

## Comparative Study of Epidural (Bupivacaine+Fentanyl) Versus Intramuscular Tramadol for Labour Analgesia in Primigravida Women

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### Abstract

**Objectives:** To compare the efficacy of epidural analgesia with intramuscular tramadol for labour and to study the maternal and fetal outcomes.

**Methods:** Comparative clinical study conducted in 100 primigravida women between the ages of 18 to 30 years, in the department of obstetrics and gynaecology, GMKMCH Salem from September 2014 to august 2015. Data analysed using student t test and chi square test.

**Results:** The epidural group had lower pain score (VAS score) than tramadol group throughout labour. The mean VAS score at 15 minutes was 1.68 in epidural group and 6.92 in tramadol group. The epidural group had shorter first and third stage of labour, longer second stage of labour compared to tramadol group. The total duration of labour is 164.23 minutes in tramadol group, 138.49 minutes in epidural group. Total duration of second stage of labour was 54.07 minutes in epidural group and 48.21 minutes in tramadol group. The APGAR scores in both groups were comparable. There is no difference in mode of delivery between the groups.

**Conclusion:** Epidural analgesia in active stage of labour provides superior analgesia and better maternal satisfaction when compared with intramuscular Tramadol.

**Keywords:** Labour analgesia, Epidural analgesia, VAS score.

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### I. Introduction

Obstetrical analgesia presents unique challenges to obstetrician (1). Several factors improved the safety of labour analgesia. The American college of obstetrics and gynaecology 2002 reaffirmed its joint position with American society of anaesthesiologist and announced that a women's request for labour pain relief is sufficient medical indication for providing labour analgesia (1). Previously epidural analgesia was advised for patients with heart disease, severe preeclampsia, anemia because of its beneficial haemodynamic effects. Nowadays the availability of regional analgesia for labour is considered a reflection of standard obstetric care (2). In the past use of high dose local anaesthetics leads to motor blockade and prolonged second stage of labour and increased instrumental deliveries. The use of opioid local anaesthetic mixture, reduced the total dose of local anaesthetic used which leads to reduced motor blockade and local anaesthetic toxicity. Reduced motor blockade will not impede with bearing down efforts by the mother. The availability of continuous epidural infusions for labour analgesia has made the anaesthetist work simple than before. All these made epidural analgesia for labour a better option.

### II. Materials And Methods

The study was conducted in the department of obstetrics and gynaecology, government Mohan Kumaramangalam medical college hospital Salem from September 2014 to august 2015. Hundred primigravida women were randomly allocated to two groups. Group 1- was given injection tramadol. Group 2-had epidural labour analgesia.

**Inclusion Criteria:** Primigravida women in the age group of 18 to 30 years. Single cephalic presentation with no CPD. Cervical dilatation of 3 to 4 cm. Gestational age more than 37weeks.

**Exclusion Criteria:** BMI more than 35, Overt maternal coagulopathy, Frank infection at the needle insertion site, Maternal hemodynamic instability, Fetal distress, oligohydramnios, Patients with clinically significant hepatic and renal disease, Cardiovascular disease - NYHA CLASS 3 AND 4, Respiratory disease-COPD, bronchial asthma, chronic bronchitis, Thyroid disorders, Severe anaemia, severe PIH, Raised intracranial tension, epilepsy, Neuromuscular disease- myasthenia gravis.

**Methodology:** Ethical clearance was obtained from the hospital ethical committee. Written informed consent was obtained in the prescribed format. After getting detailed history, thorough clinical examination was

done. Vital parameters were recorded. Admission cardiotocogram was done. Patients were randomly allocated to two groups. Initial pain score assessment was done using visual analog scale.

**Epidural Group:** After establishing intravenous access with 18g cannula, monitors were connected. Basic recordings of the vitals made. Preloading done with 500ml of ringer lactate. Patient in sitting position, after thorough aseptic preparation of the area using 18g tuohy needle epidural space entered through L2-L3 or L3-L4 interspace by loss of resistance to air technique. Catheter placed up to 5cm inside the space and fixed after test dose with 3ml of 1.5% lignocaine with adrenaline. Initial bolus of 10ml of 0.125% bupivacaine with fentanyl 2µg/ml given. Maintenance doses of 10 to 15 ml of 0.125% bupivacaine with fentanyl 2µg/ml given every hour. Patients were maintained in left lateral position or semi recumbent position. Pulse rate, blood pressure, respiratory rate, spo2 monitored continuously following bolus doses. Pain scores noted every 15minutes for the initial one hour, then every hourly. Fetal heart rate monitored continuously.

**Tramadol Group:** Inj tramadol 100mg given intramuscularly. Dose of 50mg im repeated after 4 hours except in women who reached the second stage of labour. Pulse rate, blood pressure, respiratory rate, spo2 were monitored continuously. Pain scores noted every 15minutes for the initial one hour then every hourly. Fetal heart rate monitored continuously. With Modified WHO PARTOGRAM the labour progress was monitored.

### III. Results

The epidural group had lower VAS score than tramadol group throughout labour. The initial VAS score was 9 to 10 in both groups. The maximum Pain relief with epidural started at 15 minutes. In the tramadol group the minimum VAS score reached was 5.95 whereas in the epidural group minimum VAS score was 1 as shown in Fig.1. The minor difference in the mean cervical dilatation between groups was not statistically significant as shown in Table 1. The epidural group had shorter first and third stage of labour, longer second stage of labour compared to tramadol group. Though the second stage of labour was prolonged in epidural group neither it affect the mode of delivery, nor the apgar scores of the neonate. Mean duration of labour is 25 minutes more in tramadol group than epidural group as shown in Fig.2. In tramadol group 39 women delivered by labour natural, 11 by LSCS. In the epidural group 38 women delivered by labour natural, 7 by LSCS, 4 had outlet forceps, 1 delivered by vacuum as shown in Table 2. As APGAR score was non- normally distributed, Mann whitney's parametric test was applied, no significant difference in APGAR scores were found between the groups. The difference in the blood pressure and pulse rate among groups was not statistically significant.

As per the clinical comparative study of intrapartum epidural analgesia with intramuscular tramadol with respect to maternal and perinatal outcome.2014 october, vol1; issue8; epidural analgesia shortened the duration of first stage of labour and the total duration of labour. Epidural analgesia was not associated with increase in instrumental delivery rate or caesarean section. It has a favourable effect on the progress of labour, pain relief, and neonatal outcome (3). In our study also we had shorter first stage of labour and total duration of labour. According to the journal of fertilisation, reproductive medicine genetics 2015, study conducted in 150 primigravida women there was no difference in duration of first and second stage of labour and second stage was prolonged in epidural group, both epidural and tramadol provided excellent pain relief(4). In our study we found that analgesia was better in epidural group.

### IV. Discussion

Modern neuraxial labour analgesia reflects a shift from simple focus on pain relief towards focussing on the overall quality of analgesia (2). ACOG committee opinion number 295 says that epidural block is the most effective and least depressant method of labour analgesia allowing for an alert participating mother(5). ACOG committee opinion number 339 quotes that epidural analgesia does not increase the risk of caesarean delivery (6).The labour pain is worse than the pain associated with fracture and amputation of digit.

Epidural administration of dilute concentrations of local anaesthetics with opioids provides superior analgesia during labour with less effect on mother and fetus, and allows maternal participation. Pain during the first stage of labour is amenable to epidural blockade of afferents from T10-L1 (7). Extension of the epidural blockade from T10 to S4 will relieve the pain during second stage. Epidural labour analgesia provides analgesia over prolonged period of time of varying intensity. The parturient is alert, co-operative and non exhausted. If emergency caesarean delivery is needed it can be proceeded with epidural topups.

Tramadol is readily available, inexpensive and easy to administer. Opioids can be used in pateints when epidural analgesia is contraindicated. The main limiting factors are nausea, vomiting (8).Epidural needs more intensive level of monitoring. High level of skill is needed to site the catheter. Risk of dural puncture, spinal headache, and patchy block is present. Tramadol is an effective alternative in low resource settings.

### V. Conclusion

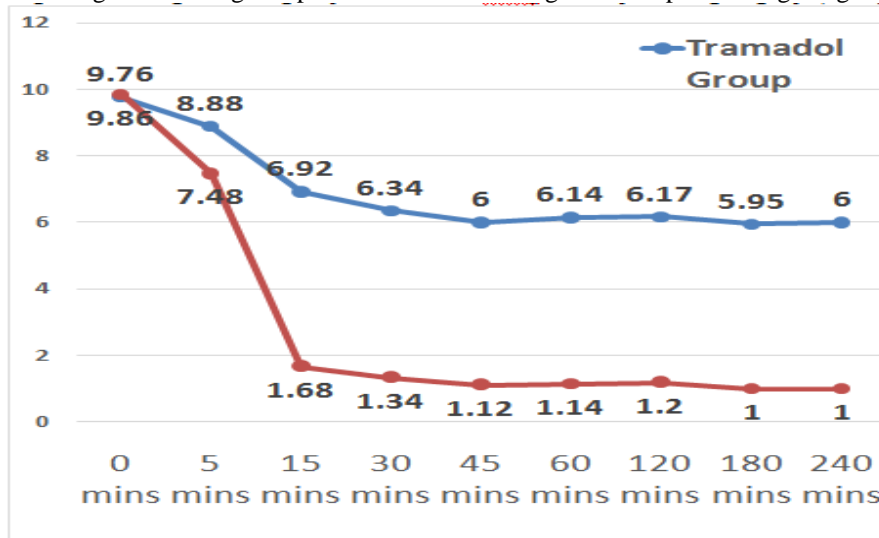
From the present study we infer that epidural analgesia is the gold standard for providing labour analgesia. Providing epidural analgesia in active stage of labour with 10ml of 0.125% bupivacaine with 2

mic/ml fentanyl followed by topups of 10 to 15 ml hourly provided good analgesia throughout labour without any maternal or fetal adverse effects. Epidural provides significant pain relief, better maternal satisfaction than tramadol. In our study Epidural does not increase the instrumental delivery or caesarean section rate. But tramadol will be useful in low resource settings. Further studies are needed whether continuous epidural infusions will be better than intermittent bolus.

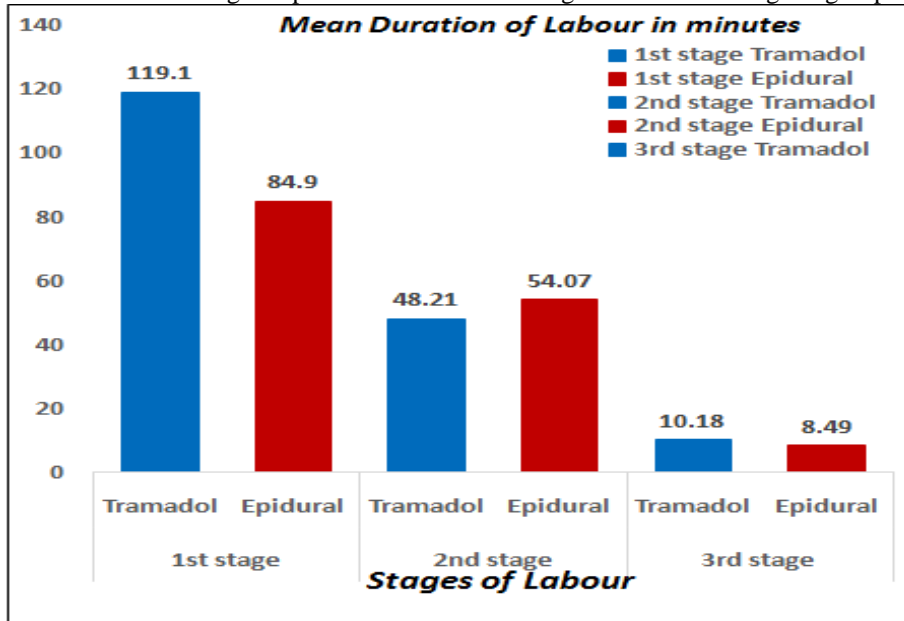
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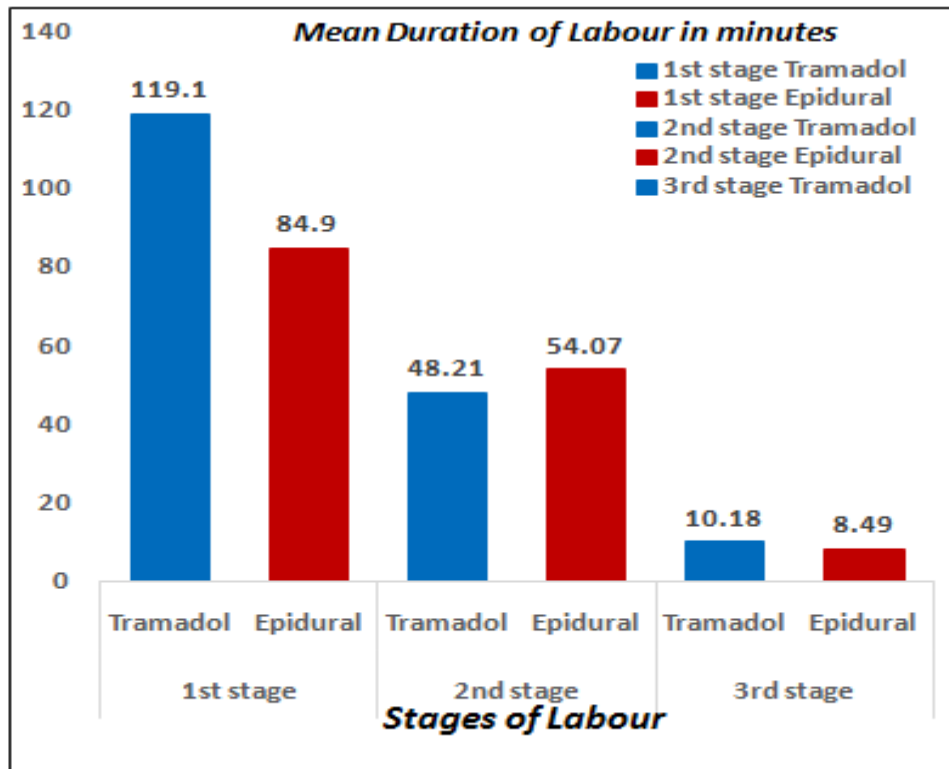
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**Figure 1:** Line diagram showing comparison of Visual analog score for pain among the groups (n=100)



**Figure 2:** Bar chart showing comparison of duration of stages of labour among the groups (n=100)





**Table 1:** Comparison of cervical dilatation and drug to delivery time interval among the groups (n=100)

Parameter		Tramadol group N (%)	Epidural group N (%)	Mean difference	Student 't' test p value
Cervical dilatation (in cms)	Mean levels	3.12	3.14	-0.020	0.769
	Standard deviation	0.328	0.351		
Duration of labour (in minutes)	Mean levels	164.23	138.49	25.742	<b>0.016*</b>
	Standard deviation	54.88	38.78		

**Table 2:** Distribution of the study population according to mode of delivery (n=100)

Mode of delivery	Frequency	Percent
Labour natural	77	77.0
Lower Segment Caesarean Section	18	18.0
Outlet forceps	4	4.0
Vacuum	1	1.0
Total	100	100.0