Original Research Article

Indian Journal of Anesthesia and Analgesia
2018; 5(11): 1812-1816
DOI: http://dx.doi.org/10.21088/ijaa.2349.8471.51118.6

Tamsulosin Reduces Incidence of Post Operative Urinary Retention Post Spinal Anaesthesia: A Pilot Study

Singh Dara[1], Syal Kartik[2], Ram Jassa[3], Verma Kumar Rajesh[4], Kumar Ramesh[5], Goyal Avinash[6]

[1,2,5]Associate Professor [3]Resident [4]Assistant Professor [6]Senior Resident, Department of Anaesthesia, Indira Gandhi Medical College, Shimla, Himachal Pradesh 171001, India.

Abstract

Introduction: One of the most common post-operative complaints after spinal anaesthesia is post-operative urinary retention (POUR). The prophylactic effect of tamsulosin in reducing POUR in post spinal anaesthesia has not been investigated in a large scale; therefore the present pilot study was conducted to investigate the efficacy of tamsulosin compared with placebo in preventing POUR before undertaking larger study. *Material and Methods:* After obtaining the approval from ethical justification committee of Indira Gandhi Medical College and associated hospitals, Shimla 50 patients of ASA I and ASA II aged 20-60 years of either sex posted for lower limb /lower abdominal surgery under spinal anaesthesia were included in the study. Patients were randomised into two groups of single dose of 0.4 mg Tamsulosin and placebo. *Conclusion:* It was found that single dose of Tamsulosin decreases the incidence of POUR in patients post spinal anaesthesia.

Keywords: Urinary Retention; Catheterisation; Alpha 1a Adrenergic Receptor Antagonist.

How to cite this article:

Singh Dara, Syal Kartik, Ram Jassa et al. Tamsulosin Reduces Incidence of Post Operative Urinary Retention Post Spinal Anaesthesia: A Pilot Study. Indian J Anesth Analg. 2018;5(11):1812-16.

Introduction

Subarachnoid (spinal) block is a safe and effective alternative to general anaesthesia when the surgical site is located on the lower extremities, perineum (e.g., surgery on the genitalia or anus) and lower abdominal wall (e.g., inguinal herniorrhaphy). One of the most common post-operative complaints is post-operative urinary retention (POUR) which may be loosely defined as the inability to void despite a full bladder. There is 50% chance of patients getting UTI if patients are catheterized for more than 2 dayswhich can cause significant pain, bladder discomfort, anxiety, and increased cost, resulting in prolonged hospital stays [1-4]. Tamsulosin and alfuzosin are safe selective α1-adrenergic receptor blockers characterized by their favourable side effects profiles [5,6]. The prophylactic effect of tamsulosin in reducing POUR has not been investigated in a large randomized double-blind study; therefore the present pilot study was conducted to investigate the

Corresponding Author: Syal Kartik, Associate Professor, Department of Anaesthesia, Indira Gandhi Medical College, Shimla, Himachal Pradesh 171001, India.
E-mail: kartik.syal@gmail.com

Received on 10.08.2018, **Accepted on** 17.09.2018

efficacy of tamsulosin compared with placebo in preventing POUR before undertaking larger study.

Material and Methods

After obtaining the approval from ethical justification committee of Indira Gandhi Medical College and associated hospitals, Shimla 50 patients of ASA I and ASA II aged 20-60 years of either sex posted for lower limb /lower abdominal surgery under spinal anaesthesia were included in the study.

This was an observational prospective randomized double-blind placebo controlled study was taken in this department.

Group T (Tamsulosin) patients were given orally single dose of Tamsulosin tablet 0.4 mg a night before surgery.

Group C (Control) patients were also given similar shaped and coloured placebo tablet in the same schedule.

These drugs were coded and given by the investigator who was not involved in further study ensuring double blinding. After data assimilation the codes were broken and statistical analysis was done using appropriate statistical test.

Exclusion Criteria

1 Any diagnosed case of urinary tract disease or catheterized.
2 Allergy and contraindication to tamsulosin tablet.
3 Serious sulfa allergy.
4 Current use of α-blocker or initiation of one of these medication during the intervention phase of the study will result in subject withdrawal from the study.
5 Current warfarin use.

Data to be Recorded

Any patient received spinal anaesthesia with Bupivacaine heavy was enrolled.

1. Type of surgery: Abdominal or lower limb surgery were noted.
2. Dose of Intrathecal Bupivacaine-H
3. Adjuvant – if any.

All patients were closely followed for 24 hours post operatively for voiding and were graded into various voiding difficulty grades as given:

Grade 0: Spontaneous voiding without difficulty.

Grade 1: Voiding with difficulty.

Grade 2: Intermittent single evacuation of bladder.

Grade 3: Intermittent repeated evacuation of bladder.

Grade 4: Continuous catheterization.

Results

The results are given in the from Tables 3-5 after demographic data (Tables 1 & 2).

Table 1: Age-wise distribution between two groups

Age groups (yrs)	Group T %age	Group C %age	p-value
20- 29	30	12	0.109
30- 39	28	32	
40-49	18	16	
50-60	24	40	

p> 0.05= not significant, p <0.05=significant (*), p< 0.001=highly significant (**)

Table 2: Sensory block level noted in two groups

Sensory Level	Groups		p- value
	T	C	
T4	1	1	0.161
T5	8	8	
T6	11	15	
T7	4	1	
T8	1	0	

p> 0.05= not significant, p <0.05=significant (*) , p< 0.001=highly significant (**)

Table 3: Distribution of VDG between two groups

VDG	Groups		p-value
	T	C	
G0	18	12	0.021
G1	4	4	
G2	2	2	
G3	1	3	
G4	0	4	

p> 0.05= not significant, p <0.05=significant (*) , p< 0.001=highly significant (**)

Table 4: Distribution of VDG according to age

Age	Group	G0	G1	G2	G3	G4	p-value
20-29	**T**	8	0	0	0	0	0.529
	C	3	0	0	0	0	
30-39	**T**	6	1	0	0	0	0.190
	C	6	2	0	0	0	
40-49	**T**	4	2	0	0	0	0.528
	C	3	0	1	0	0	
50-60	**T**	1	1	1	0	1	0.000**
	C	1	2	1	3	3	

p> 0.05= not significant, p <0.05=significant (*) , p< 0.001=highly significant (**)

Table 5: Voiding difficulty in relation to sensory block

Level of Sensory Block	Groups	VD SCORE					p-value
		G0	G1	G2	G3	G4	
T4	T	0	1	0	0	0	0.157
	C	0	0	0	1	0	
T5	T	4	2	1	0	1	0.173
	C	1	2	1	2	2	
T6	T	9	1	1	0	0	0.304
	C	10	2	1	1	1	
T7	T	3	1	0	0	0	0.101
	C	0	0	0	1	0	
T8	T	1	0	0	0	0	0
	C	0	0	0	0	0	

p> 0.05= not significant, p <0.05=significant (*) , p< 0.001=highly significant (**)

Discussion

Post-operative urinary retention is a well-established and commonly encountered problem across all surgical specialties with an incidence ranging from 5% to 75%, in patients undergoing spinal anaesthesia [7-9]. Factors like underlying disease, effects of anaesthetic agents, peri-operative fluid therapy, instrumentation, surgical intervention, bladder outlet problems, post-operative immobilization, postoperative pain and use of narcotics for the same, duration of surgery, gender and age [10].

Subjects of both group (T & C) enrolled in the study had experienced difficulty in voiding of different grades.In group 'T' 72%, 16%, 8%, 2% and 2% patients had voiding difficulty of grades G0, G1, G2, G3 and G4 respectively. Similarly in group 'C' 48%, 18%, 6%, 14% and 14% patients had voiding difficulty of grades G0, G1, G2, G3 and G4 respectively.

There are different criteria to define POUR ranging from clinical palpation of bladder to inability to pass urine to amount of urine evacuated or seen by ultrasound [9,11-18]. There is an urgent need to lay down the guidelines for definition, time of catheterization and treatment of pour by combined efforts of various specialities like urologists, surgeons, anaesthetist and other related branches. We chose clinical voiding difficulty grading for our study.

When we evaluated overall data between both the groups we found that there was significant difference in incidence and severity of voiding difficulties. As many as 7 patients in the non tamsulosin, i.e., control group had to be catheterised for prolonged period compared from only one in tamsulosin group. 14 patients were in grade 3 & 4 in control group c.f. only 2 patients in Tamsulosin group. Similar findings were obtained in a study by Madani et al. [19] where they studied effectiveness of tamsulosin in prevention of post-operative urinary retention. They found that POUR in patients who received tamsulosin was significantly lower than placebo, as 5.9% of the patients treated with tamsulosin and 21.1% placebo group, reported urinary retention following surgery ($p = 0.001$). In a study among 626 patients, undertaken by Ahmad et al. [20] to assess preventive effects of tamsulosin on POUR post anorectal surgeries under spinal anaesthesia, they found that use of tamsulosin (0.4 mg oral tamsulosin 6h preoperatively and 6-8 h post-operatively) led to reduction in incidence of post operative urinary retention. Similar to findings of our study, Mohammad-fallah et al. [21] also found that perioperative Tamsulosin represents effective strategy to reduce the risk of POUR in patients undergoing inguinal herniorrhaphy.Another study was undertaken by Akkoc et al. [22] where they studied prophylactic effects of alpha-blockers on post operative urinary retention in 180 patients undergoing surgery under spinal anaesthesia. They also found that incidence of urinary retention (defined in their study as painful suprapubic bulge, confirmed by 500ml of urinary evacuation post catheterization) was significantly lower in tamsulosin group, being 5%, compared from 25% in control group. They also thus suggested as in our own study that pre operative tasmsulosin reduces incidence of POUR and also need for urinary catheterization after surgeries under spinal anaesthesia.

In different studies [16,23,24] it was demonstrated that post operative urinary retention increases with age and the risk increases by 2.4 to 2.6 time in patients over 50 years of age is due to progressive neuronal degeneration leading to bladder dysfunction and problem of benign prostatic hypertrophy.

This is similar to finding in our study where we found that incidence of grade 3 and grade 4 voiding problems, that is need for frequent evacuations and/or persistant catheterization was most prevalent in patients having age more than 50 years, being 28% in control group, where as it was negligible in younger patients, compared to only one in tamsulosix group (above 50 years).

In our study when we compared the effects of tamsulosin in either sex in both group, it was found that the incidence of grade 3 and grade 4 difficulties in voiding was seen mostly in male patients, seen in 13 out of 41 male patients (31%) whereas only one female patient had similar grade complaint out of 9 female patients in control group (11%); findings were similar to previous studies [16,25].

Out of different co-morbidities diabetes mellitus, due to its neuropathic effect may have some significance in POUR [26], but we found no significant difference in relation to diabetes mellitus in small group of 5 patients having the disease.

Detrusormuscle is completely relaxed after 2-5 minutes of spinal anaesthesia and its recovery depends on the duration of sensory block above the S2 and S3 sacral segments. Sensory block is regressed to S3 level after 7-8 hours post spinal anaesthesia. After the regression of sensory block to S3 level it further takes approximately 15 minutes for detrusor muscles functions to start, it may take 1-3 hours post sensory regression for normal function of detrusor to start [27]. In our study there was no significant variation in post operative urinary retention in relation to height of sensory block level like in other studies [28]. Fentanyl was the commonest adjuvant used in our study and we found that there was aggravation of POUR due to it, a finding corroborated by other studies [29,30].

Conclusion

Thus we conclude that short tamsulosin therapy during peri-operative 0.4 mg oral tab 10-12 hours preoperatively in our pilot study. However, we recommend that this study be carried out more extensively on larger samples on different populations to arrive at a final conclusion regarding the validity of tamsulosin drug usage.

References

1. Baldini G, Bagry H, Aprikian A, Carli F. Postoperative urinary retention: anesthetic and perioperative considerations. Anesthesiology 2009;110:1139-57.
2. Munhall RJ, Sukhani R, Winnie A. Incidence and etiology of failed spinal anesthetics in a university hospital: a prospective study. Anesth Analg 1988;67: 843–48.

3. Fitzpatrick JM, Kirby RS: Management of acute urinary retention. BJU Int. 2006;97 (Suppl 2):16-20; discussion 21-2.

4. Norris MC, Fogel ST, Conway-Long C. Combined spinal-epidural versus epidural labor analgesia. Anesthesiology. 2001 Oct;95(4):913-20.

5. Lanz E, Grab BM. Micturition disorders following spinal anaesthesia of different durations of action (lidocaine 2% versus bupivacaine 0.5%) [German]. Anaesthetist 1992;41:231–234.

6. Axelsson K, Mollefors K, Olsson JO, et al. Bladder function in spinal anaesthesia. Acta Anaesthesiol Scand 1985;29:315–21.

7. Barry MJ, Fowler FJ, Jr., O'Leary MP, Bruskewitz RC, Holtgrewe HL, Mebust WK, Cockett AT. The American Urological Association symptom index for benign prostatic hyperplasia. The Measurement Committee of the American Urological Association. J Urol. 1992;148(5):1549–57.

8. Bjerregaard LS, Bagi P, Kehlet H. Editorial: Postoperative urinary retention (POUR) in fast-track total hip and knee arthroplasty. Acta Orthop. 2014;85(1):8–10.

9. Baldini G, Bagry H, Aprikian A, Carli F. Postoperative urinary retention: anesthetic and perioperative considerations. Anesthesiology. 2009;110:113-57.

10. Baldini G, Bagry H, Aprikian A, Carli F. Postoperative urinary retention: anesthetic and perioperative considerations. Anesthesiology 2009;110(5):1139–57.

11. Kaplan SA, Wein AJ, Staskin DR, Roehrborn CG, Steers WD. Urinary retention and post-void residual urine in men: separating truth from tradition. J Urol 2008;180(1):47–54.

12. Olsen, S.W., & Nielsen, J. A study into postoperative urine retention in the recovery ward. British Journal of Anaesthetic & Recovery Nursing; 2007;8(4):95.

13. Johansson, R-M., & Christensson, L. Urinary retention in older patients in connection with hip fracture surgery. Journal of Clinical Nursing; 2010;19 (15/16):2110-6.

14. Sarasin, S.M., Walton, M.J., Singh, H.P., & Clark, D.I. Can a urinary tract symptom score predict the development of postoperative urinary retention in patients undergoing lower limb arthroplasty under spinal anesthesia? A prospective study. Annals of the Royal College of Surgeons of England; 2006;88(4):394-8.

15. Feliciano, T., Montero, J., McCarthy, M., & Priester, M. A retrospective, descriptive, exploratory study evaluating incidence of postoperative urinary retentionafter spinal anesthesia and its effect on PACU discharge. Journal of Peri Anesthesia Nursing; 2008;23(6):394-400.

16. Keita H, Diouf E, Tubach F, Brouwer T, Dahmani S, Mantz J, Desmonts JM. Predictive factors of early postoperative urinary retention in the postanesthesia care unit. Anesth Analg 2005;101:592–6.

17. Ringdal, M., Borg, B., & Hellstrom, A. A survey on incidence and factors that may influence first p ostoperative urination. Urologic Nursing; 2003;23(5):341-54.

18. Zampini, J., Knott, J., & Glazer, P. Urinary retention following elective spine surgery. The Spine Journal, 2008;8(5, supp. 1):178S.

19. Madani A, Aval H, Mokhtari G, Nasseh H, Esmaeili S, Shakiba M, et al. Effectiveness of tamsulosin in prevention of post-operative urinary retention: A randomized double-blind placebo-controlled study. Int Braz J Urol 2014;40:30–6.

20. Ahmad MM, Wani HA, Jeelani A, Thakur S, Waseem M, Nazir I. Preventive effect of tamsulosin on postoperative urinary retention in benign anorectal surgeries. Saudi Surg J 2014;2:33–7.

21. Mohammadi-Fallah M, Hamedanchi S, Tayyebi-Azar A. Preventive effect of tamsulosin on postoperative urinary retention. Korean J Urol 2012;53:419–23.

22. Akkoc A, Aydin C, Topaktas R, et al. Prophylactic effects of alpha-blockers, Tamsulosin and Alfuzosin, on postoperative urinary retention in male patients undergoing urologic surgery under spinal anaesthesia. International Brazilian Journal of Urology: official journal of the Brazilian Society of Urology 2016;42 (3):578-84.

23. Lee SJ, Kim YT, Lee TY, Woo YN, Analysis of risk factors for acute urinary retention after non – urogenital surgery, Koreon JUrol 2007;48:1277-84.

24. Warren JW, Platt R, Thomas RJ. Antibiotic irrigation and catheter-associated urinary-tract infections. N Engl J Med 1978;299:570–3.

25. Gallo, Susan; Dupand, Jacqueline; Pshon, Nicole orthopaedic Nursing: 2008 March-April;27(2):41-115. Doi-10.1097/01.NOR.0000315625-44137.4f.

26. Tammela T, Kontturi M, Lukkarinen O: Postoperative urinary retention. II. Micturition problems after the first catheterization. Scand J Urol Nephrol 1986; 20:257–60.

27. Dreijer B, Moller MH, Bartholdy J. Post-operative urinary retention in a general surgical population. Eur J Anaesthesiol 2011;28:190-4.

28. Axelsson K, Mollefors K, Olsson JO, Lingardh G, Widman B: Bladder function in spinal anaesthesia. Acta Anaesthesiol Scand 1985;29:315-21.

29. Kreutziger J, Frankenberger B, Luger TJ, Richard S, Zbinden S. Urinary retention after spinalanaesthesia with hyperbaric prilocaine 2% in an ambulatory setting. British Journal of Anaesthesiology 2010;104(5):582-6.

30. Ben–David B, Solomon E. Levin H, Admoni H, Goldikz. Anaash Analg 1997;85(3):560-5.

31. Pavlin DJ, Pavlin EG, Gunn HC, Taraday JK, Koerschgen ME. Voiding in patients managed with or without ultrasound monitoring of bladder volume after outpatient surgery. Anesthesia and analgesia. 1999;89(1):90-7.