



Preventive Effect of Tamsulosin on Postoperative Urinary Retention in Benign per Anal Surgeries

Yasaman Shariati^{1*}, Mansooreh Vahedi¹, Shahin Fateh² and Ali Cyrus³

¹ MD General Surgeon, Arak University of Medical Sciences, Arak, Iran

² MD Thorax Surgeon, Assistant Professor, Arak University of Medical Sciences, Arak, Iran

³ MD Urologist, Associated Professor, Arak University of Medical Sciences, Arak, Iran

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ABSTRACT

The aim of this study was to investigate preventive effect of Tamsulosin on postoperative urinary retention in benign perianal surgeries. This is a randomized, double-blind, placebo-controlled clinical trial. The population included 243 patients need surgery for benign perianal pathology. Patients randomized to the intervention group 1 (81 patients, 0.4 mg of tamsulosin under the administration of a single dose, six hours before the operation), the intervention group 2 (81 patients, 0.4 mg of tamsulosin under the administration of a dose of 6 hours before surgery, a single dose six hours after surgery) and control group (81 patients, under the administration of placebo) were enrolled. The incidence of urinary retention after surgery was recorded in the three groups. Data were analyzed by SPSS 20 software. 29 patients (11.93%) were suffering from urinary retention. Urinary retention was shown in groups 1, group 2 and placebo, in 8 (9.87%), 2 (2.46%) and 19 (23.45%) patients, respectively. ($p < 0.0001$) urinary retention in Hemorrhoidectomy with 22 (17.47%) patients and in Sphincterotomy with 11 (16.41%) patients, significantly higher than the incidence of urinary retention were other injuries. The use of tamsulosin is effective in reduce the risk of urinary retention in patients with benign perianal surgery. Hemorrhoidectomy is the most associated with the incidence of urinary retention. Tamsulosin is a treatment with high performance to reduce the incidence of urinary retention.

Key words: Benign per anal surgeries, Tamsulosin, urinary retention.

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Corresponding author: Yasaman Shariati
e-mail: yasaman.shariati@gmail.com

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INTRODUCTION

Acute Urinary Retention (AUR) is a common postoperative complication of anorectal surgery, which seen in 15% of cases [1]. Postoperative induced AUR is a subset of Postoperative Urinary Retention (POUR) which define as a disability in urination in the presence of palpable bladder after surgery [2]. This disorder can be seen in both gender and in any age group after urinary tract, perineal and anorectal surgery [3-8]. The main cause of POUR is unclear, however it seems as a multifactorial impairment which in benign anorectal surgery block bladder detrusor muscle reflex and block bladder drainage contraction as result of anal distention, local inflammation and pain and adrenergic stimulation [2]. Based on

evidence, POUR is associated with some factors include: spinal anesthesia, age, presence of obstructive urinary tract infection, surgical procedure and duration, fluids and analgesia [2, 6]. According to the studies, in most cases, POUR along with urinary tract infection and the need for catheterization of the bladder, ureteral obstruction, increase hospitalization and need for additional surgery imposes significant health and financial costs on patients [9], therefore, efforts to reduce complication of surgery seems to be beneficial. Several strategies are introduced to prevent POUR which among them limitation of fluid intake during surgery [10], use of parasympathetic and α -adrenergic blockers [11, 12], pain management [13], Sitz bath [14], local anesthesia [15, 16] and early ambulation after surgery [2] are more supported. In some studies, favorable results obtained with use of α -adrenergic blockers as a prophylactic treatment of POUR [9, 17]. However, researcher [17] indicates

that some α -adrenergic blockers can cause acute postoperative complication due to decrease in patient blood pressure. Tamsulosin is selective blocker of α -1 receptor which reduces bladder outlet tone and thereby reducing resistance to urine flow [2]. In theory [2] and according to results of some experiment [9, 17] prescribing tamsulosin is beneficial in prevention of postoperative urinary retention, however scientific results are inconsistent [18]. Hang et al. [18] in a clinical trial evaluate the efficacy of Tamsulosin in prevention of urinary retention after rectal cancer surgery and showed need to postoperative catheterization were not significantly different and Tamsulosin and placebo groups (4.32% and 3.12% in Tamsulosin and control groups respectively). In general, studies in prophylactic use of Tamsulosin in the case of postoperative urinary retention are limited, however some experiment evaluate the effect of Tamsulosin in urinary retention after Herniorrhaphy [9] and rectal cancer [18] surgeries and studies in the case of Tamsulosin in urinary retention after benign per anal surgeries is limited [2, 9]. According to this, the aim of this study was to evaluate preventive effect of Tamsulosin on postoperative urinary retention in benign perianal surgeries.

MATERIAL AND METHODS

This is a randomized, double-blind, placebo-controlled clinical trial. The study population selected among 18-50 years old patents who's referred and hospitalized in surgery department of Arak Vali-Asr hospital with benign pathologies of per anal (Hemorrhoid, fissure, fistula, abscess) diagnosis and hemorrhoidectomy, fistulotomy or fistuloectomy, sphincterotomy and incision and drainage of per anal abscess indications were performed. These indications were selected according to the condition of disease and patients and opinion of the surgeon. Sampling method was random (random-number table) with using inclusion and exclusion criteria. Inclusion criteria include: patients between 18-50 years old form both gender, patients with Hemorrhoidectomy, fistulotomy or fistuloectomy, sphincterotomy and incision and drainage of per anal abscess surgery indications and International prostate Symptom Score (IPSS). Exclusion criteria include urinary tract infection, history of neurological impairment, malignancy, urinary incontinence, medication affect urination like cholinergic drugs, history of urological diseases like urethral constriction,

bladder and prostate cancer, history of urolithiasis, benign prostatic hyperplasia (BPH), history of urological surgery, urethral permanent catheter, chronic kidney disease and cardiopulmonary comorbidity, history of allergy to tamsulosin, history of treatment with tamsulosin or α -blockers, lack of access to the patient in first 24h after surgery and patient dissatisfaction for participate in study.

For all patients included in study, comprehensive clinical examination by urologist, electrocardiogram, chest radiography, blood analysis and uranalysis were performed. According to demographic information (age and gender), 243 patients divided randomly in 3 groups include: intervention group 1 (n=81; single dose of 0.4 mg tamsulosin 6h preoperative and placebo 6h postoperative), intervention group 2 (n=81; 0.4 mg tamsulosin 6h preoperative and 6h postoperative) and control group (n=81; placebo administration 6h preoperative and 6h postoperative). For all patients Ringer's lactate solution (1.5 mg/kg/h) before anesthesia and in postoperative period of food deprivation (4-6h) were administrated [7]. Short term spinal anesthesia (5% lidocaine) was performed by anesthesiologist. Morphine and nonsteroidal anti-inflammatory drug (NSAID) were administrated postoperatively for pain management [7]. Tamsulosin and placebo were prepared in same packing.

All patients monitored for difficulties in urination and urinary retention for 24 after surgery. Urinary retention defined as a presence of palpable masses in suprapubic region, pain and disability in urination 24h after surgery despite the fluid therapy which conservative methods like warming of suprapubic region and encouraging patients to get up and move for urination unsuccessful and catheterization of the bladder is inevitable [2,7]. Foley catheter with zylocaine 2% used for bladder catheterization [2]. Urinary retention according to the aforementioned definition and mean volume of urination after catheterization in patients with urinary retention were the main variables which compared between three groups.

According to the study method, placebo similar to tamsulosin (shape, size, color and other properties with starch) prepared and both medications were kept in unnamed containers with special code. In this study, surgeries were performed by Vali-asr hospital surgeons who responsible for patients

selection. Surgical assistants responsible for completion of demographic as well as clinical information of patients and urinary retention determined other clinical variables before surgery. Data were analyzed by using SPSS20 software. Descriptive statistical methods were used to analysis of frequency of variables. Student t-test and χ^2 test were used to analysis of quantitative and qualitative variables respectively. To examine the correlation between variables Pearson correlation coefficient test were used. $P < 0.05$ was considered as significance level.

RESULTS

Mean age in three groups were 41.71 ± 8.32 . In general, 125 woman (51.44%) and 118 man (48.55%) were included in study. From 243 per anal surgery, 124 (51.2%) Hemorrhoidectomy, 30 (12.34%) fistulotomy or fistuloectomy, 67 (27.57%) sphincterotomy and 22 (9.05%) incision and drainage of per anal abscess surgery were performed (diagram 1). Demographic and clinical information of patients underwent benign per anal surgery were summarized in table. According to results, mean age ($P = 0.322$) and gender distribution ($P = 0.112$) were not significantly different among three groups. Also frequency of

surgical procedure within groups ($P = 0.5$), duration of surgery (under 1h and above 1h) ($P = 0.23$) were not different significant between three groups. Mean hospitalization time in intervention group 1, 2 and placebo were 21.5, 22.1 and 21.9 respectively which was not statistically significant ($P = 0.71$).

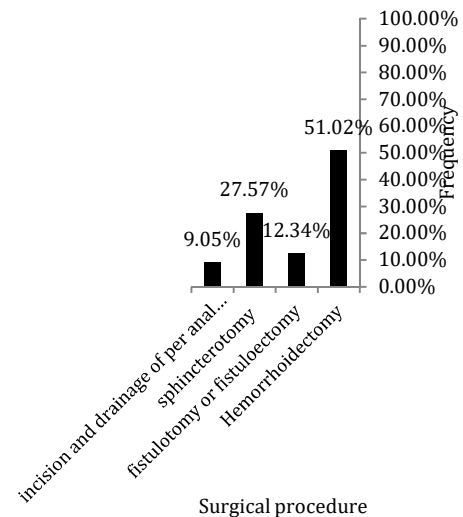


Figure 1: Frequency of different benign per anal surgery in 243 patients.

Table 1: Demographic and clinical information of patients underwent benign per anal surgery in three study groups

		Intervention 1* (n=81)	Intervention 2** (n=81)	Placebo*** (n=81)	P-value
Age (mean \pm SEM) year		41.32 \pm 6.2	42.1 \pm 8	41.82 \pm 2.6	0.322
Gender man (%)		39 (48.1)	39 (48.1)	40 (49.3)	0.112
Surgical procedure (%)	Hemorrhoidectomy	40 (49.3%)	42 (51.8%)	42 (51.8%)	0.5
	Fistulotomy or fistuloectomy	11 (13.5%)	10 (12.3%)	9 (11.1%)	
	Sphincterotomy	23 (28.3%)	22 (27.1%)	22 (27.1%)	
	Incision and drainage of per anal abscess	8 (9.87%)	7 (8.6%)	7 (8.6%)	
Duration (%)	Under 1h	66 (81.4%)	63 (77.7%)	68 (83.9%)	0.23
	Above 1h	15 (18.5%)	18 (22.2%)	13 (16%)	
Hospitalization (mean \pm SEM)		21.5 \pm 2.3	22.1 \pm 8.2	21.9 \pm 4.3	0.71

* n=81; 0.4 tamsulosin single dose, 6h preoperative.; ** n=81; 0.4 tamsulosin single dose, 6h preoperative and 6h postoperative. *** n=81; placebo administration in same time with intervention group.

Table 2: Patients with urinary retention and volume of urination in three study group

	Intervention 1* (n=81)	Intervention 2** (n=81)	Placebo*** (n=81)	P-value
Urinary retention (%)	8 (9.87)	2 (2.46)	19 (23.45)	<0.0001
Urinary residual ¹ (mean \pm SEM) cc	650 \pm 80.2	600 \pm 50.3	750 \pm 50.4	0.611

¹ in the case of urinary retention

Table 3. Correlation between studied variables and urinary retention

Variables	Urinary retention	
	p-value	Pearson Correlation
Age	0.1	-0.83
Gender	0.122	0.702
Surgical procedure	0.001	0.604
preoperative urination volume	0.431	0.568
Duration of surgery	0.7	0.373
Duration of hospitalization	0.5	0.695

Frequency of urinary retention in hemorrhoidectomy was 22 (17.74%), and sphincterotomy with 11 (16.41%), patients significantly higher than urinary retention in fistulotomy or fistuloectomy and incision and drainage of per anal abscess surgery with 2 (6.66%) and 1 (4.54%) patients.

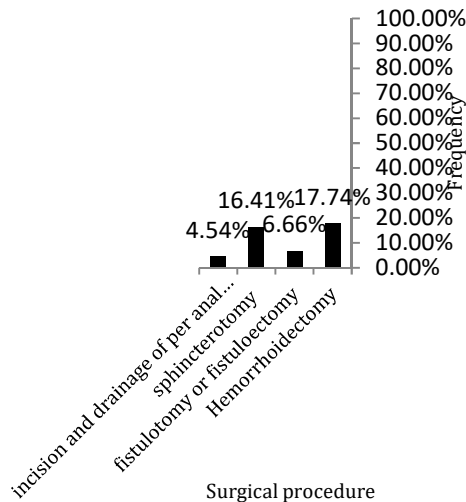


Figure 2: Frequency of urinary retention in benign per anal surgeries

Results of association between urinary retention and studied variables were summarized in table 3. According to the results, surgical procedure had significant correlation with urinary retention ($P=0.0001$) so that hemorrhoidectomy was most common cause of anorectal surgeries associated with urinary retention. On the other hand significant relationship between age ($P=0.1$), gender ($P=0.122$), preoperative urination volume ($P=0.431$), duration of surgery ($P=0.7$), duration of hospitalization ($P=0.5$) of the patient and occurrence of urinary retention was not observed.

DISCUSSION

According to our results, tamsulosin has had the desirable effect in urinary retention of patients whose underwent benign per anal surgeries. In the other hand, prescribing double dose of tamsulosin (pre and postoperative) instead of single dose prescription has shown better results in reduction of urinary retention. Our results showed that, procedure of pre anal surgery are correlated with induction of urinary retention and in this way hemorrhoidectomy is the most associated with the incidence of urinary retention. In most cases, POUR along with urinary tract infection and the need for catheterization of the bladder, ureteral obstruction, increase

hospitalization and need for additional surgery imposes significant health and financial costs on patients [9]. Therefore, an effort to reduction of surgery complication seems necessary. Tamsulosin in selective blocker of α -1 receptor, it reduces bladder outlet tone and thereby reducing resistance to urine flow [2]. In theory [2] and according to results of some experiment [9,17] prescribing tamsulosin is beneficial in prevention of postoperative urinary retention, however scientific results are inconsistent.

Ahmad *et al.*, (2014) evaluate effect of tamsulosin in reduction of urinary retention in anorectal surgeries. According to their results, in 56 (17.9%) and 8 (2.5%) patients of control and tamsulosin urinary retention observed after surgery ($P=0.0001$). Also hemorrhoidectomy is most common procedure in anorectal surgeries related to urinary retention [2].

Mohamadi Fallah, *et al.*, (2012) use prophylactic Tamsulosin and determined the risk of urinary retention after elective herniorrhaphy caused by inguinal hernia. According to the results, urinary retention observed in 15 and 2.5% of patients in group 2 and 1 respectively which significantly different ($p=0.04$) [9]. Our results showed the efficacy of Tamsulosin in reduction of urinary retention which consistent with mentioned research. Jang *et al.*, (2012) showed that tamsulosin couldn't reduce urinary retention after rectal cancer surgeries and need to in consistent was not significant difference between groups ($p=0.804$) (23.4% and 21 for tamsulosin and control group respectively). These results are in contradiction with our studies and Ahmadi *et al.*, [2] and Mohamdi Fallah [9] results. According to results of Jang *et al.*, use of tamsulosin as a prophylactic medication for urinary retention after rectal cancer surgeries is not effective [18]. One of the explanations for difference between our results and other consistent studies [2, 9] with Jang *et al.*, studies is difference in study population. In our study patients with benign per anal pathology included in study but Jang evaluate the effect of tamsulosin on rectal cancer patients. Koch *et al.*, (2006) determined risk factors of urinary retention after endoscopic hernia repair. They examined 153 patients and urinary retention observed in 22.2% [17]. In our study, frequency of urinary retention was 11.93%.

Based on evidence, POUR are correlated with factors like spinal anesthesia, age, presence of

urinary obstructive disease, type and duration of surgery procedure, fluid and analgesia [2, 6]. Although according to Chang *et al.*, studies, being a man is a risk factor for urinary retention ($p=0.023$) [18]. According to our results, only type of surgery procedure associated with urinary retention. However, Mohamadi Fallah was not report any correlation between pre anal surgery procedure and occurrence of urinary retention [9]. According to our results and some other studies, prescription of tamsulosin, especially pre and postoperative along with reduction in occurrence of urinary retention in pre anal surgery, but due to difference in studies in the case of clinical variables, type of per anal disease sample size and results, further studies with different doses of tamsulosin and more clinical variables most be considered. Small sample size is one of our study limitation, which be considered in future studies.

CONCLUSION

Tamsulosin, as a double dose pre and postoperative have a desirable effect on urinary retention in patients underwent benign per anal surgeries. Hemorrhoidectomy is prevalent per anal surgical procedure with urinary retention. Tamsulosin can be an effective treatment for reduction of urinary retention.

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