**ORIGINAL ARTICLE**

# Comparison the Duration of Analgesia between Bupivacaine Alone versus Bupivacaine Plus Tramadol in Subarachnoid Block for TURP

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## ABSTRACT

**Aim:** To compare the mean duration of analgesia between bupivacaine alone vs. bupivacaine plus tramadol in subarachnoid block for TURP.
**Study design:** Randomized controlled trial
**Place and duration of study:** Department of Anesthesia, Jinnah hospital, Lahore from 18th January 2018 to 18th July 2018.
**Methodology:** Sixty patients fulfilling inclusion criteria were divided randomly into two groups i.e. those who received 2ml of 0.75% bupivacaine only (B) and those who received 2ml of 0.75% bupivacaine with 0.2ml tramadol (20mg) (BT). The demographic data like name, age, height, weight and address were recorded. The patients were examined preoperatively and observed for analgesia on post-operative period., VAS score was documented every 30 minutes for first 90 minutes and then after 10 minutes for next four hours.
**Results:** The mean age was calculated as 39.10±8.24 years in group B and 35.90±8.84 years in group BT. In group B, duration of analgesia was 108.33±20.186 min and in group BT was 234.57±70.958 min and significant difference for duration of analgesia (p-value 0.001).
**Conclusion:** By adding Injection tramadol 20 mg in 0.75% bupivacaine for spinal anesthesia it significantly prolongs postoperative analgesia after major urological and lower abdominal surgeries without any clinically significant side effects.
**Keywords:** Transurethral resection of the prostate (TURP), Bupivacaine, Subarachnoid block

## INTRODUCTION

Benign prostate hypertrophy is a frequent case to come across in the emergency as well as in outpatient clinic. Because of its common occurrence in old age, it remains an important medical problem.[1] General as well as regional anesthesia in form of subarachnoid block is used for TUR-P surgeries. Spinal anesthesia with 0.75% hyperbaric bupivacaine offers several advantages over general anesthesia. Basically BPH is old age problem and at this age patient may have some co morbidities like hypertension, IHD, COPD and diabetes mellitus etc. Subarachnoid block blunts stress response of laryngoscope, decrease the incidence of postoperative thromboembolic events, and provides postoperative analgesia. Many adjuvants are available to add in bupivacaine to increase the duration of analgesia in sub arachnoid block. Commonly used adjuvants are like morphine, fentanyl, fentanyl, midazolam, magnesium sulphate, clonidine and many other drugs are used in this regard.[2-4] Intrathecal administration of tramadol as an adjuvant to bupivacaine has shown that postoperative duration of analgesia increases after administration of tramadol in subarachnoid blocks. Two recent studies have been done in Pakistan on using tramadol in subarachnoid space. Zahid et al[5] showed that duration of anesthesia was effectively prolonged with bupivacaine (181.56±12.42 minutes) as compared to control group with only bupivacaine (120.93±15.54 minutes). However, this study was limited as it used patient's request of rescue analgesia at undetermined time and no pain score was used for follow up. The study at Institute of Kidney diseases[6] reported improved duration of analgesia. The duration of analgesia in bupivacaine alone was 210±10.12 min, whereas in bupivacaine with tramadol group it was 380±11.82 min. In this study post-operative analgesia was assessed every 30 minutes for 90 minutes and then after every 10minutes for four hours.[4]

There are very few studies in Pakistan which tried to discover the outcome of this combination. This study will assess duration of analgesia measured on first complain of patient for pain and demand for pain relieve.[5]

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## MATERIALS AND METHODS

This study was conducted in Urological Operation Theaters Jinnah Hospital Lahore from 18th January 2018 to 18th July 2018 in department of anesthesia. This was randomized controlled trial. Sixty patients fulfilling inclusion criteria were randomized into two groups through lottery method i.e. those who received 2ml of 0.75% bupivacaine only (B) and those who received 2ml of 0.75% bupivacaine with 0.2ml tramadol (20mg) (BT). All patients with ASA I & II, age 50-70 years and patients undergoing TURP under regional anesthesia were included. Known allergy to bupivacaine/

tramadol, coagulopathy diseases, infection at injection site and demyelinating lesions were excluded. The demographic data like name, age, height, weight and address were recorded. The pre-operative assessment was done. During the pre-anesthetic assessment clinic every patient was explained with linear visual analog scale (VAS 0 = no pain and 10 = worst imaginable pain). Patients are kept NPO for six hours before surgery. In the operating theater, intravenous line secured and monitors are attached for monitoring. Each patient will receive intravenous crystalloid solution, before the administration of spinal anesthesia. The drugs for spinal anesthesia were prepared by an anesthetist who was not involved in study anesthetist performing the block was not informed about the drugs. The performer was also uninformed about the postoperative observations. Under full aseptic measures, spinal anesthesia was administered in sitting position with 25G needle below L3. Group B (n=30) received 2 ml of 0.75% hyperbaric bupivacaine (15 mg) and Group BT (n=30) received 2 ml 0.75% bupivacaine and 20 mg tramadol by intrathecal route at L3-4 inter space. Sensory level was assessed by loss of sensation by sprit swab and once highest level had stabilized that is up to T7 surgery was allowed. After the surgery, VAS score was noted every 30 minutes for first 90 minutes and then after every 10every minutes for four hours and the time recorded when the VAS score is 4 or when the patient complains for pain and demanded for analgesia. Duration of analgesia was labeled. The data was entered and analyzed in SPSS version 25. Both groups were analyzed by using independent sample t-test taking p-value <0.01 as significant.

## RESULTS

There were 19 (31.7%) in group B and 23 (38.3%) in group BT between 50-60 years of age whereas 11 (18.3%) in group B and 7 (11.7%) in group BT between 61-Above years of age with mean ages were 59.10±8.24 years and 55.90±8.84 years respectively. Regarding body mass index, 12 (20%) in group B and 1(1.7%) in group BT had body mass index (BMI) between 22-28 kg/m$^2$ and 18 (30%) in group B and 29 (48.3%) had body mass index more than 28 kg/m$^2$ (Table 1).Comparison of outcome (mean duration of analgesia) of both groups significant (P=0.001) [Table 2].

Table 1: Demographic information of the patients (n=120)

| Variable | Group A | | Group B | |
|---|---|---|---|---|
| | No. | % | No. | % |
| **Age (years)** | | | | |
| 50-60 | 19 | 31.7 | 23 | 38.3 |
| 61-70 | 11 | 18.3 | 7 | 11.7 |
| **Body mass index (kg/m$^2$)** | | | | |
| 22-28 | 12 | 20.0 | 1 | 1.7 |
| >28 | 18 | 30.0 | 29 | 48.3 |

Table 2: Comparison of duration of analgesia

| Group | Mean±SD | P value |
|---|---|---|
| A | 108.33±20.18 | 0.001 |
| B | 234.57±70.9 | |

## DISCUSSION

General as well as regional anesthesia in form of subarachnoid block is used for TURP and other lower abdominal surgeries. There are many advantages of Regional anesthesia over general anesthesia. Especially Spinal anesthesia with 0.75% hyperbaric bupivacaine offers several advantages. It blunts stress response to surgery, risk of failed intubation and aspiration is avoided and provides analgesia in early postoperative period.[2] For any surgery post-operative analgesia is main concern In the present study, when we compare both groups for duration of analgesia we got the significant results that in group B duration of analgesia was 108.33±20.186 min and in group BT was 234.57±70.958 min and there was significant difference (P = 0.001).

Our results showed that tramadol 20 mg addition to 0.75% hyperbaric bupivacaine markedly increase the duration of postoperative analgesia after major urological procedures without any significant side effects. Chakraborty et al[7] conducted a study on the effect of tramadol (20mg) with bupivacaine in patients for major gynecological surgery for intrathecal use and they observed that the combination with tramadol provided prolonged post-operative analgesia as compared to bupivacaine alone.

Mostafa and colleagues[8] conducted a study and concluded that intrathecal administration of tramadol and nalbuphine when used with 0.5% bupivacaine observed prolonged analgesia postoperatively without producing any significant side effects. Pang et al[9] noticed local anesthetic effect with intradermal injection of tramadol and lignocaine.

Jou et al[10] suggested that tramadol affects sensory and motor nerve conduction by a similar mechanism to that of lignocaine which acts on the voltage dependent sodium channel leading to axonal blockage.

One study by Zahid et al[5] observed that duration of anesthesia was effectively increased in case group with bupivacaine and tramadol (181.56±12.42 minutes) as compared to control group with only bupivacaine (120.93±15.54 minutes). However, this study was limited as it used patient's request of rescue analgesia at undetermined time and no pain score was used for follow-up.

Another study in the Institute of Kidney diseases[6] reported improved duration of analgesia in bupivacaine was 210±10.12 min, whereas in bupivacaine with tramadol group it was 380±11.82 min. In this study post-operative analgesia was assessed every 10 minutes.

Spinal anesthesia is one of the most commonly used anesthetic techniques. It is a simple, cost effective and easy to apply as compared to other anesthesia options like peripheral nerve block, epidural and general anesthesia. It provides quick and complete sensory and motor block. Several advantages of spinal anesthesia include post-operative analgesia, decreased incidence of deep vein thrombosis, PONV, reduced intraoperative blood loss, as well as the prevention of pulmonary aspiration in case of emergency and no risk of failed intubation specially the patients for TURP are old age and with co morbidities spinal anesthesia is safest option in high risk patients. In old age patients we have very limited options for analgesia. It is also good option in patients with respiratory diseases.

The only one important concern with these adjuvants should be preservative free.

Subarachnoid (spinal) block is a safe and effective option for TURP as compared to general anesthesia. We can easily get prolong analgesic effects by adding adjuvants with local anesthetics for the surgeries below umbilicus.

## CONCLUSION

Addition of tramadol 20 mg with hyperbaric bupivacaine in sub-arachnoid block increase the duration of analgesia post operatively without any clinically significant side effects. Therefore, bupivacaine with tramadol is more effective then bupivacaine alone.

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