

## Analgesic Efficacy of Intravenous Paracetamol Versus Intravenous Tramadol after Cesarean Section

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### Abstract

**Background:** Delivery by cesarean section is one of the commonest major operative procedure in obstetrics worldwide. Pain has been a major concern of mankind since the very beginning and according to Association for the Study of Pain, pain is "sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage". Pain is inevitable after every surgery; hence, management of post-operative pain is of utmost importance. **Methods:** This was a single blind randomized controlled study in which 100 parturient who were undergoing cesarean delivery under spinal anesthesia in district hospital, Ballari from July 2018 to Dec 2018 were taken for the study. Patients were divided into two equal groups using computer generated randomization with 50 women in each group. **Results:** Paracetamol is better than Tramadol for post-operative acute pain relief in cesarean patients owing to its comparable analgesic efficacy and also Paracetamol is considered to be more safe, effective and requires no special monitoring.

**Keywords:** Paracetamol; Tramadol; Cesarian section.

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### Introduction

Delivery by cesarean section is one of the commonest major operative procedure in obstetrics worldwide.<sup>1</sup> Pain has been a major concern of mankind since the very beginning and according to Association for the study of pain, Pain is "sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage".<sup>2</sup> Pain is inevitable after every surgery, hence, management of post-operative pain is of utmost importance for early ambulation

and discharge reducing the duration of stay. The different classes of analgesics used, exert their effect through different mechanisms and most commonly used ones are I.V. Paracetamol and I.V. Tramadol. Various studies have proved intravenous paracetamol as effective analgesic agent which is safe, effective and requires no special monitoring.<sup>3,4</sup> There are no significant studies comparing these two as potent analgesia after cesarean delivery. So, this study was carried out to evaluate the analgesic efficacy of intravenous Paracetamol and I.V. Tramadol for pain control after cesarean delivery.

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## Materials and Methods

### Source of Data

This was a single blind randomized controlled study in which 100 parturient who were undergoing cesarean delivery under spinal anesthesia in district hospital, Ballari from July 2018 to Dec 2018 were taken for the study. Patients were divided into two equal groups using computer generated randomization with 50 women in each group.

### Inclusion Criteria

1. Parturient who were undergoing cesarean delivery under spinal anesthesia.

### Exclusion Criteria

1. Patients with known contraindication/allergic to Paracetamol or Tramadol.
2. Pregnancy with medical disorders (hepatic, renal, diabetes, cardiovascular and pulmonary disease) preeclampsia/eclampsia cases and chorioamnionitis.
3. Women taking monoamine oxidase inhibitors and those who received any analgesics till four hours before surgery.

### Procedure

Group A received intravenous paracetamol 1000 mg in 100 ml of normal saline over 15 minutes and Group B received intravenous Tramadol 50 mg over 2-3 minutes and the drugs were repeated eight hourly for three doses. The drug was started post-operatively at first sensation of pain perceived by the patient. It was a single blinded study and only patient was blind about the analgesic drug administered. Primary outcome measured were degree of pain relief as determined by drop in Visual analog scale.

### Statistical Analysis

Comparison between the two Groups characteristics were made either by using Fisher exact test if data was categorically variable or by Mann-Whitney test if data was continuous and characteristics were expressed as medians and ranges. All outcome measures were compared between the two Groups by using the  $\chi^2$  test or Fisher exact test, where appropriate. All statistical analyses were performed by using a statistical Software program (SPSS version 22).  $p = 0.05$  was considered statistically significant.

## Results

The mean age of women in Paracetamol Group was  $25.5 \pm 4.50$  years and of Tramadol Group was  $23.2 \pm 4.80$  years ( $p > .05$ ). There was no statistically significant difference in other variables also like parity, indication of cesarean section and duration of surgery.

**Table 1:** Maternal Characteristics and Obstetric Data

Variables	Paracetamol (n = 50)	Tramadol (n = 50)	p Value
Age	25.5 ± 4.50	23.2 ± 4.80	> 0.05
Nulliparity	21	24	> 0.05
Multiparity	29	26	> 0.05
Elective Cesarian	14	8	> 0.05
Emergency Cesarian	36	42	> 0.05
Duration of Surgery (Mean) in minutes	42.56	43.65	> 0.05

It was observed that there was significant pain relief in both the groups at various time intervals except at 6 hours in Paracetamol Group ( $p = 0.610$ ) and at 8 hours in Tramadol Group ( $p = 0.134$ ). In Paracetamol Group mean VAS change was lowest at 6 hours and in Tramadol Group at 8 hours, suggestive of least pain control at this point of time. This suggests that effect of Paracetamol starts weaning off by 6 hour after initial dose and of Tramadol by 8 hour.

**Table 2:** Pain Assessment by VAS Scoring

Pain Assessment	Paracetamol Mean vas change	Paracetamol p value	Tramadol Mean vas change	Tramadol p value
VAS after 30 min	0.240	0.016	0.430	0.008
VAS after 1 hr	0.400	0.002	0.780	0.000
VAS after 2 hr	0.520	0.000	0.860	0.000
VAS after 4 hr	0.510	0.000	0.810	0.000
VAS after 6 hr	-0.060	0.610	0.450	0.003
VAS after 8 hr	0.420	0.017	0.230	0.134
VAS after 12hr	0.580	0.000	0.580	0.000
VAS after 24 hr	1.140	0.000	1.006	0.000

## Discussion

Cesarean section constitutes a public health priority because it is one of the most common surgeries in the obstetrics. Cesarean delivery is associated with substantial post-operative discomfort and pain.<sup>5</sup> Continuous epidural analgesia or patient-controlled analgesia is being replaced by more traditional approach of on demand parenteral

administration of opioids.<sup>6</sup> Thus, prevention of post-operative complications of cesarean section is of great importance.<sup>7</sup> One of the most common post-operative complications of cesarean is pain after surgery.<sup>8</sup> The results of our study are consistent with the study done by Toms *et al.* which has shown that a single dose of paracetamol provides effective analgesia for about half of patients with acute post-operative pain compared to tramadol infusion.<sup>9</sup> A systematic review and meta-analysis by McNicol *et al.* has confirmed the efficacy and safety of single dose of intravenous paracetamol in preventing acute post-operative pain which are in consistent with our study.<sup>10</sup> A randomized double blinded study conducted by Inal MT *et al.* between intravenous paracetamol and intravenous meperidine for post-operative analgesia after cesarean section found that intravenous paracetamol administration results in lesser requirement of rescue analgesics than intravenous meperidine, a synthetic opioid agonist when used for post-operative pain management.<sup>11</sup> Uysal HY *et al.* concluded that I.V. formulation of paracetamol was associated with similar analgesic properties and early recovery to that of I.V. tramadol after adenotonsillectomy in children.<sup>12</sup>

## Conclusion

Paracetamol is better than Tramadol for post-operative acute pain relief in cesarean patients owing to its comparable analgesic efficacy and also paracetamol is considered to be safer, effective and requires no special monitoring.

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*Conflict of interest:* None declared.

*Ethical approval:* The study was approved by the Institutional Ethics Committee.

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