# EFFECT OF RECTAL MISOPROSTOL AND INTRAVENOUS ERGOMETRINE IN PATIENTS OF POSTPARTUM HEMORRHAGE IN CAESAREAN SECTION DELIVERY

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## ABSTRACT

**Background:** Postpartum Hemorrhage in caesarean delivery is mostly problematic for gynecologist. **Objective:** To compare the effect of rectal misoprostol and intravenous ergometrine in patients of primary postpartum hemorrhage in caesarean delivery. **Methodology:** This experimental study was conducted from 11th March to 10th September 2013, at Department of Obstetrics and Gynaecology, Sheikh Zayed Hospital, Rahim Yar Khan. The sample included 650 labouring women. The final outcome in this study was to assess the efficacy (i.e. ability of drug to prevent 1000 ml of blood loss within first 24 hrs of caesarean delivery) of intravenous ergometrine versus rectal misoprostol (Group A and Group B). Data was analyzed by SPSS version 16. **Results:** Mean age of patients was 27.41±0.18 vs. 27.31±0.20 years respectively in group A and group B. Mean amount of blood loss was 848±14 vs. 818±13 ml in group A and in group B respectively. Efficacy of misoprostol was found to be 90.2% as compared to ergometrine having efficacy of 83.1% in prevention of PPH in cesarean delivery. **Conclusion:** Rectal misoprostol has more efficacy than intravenous ergometrine in the prevention of PPH in cesarean delivery.

**Key words:** Postpartum haemorrhage, Uterotonics, Misoprostol, Prostaglandins, Ergometrine.

## INTRODUCTION

Postpartum hemorrhage (PPH) is a life-threatening complication and is one of the leading causes of maternal mortality and morbidity. Primary postpartum hemorrhage refers to a blood loss within 1st 24 hours from genital tract of more than 500 ml in vaginal delivery or 1000 ml during a caesarean section.[1] The incidence of PPH is 2–11%.[2] It accounts for one third of maternal deaths in developing countries[3] that are caused by poor transport system, Lack of skilled caregivers, and poor emergency obstetrics care.[3]

The main cause of PPH is uterine atony leading to severe hemorrhagic shock requiring transfusions and surgical treatment.[4] Causes are usually uterine atony, retained placenta, membranes or blood clot's genital tract trauma, or coagulation abnormalities.[1]

The strategy to control is the active management of third stage of labor with uterotonic drugs, controlled cord traction and fundal massage.[5] Uterotonic agents including oxytocin, ergometrine and prostaglandins are used as first line therapy while misoprostol, is an alternative in areas where storage and parental administration of drugs are problem.[6]

Side effects of misoprostol are dose related pyrexia and shivering, whereas ergometrine is associated with rise in blood pressure due to peripheral vasoconstriction, nausea and vomiting.[7,8] It has been observed that rectally placed misoprostol is more effective than sublingual misoprostol and with a significant decrease in side effects.[9,10]

Use of ergometrine and oxytocin in the developing countries may be problematic because of additionally need for cold storage as well as need of sterile syringes and need for administration and training of village level health worker. Rectal route is free of gastrointestinal side effects and also reduces the risk of transmitting hepatitis C, AIDS and other blood borne diseases.[11]

This study would provide the evidence regarding conveniently administered drug to reduce the incidence of primary PPH, ultimately decreasing the burden of maternal morbidity and mortality. The objective of this study was to assess the effect of rectal misoprostol and intravenous ergometrine in patients of postpartum hemorrhage in caesaream delivery.

## METHODOLOGY

This experimental study was conducted from 11th March to 10th September 2013 on women coming to Department of Obstetrics and Gynaecology Unit I, Shaikh Zayed Hospital, Rahim Yar Khan, who were having cesarean delivery selected by using non probability consecutive sampling technique. A proforma was specifically designed to record findings of this study. Six hundred and fifty women admitted in labour ward meeting the inclusion criteria were enrolled for the study.

Patients were included in the study after taking informed consent. Patients were randomly allocated in two groups of three hundred and twenty five each, by lottery method. Group A was prophylactically

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administered 0.5 mg ergometrine intravenously at the time of delivery of head for prevention of postpartum haemorrhage, while Group B was treated prophylactically with rectal misoprostol 800 microgram administered just before the start of cesarean section for the same purpose. Caesarean delivery was performed and blood loss was measured by weighing blood soaked pads and the known dry weight was subtracted standardizing one mililitre blood to weigh one gram. Amount of blood from genital tract after caesarean delivery was noted. PPH was labeled when there was 1000 ml of blood loss after cesarean section. The outcome variable that is efficacy of the two drugs was noted on the proforma. Efficacy was taken as "yes" when there was no PPH. Mean±SD was calculated for quantitative variables like blood loss, age and gestational age of the patients. Data waz analyzed by SPSS version 16. Frequencies and percentages were calculated for qualitative variables like parity and efficacy. Chi-square test was applied to compare efficacy of intravenous ergometrine and rectal misoprostol. P-value ≤ 0.05 was taken as significant.

## RESULTS

In this study, the mean age of the patients was 27±0.18 vs. 27±0.20 years respectively in group A and group B. Mean gestational age was 38±0.05 vs. 38±0.06 weeks in group A and B respectively. Mean amount of blood loss was 848±14 vs. 818±13 ml in group A and in group B respectively.

Most common age group was 26–30 years having 154 (47.4%) and 149 (45.8%) patients in group A and group B respectively as shown in Table I. Parity distribution showed that para 1–2 were more common, 150 (46.2%) vs. 148 (45.5%) patients in group A and B respectively had parity 1-2.

Commonest type of cesarean section was emergency cesarean done on 283 (87.1%) versus 284 (87.4%) patients in group A and B respectively while elective cesarean was performed in 42 (12.9%) versus 41 (12.6%) in group A and B respectively. (Table I)

Efficacy of misoprostol was found to be 90.2% as compared to ergometrine having efficacy of 83.1% in prevention of PPH in cesarean delivery (Table I). Rectal misoprostol has significantly more efficacy than intravenous ergometrine in prevention of PPH in cesarean delivery (p=0.008).

**Table I: Characteristics of patients in both groups**

| Age (in years) | Group A (Intravenous Ergometrine) | Group B (Rectal Misoprostol) | |
|---|---|---|---|
| 20 — 25 | 135 (41.5%) | 137 (42.2%) | |
| 26 — 30 | 154 (47.4%) | 149 (45.8%) | |
| 31 — 35 | 36 (11.1%) | 39 (12.0%) | |
| Total | 325 (100%) | 325 (100%) | |
| Parity | Group A (Intravenous Intravenous) | Group B (Rectal Misoprostol) | |
| Nullipara | 111 (34.2%) | 117 (36.0%) | |
| Para 1 – 2 | 150 (46.2%) | 148 (45.5%) | |
| Para 3 – 4 | 64 (19.7%) | 60 (18.5%) | |
| Total | 325 (100%) | 325 (100%) | |
| Type of Cesarean Section | Group A (Intravenous Ergometrine) | Group B (Rectal Misoprostol) | |
| Elective | 42 (12.9%) | 41 (12.6%) | |
| Emergency | 283 (87.1%) | 284 (87.4%) | |
| Total | 325 (100%) | 325 (100%) | |
| Efficacy | Group A (Intravenous Ergometrine) | Group B (Rectal Misoprostol) | P value |
| Yes | 270 (83.1%) | 293 (90.2%) | 0.008 |
| No | 55 (16.9%) | 32 (9.8%) | |

**Table II: Age Distribution and type of cesarean section vs efficacy.**

| Age (in years) | Efficacy in Group A (No) | Efficacy in Group B (No) | P value |
|---|---|---|---|
| 20—25 | 116 | 125 | 0.985 |
| 26—30 | 123 | 133 | |
| 31—35 | 31 | 35 | |
| Total | 270 | 293 | |
| **Type of Cesarean** | **Efficacy in Group A (No)** | **Efficacy in Group B (No)** | **P value** |
| Elective | 37 | 34 | 0.454 |
| Emergency | 233 | 259 | |
| Total | 270 | 293 | |

One hundred and sixteen patients (116) versus 125 patients of the age of 20–25 years has efficacy in group A versus group B. In patients of 26–30 years, 123 patients in group A and 133 patients in group B has efficacy in group A and group B respectively. In age group 31–35 years, 31 patients in group A and 35 patients in group B has efficacy. There was statistically no relation of efficacy and different age groups in the two groups (p=0.985).

In group A, 93 nullipara and in group B 106 nullipara had efficacy. In para 1–2, 122 patients in group A and 135 in group B has efficacy. While in para 3–4, 55 patients in group A and 52 patients in group B has efficacy as shown in Table II. There was no relation of efficacy and different parity groups (p=0.722).

In patients having elective cesarean, 37 patients in group A has efficacy while in group B, 34 patients has efficacy. In patients having emergency cesarean, 233 patients in group A had efficacy and 259 patients in group B has efficacy as shown in Table II. There was no significant relation of efficacy and type of cesarean (p=0.454).

## DISCUSSION

Misoprostol has benefit that it not required parentral administration and has less side effects.[21-24] Ergometrine which is currently as second line intervention in case uterine atony continues after oxytocin administration. This study was conducted to determine the efficacy of intravenous ergometrine compared with rectal misoprostol in the prevention of PPH in cesarean delivery. Age of the patients was 27±0.18 vs. 27±0.20 years respectively in group A and group B. Mean amount of blood loss was 848±14 vs. 818±13ml in group A and in group B respectively. Efficacy of misoprostol was found to be 90.2% as compared to ergometrine having efficacy of 83.1% in prevention of PPH in cesarean delivery. Our study results are comparable with national and international literature.[25-29]

Robina Ali and Farzana Hina,[26] compared efficacy of ergometrine with misoprostol in prophylaxis of PPH in cesarean delivery. They found that in misoprostol group age was 27±3 and in ergometrine group was 26.79±3.67. In misoprostol group mean parity was 1.17 ± 0.88 and in ergometrine group it was 1.18 ± 0.85. 49 patients in misoprostol group were primipara and 39 patients in ergometrine were primipara.

In a study, 187 patients were randomly divided into two groups; GP1 was given 800 ug misoprostol per rectal just before starting cesarean section and GP2 was given intravenous ergometrine at delivery of head or anterior shoulder. In GP1 (given misoprostol), 13 patients (7%) out of 187 have blood loss more than 500 ml measured by standard size kidney tray while in GP2 (given ergometrine), 25 patients (13.5%) out of 187 had blood loss more than 500 ml, so misoprostol was found to be a better uterotonic than ergometrine for prevention of PPH. [26]

Aliya Islam et al,[2] compared efficacy of misoprostol and ergometrine in prophylaxis of PPH in cesarean delivery. In group which was given ergometrive, 15 patients (15%) had mild PPH, 3 had severe PPH requiring bimanual massage and 2 patients required blood transfusion. In group which was given misoprostol, 8 patients (8%) had PPH, 1 patient required uterine massage and none required blood transfusion.

In a randomized, double-blind, prospective study, 27 syntometrine 1M (synthetic oxytocin plus ergometrine) was a better than syntocinon alone, in the management of the third stage of labour. Chaudhuri et al[28] to compared the efficacy of rectally administered misoprostol with intravenous oxytocin. Intraoperative and postoperative blood loss was significantly lower in misoprostol group than oxytocin group.

A recent study,[29] also compared a combination of intramuscular syntometrine injection and oxytocin infusion to rectal misoprostol. The result that showed who received misoprostol had a statistically significant reduction in bleeding. Sharma and El-Refaey,[30] in a review found that the use of rectal misoprostol is a relatively easy, to administer option, and potent treatment for postpartum hemorrhage. An other review found results similar to current study that rectal misoprostol is a useful first-line drug for the treatment of severe postpartum hemorrhage.[31] Lokugamage Amali et al[32] assessed rectal misoprostol versus syntometrine effect of for the control of PPH and showed that 28.1% difference between the misoprostol and other arm (p=0.01), hence misoprostol performed better.

## CONCLUSION

This study concludes that misoprostol administered using rectal route, has significant efficacy in prevention of postpartum hemorrhage as compared to intravenous ergometrine that causes vasoconstriction. We suggest its use for prophylaxis of postpartum hemorrhage in cesarean delivery to reduce maternal morbidity and mortality.

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