



General Surgery

EFFECT OF TAMSULOSIN IN PREVENTING POST OPERATIVE URINARY RETENTION IN PATIENTS UNDERGOING INGUINAL HERNIOPLASTY

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ABSTRACT **Background:** Postoperative Urinary Retention (POUR) is defined as the inability to pass urine in presence of a clinically palpable bladder post-surgery. Retention can cause significant health burden on the patient, as well as morbidity. The aim of this study is to determine the prophylactic effect of Tamsulosin compared to those patients who did not receive the drug on the development of urinary retention in men undergoing elective inguinal hernioplasty in a tertiary care centre in Mandya. **Materials and Methods:** In this randomised, prospective study, 92 male patients between the ages of 40 to 65 years admitted in Mandya Institute of Medical Sciences for elective inguinal hernioplasty, were randomly assigned to receive two doses of 0.4mg Tamsulosin (n= 48) or placebo (n=44), 6 hours prior to surgery and 6-12 hours after surgery. Patients were routinely monitored post operatively for 24 hours. The primary endpoint was to investigate the effect of tamsulosin in prevention of post- operative urinary retention 24 hours after elective inguinal hernioplasty. Collected data was analysed using SPSS software V.28 and the $P < 0.05$ was considered statistically significant. **Results:** Forty-eight patients were included in the Tamsulosin arm and forty-four patients in the placebo arm. POUR in patients who received Tamsulosin was significantly lower than placebo, as 4.1% of patients treated with Tamsulosin and 20.45% with placebo, reported urinary retention following surgery ($P= 0.04$). No serious adverse effects were seen in either group. **Conclusions:** This study suggests that short perioperative treatment with tamsulosin can reduce the incidence of urinary retention and the need for catheterisation after elective inguinal hernioplasty.

KEYWORDS : Post operative urinary retention, Tamsulosin

INTRODUCTION

Postoperative Urinary Retention (POUR) is defined as the inability to pass urine in presence of a clinically palpable bladder post- surgery.

POUR is frequently encountered in surgical practice with an incidence of around 3-25%.⁽¹⁾

Retention occurs most frequently after perineal, gynaecological, anorectal and lower urinary tract surgeries.

Retention can cause significant health burden on the patient, as well as morbidity.

Instrumentation or catheterisation has been shown to result in complications such as urinary tract infection, subsequently possible stricture formation, prolonged hospital stays and the costs of probable additional surgical procedures.

Alpha- adrenergic blockers have been shown to have significant prophylactic as well as therapeutic roles in POUR.⁽²⁾

Alpha blockers act by decreasing bladder outflow resistance and facilitate micturition.

Tamsulosin, a selective alpha 1a adrenergic antagonist has significant and varied uses in medical practice. The need for the study is to quantify the effect of Tamsulosin in decreasing POUR. As per previous studies conducted using the drug for pelvic surgeries, the incidence of POUR with Tamsulosin (9%) versus without the drug (12%), showed a statistically significant difference.⁽³⁾

The current study was aimed to investigate the prophylactic efficacy of Tamsulosin on the development of urinary retention in men under undergoing elective inguinal hernioplasty in a tertiary care hospital in Karnataka.

MATERIALS AND METHODS

Study Design

This prospective, randomised study was performed between June 2022 to May 2023 in the Department of General Surgery, Mandya Institute of Medical Sciences, Mandya. The study was conducted in accordance with the Declaration of Helsinki, and was approved by the local Institutional Review Board and the IEC-MIMS.

Subjects

Male patients aged 40-65 years who were admitted in our center for elective inguinal hernioplasty were included in our study. Patients who had active urinary tract infection, recurrent or bilateral inguinal hernia, aged less than 40 years or more than 65 years, with cardiopulmonary or any other severe systemic disease such as diabetes mellitus, previous neurologic disease, medications such as cholinergics, benzodiazepines, or alpha blockers, that could affect voiding function, previous urological disease such as stricture or bladder or prostatic cancer, serum creatinine more than 1.6mg/dL, urinary incontinence, or an indwelling Foley's catheter were excluded from the study.

After obtaining written informed consent from all participants, patients were randomized to receive either two doses of 0.4mg Tamsulosin or placebo 6 hours prior to surgery and 6-12 hours after surgery.

Interventions

Half-life of tamsulosin is 9-15 hours, so 2 doses were administered with a 12-hour interval. The medications were administered 6 hours prior and 6-12 hours after surgical operation. Patients were asked to empty their bladder prior to surgery. All patients were routinely monitored post operatively for 24 hours for the presence of urinary retention, any voiding difficulty and side effects during 24 hours after surgery, and the occurrence of POUR was compared between the two groups. Patients were allowed to void once they felt they had a full bladder. Opioid analgesics were not administered to any patient post operatively.

Measurement

The diagnosis of POUR was established when the patient had a painful and palpable mass in his suprapubic area, and was unable to void during the first 24 hours after surgery. The diagnosis was confirmed by emptying of more than 400mL of urine by catheterisation. A 14-French Foley's catheter was placed to decompress the bladder of patients who could not urinate 12 hours after surgery.

Data Collection

Upon admission, demographic data was collected from all participants. Operative time was also collected 24 hours after surgical intervention.

Endpoints

The primary endpoint was to investigate the effect of tamsulosin in

prevention of POUR during the first 24 hours after inguinal hernioplasty.

Statistical Analysis

According to previous studies, reporting the incidence of POUR as 3-25% after surgery, our sample size was calculated to be 92, with 48 patients in one study arm, and 44 patients in the other.

Data was compiled and tabulated on an Excel Sheet and Analysed with SPSS V.28. Categorical data was analysed by Chi Square test and Fischer's exact test.

Results obtained were extrapolated in the form of bars, graphs and pie charts.

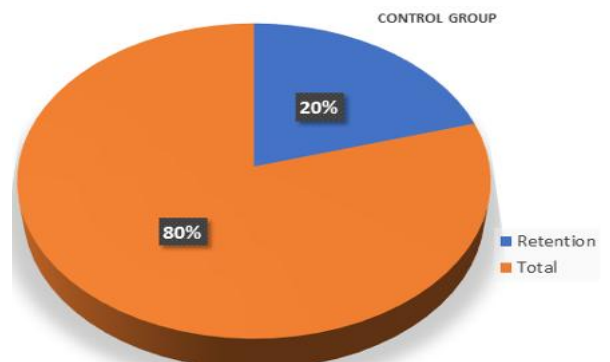
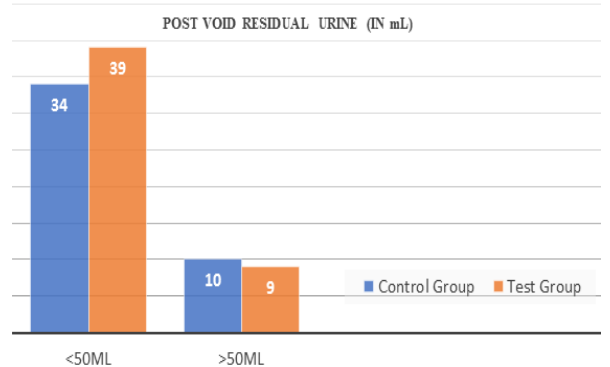
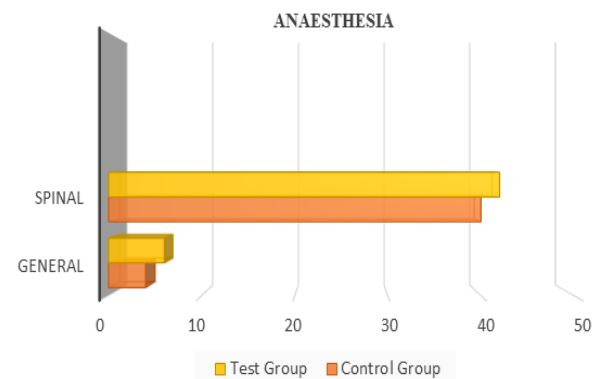
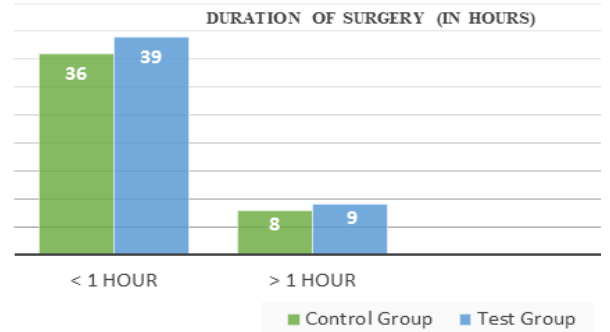
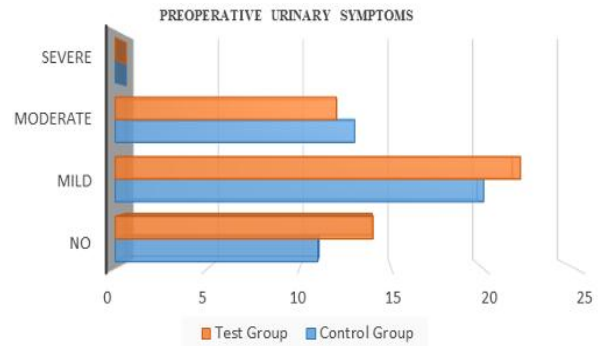
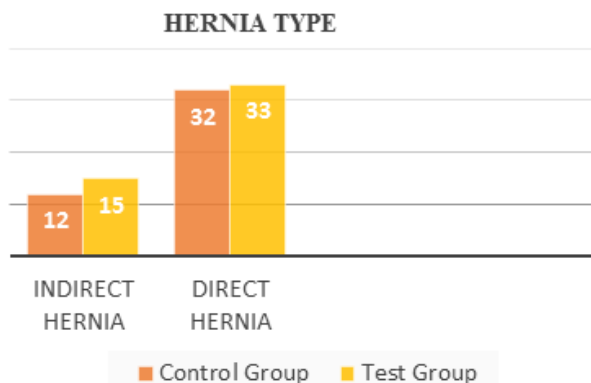
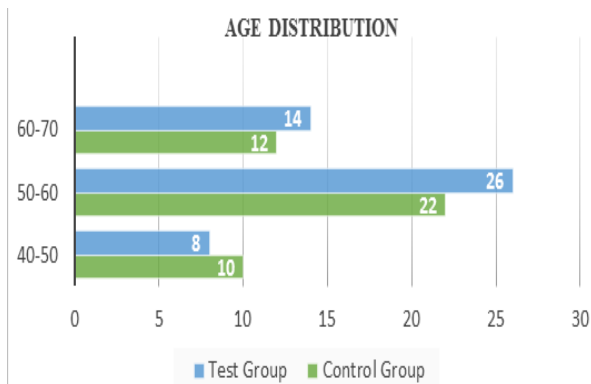
Ap-value of 0.05 or less was considered statistically significant.

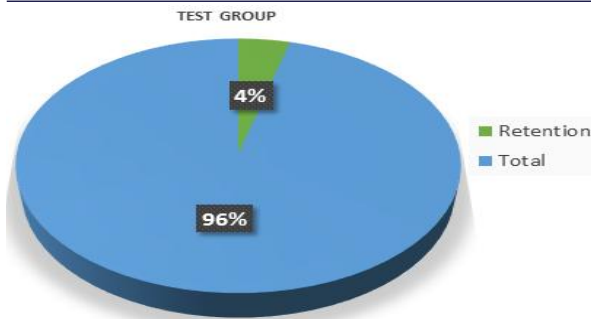
RESULTS

Ninety- two patients who were randomly assigned to placebo group (n=44) and tamsulosin group (n=48) were included in the analysis. Demographic data and clinical features of both treatment groups are presented in Table-1.

Table 1- Demographic characteristics and clinical features of patients in both treatment groups

	Tamsulosin Group (N=48)	Placebo Group (N=44)
Mean Age	51	52
Hernia Type		
Direct	33	32
Indirect	15	12
Preoperative Urinary Symptoms (AUA Score)		
None	14	11
Mild	22	20
Moderate	12	13
Severe	-	-
Duration of surgery (in hour)		
< 1 hour	39	36
More than 1 hour	9	8
Anaesthesia		
Spinal	42	40
General	6	4





In Group 1 (Control group)- 9 patients required catheterisation with a mean urine volume of 700 mL at catheterisation. In Group 2 (Test group)- 2 patients required catheterisation with a mean urine volume of 600 mL. Thus, 20.45% of patient in group 1 and 4.1% of patients in group 2 had urinary retention. This difference in the requirement for catheterisation was statistically significant ($p=0.04$). No complications or side effects of therapy were encountered during treatment with placebo or Tamsulosin.

DISCUSSION:

Urinary retention occurs commonly after lower urinary tract, gynaecologic, perineal, and anorectal surgeries. Avoidance of this perioperative complication is particularly necessary considering the financial and health burden on the patient.

Although most patients may recover with a TWOC (Trial Without Catheter) after a few days, some can have persistent retention.

FACTORS CONTRIBUTING TO POUR:



Baysden et al., conducted a systematic review and Meta-analysis that concluded that the risk of retention was significantly lower with Tamsulosin with a 95% CI and $P<0.001$.⁽⁴⁾

Detrusor contractility decreases with advancing age. Accordingly, in light of previous studies, POUR increases with age, risk increases almost 2.4 to 2.8 times in patients over 50 years.⁽⁵⁾ Age is an independent predictor of successful TWOC and patients more than 70 years of age are at higher risk of failure of TWOC.⁽⁶⁾

Many different methods have been tried to prevent POUR, including the use of parasympathomimetic agents, use of α -blockers, use of anxiolytics, restriction of perioperative fluid intake, avoidance of anal packing, sitz baths, use of local anesthesia, and outpatient surgery. Some precautions, such as limitation of fluid intake, early mobilization, warm compress to the suprapubic area, and the use of short-acting local or spinal anesthesia have been reported to prevent this complication.

Limiting perioperative volume of fluids and controlling pain are reasonable measures to reduce POUR.⁽⁷⁾

The type of anesthesia during surgery is another important factor in the development of POUR. In a group of 880 patients undergoing inguinal herniorrhaphy using local anesthesia, Finley et al.⁽⁸⁾ noticed that the incidence of POUR was 0.2%. During the same period, a similar group of 200 patients had their hernias repaired with the use of general or spinal anesthesia. The incidence of POUR in that group was 13%. The authors contended that the use of local anesthesia in inguinal hernia repair almost eliminates POUR.

Tamsulosin is a superselective adrenoceptor antagonist (α_1 -la). Its

preventive effect has not been previously studied in reducing the risk of POUR after herniorrhaphy. Patel et al.⁽⁹⁾ investigated the potential efficacy of α -blockers for facilitating early removal of the urinary catheter following radical prostatectomy. A consecutive group of 250 men undergoing radical prostatectomy received tamsulosin, 0.4 mg, 3 days before a cystography planned for postoperative day 8. Tamsulosin was administered for an additional 4 days following the catheter removal. The incidence of POUR in the men who received tamsulosin was only 2.6% compared with 10% in control group.

Mohammadi- Fallah et al., in their study, assessed the efficacy of Tamsulosin in the prevention of post-operative urinary retention in patients undergoing inguinal herniorrhaphy. 2.5% of patients developed urinary retention after receiving Tamsulosin ($N=40$).⁽¹⁰⁾

In the present study 20.45% of patient in group 1 (Control) and 4.1% of patients in group 2 (Test) had urinary retention. This difference in the requirement for catheterisation was statistically significant ($p=0.04$).

CONCLUSION:

In the present study, 9 of 44 patients (20.45%) in the placebo group and 1 of 48 patients (4.1%) had urinary retention and required catheterisation. The use of Tamsulosin can be recommended in adult male patients over 40 years, undergoing inguinal hernia repair, regardless of their baseline characteristics. The effect of Tamsulosin has not been adequately investigated in inguinal hernioplasty with sparse literature on the same. More in depth multicentric studies are required to establish Tamsulosin as a standard of care to prevent post operative urinary retention.

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