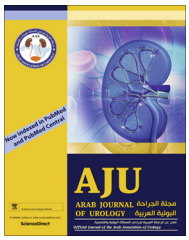
Arab Journal of Urology (2017) **15**, 260–266

Arab Journal of Urology
(Official Journal of the Arab Association of Urology)

www.sciencedirect.com



PROSTATIC DISORDERS
ORIGINAL ARTICLE

Evaluation of the risk factors associated with the development of post-transurethral resection of the prostate persistent bacteriuria

Tarek Osman [a], **Karim Omar ElSaeed** [a,*], **Hassan A. Youssef** [a], **Mohamed Shabayek** [a], **Ahmed Emam** [a], **Mohammed Saad Hussein** [b]

[a] *Department of Urology, Ain Shams University, Cairo, Egypt*
[b] *Department of Urology, Sidnawy Insurance Hospital, Cairo, Egypt*

Received 25 February 2017, Received in revised form 13 April 2017, Accepted 27 May 2017
Available online 12 July 2017

KEYWORDS

TURP;
UTI;
Bacteriuria;
Urine analysis

ABBREVIATION

DM, diabetes mellitus

Abstract ***Objectives:*** To determine the preoperative, intraoperative and postoperative risk factors that influence the development of persistent post-transurethral resection of the prostate (TURP) urinary tract infection (UTI) defined as pyuria and/or bacteriuria remaining for 3 weeks after surgery.

Patients and methods: This is a prospective study including 100 patients scheduled for TURP. Urine analysis and culture was performed immediately after catheter removal, then at 1 and 3 weeks postoperatively, and the results were correlated to various preoperative, intraoperative and postoperative potential risk factors to detect any significant relation to persistent UTI.

Results: There was a statistically significant relationship between bacteriuria and the following risk factors: old age, past history of diabetes mellitus, large prostatic size, positive preoperative urine analysis and culture, preoperative catheter use, previous urological interventions, large size of sheath, long duration of operation, postoperative catheter events and postoperative manual wash.

* Corresponding author.
E-mail address: stonedoctor62@hotmail.com (K.O. ElSaeed).
Peer review under responsibility of Arab Association of Urology.

http://dx.doi.org/10.1016/j.aju.2017.05.004

Conclusions: Many risk factors have been found to contribute to the development of post-TURP UTI and avoiding these factors can enhance recovery of patients undergoing TURP.

Introduction

There is much controversy regarding urological endoscopic surgeries and the proposed risk of UTI [1]. TURP has monopolised surgical intervention of BPH-induced LUTS for a long time [2]. However, TURP still carries high morbidity [3], and UTI is the most common complication secondary to this procedure [4]. Post-TURP UTI affects postoperative voiding patterns, and can be followed-up reliably by postoperative urine analysis and culture [4]. The aim of the present study was to evaluate and assess different possible preoperative, intraoperative and postoperative risk factors influencing the development of UTI (pyuria and bacteriuria) after TURP, particularly that which persists for up to 3 weeks after the procedure.

Patients and methods

This was a prospective clinical study carried out during the period between March 2014 and September 2016. In all, 100 consecutive men scheduled for TURP were included in this study. Verbal and written consents explaining the purpose of the study were obtained from all patients. Concomitant bladder pathology, including stones, was considered an exclusion criterion. Standard preoperative evaluation was done routinely, including urine culture and antibiotic sensitivity, full laboratory evaluation, abdominopelvic ultrasonography, uroflowmetry, and urodynamic studies, whenever indicated.

Surgical procedure

All patients were given 1 g ceftriaxone at induction of anaesthesia, which was regional in all cases, and all were operated upon in the lithotomy position. All surgeons had $\geq$15 years of experience and had performed $\geq$300 TURP procedures. TURP was done with either 24- or 26-F resectoscope according to surgeon's preference and with standard monopolar loops. The cutting power ranged from 90 to 150 W and the coagulation power ranged from 60 to 90 W. Glycine was the standard irrigation fluid in all operations. All procedures were performed using the modified Nesbit technique, whereby the median lobe was resected first, then resection of each lateral lobe starting from the 12 o'clock position to the 6 o'clock position was carried out one lobe at a time, with care taken to avoid subtrigonal resection or injury of the external sphincter. Finally, the apical lobes were resected followed by adequate haemostasis. A three-way urethral Foley catheter was then inserted with a continuous irrigation system. Postoperative management included a 3 day course of i.v. third-generation cephalosporin, unless the preoperative urine antibiotic sensitivity stated otherwise. The catheter was removed after 3 days. Catheter events were handled first by manual wash to relieve clot retention, up to catheter exchange if required.

Study design

Urine analysis and culture were obtained for all patients on three occasions: immediately after catheter removal, then at 1 week after TURP, and finally at 3 weeks after TURP. Pyuria was defined as the presence of >5 pus cells/high-power field in a urine sample, whilst bacteriuria was defined as the presence of $>100{,}000$ colony-forming units/mL in a urine sample.

All possible preoperative, intraoperative and postoperative risk factors were studied in relation to post-TURP UTI (bacteriuria and pyuria; Table 1).

Table 1 Possible preoperative, intraoperative and postoperative risk factors that may lead to persistent post-TURP UTI.

Preoperative	Intraoperative	Postoperative
Age	Surgeon's experience (years and number of TURP operations)	Catheter (size and type)
Presentation	Sterilisation (duration of activation of CIDEX®, sterilisation of instruments and telescope)	Blood transfusion
Prostate size	Irrigation fluid volume	Catheter events (block, clot retention and exchange)
PSA level	Resectoscope size	Continuous irrigation (type of fluid, duration)
Urine analysis/culture	Power current setting (cutting and coagulation)	Need for manual irrigation to drain clots
Renal function tests	Duration of operation	Urine analysis/culture 3 weeks after TURP
Catheter if present (type, size and duration)		
Previous urological interventions		
Past history of medical problems		

Statistical analysis

The mean and standard deviation (SD) were reported for continuous variables. The chi-squared test and independent *t*-test were used for univariate analysis to detect statistical significance in categorical and continuous variables. Multivariate logistic regression analysis was used to assess the independent factors affecting UTI. Statistically significant and statistically highly significant results were considered as $P < 0.05$ and $P < 0.001$, respectively.

Results

Incidence of UTI

The incidence of bacteriuria and pyuria at the three aforementioned post-TURP urine analyses was studied in relation to preoperative, intraoperative and postoperative risk factors. However, only the results of the 3-week post-TURP urine analysis results are shown to avoid repetition and redundancy, especially as there were no apparent differences in the incidence of UTI at the different intervals. Moreover, our main focus in this study was persistent UTI (up to 3 weeks after TURP). In all, 36% and 44% of the patients included in our study had persistent bacteriuria and pyuria, respectively.

Persistent post-TURP bacteriuria and relation to perioperative factors

Univariate analysis

The relation of post-TURP bacteriuria to preoperative risk factors. There was a significant relationship of persistent post-TURP bacteriuria to the patient's age, prostatic size, positive preoperative urine analysis and culture, preoperative catheterisation, previous urological interventions, and history of diabetes mellitus (DM). There was no statistically significant relationship for the other variables measured (Table 2).

The relation of post-TURP bacteriuria to intraoperative risk factors. Persistent post-TURP bacteriuria was only significantly related to the size of the resectoscope sheath used for TURP and the duration of the operation (Table 3).

The relation of post-TURP bacteriuria to postoperative risk factors. There was only a significant relationship of persistent post-TURP bacteriuria to postoperative catheter events (block, exchange, and manual wash; Table 4).

Multivariate analysis

On multivariate logistic regression analysis, we found statistically significant relationships between persistent post-TURP bacteriuria and the following risk factors: old age, past history of DM, large prostatic size, positive preoperative urine analysis, preoperative catheter use, previous urological interventions, large size of sheath, long duration of operation, postoperative catheter events, and postoperative manual wash (Table 5).

Persistent post-TURP pyuria and relation to perioperative factors

Univariate analysis

There was a statistically significant relationship between persistent post-TURP pyuria and the following risk factors: old age, past history of DM, large prostatic size, positive preoperative urine analysis, preoperative catheter use, large size of sheath, long duration of operation, postoperative catheter events and postoperative manual wash.

Multivariate analysis

Our multivariate logistic regression analysis revealed many independent statistically significant risk factors related to the occurrence of persistent post-TURP pyuria: old age, past history of DM, large prostatic size, positive preoperative urine analysis, positive urine culture, preoperative catheter use, large size of sheath, long operation time, postoperative catheter events, and postoperative manual wash.

Sterile pyuria

Eight of the studied patients (8%) had persistent postoperative pyuria without bacteriuria. This was not statistically significant. Causes of sterile pyuria are multiple and beyond scope of our study.

Discussion

In urology, the prevention of postoperative infectious complications is important and only a few studies have evaluated the risk factors [5]. Studies on the epidemiology and risk factors for post-TURP bacteriuria in urology have been limited [7,10]; so we carried out our present study to identify the potential risks factors that may increase the incidence of post-TURP infection (particularly persistent pyuria and bacteriuria).

The reported incidence of UTI in patients undergoing TURP varies widely. In two different studies it was 26% and 34.9% [5,6], whilst in other reports the infection rate was as low as 3.5% [4] and 1.9% [7]. The specific incidence of postoperative bacteriuria has been reported to be 7.6–26% [7,8].

In our present study, we found a higher incidence of postoperative bacteriuria (36% at 3 weeks) compared to Colau et al. [6] (5% at 4 weeks) and Wagenlehner et al. [9] (28% at 3–5 weeks). This could be attributed to peri-

Table 2 The incidence of bacteriuria in relation to preoperative variables of patients scheduled for TURP.

Preoperative variable		Postoperative bacteriuria				Chi-squared test	
		Negative		Positive		χ^2	*P*
Age, years	<65, *n* (%)	24	(85.7)	4	(14.3)	7.96	0.005 HS
	>65, *n* (%)	40	(55.6)	32	(44.4)		
Presentation	LUTS, *n* (%)	28	(70)	22	(30)	4.42	0.109
	Haematuria, *n* (%)	11	(73.3)	4	(26.7)		
	Urine retention, *n* (%)	30	(75)	10	(25)		
Prostatic size, g	<60, *n* (%)	23	(82.1)	5	(17.9)	5.56	0.018 S
	>60, *n* (%)	41	(56.9)	31	(43.1)		
Free PSA, ng/mL	Mean (SD)	0.85 (0.57)		1.04 (0.92)		1.28	0.325*
	Range	0–2		0–2.91			
Total PSA, ng/mL	Mean (SD)	3.10 (1.75)		3.77 (2.19)		1.66	0.100*
	Range	0–6.1		0–6.5			
Preoperative urine analysis	No pyuria, *n* (%)	39	(75.0)	13	(25.0)	5.69	0.017 S
	Pyuria, *n* (%)	25	(52.1)	23	(47.9)		
Preoperative urine culture	No bacteriuria, *n* (%)	54	(79.4)	14	(20.6)	21.90	<0.001 HS
	Bacteriuria, *n* (%)	10	(31.3)	22	(68.8)		
Urea, mg/dL	Mean (SD)	26.22 (7.05)		28.61 (8.93)		1.48	0.143*
	Range	17–44		18–44			
Creatinine, mg/dL	Mean (SD)	1.23 (0.33)		1.31 (0.49)		1.09	0.439*
	Range	0.7–1.9		0.7–2.6			
Preoperative catheter	No, *n* (%)	52	(72.2)	20	(27.8)	7.55	0.006 HS
	Yes, *n* (%)	12	(42.9)	16	(57.1)		
Catheter size, F	Mean (SD)	18.33 (0.78)		18.75 (1.00)		1.20	0.243*
	Range	18–20		18–20			
Preoperative catheter duration, days	Mean (SD)	13.17 (4.88)		10.25 (5.11)		−1.52	0.139*
	Range	5–20		3–21			
Previous urological interventions	No, *n* (%)	54	(73.0)	20	(27.0)	9.946	0.001 HS
	Yes, *n* (%)	10	(38.5)	16	(61.5)		
Past history of DM	No, *n* (%)	52	(70.3)	22	(29.7)	4.86	0.028 S
	Yes, *n* (%)	12	(46.2)	14	(53.8)		
Past history of IHD	No, *n* (%)	54	(64.3)	30	(35.7)	0.02	0.890
	Yes, *n* (%)	10	(62.5)	6	(37.5)		
Past history of HTN	No, *n* (%)	56	(65.1)	30	(34.9)	0.33	0.564
	Yes, *n* (%)	8	(57.1)	6	(42.9)		
Past history of HCV	No, *n* (%)	58	(65.9)	30	(34.1)	1.16	0.281
	Yes, *n* (%)	6	(50.0)	6	(50.0)		

IHD, ischaemic heart diseases; HTN, hypertension; HCV, hepatitis C virus; S, significant; HS, highly significant.
* Independent *t*-test.

operative patients' characteristics and postoperative catheter events.

For the influence of preoperative risk factors on postoperative UTI, two studies in addition to our present study found that age was a risk factor for postoperative bacteriuria [7,11]; however, this was contradicted in two other studies that found no statistically significant effect of age [6,8]. In the present study, a prostate size of >60 g was significantly correlated with postoperative bacteriuria and this was also reported by Hwang et al. [11]. In the present study, DM was a significant risk factor for post-TURP UTI and various reports have identified DM as a risk factor [7,8,11].

Our present study found a statistically significant association between both preoperative positive urine analysis and preoperative catheter presence, and postoperative UTI. The former risk factor has been confirmed in numerous studies [5,8,10,12], but also denied by some [7,9]; whereas the latter has been demonstrated in multiple series [7,13–15] but reported to be an insignificant factor in one study [16].

We did not find a statistically significant relationship between presenting symptoms, PSA level and preoperative catheter duration as risk factors for post-TURP UTI, which concurs with Hwang et al. [11], who found that neither storage symptoms nor obstructive symp-

Table 3 The incidence of bacteriuria in relation to intraoperative variables of patients after TURP.

Intraoperative variable		Preoperative bacteriuria		Independent *t*-test	
		Negative	Positive	*t*	*P*
Surgeon experience, years	Mean (SD) Range	22.94 (8.09) 15–39	20.56 (6.34) 15–37	−1.44	0.311
Surgeon number of previous TURPs	Mean (SD) Range	37.94 (8.09) 30–54	35.56 (6.34) 30–52	−1.44	0.311
Duration of activation of CIDEX, days	Mean (SD) Range	6.13 (3.13) 1–13	5.68 (2.61) 1–12	−1.04	0.512
Volume of irrigating fluid, L	Mean (SD) Range	17.88 (2.83) 13–25	18.72 (3.64) 14–26	1.30	0.198
Size of sheath, F	24, *n* (%) 26, *n* (%)	18 (90.0) 46 (57.5)	2 (10.0) 34 (42.5)	7.34	0.006* HS
Coagulation power, W	Mean (SD) Range	77.50 (11.55) 60–100	74.22 (7.31) 60–90	−1.54	0.128
Cutting power, W	Mean (SD) Range	101.88 (11.11) 90–150	100.56 (8.60) 90–150	−0.62	0.539
Duration of operation, min	< 60, *n* (%) > 60, *n* (%)	20 (63.6) 44 (64.1)	2 (36.4) 34 (35.9)	8.86	0.002* HS

HS, highly significant.
* Chi-squared test.

Table 4 The incidence of bacteriuria in relation to postoperative variables of patients after TURP.

Postoperative variable		Postoperative bacteriuria		Independent *t*-test	
		Negative	Positive	*t*	*P*
Catheter size, F	Mean (SD) Range	23.56 (0.83) 22–24	23.44 (0.91) 22–24	−0.66	0.512
Blood transfusion	No, *n* (%) Yes, *n* (%)	58 (67.4) 6 (42.9)	28 (32.6) 8 (57.1)	3.16	0.076*
Antibiotics Type	3rd G.CS, *n* (%)	64 (64.0)	36 (36.0)	NA	NA*
Antibiotics duration, days	Mean (SD) Range	3.87 (0.79) 3–5	4.12 (0.64) 3–5	1.26	0.426
Catheter events	No, *n* (%) Yes, *n* (%)	59 (73.8) 5 (25.0)	21 (26.3) 15 (75.0)	16.50	< 0.001* HS
Continuous irrigation fluid	Normal saline, *n* (%) Sterile water, *n* (%)	14 (53.8) 50 (67.6)	12 (46.2) 24 (32.4)	1.57	0.210*
Continuous irrigation duration, h	Mean (SD) Range	31.56 (8.86) 20–48	35.00 (12.29) 2–48	1.62	0.109
Manual wash	No, *n* (%) Yes, *n* (%)	56 (70.0) 8 (40.0)	24 (30.0) 12 (60.0)	6.25	0.012* S

S, significant; HS, highly significant.
* Chi-squared test.

toms or PSA level were risk factors for postoperative infection. However, Ansari et al. [17] found that preoperative catheter duration was a significant risk factor for post-TURP UTI.

Evaluating the potential intraoperative risk factors, we found a statistically significant relationship between post-TURP persistent bacteriuria and the use of a large resectoscope sheath (26 vs 24 F) and a long duration of operation. Most studies, as well as our present study, agree that a longer operation (> 60 min in the present study) is a major risk factor for postoperative UTI [4,8,9,18]. However, this has also been denied in another study [11].

Postoperative catheter events and postoperative manual wash were statistically highly significantly associated with post-TURP UTI. Many studies have shown that

Table 5 Multivariate logistic regression analysis for positive bacteriuria after TURP.

Variable	Coefficient	Std. error	*P*	Odds ratio	95% CI
Age	1.57	0.59	0.008 S	4.80	1.51–15.25
Prostatic size	1.25	0.55	0.023 S	3.48	1.19–10.18
Preoperative +'ve urine analysis	1.02	0.43	0.019 S	2.76	1.19–6.43
Preoperative +'ve urine culture for bacteriuria	2.14	0.49	<0.001 HS	8.49	3.28–21.96
Preoperative catheter	1.24	0.46	0.007 S	3.47	1.40–8.60
Previous urological interventions	1.46	0.48	0.002 S	4.32	1.68–11.08
Past history of DM	1.01	0.47	0.030 S	2.76	1.10–6.91
Size of sheath	1.89	0.78	0.002 S	6.65	1.45–30.62
Duration of operation	2.04	0.78	0.008 S	7.73	1.69–35.36
Catheter events	2.13	0.58	<0.001 HS	8.43	2.73–26.04
Manual wash	1.25	0.52	0.016 S	3.50	1.27–9.65

S, significant; HS, highly significant.

disconnection of the closed urinary catheterisation system was a major risk factor for infection, which corresponds with our present results [4,9,12,18].

We found that the interval to removal of the catheter had no influence on infection, as has also been reported by Irani et al. [19]. However, contradicting our present results, several studies identified long indwelling postoperative urethral catheters (for >3 days) as a risk factor for UTI after TURP [4,6,12,18].

Pourmand et al. [12] reported that longer irrigation duration was a risk factor for occurrence of bacteriuria, in disagreement with our present results. We did not find any previous studies assessing postoperative catheter size nor infusion set as risk factors for postoperative infection.

A larger resectoscope sheath was found to have a statistically significant impact on post-TURP bacteriuria. We screened the literature and similar studies that addressed the same issue and found nothing to justify the relationship. Any justification on our behalf would therefore be a mere guess with no scientific basis. One possible explanation is that urinary tract instrumentation may cause 'trauma' that renders the patient susceptible to UTI by triggering an inflammatory cascade.

Again, a similar relationship exists between post-TURP bacteriuria and previous urological surgery. One possible reason may be that previous urological surgery often implies urinary tract anatomical or pathological aberration, which may predispose to a higher incidence of UTI. However, this is merely conjecture and requires substantiation through further studies.

Study limitations included: (a) Some risk factors for UTI were observational, such as size of resectoscope sheath and previous urological surgeries; (b) Given the large number of risk factors, a larger cohort of patients would have defined them more accurately; (c) Short follow-up, the long-term outcome of these patients remains unknown; and (d) We did not correlate the mere presence of bacteriuria to the symptoms and complications.

In summary, independent risk factors for persistent post-TURP UTI in our present study were: old age, past history of DM, large prostatic size, positive preoperative urine analysis, preoperative catheter use, previous urological interventions, large resectoscope sheath, a long duration of operation, postoperative catheter events and postoperative manual wash. Our present results are in agreement with the findings of most similar studies.

Conclusion

We identified many avoidable preoperative, intraoperative and postoperative risk factors for post-TURP UTI. However, larger prospective studies are required to unify risk factors for post-TURP infection in order to improve the results of our 'gold standard' procedure for treatment of BPH.

Conflicts of interest

None declared.

References

[1] Alsaywid BS, Smith GH. Antibiotic prophylaxis for transurethral urological surgeries: systematic review. *Urol Ann* 2013;**5**:61–74.
[2] Mayer EK, Kroeze SG, Chopra S, Bottle A, Patel A. Examining the 'gold standard': a comparative critical analysis of three consecutive decades of monopolar transurethral resection of the prostate (TURP) outcomes. *BJU Int* 2012;**110**:1595–601.
[3] Reich O, Gratzke C, Bachmann A, Seitz M, Schlenker B, Hermanek P. Morbidity, mortality and early outcome of transurethral resection of the prostate: a prospective multicentre evaluation of 10,654 patients. *J Urol* 2008;**180**:246–9.
[4] Rassweiler J, Teber D, Kuntz R, Hofmann R. Complications of transurethral resection of the prostate (TURP) incidence, management, and prevention. *Eur Urol* 2006;**50**:969–79.
[5] Hwang EC, Jung SI, Kwon DD, Lee G, Bae JH, Na YG, et al. A prospective Korean multicenter study for infectious complications in patients undergoing prostate surgery: risk factors and efficacy of antibiotic prophylaxis. *J Korean Med Sci* 2014;**29**:1271–7.

[6] Colau A, Lucet JC, Rufat P, Botto H, Benoit G, Jardin A. Incidence and risk factors of bacteriuria after transurethral resection of the prostate. *Eur Urol* 2001;**39**:272–6.

[7] El Basri A, Petrolekas A, Cariou G, Doublet JD, Hoznek A, Bruyere F. Clinical significance of routine urinary bacterial culture after transurethral surgery: results of a prospective multicenter study. *Urology* 2012;**79**:564–9.

[8] Matsumoto T, Kiyota H, Matsukawa M, Yasuda M, Arakawa S, Monden K, et al. Japanese guidelines for prevention of perioperative infections in urological field. *Int J Urol* 2007;**14**:890–909.

[9] Wagenlehner FM, Wagenlehner C, Schinzel S, Naber KG, Working Group 'Urological Infections' of German Society of Urology. Prospective, randomized, multicentric, open, comparative study on the efficacy of a prophylactic single dose of 500 mg levofloxacin versus 1920 mg trimethoprim/sulfamethoxazole versus a control group in patients undergoing TUR of the prostate. *Eur Urol* 1920;**2005**(47):549–56.

[10] Grabe M. Antibiotic prophylaxis in urological surgery, a European viewpoint. *Int J Antimicrob Agents* 2011;**38**:58–63, Suppl..

[11] Hwang EC, Yu SH, Kim JB, Jung SI, Kang TW, Kwon DD, et al. Risk factors of infectious complications after transurethral prostate surgery in patients with preoperative sterile urine. *Korean J Urogenit Tract Infect Inflammation* 2013;**8**:27–31.

[12] Pourmand G, Abedi AR, Karami AA, Khashayar P, Mehrsai AR. Urinary infection before and after prostatectomy. *Saudi J Kidney Dis Transpl* 2010;**21**:290–4.

[13] Budak S, Budak GG, Aksoy EE, Sonbahar AE, Süelözgen T, Değirmenci T, et al. Risk factors for urinary tract infections in patients who underwent transurethral prostatectomy. *J Clin Anal Med* 2016;**7**:32–4.

[14] Budak GG, Budak S, Arı A, Özgenç O. Research for the agents of the urinary infection resistant to multiple antibiotics and risk factors. *J Clin Anal Med* 2015;**6**:216–8.

[15] Grabe M, Botto H, Cek M, Tenke P, Wagenlehner FM, Naber KG, et al. Preoperative assessment of the patient and risk factors for infectious complications and tentative classification of surgical field contamination of urological procedures. *World J Urol* 2012;**30**:39–50.

[16] Ibrahim A, Sharfi AA. Factors influencing postprostatectomy bacteriuria. *Emirates Med J* 1987;523–8.

[17] Ansari MZ, Costello AJ, Ackland MJ, Carson N, McDonald IG. In Hospital Mortality in Transurethral Resection of the Prostate in Victorian Public Hospitals. *Aust NZ J Surg* 2000;**70**:204–8.

[18] Huang X, Shi HB, Wang XH, Zhang XJ, Chen B, Men XW, et al. Bacteriuria after bipolar transurethral resection of the prostate: risk factors and correlation with leukocyturia. *Urology* 2011;**77**:1183–7.

[19] Irani J, Fauchery A, Dore B, Bon D, Marroncle M, Aubert J. Systematic removal of catheter 48 hours following transurethral resection and 24 hours following transurethral incision of prostate: a prospective randomized analysis of 213 patients. *J Urol* 1995;**153**:1537–9.