

OUTCOME OF PROSTATIC ABSCESS BY TRANSURETHRAL RESECTION IN DIABETIC PATIENTS

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Abstract:

Purpose: Prostatic abscess is an uncommon urologic disease but has a high mortality rate if not treated properly. Furthermore, diagnosis and proper treatment of prostatic abscess remain as a challenge for physicians. Transurethral resection of prostate in prostatic abscess is found very effective considering its rapid recovery. We compared data on transurethral resection of prostate (TURP), and transurethral incision of the abscess cavity (TUI) in 117 cases over a six and half year period. The details of surgical resection and all the followup visits were recorded and analyzed.

Results: With a mean age of 61.53 ± 8.58 years, all diabetic patients had multifocal abscess cavities. Seventy six men underwent classical TURP similar to the technique used for benign prostatic enlargement (group 1), other 41 men underwent modified transurethral incision of the abscess cavity (TUI) (group 2). The abscess cavities resolved completely, and no patient required a second intervention. One patient in group 1 and 6 in group 2 had postoperative fever requiring parenteral antibiotics ($P = 0.716$), 23 patients in group 1 had transient urinary incontinence, whereas none of the patients in group 2 had this complication ($P = 0.055$). 24 and 2 men in group 1 and 2 reported retrograde ejaculation respectively ($P = 0.740$). For the alleviation of symptoms and to get the urine culture negative post-operative antibiotic treatment was needed to be continued in group 1 for 7 days and in group 2 for more than 14 days.

Conclusion: The modified resection technique of abscess cavity and formal TURP in the management of prostatic abscess give comparable outcome, but in diabetic patients as the abscess is multifocal transurethral resection ensures better drainage and faster post-operative recovery.

Key words: Prostatic abscess, Diabetic

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Introduction

Type 2 diabetes mellitus is a heterogeneous group of disorders. Patients with type 2 diabetes mellitus remain at increased risk of infections with the urinary tract being the most frequent infection site [1]. Urinary tract infection may complicate and lead to prostatic abscess. In the modern antibiotic era, prostatic abscess (PA) is a rarely encountered entity, particularly in developed countries [2,3]. However, in developing countries it continues to be a significant health problem and can result in severe complications and even death on account of delayed diagnosis or inadequate management [4].

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PA is more common in patient with acute and chronic bacterial prostatitis, chronic renal failure, hemodialysis, diabetes mellitus, cirrhosis and more recently, the AIDS [5,6].

Therapeutically, it requires some form of surgical intervention along with medical treatment and monotherapy is usually not sufficient [4]. The management options include transrectal ultrasound (TRUS) guided aspiration/tube drainage, transurethral incision over abscess (TUI), transurethral deroofting of the abscess cavity (TUD), or formal transurethral resection of prostate (TURP) [7–9]. No management algorithm currently available to guide the surgical drainage, and the decision is usually based on the

preference of the treating physician. Although TUI and TURP have been described as two separate procedures for prostatic abscess, the techniques are overlapping and poorly defined in the contemporary literature. Similarly, the indications of a particular procedure (whether incision or resection) and complications are not well documented. Here a retrospective analysis of data of men with prostate abscess treated by transurethral resection or incision was done to document the technique of the procedure and its complications.

Material and Methods

Data of all the patients diagnosed with prostatic abscess and managed with TURP and TUI between July 2009 and January 2016 was analyzed retrospectively. Patients managed by other means were excluded from the present study. Studied parameters included the age of the patients, clinical presentation, risk factors, radiological findings, treatment details, and the complications encountered. The details of surgical resection and all the followup visits were recorded. The complications were noted according to the modified Clavien classification system. All patients had a repeat abdominal or transrectal ultrasonogram at first followup visit after two week to look for any residual abscess. After that, the followup visits were in every six months for 1 year. Men with incomplete data were excluded from the study.

Statistical Analysis

Data were summarized as mean \pm SD and percentage. Groups were compared by independent Student's t -test, chi square (χ^2) test, and proportion χ^2 -test wherever applicable. A two sided ($\alpha = 0.05$) $P < 0.05$ was considered statistically significant.

Results

One hundred forty-four men were treated for prostatic abscess during the study period. One hundred seventeen, out of them, fulfilled the selection criteria and were included in the present study. The mean age was 63.35 ± 8.58 years (range 41 to 74). The mode of presentation was dysuria and lower urinary tract symptoms in 114, recurrent fever in 99, and urinary retention in 77 patients. Seventy seven men with history of urinary retention were on indwelling urethral catheter. Risk factors included diabetes mellitus in all 117 cases, recurrent urinary retention with history of urethral catheterization in 65, and prostatic biopsy in 2, which were not mutually exclusive. There was no documented

risk factor in 6 patients. Fluctuation on digital rectal examination was present in 96 patients. Abdominal and/or TRUS confirmed the presence of abscess in most of the cases (82 cases). Seventeen patients underwent TRUS, while 2 men were assessed by contrast-enhanced CT scan in their preoperative evaluation. In 33 cases, abscess was diagnosed intraoperatively where multiple small abscesses were found throughout the gland. All patients were received parenteral antibiotics at the time of intervention. Intraoperatively, the abscess cavities were located in peripheral zone in 88 patients, 27 were in the central zone, and total prostatic involvement was in two cases. All the patients had multiloculated or multifocal abscess cavities. All procedures were performed under spinal anesthesia. Seventy six men underwent the classical transurethral resection of prostate similar to the technique performed for benign prostatic enlargement (group 1), transurethral incision over the abscess was done on the rest 41 patients (group 2). In the modified resection group, the bladder neck was not resected, and incision was made on bulged area. Rest of the procedure was completed as standard TURP. The abscesses resolved completely in all the patients which was observed in follow up. Catheter-free trial was given after a mean interval of 5.7 days (range 3 to 10 days) with all men voiding successfully. The perioperative and postoperative details are summarized in Table-I.

Six patients in group 2 and one in group 1 continued to have fever (Clavien grade II) postoperatively, which responded to culture-specific antibiotics. Three case of group 2 had residual focus of abscess and treated with antibiotics for a prolonged period (21 – 28 days).

Twenty three men in group 1 (30.3%) reported stress urinary incontinence (Clavien grade I) early in the postoperative period, whereas no patient in group 2 had any continence-related problem ($P = 0.055$). The transient stress incontinence reported in group 1, subsided within 3 weeks in eleven patients, and rest 12 patients significantly improved within 3 months. Retrograde ejaculation was reported by 24 patients in group 1 and two men in group 2 ($P = 0.74$).

All patients on follow up ultimately became asymptomatic, with or without medical treatment and none of the patient needed any further surgical intervention within 6 weeks, (mean duration 23.62 days in group 1 and 31.24 days in group 2). The mean duration of followup was 58 months (range 6–92 months).

Table-I
Demographics characteristics and treatment-related side effects of two groups.

Parameters	Group I (classical resection) (N = 76)	Group 2 (modified resection) (N = 41)	50CÜ value
Age (yrs): mean ± SD (range)	61.78 ± 7.23 (43–74)	60.39 ± 8.65 (41–70)	0.725
Operating time (min): mean ± SD (range)	64.16 ± 12.19 (38–70)	55.00 ± 12.01 (42–80)	0.893
Abscess localization			
Central	52 (68.4%)	36 (87.8%)	
Peripheral	23 (30.3%)	4 (9.8%)	0.526
Pan-prostatic	1 (1.3%)	1 (2.4%)	
Diabetes mellitus	36 (33.3%)	73 (63.6%)	0.491
Blood transfusion	0 (0.0%)	0 (0.0%)	1.000
Residual abscess	0 (0.0%)	3 (7.3%)	0.521
Temporary incontinence (Clavien grade I)	23 (30.3%)	0 (0.0%)	0.055
Postoperative fever (Clavien grade II)	1 (1.3%)	6(14.6%)	0.716
Retrograde ejaculation (Clavien grade II)	24 (31.6%)	2 (4.88%)	0.740
Post-operative antibiotic needed: days	7	> 14	

Discussion

This cross-sectional study was conducted among the diabetic patients to compare the techniques of prostatic abscess drainage. The technique of transurethral resection for benign prostatic hyperplasia is well defined and standardized. However, the technique of transurethral drainage of prostatic abscess is not well formulated. The available options include limited interventional techniques (TUI and TUD) [8, 9] and the “more” invasive method like TURP [2, 8, 9]. Although all these methods have been described to be effective for draining prostate abscess, frequent complications encountered include septicemia, hemorrhage, residual abscess, retrograde ejaculation, and urinary incontinence. In our study we have compared TUI and TURP for drainage of prostatic abscess. The techniques of TUI have the advantages of minimal invasion with a disease specific treatment approach and less chances of complications [4]. However, the major disadvantage of this methods is the risk of incomplete drainage of abscess. The limited drainage techniques may be adequate in a patient with single large abscess but in multifocal or multi-loculated abscess cavities it is not enough [10]. To overcome the problem of incomplete drainage, Kinahan et al. described the use of intraoperative TRUS guidance to ensure complete transurethral drainage of prostatic abscess in a patient [10]. Although this technique sounds practical, it involves

additional trained manpower and extra equipment and is cumbersome to perform. Secondly, many elderly men with prolonged history of lower urinary tract symptoms (LUTS) have a component of benign prostatic hyperplasia (BPH), which may not respond to limited drainage or may require another surgical intervention (in the form of TURP) in the lifetime [4, 11].

The diagnosis and localization of prostatic abscess have been facilitated with the advent of TRUS and axial imaging [12, 13]. These modalities can exactly define the location, size, and number of abscess cavities and help in the management. However, performing TRUS may not be feasible in all the men as it is highly painful in the presence of prostatic abscess, and CT scan is usually not practiced to localize prostatic abscess [9]. Transabdominal USG, although sufficient to make a diagnosis, usually does not delineate the exact anatomical details of prostatic abscess. Unifocal or multifocal nature of the abscess cannot be ascertained clinically. Therefore, while performing TUI or TUD in an inadequately imaged patient, an inherent chance of incomplete drainage is always present.

Many authors have advocated classical TURP in treating prostatic abscess, either because of incomplete response to limited drainage procedures or as a primary procedure because of associated BPH. In major

published studies, up to one third of the patients suffering from prostatic abscess ultimately required TURP [8, 9, 10]. In one of the largest series of 25-patients by Dajani and O'Flynn, two patients underwent TURP as the primary procedure because of associated prostate enlargement. Four required complete TURP before hospital discharge, and three more patients underwent TURP at a later date because of persistent symptoms. So, ultimately nine patients (36%) required complete prostate resection for abscess [10]. Similarly, in other series of 48 patients by Bhagat et al. [8], 14 patients underwent complete TURP because of associated BPH symptoms and prostatic enlargement, while 17 men underwent limited transurethral abscess drainage. In a series of 18 patients reported by Ludwig et al. [9], transurethral de-roofing was done in 3 patients when the abscess was located just adjacent to the prostatic urethra, but one of the three required a repeat resection for elimination of infection. In an MRSA-caused prostatic abscess, reported by Park et al. [14], patient did not improve with TRUS-guided abscess drainage because of high viscosity pus and required TURP the very next day. His worsening clinical condition improved following TURP. Aravantis et al. [3] treated prostatic abscess in 7 patients with trans-rectal placement of drainage tube. However, two patients required TURP later on as a selective procedure for persistent bladder outlet obstruction.

At our center, we have been performing TURP for prostatic abscess for the last many years. One reason was that in many of our patients, adequate preoperative imaging had not been available. However, with evolution of percutaneous techniques and general acceptance of TUI in the urologic community, we changed our technique and started TUI as the modified approach. It is comparable to known complication of TURP i.e. hemorrhage, retrograde ejaculation, and incontinence. These are sometimes rigorously manageable. Attention was paid not to perforate the venous sinuses to avoid the risks of septicemia and hemorrhage. To document the advantages and complications of our modified approach we retrospectively analyzed our data. We found that classical TURP for prostatic abscess was associated with a high incidence (23 out of 76 men, i.e., 30.3%) of transient urinary incontinence (Clavien grade I). Although the exact reason for this observation is not well understood, a tendency to over resection so as to drain all the abscess cavities was probably the major cause. Secondly, although not documented, an inflammatory reaction in the region of external sphincter may be

responsible for transient sphincter inertia and dysfunction. Another possible reason could be bladder overactivity in response to inflammation of the prostatic fossa. The incontinence seen in our patients was temporary, and all men recovered with conservative management within 3 months. This high rate of incontinence in the present study has not been previously reported by others [8, 10]. This may be because of paucity of contemporary data on classical TURP (for prostatic abscess) and under reporting of this complication as it is usually temporary. In our study, men who underwent modified resection (group 2) did not encounter any continence-related problem ($P = 0.055$). Bladder neck sparing with limited anterior resection is the possible reason for this advantage over conventional resection. Post operative urinary incontinence although transient is an exasperating complication causing anxiety both to the patient and the operating surgeon. Retrograde ejaculation (Clavien grade II) was noted in both groups and was more common in group 1, although statistically not significant ($P = 0.740$). All the patients responded well to the resection, and the abscess cavities resolved completely in all of them. Seven of the patients had fever (Clavien grade II) postoperatively (1 out of 76 in group 1 and 6 out of 41 in group 2), which responded to culture-specific parenteral antibiotics. But the overall continuity of antibiotic treatment was needed to alleviate the symptoms in an acceptable level was 7 days in group 1 and more than 14 days in group 2, it is worth noting that negativity of the urine culture corresponded to the alleviation of the clinical symptoms. However, no patient had features of sepsis. No patient had excessive blood loss requiring blood transfusion in either group.

As no standard technique is described in the literature regarding drainage of prostate abscess, we recommend our techniques in patients requiring transurethral drainage of prostatic abscess, especially if adequate imaging is lacking. An additional advantage of our approach is the complete resection of the infected glandular prostatic tissue is ensured.

The mean age of patients in our study was 63.35 ± 8.58 years (range 41 to 74), and number of young patients was very low. In younger patients, the proper preoperative evaluation including family history is mandatory. Because minimally invasive treatment might be preferred over TURP in view of high risk of retrograde ejaculation.

Our study has certain limitations, the most important is comparison of this technique with standard TURP

for BPH. TURP is rarely performed for managing abscess these days, as the majority of the prostate abscesses are being managed successfully using minimally invasive modalities. Other limitations include the retrospective nature of the study, and short follow-up data. Though the difference between two groups was not statistically significant due to the small sample size, the incidence of post-operative incontinence was seen just approaching the statistical significance ($P = 0.055$). Due to these limitations, we can not recommend it as a “wholesale” procedure in all the situations but it definitely appears to have an appreciably acceptable place in the management of patients requiring more liberal drainage.

Conclusions

The modified resection technique does not ensure complete drainage of all the abscess cavities and may need subsequent or secondary procedure in long-term follow-up. It has no extra morbidity, compared to other limited resection procedures. But in most of the diabetic patients which is our patient group prostatic abscess are multifocal where incision over a prostatic abscess does not open up all the abscess cavities and formal TURP might be taken as more meticulous drainage technique and to reduce subsequent lingering of treatment.

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