. 64.61 years in control). The mean (range) IPSS score in patients without retention was 26.05 (21-33) and in control cases was 22.63 (19-33).

Forty-two patients (70%) in study group and forty-four (73.3%) patients in control group had an indwelling catheter before TURP because they had a history of retention of urine; all these patients had failed at least one trial without catheter.

The mean (range) Q max in the 18 patients of day care group without a catheter was 8.16 (6-11) mL/s, and the mean post-void residual volume was 80.55 (50-150) mL. The mean (range) Q max in the 16 patients of control group without a catheter was 8.63 (7-11) mL/s, and the mean post-void residual volume was 83.75 (50-125) mL.

The mean prostate volume was 38.58 (20-80) gm in day care group and 39.25 (20-100) gm in control group. The volume of prostate resected 16.33 (5-45) gm in study group and in 17.58 (5-60) gm in control group. Resection time ranged from 10-70 min in day care group and 5-75 min in control group. Mean resection time of 34.66 min in day care group and 36.25 min in control group were comparable.

Mean duration of catheterization in day care was short at 4.28 h in 59 patients. In controls, the average duration of catheterization was 26.78 h. The outcome was considered successful in 59 of 60 patients (98.33%) who were included in day care, as the catheter was removed successfully and they were discharged within 12 h. One patient had retention of urine due to clots and he was recatheterized and the catheter was removed 24 h after TURP.

The patients generally voided first at 0.5-2 h after catheter removal and all were discharged after two successful voids, on average 2-4 h after catheter removal. The average duration of hospital stay after TURP of the 59 successful patients was 9 (6-12) h. Only one patient had a catheter in place for 24 h and was discharged 28 h after surgery.
Of the 60 patients in control group, 1 patient developed stricture in membranous urethra at 3 months of follow up and I developed bladder neck stenosis at 6 months of follow up. Both underwent endoscopic treatment for their problems. There was no incontinence recorded. No patient in day care group developed any late complications.

Follow up
Patients were followed up on first month, third month, and a year after surgery. Improvement in Q max in day care group of patients without retention was from 8.16 ml/s in pre op to 22.05 ml/s following the removal of catheter and 21.83 ml/s and 21.94 ml/s at first and third monthly follow up, respectively.

Improvement in Q max in control group of patients without retention was from 8.62 ml/s in pre op to 22.6 ml/s following the removal of catheter and 22.41 ml/s and 22.13 ml/s at first and third monthly follow up, respectively.

IPSS scored improved from 26.05/35 pre-operatively in day care group to 7.61 at first month and 7.22 at third month. IPSS scored improved from 26.63/35 pre-operatively in day care group to 7.61 at first month and 7.22 at third month. [Table 1].

**DISCUSSION**

Attempts at early catheter removal, and thus conducting TURP as day-care surgery, have been underway since 1991.[7] The concept of TURP in an outpatient setting has been possible through improvements in instrumentation, complete hemostasis, anesthetic management during and after surgery, and increased experience with outpatient transurethral surgery. The advent of holmium laser resection of the prostate (HoLRP) revolutionized the concept of the surgical treatment of BPH.[8] It combines the best features of previous laser prostatectomy technologies, including minimum complications and morbidity, with the efficacy and immediacy of voiding outcomes associated with conventional TURP while eliminating the shortcomings of earlier lasers. HoLEP is relatively bloodless surgery that results in a brief catheterization and hospital stay (typically overnight), immediate symptomatic improvement and minimal irritative symptoms. We consider that it is possible to achieve results comparable with HoLEP using conventional TURP techniques meticulously and judiciously in carefully selected patients with BPH.

Selecting the patients is the most crucial part of outpatient surgery. The present study included patients with no significant comorbidity (e.g. chronic obstructive pulmonary disease or chronic arterial disease) which would increase the anesthetic risk or affect the course of hospital stay after surgery. The mean age of patients was 67.35 years, lower than that in previous series [Table 2].

The mean volume of prostate resected (16.33 gm) was higher than that reported by Gordon[10] (12.5 gm) in his series of day-care TURP. Other series of outpatient TURP by Chander et al.[9] reported a mean resection weight of 22.1 g [Table 2].

Although the mean resected volume was high, there were no major related complications, e.g. hemorrhage or fluid absorption.

The duration of catheterization after TURP depended primarily on the color of the catheter effluent. As there was either a clear or lightly tinged effluent at the end of TURP the duration of catheterization was short, at 4.28 h in 59 patients. This is comparably lower than the results in the study by Gordon[10] in which the mean duration was 6.54 h, and in the study by Chander et al.[9] in which the mean duration was 7.15 h. This may be because we spent more time on maintaining perfect hemostasis and no traction was given post-operatively [Table 2].

| Table 1: Follow up uroflowmetry and IPSS scores |
|-----------------------------------------------|
| Study | n | Age in years | Volume resected in gm | Duration of catheterization in hrs | Hospital stay in hrs |
|-------|---|-------------|------------------------|-----------------------------------|---------------------|
| Day care | | | | | |
| 1/12 IPSS | 7.61 | 8.13 |
| Average Q max | 21.83 ml/s | 22.41 ml/s |
| Average voided volume | 259.73 ml | 260.70 ml |
| Average residual volume | 21.66 ml | 22 ml |
| 3/12 IPSS | 7.22 | 8.05 |
| Average Q max | 21.94 ml/s | 22.13 ml/s |
| Average voided volume | 264.88 ml | 265.50 ml |
| Average residual volume | 20.75 ml | 23.5 ml |
| Control | | | | | |

| Table 2: Comparison of results from various studies of TURP as day surgery |
|-----------------------------------------------|
| Study | n | Age in years | Volume resected in gm | Duration of catheterization in hrs | Hospital stay in hrs |
|-------|---|-------------|------------------------|-----------------------------------|---------------------|
| Chander et al.[9] | 64 | 62.4 | 22.1 | 7.15 | 10.7 |
| Gordon[10] | 58 | 68.7 | 12.58 | 6.54 | 13.9 |
| Mebus et al.[11] | 3885 | 69 | 22 | 72 | 120-168 |
| Mc Loughlin et al.[12] | 150 | 70 | 17.2 | 72-120 | Outpatient |
| Mamo GJ et al.[13] | 127 | 69.8 | 29.3 | 21.5/45.4 | 68.6 |
| Klimberg IW et al.[14] | 125 | 71 | 14.7 | 48 | Outpatient |
| Agarwal SK el al.[7] | 83 | 69.9 | 23.6 | <24 | 72 |
| Dodds et al.[15] | 100 | 72 | 27 | <24/36-40 | 67.2/127.2 |
| Present study | 60 | 67.35 | 16.33 | 4.28 | 9 |

TURP: Transurethral resection of prostate
Various previous studies have recommended that the catheter can be safely removed after TURP within 24 h, with no significant increase in morbidity. The two series on outpatient TURP reported discharging patients with the catheter in place, the patients returning for catheter removal after 2 and 3–5 days, respectively. Although no patient in the present study was discharged with the catheter in place, there was no significant morbidity related to early catheter removal, comparable with previous studies.

The mean hospital stay was 9 h, with 59 patients discharged within 12 h of surgery; in the previous studies, the mean hospital stay was 2.8–5.3 days. One of our patients was discharged after 28 h as he was recatheterized due to inability to void following catheter removal. Gordon reported a mean hospital stay of 13.9 h, and in that series all patients were discharged within 14 h of surgery [Table 2].

Complications
There were no significant early complications except for one recatheterization (1.66%). The predominant complication in previous studies was reinsertion of the catheter, which was required in 12–14% of patients in one study by Dodds et al.,[15] and 17.5% in another by Gordon. No patient in series of Chander et al.[9] required reinsertion of the catheter after removal.

There were no cases of TUR syndrome, hemorrhage or capsular perforation. No readmission to the hospital was required for any complications. The incidence of headache after spinal anesthesia, or of hypotension, was nil because a fine-bore spinal needle was used.

Of the 60 patients in control group 1 patient developed stricture in membranous urethra and I developed bladder neck stenosis. No patient in day care group developed any late complications. Muzzonigro et al.[16] reported a 1.8% stricture rate after TURP and Vervoort et al.[17] reported 2.27% stricture rate. Stricture rate in holmium laser prostate enucleation was 1.3% and bladder neck contracture was seen in 6% in a large series.[18] Late complications of TURP like bladder neck contracture and urethral stricture are also reduced due to the early removal of catheter.

Follow up
Patients were followed up on first month, third month, and a year after surgery. Improvement in Q max of patients without retention was from 8.16 ml/s in pre op to 22.05 ml/s following the removal of catheter and 21.83 ml/s and 21.94 ml/s at first and third monthly follow up, respectively.

IPSS score improved from 26.05/35 pre-operatively to 7.61 at first month and 7.22 at third month which is comparable to the study by Muzzonigro et al.,[16] but poor when compared to Saeed et al. [Table 3].

**CONCLUSIONS**

It is possible to remove catheter following m-TURP on the same day of surgery in most of the cases that do not have any associated co-morbid conditions. Hemostasis should be secured until effluent of the irrigation fluid from the bladder is totally free of any visible trace of blood. Catheter can be removed on the same day if any intra-operative complications like excessive hemorrhage and capsular perforation have not occurred. Size of the prostate should not matter if the procedure has been completed without any significant complications.

It is advisable to give diuretics at the end of procedure to flush out any excess fluid absorbed during the procedure. Diuretics can also be continued post-operatively in intra venous fluid and also patients are advised to consume plenty of oral liquids which will act as irrigant and reduce the bladder irrigation time.

Late complications of TURP like bladder neck stenosis and urethral stricture are also reduced due to the early removal of catheter.

This study supports the feasibility of the early catheter removal after a short irrigation period in TURP in the majority of patients who did not have any significant per-operative complications, without significantly increasing post-operative complications.

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