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# A Comparative Study of Intrathecal Bupivacaine with Fentanyl versus Plain Bupivacaine in Elective Lower Segment Caesarean Section

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## I. INTRODUCTION

Pregancy is a very stressful condition for every women. Most of them live in a fear of complications and the safety of the unborn baby. Many have lots of questions and confusions when it comes to surgery. Regional anaesthesia is the best choice for a elective lower segment caesarean section. Making sure that the pregnant women co-operates to perform a lumbar puncture to deliever the drugs is at most important to have a succesful spinal block. It is also very important to choose drugs which last for longer time and provide analgesia even after the surgery. The practice of adding additives to local anaesthetic agents is very come from decades. The best and the safest additive with very low complication is the one which doesn't affect the degree of anaesthetic block and has very safe haemodynamic response. Fentanyl is a time tested drug and it is very safe as per the available litracure and can be safely given in pregnancy. In this comparative study we are going to compare the potentail of fentanyl and bupivacaine with bupivacaine alone when given intrathecally.

## II. AIMS AND OBJECTIVE

To evaluate efficacy of fentanyl and bupivcaine versus plain hyperbaric bupivacaine in elective Lower abdominal caesarean section.

## III. MATERIALS AND METHODS

This study was conducted at Bhaarath Medical College and Hospital after approval from Medical Ethics Committee and the institutional review board of department of Anesthesiology. Consent of the patients was taken in addition to hospital committee approval. Following inclusion and exclusion criteria was used to select the study subjects.

*A. Inclusion Criteria*

*1)* Patients undergoing in elective Lower abdominal caesarean section.
*2)* ASA I and II were only included.

*B. Exclusion Criteria*

*1)* ASA III.
*2)* High risk preganacy.
*3)* Patients with peri-partum cardiomyopathy or myocardial Dysfunction, local skin infections of site of injection coagulopathy, and spine deformity.
*4)* Patients consuming antiplatelets, or anticoagulants.
*5)* Known allergy to the trial drugs.
*6)* Patient refusal.

By using the above exclusion and inclusion criteria 60 patients were choosen for the study. Informed and written consents were obtained from every patients before the surgery. The selected patients were again divided in to two groups containing 30 patients each.

*C. Study Groups*

*1) Group I:* Receive 2ml of 0.5 % bupivacaine and Fentanyl 20µg.

*2) Group II:* Receive 2ml of 0.5% bupivacaine.

Fentanyl was added in a aspectic condition with bupivacaine to make up a volume of 2ml. Detail information was noted down in a prestructured proforma for the comparision of the data obatined. All the standard protocol were followed, Preparation of the patients and preoperative assessment was done by the attending nurse and the anaesthesiologist. All patients were monitored for heart rate, systolic arterial blood pressure, arterial oxygen saturation (spo2). Sensory block was assessed by observing onset, duration and level using pinprick test. In motor block assessment total duration of motor block and time for maximum degree motor block was also noted. Density of block was assessed by modified bromage score calculation. Post operative side effects of the drugs were noted in the all groups. Data was collected, tabulated, coded and analyzed using SPSS software.

## IV. RESULTS

In the present study according to the data obtained and presented in the table 1 mean age of subject in group I was 29.3 years with SD 3.2 year, whereas mean age of subject in group II was 30.1 years with SD 3.9 year. Mean weight and height of the group I was 61.3kg and 150.1cm. And Mean weight and height of the group II was 62.2kg and 148.8cm. In group I 19 patents were of ASA I grade and 11 were of grade II. In group II 14 patients were of ASA grade I and 16 were of ASA grade II. Characteristics of patients' age, weight, height, and ASA classification showed no statistically significant differences between these two groups.

Table 1: Characteristics of patients according to age, weight, height and ASA classification

| Variable | Group I | Group II |
|---|---|---|
| Age ( years) | 29.3 ± 3.2 | 30.1 ± 3.9 |
| Weight ( KG) | 61.3 ± 7.8 | 62.2 ± 4.4 |
| Height ( CM) | 150.1 ± 8.6 | 148.8 ± 7.6 |
| ASA (I & II ) | 19/11 | 14/16 |

From the table 2 it was noted that mean duration for onset of sensory block (Pin-Prick at T10) was 11.2 ± 1.1 min in group I (Fentanyl additive) and 8.3 ± 3.1 min in group II (plain bupivacaine group). But the difference was not significant. Study showed that the mean height of sensory block was T6 in group I while it was T7 in group II. The mean duration block in group 190.2 ± 12.3 was more as compared to the group I (165 ± 8.5) and the difference was statistically significant.

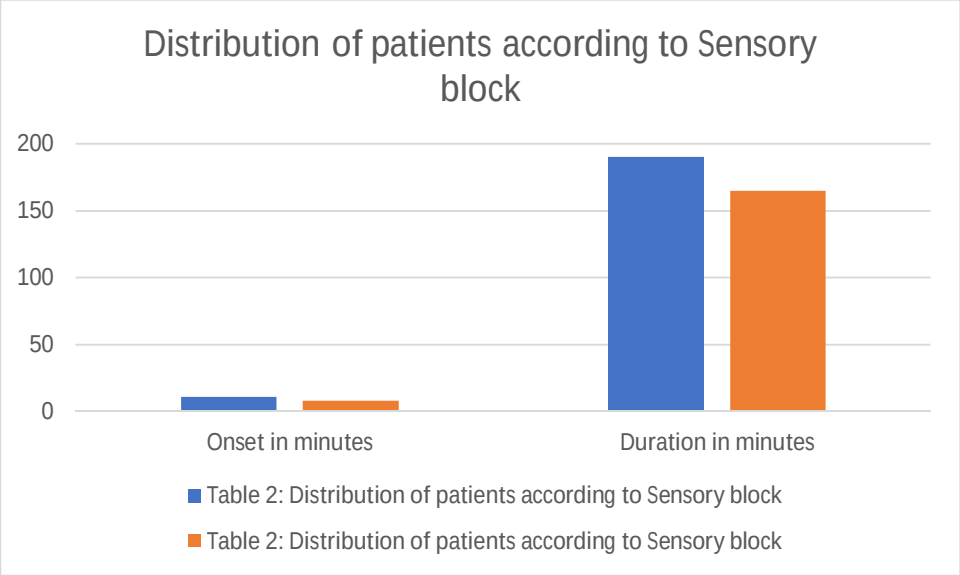
Table 2: Distribution of patients according to Sensory block

| | Group I | Group II |
|---|---|---|
| Onset in minutes | 11.2 ± 1.1 | 8.3 ± 3.1 |
| Block height (spinal segments) | T6 (T5–T11) | T7 (T4–T11) |
| Duration in minutes | 190.2 ± 12.3 | 165 ± 8.5 |

The duration of motor block was shorter the fentanyl group , it was 130 ± 18.2 for and 141.5 ± 22.7 in plain bupivacaine group and this result was significant statistically. Onset of maximum degree of motor block was also studied and it was observed that it was 11.5±1.5 for Group I and 10.3 ±2.2 for bupivacaine and the difference observed was not statistically different. The Bromage scale degree of motor block was significantly greater with plain bupivacaine Group II.

Table 3 Distribution of patients according to Motor block

| | Group I | Group II |
|---|---|---|
| Time to maximum degree of motor block in minutes | 11.5 ± 1.5 | 10.3 ± 2.2 |
| Total duration of motor block in minutes | 130 ± 18.2 | 141.5 ± 22.7 |
| Grade 0 Block | 0 (0%) | 0 (0%) |
| Grade I Block | 2 ( 6.66%) | 0 (0%) |
| Grade II Block | 3 (10%) | 2 (6.66%) |
| Grade III Block | 25 (83.3%) | 28 ( 93.3%) |




## V. CONCLUSION

It is very clear from the above study that by adding fentanyl to the local anaesthetic agents such as bupivacaine when given intrathecally increases the duration of sesory block considerably. Hence improving the post-op patient comfort. Moreover the unpleasent motor block is significantly reduced thus helps in early mobilization of the patient out of bed. Furthermore fentanyl has a added advantage of being a safe drug that can be boldly used in pregancy. I conclude that it is safe, effective and comfortable to use fentanyl as a additive with bupivacaine for spinal anaesthesia in pregant women under going elective lower segment caesarean section.

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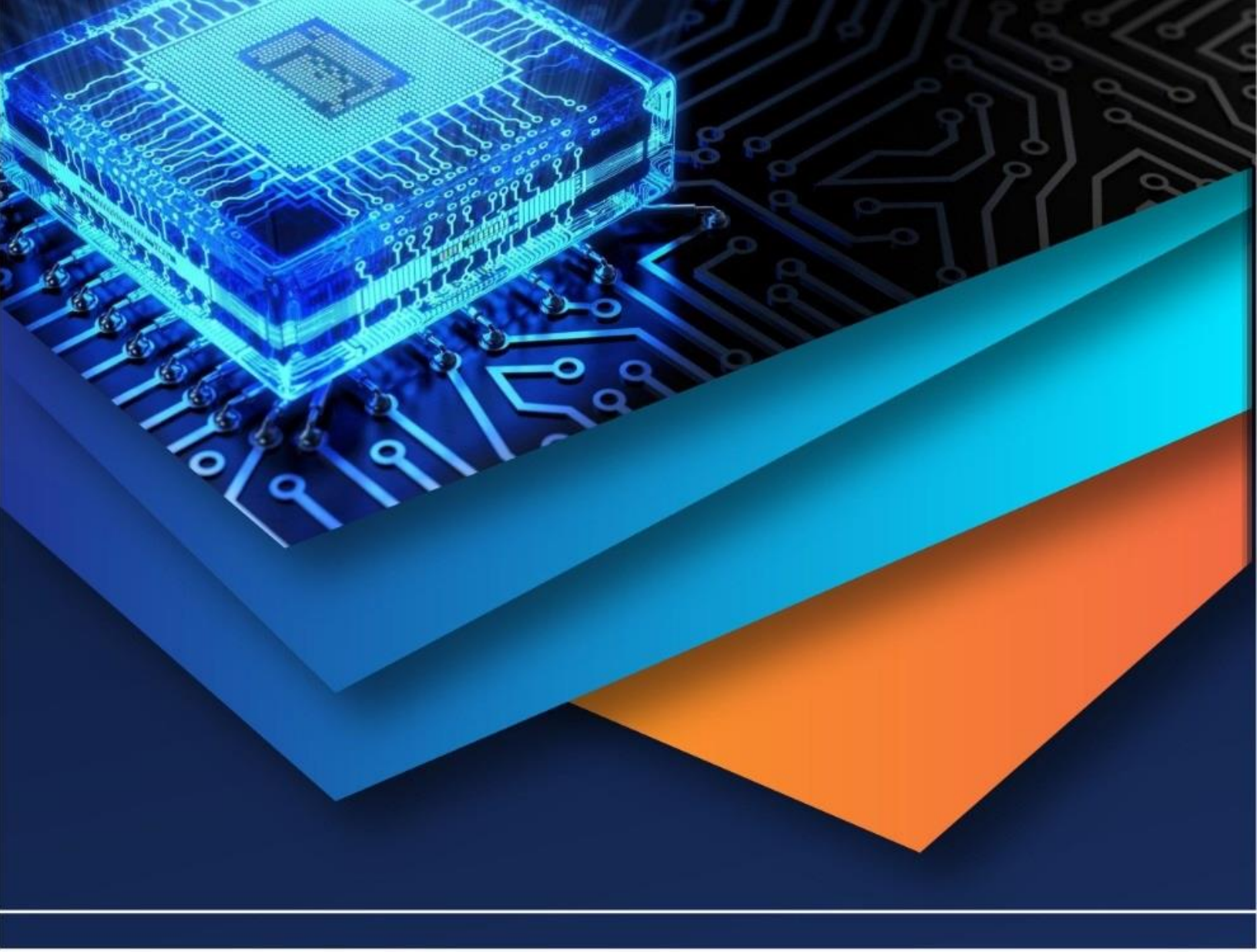

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