

Comparison of Lumbar epidural block using 0.5% Bupivacaine with Butorphanol and 0.5% Bupivacaine with Fentanyl for lower abdominal and lower limb surgeries

Dr. K D A Prasad¹, *Dr. V Sree latha²

¹(Dept. of Anesthesiology, Siddhardha Medical college, Vijayawada, India)

²(Asst. Professor, Dept. of Anesthesiology, Siddhardha Medical college, Vijayawada, India)

*Corresponding Author: Dr. V Sree Latha,

Abstract: Regional Anesthesia is the choice in lower abdominal and lower limb surgeries. Epidural anesthesia lasts longer with lesser complications compared to general anesthesia. Butorphanol is agonist-antagonist opioid that resembles Pentazocine, while producing stronger analgesia. Fentanyl is a phenyl piperidine-derivative synthetic opioid agonist that is structurally related to Meperidine. **Aim:** Comparison of Lumbar epidural block using 0.5% Bupivacaine with Butorphanol and 0.5% Bupivacaine with Fentanyl for lower abdominal and lower limb surgeries. **Methods:** Adult patients of ASA grade I & II belonging to 18-60 years posted for lower abdominal and lower limb surgeries

Group 1: Bupivacaine (0.5) 10 ml with Fentanyl 20µg

Group 2: Bupivacaine (0.5) 10 ml with Butorphanol 1µg

Keywords: Post Operative pain, Epidural route, Bupivacaine, Fentanyl, Butorphanol

Date of Submission: 03-03-2018

Date of acceptance: 19-03-2018

I. INTRODUCTION

International association for study of pain defines pain as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described as in terms of such damage.”

Post-operative pain causes stress and effects the physiology of almost all systems including Respiratory, Cardio vascular, Metabolic systems increasing morbidity. Epidural route is more popular for postoperative pain management as it decreases the incidence of post-operative complications. Bupivacaine is a widely used local anesthetic drug. Butorphanol is a μ -receptor partial agonist and antagonist which is effective in relieving moderate to severe pain. Fentanyl is Phenyl piperidine derivative, synthetic opioid agonist which is very effective analgesic.

II. PATIENTS AND METHODS

Sixty adult patients of ASA grade I & II, of either sex, belonging to 18-60 years of age, posted for elective lower abdominal and lower limb surgeries in general surgery, orthopedics, gynecology, urology and plastic surgery were selected for the study. Patients were randomly divided into two groups of 30 each.

Group 1: Bupivacaine (0.5) 10 ml with Fentanyl 20µg

Group 2: Bupivacaine (0.5) 10 ml with Butorphanol 1µg

Exclusion Criteria:

- Patients with cardio-respiratory disorders
- ASA grade III and IV patients
- Emergency surgeries,
- Patient with known allergic to opioids

After careful pre-anesthetic checkup, patient consent is taken. Patient is shifted to operation theatre where epidural catheter is fixed at L₃₋₄. After confirming the space with hanging drop technique and loss of resistance, patient is monitored with pulse oxymeter, NIBP, ECG leads and fluid management with RL, NS.

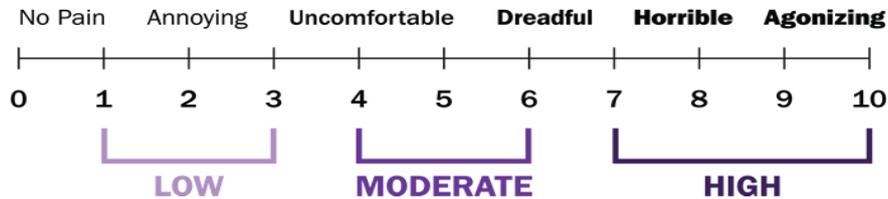
Post-Operative Period:

After completion of surgery, patient was shifted to recovery room and monitored continuously. Pain was assessed using VAS scale at 5, 10, 15, 30, 60, 120 minutes and there after once every two hours for twelve hours post operation.

0 - 10 VAS Numeric Pain Distress Scale

This pain assessment tool is intended to help patient care providers assess pain accordingly to individual patient needs.

Explain and use **0 - 10 VAS Scale** for patient self-assessment.



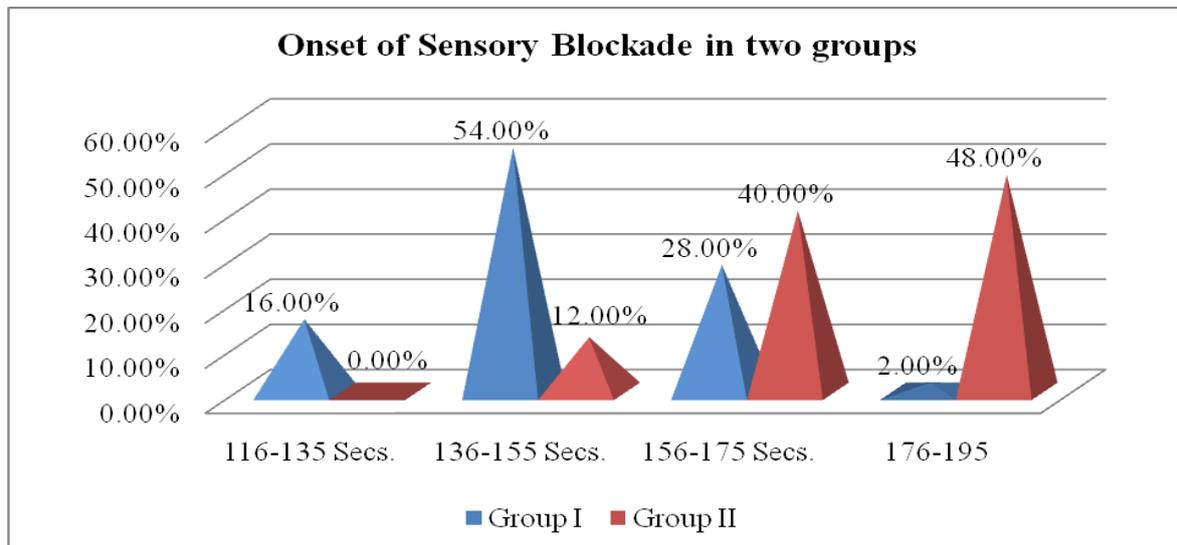
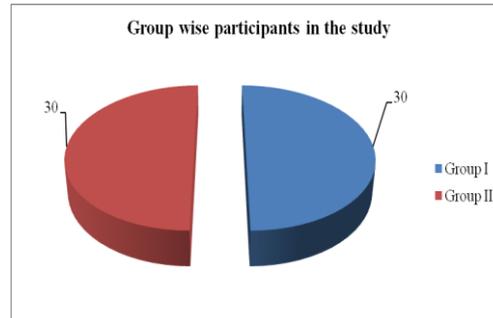
III. OBSERVATIONS AND RESULTS

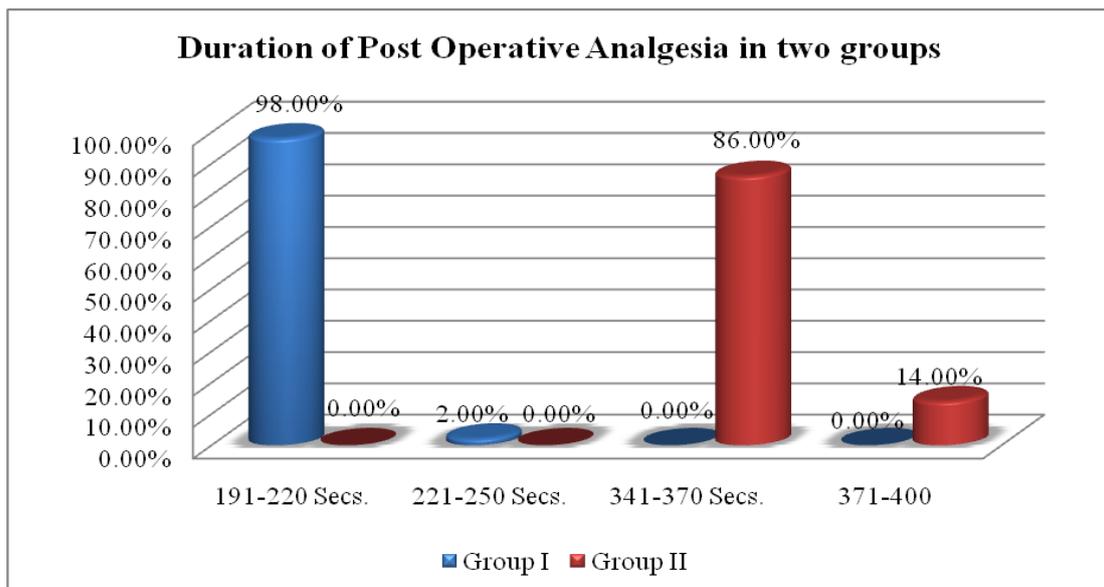
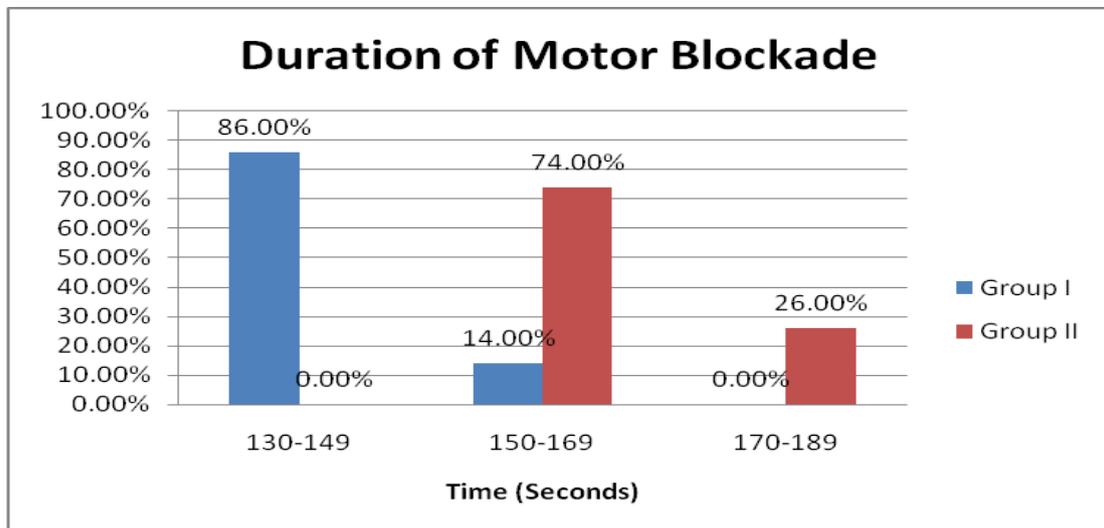
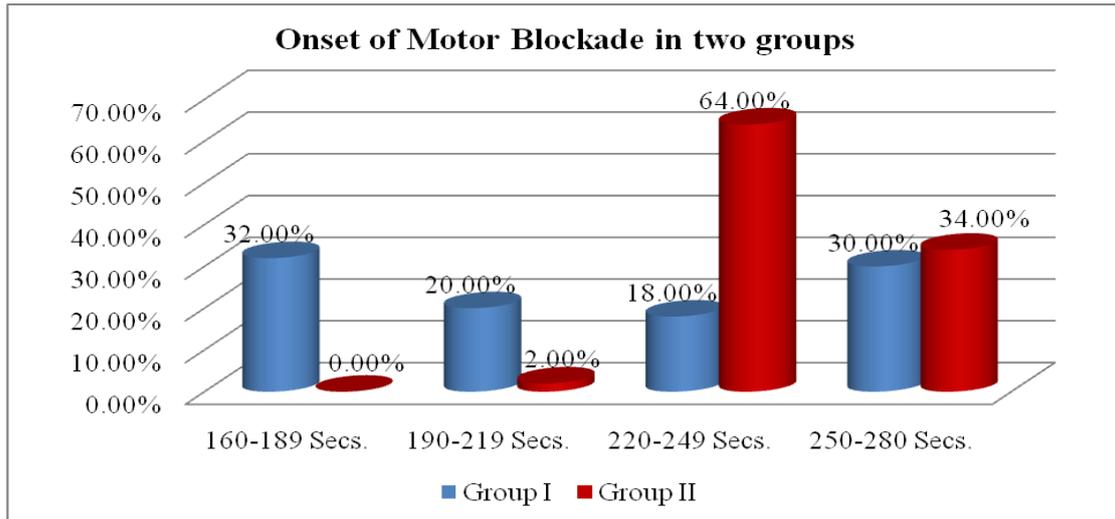
Sixty adult patients belonging to ASA grade I and II, of either sex, in age group between 18- 60 years, posted for elective lower abdominal and lower limb surgeries under Epidural anaesthesia were selected for the study. They were randomly allocated to two groups with 30 patients in each group.

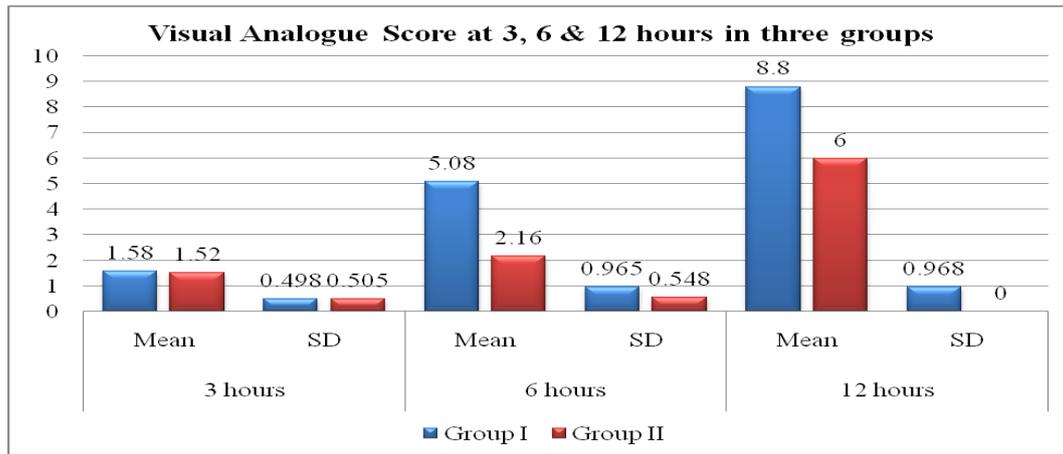
In Group I(BB)- Bupivacaine (0.5%)10ml +Butorphanol (1mg) were used as the study drug and

In Group II(BF)- Bupivacaine (0.5%)10ml + Fentanyl (20µg) were used as the study drug to study the efficacy based on onset of analgesia, duration of analgesia and adverse effects.

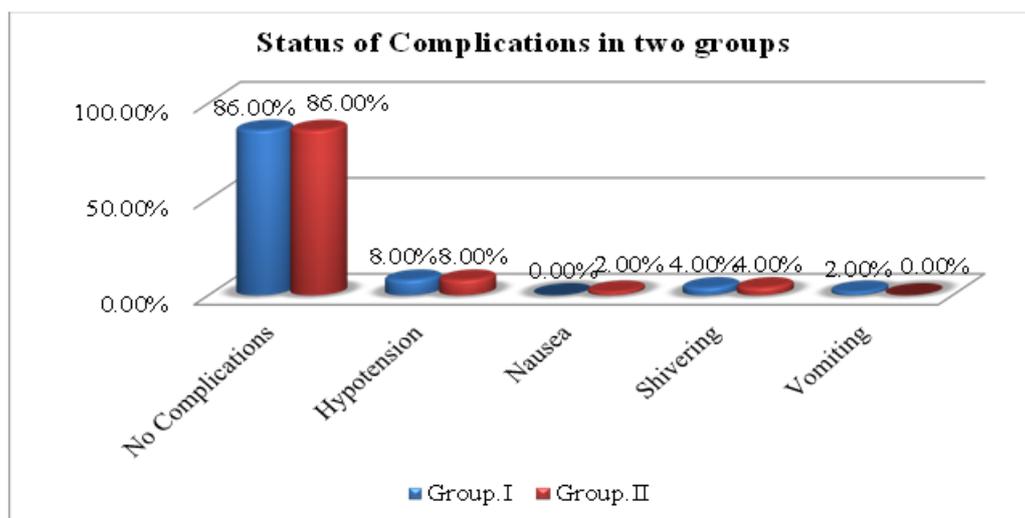
Group	No. of study Participants	%
Group I(BF)	30	50.00%
Group II(BB)	30	50.00%
Total	60	100.00%







Type of Complication	Group.I		Group.II		Total	
	No.	%	No.	%	No.	%
No Complications	43	86.00%	43	86.00%	86	86.00%
Hypotension	4	8.00%	4	8.00%	8	8.00%
Nausea	0	0.00%	1	2.00%	1	1.00%
Shivering	2	4.00%	2	4.00%	4	4.00%
Vomiting	1	2.00%	0	0.00%	1	1.00%
Total	50	100.00%	50	100.00%	100	100.00%



The difference between two groups with regard to complications is statistically not significant at $P > 0.05$

IV. DISCUSSION

Opioids as epidural adjuvants to LA improve the quality of the block and provide a dose-sparing effect.^{28,29} We chose to investigate fentanyl, a μ -receptor agonist and butorphanol, a strong k -receptor agonist and a weak μ -receptor agonist-antagonist administered epidurally along with B for intra-operative and post-operative analgesia. Combination of local anesthetics and opioids enable to get effective early onset and increased duration of analgesia and better quality of pain relief.

In our study, the onset of epidural analgesia in group BF (10ml of 0.5% Bupivacaine + 20u Fentanyl) was varied from 2- 4 minutes (mean 5.27 minutes) whereas in group BB (0.5% Bupivacaine+ 1mg Butorphanol) the onset was 4-8 minutes (mean 2.69, $p < 0.0001$) which is statistically significant. The duration of analgesia in group BF lasted for 2-4 hours (mean 2.98) where as in group BB patients duration of analgesia lasted for 3-5 hours (mean 6.98 $p < 0.0001$) which is also statistically significant.

V. CONCLUSION

Addition of the opioids, i.e., Butorphanol and Fentanyl significantly quickens the onset and prolongs analgesia .onset is fast with Bupivacaine with Fentanyl combination compared with Bupivacaine with Butorphanol combination . Bupivacaine with Butorphanol provide more effective and longer duration of analgesia as compared with Bupivacaine with Fentanyl. A single bolus dose of Butorphanol and Fentanyl along with Bupivacaine given at the start of epidural anesthesia provides good intraoperative and post-operative analgesia. The administration of these drugs in the epidural space is devoid of serious cardio-respiratory side effects.

REFERENCES

- [1] Dr.Nirvik Pal, Dr.Kiran Malhotra, Dr.Chitra et al. Effect of morphine on postoperative respiratory functions: Comparision between systemic and epidural routes. *Indian J. Anaesth* 2004;48(3):204-207.
- [2] RG Wheatley, SA Schug, D. Watson. Combination of local anaesthetic and an opioid combination. *Br J Anaesth* 2001;87:47
- [3] Egan, Talmage D. (2013). *Pharmacology and physiology for anesthesia : foundations and clinical application*. Philadelphia, PA: Elsevier/Saunders. p. 291. ISBN 9781437716795.
- [4] Hamilton, Richart (2015). *Tarascon Pocket Pharmacopoeia 2015 Deluxe Lab-Coat Edition*. Jones & Bartlett Learning. p. 22. ISBN 9781284057560.
- [5] Whimster, David Skinner (1997). *Cambridge textbook of accident and emergency medicine*. Cambridge: Cambridge University Press. p. 194. ISBN 9780521433792.
- [6] http://www.deadiversion.usdoj.gov/quotas/conv_factor/index.html
- [7] http://www.deadiversion.usdoj.gov/schedules/orangebook/a_sched_alpha.pdf
- [8] Fentanyl". NIH. Retrieved 2016-11-06.
- [9] Stanley TH (April 1992). "The history and development of the fentanyl series". *J Pain Symptom Manage*. 7 (3 Suppl): S3–7. doi:10.1016/0885-3924(92)90047
- [10] "DailyMed: About DailyMed". *Dailymed.nlm.nih.gov*. Retrieved 2010-07-28.
- [11] Roerig DL¹, Kotrly KJ, Vucins EJ, Ahlf SB, Dawson CA, Kampine JP. First pass uptake of fentanyl, meperidine, and morphine in the human lung. *Anesthesiology*. 1987 Oct;67(4):466-72.
- [12] Kaur J, Bajwa SS. Comparison of epidural butorphanol and fentanyl as adjuvants in the lower abdominal surgery: A randomized clinical study. *Saudi J Anaesth* 2014;8:167-7

Dr. K D A Prasad "Comparison of Lumbar epidural block using 0.5% Bupivacaine with Butorphanol and 0.5% Bupivacaine with Fentanyl for lower abdominal and lower limb surgeries." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, vol. 17, no. 3, 2018, pp 66-70