



iJRASET

International Journal For Research in
Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 9 Issue: VII Month of publication: July 2021

DOI: <https://doi.org/10.22214/ijraset.2021.36897>

www.ijraset.com

Call:  08813907089

E-mail ID: ijraset@gmail.com

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

Dr. Hari Prasad Kasturi¹, Dr. Ram Kumar P. A², Dr. Yuvakesavan. P. R³, Dr. Saranya. N⁴

¹Associate Professor, Department of Anaesthesiology, Shri Sathya Sai Medical College and Research Institute College in Ammapettai, Tamil Nadu;

²Associate Professor, Department of Anaesthesiology, Sri Muthukumaran Medical College Hospital and Research Institute, Chikkarayapuram, Chennai.

³Assistant professor Department of Anaesthesiology Sri Muthukumaran Medical College Hospital and Research Institute, Chikkarayapuram, Chennai

⁴Academic junior Resident, Department of pathology, Shri Sathya Sai Medical College and Research Institute College in Ammapettai, Tamil Nadu.

I. INTRODUCTION

Pregnancy 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 deliver 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 litrature 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 bupivacaine versus plain hyperbaric bupivacaine in elective Lower abdominal caesarean section.

III. MATERIALS AND METHODS

This study was conducted at Bhaarith 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 aseptice 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.

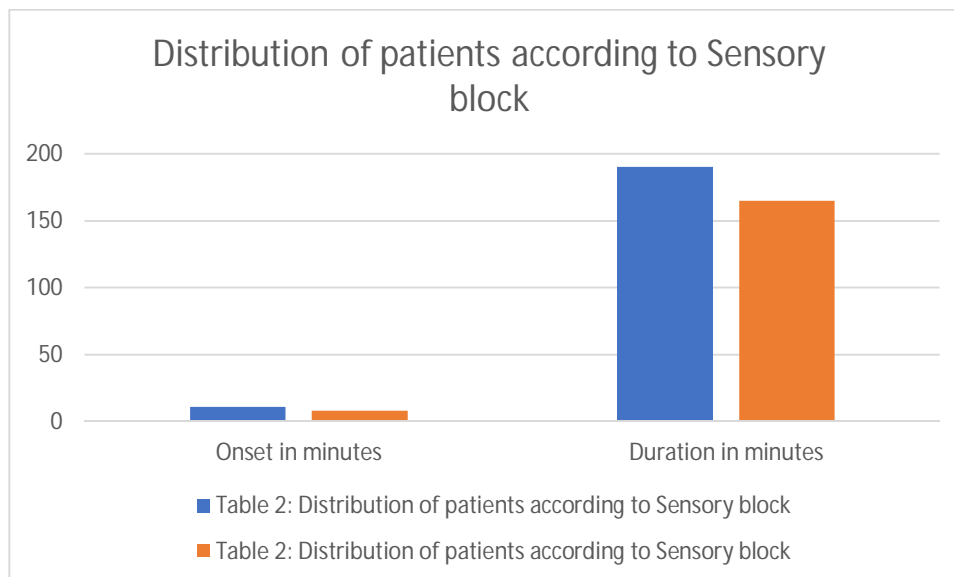
Table 1: Characteristics of patients according to age, weight, height and ASA classification		
Variable	Group I	Group II
Age (years)	29.3 ± 3.2	30.1 ± 3.9
Weight (KG)	61.3 ± 7.8	62.2 ± 4.4
Height (CM)	150.1 ± 8.6	148.8 ± 7.6
ASA (I & II)	19/11	14/16

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 sensory block considerably. Hence improving the post-op patient comfort. Moreover the unpleasant motor block is significantly reduced thus helps in early mobilization of the patient out of bed. Furthermore fentanyl has an added advantage of being a safe drug that can be boldly used in pregnancy. I conclude that it is safe, effective and comfortable to use fentanyl as an additive with bupivacaine for spinal anaesthesia in pregnant women undergoing elective lower segment caesarean section.

REFERENCES

- [1] DeBeer DA and Thomas ML (2003): Caudal additives in children—solutions or problems? *Br J Anaesth*; 90: 487- 98.
- [2] Nitsun M, Szokol JW, Saleh HJ, et al. Pharmacokinetics of midazolam, propofol, and fentanyl transfer to human breast milk. *Clin Pharmacol Ther.* 2006;79:549–57. [\[PubMed\]](#)
- [3] vanKleef JW, Veering BT, Burm AG. Spinal anesthesia with ropivacaine: A double-blind study on the efficacy and safety of 0.5% and 0.75% solutions in patients undergoing minor lower limb surgery. *Anesth Analg* 1994; 78:1125-30.
- [4] Ekwa-Ekoko C, Beilin Y, Abramowitz S, et al. Labor epidural fentanyl and new-born breast-feeding. *Pediatr Res.* 2000;47(4 Pt 2):187A. Abstract
- [5] McDonald SB, Liu SS, Kopacz DJ, Stephenson CA. Hyperbaric spinal ropivacaine: A comparison to bupivacaine in volunteers. *Anesthesiology* 1999; 90:971-7.
- [6] Bekker A, Sturaitis M, Bloom M, Moric M, Golfinos J, Parker E, Babu R, Pitti A. The effect of dexmedetomidine on preoperative hemodynamics in patients undergoing craniotomy. *Anesth Analg.* 2008;107(4):1340–7.
- [7] Kallio H, Snäll EV, Tuomas CA, Rosenberg PH. Comparison of hyperbaric and plainropivacaine 15 mg in spinal anaesthesia for lower limb surgery. *Br J Anaesth* 2004; 93:664-9.
- [8] Kuusniemi KS, Pihlajamäki KK, Pitkänen MT, Helenius HY, Kirvelä OA. The use of bupivacaine and fentanyl for spinal anesthesia for urologic surgery. *Anesth Analg.* 2000 Dec;91(6):1452-6. doi: 10.1097/0000539-200012000-00029. PMID: 11093999.
- [9] Goel S, Bhardwaj N, Grover VK. Intrathecal fentanyl added to intrathecal bupivacaine for day case surgery: a randomized study. *Eur J Anaesthesiol.* 2003 Apr;20(4):294-7. doi: 10.1017/s0265021503000462. PMID: 12703834.
- [10] Boussofara M, Carlès M, Raucoules-Aimé M, Sellam MR, Horn JL. Effects of intrathecal midazolam on postoperative analgesia when added to a bupivacaine-clonidine mixture. *Reg Anesth Pain Med.* 2006;31(6):501–5.
- [11] hah A, Patel I, Gandhi R. Haemodynamic effects of intrathecal dexmedetomidine added to ropivacaine intraoperatively and for postoperative analgesia. *Int J Basic Clin Pharmacol.* 2013;2(1):26–9.
- [12] Bell AF, White-Traut R, Medoff-Cooper B. Neonatal neurobehavioral organization after exposure to maternal epidural analgesia in labor. *J Obstet Gynecol Neonatal Nurs.* 2010;39:178–90. [\[PubMed\]](#)
- [13] Raksakulkiat S, Punpuckdeekoon P. A comparison of meperidine and fentanyl for labor pain reduction in Phramongkutklao hospital. *J Med Assoc Thai.* 2019;102:197–202. <http://www.jmatonline.com>



10.22214/IJRASET



45.98



IMPACT FACTOR:
7.129



IMPACT FACTOR:
7.429



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089  (24*7 Support on Whatsapp)