

## **Repetitive Prostatic Massage and Drug Therapy as an Alternative to Transurethral Resection of the Prostate**

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### **Abstract**

#### **Background**

Acute urinary retention followed by failed attempts at catheter removal, is considered an indication for transurethral resection of the prostate. We describe 5 men with urinary retention and indwelling catheters, treated with repetitive prostatic massage, antimicrobials, alpha-blockers, and in two cases, finasteride.

#### **Methods**

We retrospectively reviewed the charts of all patients presenting to the genitourinary clinic with indwelling urinary catheters during a one-year period.

#### **Results**

Five men (mean age, 70 years; range 64 – 76; SD, 4.47) presented to the Manila Genitourinary Clinic (Cebu Branch) wearing indwelling urinary catheters placed for acute urinary retention. Urologists had told all five men that they needed to undergo transurethral resection of the prostate. The Cebu genitourinary physician removed the catheters, instituted repetitive prostatic massage, and diagnosed all 5 patients with prostatitis. All 5 patients received alpha-blocker medication and antibiotic therapy, while finasteride was given to 2 patients. During treatment, statistically significant improvements occurred in several objective parameters including: global symptom severity scores, urethral white

blood cell (WBC) counts, WBC counts of the expressed prostatic secretions (EPS), EPS red blood cell (RBC) counts, urinary WBC counts, and urinary RBC counts. Fluorescing Chlamydia elementary bodies disappeared in 3 of the 4 positive patients (one patient was not available for retesting) by the end of treatment.

## **Conclusions**

We suggest that men suffering urinary retention who have an indwelling urinary catheter be tested for prostatitis, as all five men in this study were diagnosed with prostatitis based on WBC counts of the expressed prostatic secretions. The treatment protocol of repetitive prostatic massage, antimicrobial therapy, alpha-blocker therapy, and, in two cases, finasteride, enabled catheter removal in all 5 men (100%), and successful urination in all 5 men (100%). Transurethral resection of the prostate has been prevented for a mean of 2.53 years (range, 16-38 months). In other case series studies, a significant percentage of men fail catheter removal even with medical therapy, and go on to surgery within one-year. We present statistically significant data that has never before been published for men with indwelling urinary catheters after urinary retention. Further study is necessary to determine if adding repetitive prostate massage and antibiotics to treat prostatitis adds to the standard medical therapy of catheterized men in urinary retention. Controlled studies are warranted.

## **Keywords:**

BPH, benign prostatic hyperplasia, TWOC, trial without catheter, acute urinary retention, urinary retention, prostatitis, prostatic massage

## **Introduction**

Acute urinary retention is a disease of elderly men. One study of 72,114 men found the mean age of male patients with urinary retention to be 73 years[1]. A study by Meigs and colleagues showed that 33% of men suffer acute urinary retention by age 89[2], and research by Peters and colleagues found the incidence of that disorder to be 4.5/1000 man-years[3].

A large, randomized, double-blind, placebo-controlled study found that treatment with alfuzosin (Uroxatral) increased the likelihood of a successful trial without catheter (TWOC) in men with acute urinary retention, but even with continued alfuzosin therapy, 27.1% of those patients required surgery within 6 months[4]. Another study showed that 56% of men underwent surgery after TWOC and that the mean time to operation after the first episode of acute urinary retention (even in those treated with alfuzosin) was 1.85 years[5].

Acute urinary retention is considered an indication for transurethral resection of the prostate (TURP), especially when medical therapy fails or patients

experience difficulty with catheter removal[6]. However, patients who undergo TURP may experience significant short-term adverse effects such as postsurgical pain, bleeding, infection, and complications from anesthesia. A study of 10,000 men indicated that the risk of urinary tract infection after TURP is 15.5%[7]. TURP can also cause significant long-term complications, such as the need for reoperation (1.9% to 6% of patients) or transurethral resection to correct bladder neck contracture (2.4%) or the formation of urethral strictures that require surgical correction (1.7%)[8]. TURP can also result in retrograde ejaculation, infertility, sexual dysfunction, and incontinence[9,10]. In one study, 67% of the men who underwent TURP experienced sexual dysfunction[11], and other research indicates that satisfaction with sex decreased in 44% of men after TURP[12].

One prior case report appears in the literature of a 69-year-old man who was spared TURP and experienced improved sexual function by undergoing repetitive prostatic massage and antimicrobial therapy.[13]

## **Patients**

Approximately 4 to 8 male patients with urinary retention present to the Manila Genitourinary Clinic, Cebu Branch (the Cebu Genitourinary Clinic) each year. We performed a retrospective chart review of the 6 patients presenting with a urinary catheter for the treatment of acute urinary retention during 2000 to the Cebu Genitourinary Clinic. The study subjects did not exhibit diabetes mellitus, congestive heart failure, neurologic, or musculoskeletal disease. All patients were self-referred to our clinic upon recommendations from other patients. None of the patients had undergone prostatic massage with EPS collection before being treated at our clinic. One patient was anemic and was admitted to the hospital for GI bleeding and blood transfusions. He was never treated at the clinic bringing our study number down to 5 patients.

Certified laboratory technicians performed all laboratory tests and reported their results independently of the treating physician. Urethral smears were obtained from all patients by pressing a glass slide against the urethral mucosa of the penile meatus, after which the smears were Gram-stained. Each slide was scanned via light microscopy to identify the field with the lowest and highest number of urethral WBCs.

Urethral bacteria were recorded, and urethral smears were evaluated until the urethral WBC counts and presence of urethral bacteria decreased to zero in all patients. After each urethral smear had been obtained, the penis of each patient was cleaned with povidone-iodine 10% and then with 70% isopropyl alcohol. A paper tissue was placed under the penis as each patient leaned over the examination table. Prostatic massage was then performed on each patient every day for 4 days and thereafter 3 times per week. The same physician performed each massage. During the massage, all drops of expressed prostatic fluid falling

on the tissue were counted, as was the drop remaining at the end of the penis after the massage, which was used to determine WBC and RBC counts. After the remaining drop had been removed for microscopy, the penis was milked of the remaining prostatic fluid, which was sent for culture.

After EPS collection, a cotton swab was inserted 1 cm or more into the urethra to collect urethral mucosal cells for Chlamydia testing. Chlamydia testing was performed by direct fluorescent antibody technique (DFA, BioMérieux). We considered the test results positive if any fluorescing elementary bodies were seen and recorded the number. A previous study[14] and our ongoing clinical experience suggest that even one fluorescing elementary body found by DFA may be significant. The manufacturer; however; recommends that 10 or more fluorescing elementary bodies be considered a positive test result. The Chlamydia test was performed immediately after the first prostatic massage in all 5 men.

Next, each patient was asked to urinate the first 10 mL of urinary flow into a sterile container for urinalysis.

Because the data had no outliers that changed our conclusions, we used the mean as the measure of central tendency. We compared the first and last treatment values when the values tended to decrease in a straight-line fashion. Because our previous work showed that the white blood cell count in prostatic fluid usually peaks not at the first prostatic massage but somewhere between the fourth to sixth massage[15], we compared the peak and last values of WBC counts and RBC counts in samples of the subjects' prostatic fluid. Statistical analyses were performed with the SPSS software (SPSS software (Statistical Package for the Social Sciences, version 11.0, SSPS Inc, Chicago, Ill, USA). The Staff of the Cebu Genitourinary Clinic records each patient's global symptom severity score at each clinic visit. Scores range from 0 (no symptoms) to 10 (worst possible symptoms). First and last symptom scores were compared with the paired t test. To determine whether there was a significant change in other values during treatment among the 5 patients, the nonparametric Wilcoxon signed rank test (2-tailed) was used because we did not assume a normal distribution for the data. A P value of < .05 was considered statistically significant.

## **Results**

### **Patient 1**

Patient 1, a 68-year-old man with urinary retention, presented to our clinic after having worn an indwelling urethral catheter for 1 month. His former physician had removed the catheter twice, after which obstruction recurred and the catheter was replaced. Results of prior TRUS revealed a 92.8-g prostate.

Our clinic physician requested that during the patient's initial visit, Patient 1 take the 5-mg dose of terazosin that he had brought with him. One hour later, the indwelling urinary catheter was removed and prostatic massage was performed. The patient's prostate was very large and bulged 2 cm into the rectum. The prostate was slightly firm, smooth, and tender to palpation and 4 to 5 drops of EPS were expressed during the massage.

Oral alfuzosin (Xatral) 5 mg twice daily and a single dose of both oral metronidazole (Flagyl) 2 g and oral ofloxacin (Inoflox) 1200 mg were prescribed. The patient was able to urinate before the conclusion of his first clinic visit.

By the fourth prostatic massage, the results of an EPS aerobic culture were positive for *Staphylococcus intermedius*. Treatment with oral ofloxacin 400 mg twice daily was initiated. Because the results of testing for *Chlamydia* were positive, oral minocycline (Minocin) 100 mg twice daily was added to the antibiotic regimen.

After having undergone 14 prostatic massages, antimicrobial therapy, and treatment with alfuzosin, this patient reported an improvement in his condition. His prostate was markedly smaller to palpation and less tender. He underwent transrectal ultrasonography (TRUS) of the prostate, which revealed a 27.6-g prostate (a 70% reduction from the pretreatment value). At the time of the fifteenth prostatic massage, the results of testing for *Chlamydia* were negative. Patient 1 was discharged from the clinic with the prescribed treatment of finasteride 5 mg 4 times daily and alfuzosin 5 mg 4 times daily to be taken for 6 to 8 months as tolerated. TURP remained unnecessary in this patient 27 months after his first episode of acute urinary retention.

## **Patient 2**

A 70-year-old man with acute urinary retention presented to our clinic. At the time of his initial examination, he had worn an indwelling urethral urinary catheter for 2 months and was not receiving treatment with any medication. Patient 2 reported nocturia 4 to 5 times per night before he had undergone catheterization and also complained of difficult urination of 4 years' duration.

The clinic physician removed the catheter, massaged the patient's prostate, and collected more than 5 drops of EPS. Patient 4 had a large, broad-based prostate that projected 1 to 2 cm into the rectum; it was a smooth, swollen, tender prostate.

Oral cefixime (Tergicel) 400 mg and oral metronidazole, 2 grams, were prescribed as one-time doses. Oral alfuzosin 5 mg twice daily was also prescribed. This patient was able to urinate before he left the clinic after his first visit. At the time of the second massage, the clinic physician prescribed oral

itraconazole (Sporanox) 200 mg twice daily for 3 days to relieve a possible yeast infection.

At the fourth massage, the results of laboratory testing revealed chlamydial elementary bodies for which oral minocycline 100 mg twice daily was prescribed. In addition, the analgesic naproxen sodium (Flanax Forte) 550 mg every 6 hours as needed, was prescribed. The results of TRUS indicated a prostate volume of 74 g. Culture of the EPS revealed both *Serratia liquefaciens* and *Staphylococcus epidermidis*, for which oral ofloxacin 400 mg twice daily was prescribed. At the time of the fourteenth prostatic massage, the results of testing for Chlamydia were negative, and at the fifteenth massage, there was no growth from the culture of EPS after 72 hours of incubation. All antibacterial treatment was terminated, and oral itraconazole 200 mg twice daily for 1 week was prescribed.

At the time of Patient 2's seventeenth massage, the results of repeat testing for Chlamydia were again negative, and culture of the EPS revealed *Staphylococcus epidermidis*. Therapy with minocycline was initiated. By the 30th massage, this patient's prostate was markedly smaller on palpation, and his symptoms had markedly improved from those described during his first visit. Oral finasteride 5 mg 4 times daily and oral alfuzosin 5 mg twice daily were prescribed. The results of culture from the patient's prostatic fluid revealed *Proteus mirabilis*, for which oral ofloxacin 400 mg twice daily for 1 week was prescribed. At follow-up 3 years and 2 months after his first visit to the clinic, Patient 2 had not undergone TURP. He stated that his symptoms were mild and that he experienced nocturia only 2 to 3 times per night. He declined further treatment with finasteride and alfuzosin.

### **Patient 3**

A 76-year-old man presented to the Cebu clinic after having worn an indwelling urethral catheter for 1 month. His prior physician had attempted to remove the catheter 4 times, but each time the patient was unable to void, and a new catheter was subsequently placed. Patient 3 complained of dysuria, urinary frequency, and nocturia 5 times per night before the onset of his acute urinary retention. His current medication was terazosin 2 mg 4 times daily. He supplied his clinic physician with the results of prior transabdominal ultrasonography, which revealed a prostate weighing 16 g.

The clinic physician removed the urinary catheter and massaged the Patient 3's prostate, which was normal in size, smooth, and tender when palpated. Four to 5 drops of prostatic fluid were expressed. The patient was unable to urinate and said that his bladder was empty. Oral alfuzosin 5 mg twice daily, a single dose of oral metronidazole 2 g, and oral ofloxacin 400 mg twice daily were prescribed. That evening urinary obstruction recurred, and Patient 3 was catheterized in an emergency department with a 12-French urinary catheter, which was removed after urinary drainage. The following morning, our clinic physician increased the dosage of oral alfuzosin to 10 mg twice daily and performed a second prostatic

massage. The patient was able to urinate before he left the clinic. At the time of the fourth prostatic massage, the results of testing for Chlamydia were positive, and oral minocycline 100 mg twice daily was prescribed. The results of culture from the first specimen of EPS revealed *Escherichia coli* and *Staphylococcus epidermidis*. Treatment with ofloxacin was terminated, and therapy with oral cefaclor 375 mg twice daily was initiated.

By the eleventh massage, yeast was identified in a urine sample, and oral itraconazole 100 mg twice daily for 1 week was prescribed. The results of the EPS culture from the eleventh massage revealed *S epidermidis*. At the time of the fourteenth massage, results were negative for Chlamydia. Because Patient 3's prostate was small and nontender on palpitation, neither an alpha-blocker nor finasteride was prescribed at the time of his discharge from the clinic. Sixteen months after his last treatment, this patient remained free from repeat urinary obstruction or catheterization and had not undergone TURP.

#### **Patient 4**

A 73-year-old man presented to our clinic after having worn an indwelling urethral catheter for 21 days. His symptoms included low back pain, testicular pain, nocturia, and suprapubic pain when his bladder was full, all of which he had experienced before the onset of his acute urinary obstruction. This patient had left the hospital in which he had been undergoing treatment with oral terazosin 2 mg 4 times daily and oral finasteride 5 mg 4 times daily to be treated in our clinic, where our physician removed the catheter and performed prostatic massage. The patient's prostate, which was large, smooth, and tender on palpation, projected 2 cm into the rectum. Prostatic massage yielded more than 5 drops of EPS.

Oral forms of alfuzosin 5 mg twice daily, cefixime 400 mg as a single dose, ofloxacin 400 mg twice daily, and metronidazole, 2 g, as a single dose were prescribed, and the patient was able to urinate before he left the clinic.

At the second massage, scrotal skin changes suggestive of fungal infection were noted. Isoconazole nitrate cream and oral ketoconazole 200 mg twice daily for 7 days were prescribed. At the time of the third prostatic massage, the results of testing for Chlamydia were negative. The culture of the first EPS specimen revealed *S epidermidis* and *P mirabilis*, and oral minocycline 100 mg twice daily was prescribed. At the fifteenth massage, repeat testing revealed no Chlamydia, but the results of EPS culture indicated antibiotic-resistant *Staphylococcus saprophyticus* and *E coli*.

After the patient had undergone 16 massages, his prostate was smaller and was no longer tender on palpation. He was asked to undergo a TRUS, after which his discharge medications were to be prescribed. However, he did not return to the clinic and was lost to follow-up. Two years and 11 months after treatment, this

patient had not undergone urinary catheterization or TURP. He was not taking finasteride or any alpha-blocker and reported good urinary flow.

### **Patient 5**

A 64-year-old man with acute urinary retention underwent urinary catheterization at a local hospital. Patient 5 had worn a urethral catheter for 3 weeks before his presentation at our clinic, at which time he reported a history of frequent urination and nocturia. His medications consisted of terazosin (2 mg p.o. q.d.) and oral finasteride (5 mg q.d.). He had completed a 1-week course of oral norfloxacin 400 twice daily when he first underwent catheterization. The clinic physician removed the urethral catheter and massaged the patient's prostate, which was smooth, tender, and enlarged. Four drops of EPS were obtained from the first massage. Treatment with the medications prescribed elsewhere was discontinued, and therapy with oral forms of alfuzosin 5 mg twice daily, metronidazole 2 g as a single dose, ofloxacin 400 mg twice daily, and cefixime 400 mg as a single dose was initiated. The patient was able to urinate before he left the clinic after his first visit.

At the fourth massage, the results testing for Chlamydia were positive, and the culture from the first EPS specimen revealed *Citrobacter freundii* and *Staphylococcus intermedius*. Both bacteria were resistant to ofloxacin treatment, which was replaced by oral erythromycin 500 mg 3 times daily. Oral minocycline 100 mg twice daily was prescribed to treat the chlamydial infection. After the fifth massage, the Patient 5's symptom score had decreased from 10 to 5, he reported a good flow of urine, and his nocturia had decreased to 2 to 3 times per night. However, he failed to return for further treatment or testing and was lost to follow-up.

Patient 5's family physician eventually reported that Patient 5 had died from a heart attack 36 months after he was treated at our clinic. At the time of his death, per his family physician, Patient 5 had experienced good urinary flow and had not undergone either urinary catheterization or TURP.

### **Data Summary**

Before presentation to the Cebu Genitourinary Clinic, Patient 1 had failed two catheter removal challenges, and Patient 3 had failed 4 catheter removal challenges.

None of the 5 men in this study, by their reports, had received prostatic massage or EPS collection prior to arrival at the Cebu Genitourinary Clinic. In our study, EPS was collected 79 times from the 5 patients in 100% of attempts. The mean number of prostatic massages with EPS collection per patient was 15.80 (range, 5-30, SD, 9.01).



Patients 1, 2, 4, and 5 were able to urinate after one prostatic massage. Patient 3 was straight catheterized his first night and then was able to urinate after his second prostatic massage.

Patient 3, Patient 4, and Patient 5 were only treated only once for acute urinary retention. Patient 1 re-obstructed 6 months after treatment and underwent a second round of therapy. Patient 2 re-obstructed 7 months after therapy and underwent a second round of therapy. Each retreatment was successful in that both Patient 1 and Patient 2 improved and continued to avoid surgery. Below, we compare the data from the first rounds of treatment for all 5 men.

## **Symptoms**

All the men complained of nocturia prior to their first episode of acute urinary retention. Three of the 5 patients had their frequency of nocturia documented prior to treatment at the Cebu Genitourinary Clinic, and the frequency of nocturia decreased in those 3 men. Besides nocturia, the men complained of other symptoms (extracted from the medical records) such as dysuria; frequency of urination; and low back, rectal, and testicular pain (Table 1).

## **Urethral Bacteria**

Urethral bacteria disappeared in all 5 men over the treatment period (Table 2).

## **Statistically significant data**

The global symptom severity scores in the five men decreased dramatically (Figure 1). We compared the first and last symptom scores in the five men. The mean first symptom score was 9.80 (SD 0.45) and the last mean symptom score was 2.6 (SD 1.34), and the decrease was significant ( $P < .0005$ ).

The mean urethral WBC high peak was 27.60 (range, 20-36; SD, 6.88), and the mean urethral WBC high last value was 0.00. This decrease was significant ( $P = 0.043$ ) (Table 3).

Patients 1 and 4 had their highest EPS WBC high counts at their first massage, while patients 2, 3, and 5 had EPS WBC high peaks at their sixth, fifth, and third massages, respectively. The mean peak EPS WBC high count was 43.40 (SD, 16.36). The mean last WBC EPS high count was 13.40 (SD, 5.73). This decrease was significant ( $P = 0.043$ ) (Table 4).

The mean peak EPS RBC low count was 37.20 (SD, 31.25), and the mean last EPS RBC low count was 0.00. This decrease was significant ( $P = 0.039$ ).

The mean peak RBC high count was 39.00 (SD, 28.81). The mean last EPS RBC count was 0.00. This decrease was significant ( $P = 0.039$ ).

The mean urinary RBC count low peak was 36.80 (SD, 31.78), and the mean last urinary RBC count low was 0.00. The change from the mean peak urinary WBC low count to the mean last urinary WBC low count was significant ( $P = 0.039$ ).

The mean urine RBC high count peak was 39.40 (SD, 28.23). The mean last urine RBC high count was 2.00 (SD, 1.22). The decrease from the mean urine RBC high peak count to the last was significant ( $P = 0.042$ ).

The mean urinary WBC low count peak was 29.40 (SD, 20.54). The mean last urinary WBC low count was 2.07 (SD, 2.07). The change from the mean peak to mean last urinary WBC low count was significant ( $P = 0.042$ ).

The mean urinary WBC high count peak was 43.40 (SD, 17.54). The mean last urinary WBC high count was 6.40 (SD, 4.88). The change from the peak urinary WBC high count to the last urinary WBC high count was significant ( $P = 0.042$ ).

### **EPS Cultures**

All 5 men had a culture of their first EPS specimen. Patients 1 and 4 had one repeat set of EPS cultures, while Patient 2 had 4 sets of EPS cultures. All 5 patients were positive for Staphylococcus species. Patients 2, 3, and 4 also cultured positive for Gram-negative bacteria (Table 5).

### **Chlamydia DFA**

Four of the 5 men tested positive for 5 to 10 fluorescing Chlamydia elementary bodies by Chlamydia DFA at their first presentation. In 3 of these 4, the Chlamydia DFA test turned negative for any fluorescing elementary bodies after undergoing treatment with repetitive prostatic massage combined with antibiotics. It is not known if the fourth case turned negative as Patient 5 never returned for a repeat Chlamydia DFA test (table 6).

### **Ultrasounds of Patient 1 and Patient 2**

Over the course of repetitive prostatic massage, the Cebu Genitourinary Clinic physician noted palpable changes in the men's prostates, with the prostates becoming smaller and more normal in consistency over time. In two patients, ultrasound data, within the limitations of technique and interpretation, supported this finding. There is one prior case in the literature of ultrasound-documented reduction of prostate size by repetitive prostatic massage.[16] Patient 1 underwent abdominal ultrasound prior to arriving at the Cebu Genitourinary Clinic, and his prostate was 92.8 g. After therapy, his prostate was reported as 26.6 g by transrectal ultrasound. Patient 2 underwent TRUS at his fourth massage, and his prostate was reported as 74 g. There was no TRUS at the end of his first round of therapy, but at the end of all his therapy, his prostate was reported to be 54 grams by TRUS. Since, there were differences in technique,

one ultrasound being transabdominal instead of transrectal, and differences in machines, examiners, and timing, so we present the ultrasound data without making any conclusions (Table 7).

## **Discharge**

At discharge, Patient 1 was prescribed alfuzosin and finasteride. Patient 2 was prescribed alfuzosin, finasteride, and itraconazole. Patient 3 was prescribed itraconazole. Patient 4 was not prescribed any medication, and Patient 5 left treatment still taking erythromycin and minocycline.

## **Avoidance of Surgery**

The 5 men in this study have avoided surgery for acute urinary retention for an average of 2.53 years at last follow-up (Table 8.)

## **Discussion**

All subjects in our study had been advised to undergo TURP. Urologists have traditionally used acute urinary retention as an indication to perform a TURP, in one of its many forms especially if medical therapy fails and catheter challenges are unsuccessful.[17]

The complications from TURP are well-known, but the medical management of acute urinary retention is also less than perfect. Alpha-blockers can produce adverse effects such as dizziness or orthostatic hypotension[18], sexual dysfunction - especially retrograde ejaculation[19], and dry mouth[20]. Finasteride, which can produce sexual dysfunction by causing a decreased amount of semen per ejaculation, is associated with impotence, ejaculation disorders, and decreased libido[21]. Both finasteride and alpha-blockers prescribed to treat benign prostatic hyperplasia (BPH) must be taken continually, and noncompliance often occurs[22].

Prostatic massage has been described in the literature since at least 1906[23]. However, to our knowledge, no controlled studies have compared the effects of prostatic massage alone or with antibiotics against surgery for BPH.

In our study, all 5 men were diagnosed as having prostatitis, according to an established criterion for that disorder[24]. EPS was collected in 100% of attempts in these men. Theoretically, in the successful treatment of prostatitis, the WBC count in the EPS should decrease during treatment or should peak and then decrease. Both results occurred in our subjects.

The results of our study indicate that repetitive prostatic massage improves the likelihood of urination and the successful drainage of pus from the prostate. We suggest that prostatic massage enables men to urinate during episodes of acute

urinary retention. Our results indicate that several prostatic massages are needed to obtain the most purulent EPS specimen for disease classification and microbial testing. We found that repetitive prostatic massage is not traumatic, because the RBC in the EPS decreased to zero during the course of therapy. Prostatic massage has not been properly studied, however, and questions exist about whether most urologists can perform it effectively[25].

The results of pretreatment and post-treatment TURP in the patients described in our first and second case reports revealed a reduction in prostate size; however, the techniques used in those case reports and the examiners who performed them differed. We conclude that additional studies in larger numbers of patients are required to establish the value of prostatic massage and the medical treatment of acute urinary retention in men with prostatitis and an indwelling urethral catheter.

### **Limitations**

Because none of our subjects had undergone prostatic massage and EPS collection prior to catheterization, we do not know whether their prostatitis predated the placement of their indwelling urinary catheter. In addition, controls were not included in this study.

### **Conclusions**

Five elderly men with histories of acute urinary retention and an indwelling urethral catheter presented to our clinic for treatment. Each patient had been advised by his urologist to undergo TURP, yet successful removal of their indwelling catheter was accomplished in each case, and all 5 men have avoided prostate surgery for at least 2.53 years. All 5 men were treated with repetitive prostatic massage, antimicrobial therapy, and alpha-blockers, while two patients were also treated with finasteride. During the treatment period, statistically significant improvements occurred in several parameters including global symptom severity scores, urethral WBC counts, EPS WBC counts, EPS RBC counts, urinary WBC counts, and urinary RBC counts.

We suggest that men who suffer acute urinary retention resulting in an indwelling catheter should be examined for prostatitis and we note that that all treatments performed in this study were done by general practitioners. In our opinion, larger controlled studies are required to determine whether the effects of repetitive prostatic massage and antibiotic therapy are superior to those of treatment with an alpha-blocker, finasteride, or a combination of those drugs.

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## Figures

### Figures 1,

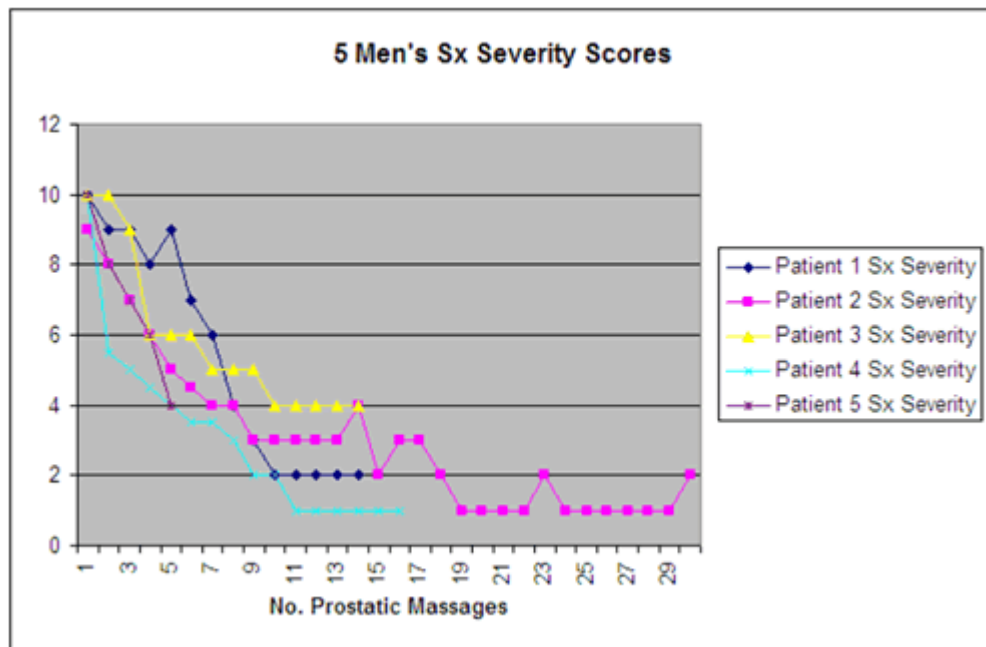


Figure. The global symptom severity score decreased in all subjects over the course of treatment.

## Tables

**Table 1. Symptoms**

Patient No.	Nocturia	Dysuria	Frequency	Low Back Pain	Rectal Pain	Testicular Pain	Suprapubic Pain with Full Bladder
1	Yes	Yes	NR	Yes	Yes	NR	NR
2	Yes	Yes	NR	NR	NR	NR	NR
3	Yes	Yes	Yes	NR	NR	NR	NR
4	Yes	NR	Yes	Yes	NR	Yes	Yes
5	Yes	NR	NR	NR	NR	NR	NR

Symptoms recorded in the medical records of the 5 patients. NR = not recorded.

**Table 2. Urethral bacteria**

Urethral Bacteria	GPC/specimens	GNC/Specimens	GPB/Specimens	GNB/Specimens
Patient 1	0/5	0/5	0/5	0/5
Patient 2	9/10	0/10	0/10	0/10
Patient 3	4/5	0/5	0/5	1/5
Patient 4	4/5	0/5	0/5	0/5
Patient 5	4/5	0/5	0/5	0/5

This table shows the number of times different bacteria were present in the urethral Gram stains, with the number of specimens taken as the denominator. Bacteria were seen in 22 of the 30 urethral smears. Both bacteria and WBCs disappeared in each patient's urethral smear over the course of treatment. GPC is Gram-positive cocci. GNB is Gram-negative bacilli. GPC is Gram-positive cocci, GNB is Gram-negative bacilli. Gram-positive cocci were most common.

**Table 3. Urethral white blood cells**

	No. Urethral Smears	First	Peak	Last	1	2	3	4	5	6	7	8	9	10
Patient 1	5	13	30	0	13	30	15	5	0					
Patient 2	10	36	36	0	36	2	1	0	0	0	0	1	1	0
Patient 3	5	23	31	0	23	31	1	0	0					
Patient 4	5	16	20	0	16	20	15	7	0					
Patient 5	5	9	21	0	9	7	21	2	0					
Mean	6.00	19.40	27.60	0.00										

The urethral WBC high counts all went to zero during treatment.

**Table 4. EPS WBC High Counts**

Patient	First	Peak	Last	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
1	50	50	23	50	40	40	18	6	22	15	28	36	6	12	18	31	23																	
2	40	40	9	40	31	33	35	32	45	39	27	24	19	13	9	7	18	27	16	21	32	35	30	25	25	12	16	24	28	32	37	35	9	
3	5	50	9	5	22	31	46	50	45	8	14	8	35	10	11	9	9																	
4	60	60	13	60	60	60	45	50	40	45	30	40	38	30	24	21	20	20	13															
5	6	17	13	6	13	17	15	13																										
Mean	32.20	43.40	13.40																															

EPS WBC high counts, first, peak, last, and all data points.

**Table 5. EPS Cultures**

	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5
<i>Staphylococcus epidermidis</i>	present	present	present	present	
<i>Staphylococcus intermedius</i>	present				present
<i>Staphylococcus saprophyticus</i>				present	
<i>Serratia liquefaciens</i>		present			
<i>E. coli</i>			present	present	
<i>Proteus mirabilis</i>		present		present	
<i>Citrobacter freundii</i>					present

Organisms that grew in the cultures of the EPS.

**Table 6. Chlamydia DFA**

Patient	First Chlamydia DFA	Repeat Chlamydia DFA
1	10	0 at 15th massage
2	8	0 at 14th massage
3	7	0 at 14th massage
4	0	0 at 15th massage
5	5	lost to follow-up

Number of fluorescing Chlamydia elementary bodies seen at the first test and at the repeat test.

**Table 7. Ultrasounds**

	Ultrasound Before Massages Completed	Ultrasound After Massages Completed
Patient 1	92.8 grams (transabdominal) before all massages	26.6 grams (TRUS) after 14 massages
Patient 2	74 grams (TRUS) on day of 4th massage	54 grams (TRUS) 3 months after third round of therapy

Two patients underwent before and after ultrasounds of the prostate, which showed a reduction in prostate size.

**Table 8. Last follow-up**

Patient	Elapsed Time (months)
1	27.00
2	38.00
3	16.00
4	35.00
5	36.00
Mean	30.40
	(2.53 years)



Number of months that patients have avoided having to undergo transurethral resection of the prostate at last available follow-up.

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The authors thank Rena Pedaria and Hazel Macandandang for their assistance with statistics. This study was not funded, but the authors would like to thank the Prostatitis Foundation ([www.Prostatitis.org](http://www.Prostatitis.org)), a nonprofit organization, devoted to publicizing and researching prostatitis.

### **Author Responsibilities**

BRH and AEF conceived this study. BRH managed the statistical analysis in consultation with others and wrote the manuscript. ARL saw the patients, collected the data, and performed follow-up. AEF provided overall clinical supervision of the project. AEF and ARL helped to edit and review the manuscript. All authors have read and approved the final draft of the manuscript. The authors declare that they have no financial disclosures to state or conflicts of interest.