

**ORIGINAL ARTICLE****Intrathecal dexmedetomidine with different doses of bupivacaine spinal anaesthesia in patients undergoing TURP**<sup>1</sup>Vivek Mohindra, <sup>2</sup>Lalit Kumar<sup>1</sup>Associate Professor, Department of General Surgery, Muzaffarnagar Medical College, Muzaffarnagar, Uttar Pradesh, India;<sup>2</sup>Assistant Professor, Department of Anaesthesia, Muzaffarnagar Medical College, Muzaffarnagar, Uttar Pradesh, India**ABSTRACT:**

**Background:** Males who have benign prostatic hyperplasia (BPH), a common chronic condition that progresses slowly, have an enlarged prostate gland and a blocked bladder outlet. The present study was conducted to compare intrathecal dexmedetomidine with low-dose bupivacaine spinal anaesthesia and a higher dose of bupivacaine in patients undergoing TURP. **Materials & Methods:** 80 adult males of benign prostate hyperplasia selected to undergo TURP were divided into 2 groups of 40 each. In group I, patients received 7.5 mg of 0.5% hyperbaric bupivacaine hydrochloride and group II patients received 3 µg of dexmedetomidine hydrochloride combined with 6 mg of 0.5% hyperbaric bupivacaine hydrochloride. Regression time from peak sensory block level, VAS (hours), the Modified Bromage score at the conclusion of operation, the need for analgesics during and after surgery, and adverse effects were among the parameters that were noted. **Results:** Age group 40-50 years comprised of 13 patients in group I and 12 in group II, 50-60 years had 12 in group I and 11 in group II, 60-70 years had 15 in group I and 17 in group II. The difference was non-significant (P > 0.05). The time to reach T10 sensory block was 12.5 in group I and 10.3 in group II. VAS score at 1 hour was 3.9 and 3.6, 2 hours was 3.4 and 2.7, 3 hours was 2.2 and 1.8 and 4 hours was 1.3 and 1.2. Modified Bromage score at the end of surgery 1 was seen in 4 in group I, 3 in 4 in group II, score 2 in 5 in group I and 12 in group II, and score 3 seen in 31 in group I and 25 in group II. The difference was significant (P < 0.05). Side effects were nausea/vomiting 4 in group I and 3 in group II, pruritis 1 in group I and 2 in group II and hypotension 3 in group I and 4 in group II. The difference was non-significant (P > 0.05). **Conclusion:** Longer perioperative analgesia duration, a quicker onset of sensory and motor block, and both were observed when 3 µg of dexmedetomidine was given to 6 mg of bupivacaine.

**Keywords:** Benign prostatic hyperplasia, Dexmedetomidine, transurethral prostate resection

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**INTRODUCTION**

Males who have benign prostatic hyperplasia (BPH), a common chronic condition that progresses slowly, have an enlarged prostate gland and a blocked bladder outlet. Transurethral resection of the prostate, or TURP, is the term for endoscopic prostate resection. It was the first major minimally invasive operation of its kind in contemporary times.<sup>1,2</sup> This treatment has been used for many years and is still considered the gold standard for bladder outlet obstruction (BOO) surgery, with just minor changes since its modern inception in 1943. In certain instances of obstructive azoospermia, a TURP can also be performed to open the ejaculatory channels and unroof prostatic abscesses.<sup>3</sup>

Spinal anaesthesia is the most often used approach for transurethral prostate resection (TURP). The pain associated with bladder distension is believed to be alleviated by sensory blocking up to T10.<sup>4</sup> For  $\alpha$ 2-adrenoreceptors, dexmedetomidine, the S-enantiomer of medetomidine, exhibits a high degree of selectivity. It has also been noted that lesser doses of local anesthetic mixed with additives produce the required sensory level with appropriate analgesia.<sup>5</sup> The present

study was conducted to compare intrathecal dexmedetomidine with low-dose bupivacaine spinal anaesthesia and a higher dose of bupivacaine in patients undergoing TURP.

**MATERIALS & METHODS**

The present study consisted of 80 adult males of benign prostate hyperplasia selected to undergo TURP. All agreed to participate in the study.

Demographic data of each patient such as name, age, etc. was recorded. Patients were divided into 2 groups of 40 each. In group I, patients received 7.5 mg of 0.5% hyperbaric bupivacaine hydrochloride and group II patients received 3 µg of dexmedetomidine hydrochloride combined with 6 mg of 0.5% hyperbaric bupivacaine hydrochloride. Regression time from peak sensory block level, VAS (hours), the Modified Bromage score at the conclusion of operation, the need for analgesics during and after surgery, and adverse effects were among the parameters that were noted. The results were statistically analysed. P value less than 0.05 was set significant.

**RESULTS**

**Table I Age wise distribution of patients**

Age groups (years)	Group I	Group II	P value
40-50	13	12	0.81
50-60	12	11	
60-70	15	17	

Table I shows that the age group 40-50 years comprised of 13 patients in group I and 12 in group II, 50-60 years had 12 in group I and 11 in group II, 60-70 years had 15 in group I and 17 in group II. The difference was non-significant (P> 0.05).

**Table II Comparison of parameters**

Parameters	Variables	Group I	Group II	P value
Time to reach T10 sensory block (min)		12.5	10.3	0.05
VAS (Hours)	1	3.9	3.6	0.02
	2	3.4	2.7	
	3	2.2	1.8	
	4	1.3	1.2	
Modified Bromage score at the end of surgery	0	0	0	0.05
	1	4	3	
	2	5	12	
	3	31	25	

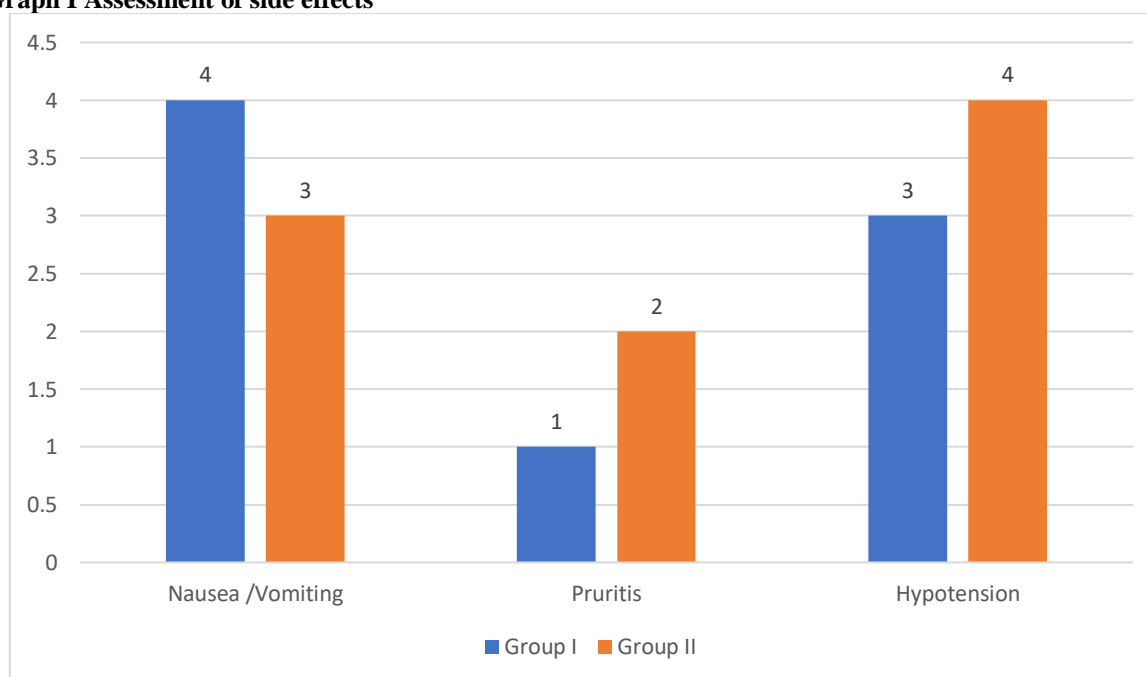
Table II shows that the time to reach T10 sensory block was 12.5 in group I and 10.3 in group II. VAS score at 1 hour was 3.9 and 3.6, 2 hours was 3.4 and 2.7, 3 hours was 2.2 and 1.8 and 4 hours was 1.3 and 1.2. Modified Bromage score at the end of surgery 1 was seen in 4 in group I, 3 in 4 in group II, score 2 in 5 in group I and 12 in group II, and score 3 seen in 31 in group I and 25 in group II. The difference was significant (P< 0.05).

**Table III Assessment of side effects**

Side effects	Group I	Group II	P value
Nausea /Vomiting	4	3	0.24
Pruritis	1	2	
Hypotension	3	4	

Table III, graph I show that side effects were nausea/vomiting 4 in group I and 3 in group II, pruritis 1 in group I and 2 in group II and hypotension 3 in group I and 4 in group II. The difference was non-significant (P> 0.05).

**Graph I Assessment of side effects**



## DISCUSSION

In older men, a common chronic illness called benign prostatic hyperplasia (BPH) causes the prostate gland to grow and obstructs the bladder outflow. As the population ages and life expectancies increase, more people are receiving a diagnosis of major BPH.<sup>6</sup> In the treatment of BPH, transurethral resection of the prostate (TURP) has long been regarded as the "gold standard." TURP is still subject to prostatic volume, hemorrhage, transurethral resection syndrome (TURS), and other restrictions.<sup>7</sup> A new method for treating large BPH was just introduced: transurethral bipolar plasmakinetic enucleation of the prostate (PKEP). PKEP was created based on suprapubic prostatectomy and TURP in order to solve the shortcomings of TURP.<sup>8,9</sup> The present study compared intrathecal dexmedetomidine with low-dose bupivacaine spinal anaesthesia and a higher dose of bupivacaine in patients undergoing TURP.

We found that the age group 40-50 years comprised of 13 patients in group I and 12 in group II, 50-60 years had 12 in group I and 11 in group II, 60-70 years had 15 in group I and 17 in group II. Akcaboy et al<sup>10</sup> evaluated the clinical effectiveness and block quality of low dose levobupivacaine, and compare it with low dose bupivacaine when they are combined with fentanyl in transurethral resection of prostate surgery. Forty-nine patients undergoing transurethral prostate surgery were enrolled in this prospective, randomized and double blind study. Patients in levobupivacaine group received 5 mg levobupivacaine + 25 µg fentanyl and bupivacaine group received 5 mg bupivacaine + 25 µg fentanyl. Demographic data, surgery times, hemodynamic parameters, block qualities and patient and surgeon satisfactions were recorded. Demographic data, surgery times and patient and surgeon satisfactions were similar in both groups. Hemodynamic parameters were comparable and stable during the procedure in both groups. Sensory block characteristics were comparable and clinically effective in both groups. While 3 patients in bupivacaine group had Bromage score of 3 at the beginning of the surgery, no patient in levobupivacaine group had this score and this difference was significant ( $p = 0.042$ ). Bromage scores at the end of the surgery were comparable in both groups. For transurethral prostate surgery 5 mg levobupivacaine with 25 µg fentanyl can provide stable hemodynamic profile, patient and surgeon satisfaction and effective sensorial blockade with less motor blockade in spinal anaesthesia; so it could be used at low doses as a good alternative to bupivacaine.

We found that the time to reach T10 sensory block was 12.5 in group I and 10.3 in group II. VAS score at 1 hour was 3.9 and 3.6, 2 hours was 3.4 and 2.7, 3 hours was 2.2 and 1.8 and 4 hours was 1.3 and 1.2. Modified Bromage score at the end of surgery 1 was seen in 4 in group I, 3 in 4 in group II, score 2 in 5 in group I and 12 in group II, and score 3 seen in 31 in

group I and 25 in group II. We found that side effects were nausea/vomiting 4 in group I and 3 in group II, pruritis 1 in group I and 2 in group II and hypotension 3 in group I and 4 in group II. Cuvas et al<sup>11</sup> compared the characteristics of spinal blocks produced by 0.5% levobupivacaine with and without fentanyl in transurethral resection and to test the hypothesis that, fentanyl added to levobupivacaine, may be used as an alternative to pure levobupivacaine solution, in spinal anaesthesia. Forty males, aged >60 years, ASA I-III patients scheduled for elective transurethral resection were included in a prospective, randomized, double-blinded study. Following a spinal tap, intrathecal injection in Group L (n=20), 2.5 mL of 0.5% levobupivacaine and in Group LF (n=20), 2.2 mL of 0.5% levobupivacaine with fentanyl 15 microg (0.3 mL) was performed. The characteristics of sensory and motor block, hemodynamic data, side effects, patient and surgeon satisfaction were recorded. Patients were observed until the level of sensory block was S1 and the Bromage score was 0. There were no significant differences between the two groups for patient demographic, intraoperative, hemodynamic parameters, side effects and satisfaction. The highest level of sensory block was T9 in the Group L, and T6 in the Group LF ( $p = 0.001$ ). Duration of motor block was shorter in Group LF than in Group L (291.00 +/- 81.08 min in Group L; 213.75 +/- 59.49 min in Group LF) ( $p = 0.001$ ). Both regimes are effective, and the addition of fentanyl to levobupivacaine may offer the advantage of shorter duration of motor block and may be used as an alternative to pure levobupivacaine solution in spinal anaesthesia, for transurethral resections.

The limitation of the study is small sample size.

## CONCLUSION

Authors found that longer perioperative analgesia duration, a quicker onset of sensory and motor block, and both were observed when 3 µg of dexmedetomidine was given to 6 mg of bupivacaine.

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