

# PRIMARY POSTPARTUM HAEMORRHAGE; COMPARISON OF EFFECTIVENESS OF MISOPROSTOL AND SYNTOCINON IN THE PROPHYLAXIS

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**ABSTRACT.... Objective:** To compare the effectiveness of Misoprostol with syntocinon in the prophylaxis of primary post partum haemorrhage during the management of 3rd stage of labour. **Design:** Experimental study. **Setting:** Department of Obstetrics & Gynaecology Sheikh Zayed Medical College/Hospital, Rahim Yar Khan. **Patients and Methods:** Pregnant patient with term pregnancy in labour were admitted in labour room. After confirmation that the patient is in labour, they were randomly divided in two groups A & B with 50 patients in each group. 600 ug oral Misoprostol was given to patients in group A and 10 units I/V Syntocinon were given to patients in group B at the time of delivery of anterior shoulder of the baby. Amount of blood loss was observed and all the information were recorded and entered in predesigned proforma. **Results:** Amongst the 100 pregnant patients the mean age was 28.86 + 2.94 and mean parity of patients was 3.94. 57% of patients were presented with labour pains only and 27% presented with both labour pain and leaking liquor. In 59 patients duration of labour was between 2-12 hours. Total 9 patients develop PPH in both groups, three patients from Misoprostol group and six patients from syntocinon group. PPH was mild to moderate and settled down with other uterotonic drugs none of the patient required surgical intervention. Development of minor side effect was relatively high in Misoprostol group i.e. 10% such as nausea, vomiting while 4% in syntocinon group. Shivering and mild pyrexia was 12% in Misoprostol group while 5% in syntocinon group. **Conclusion:** In this study effectiveness of both syntocinon & Misoprostol has been found comparable Misoprostol being slightly more effective than syntocinon in managing 3rd stage of labour also prophylactically and it also has fewer minor side effects with no serious danger to life. It does not need skilled personnel for its use.

**Key words:** Misoprostol syntocinon, Labour Postpartum haemorrhage

## INTRODUCTION

Out of 200 million pregnancies per year, there are 600,000 maternal deaths reported worldwide. Obstetrical hemorrhage, which is the most common direct cause of maternal mortality in Pakistan as well as other parts of the world<sup>1</sup>, accounts for about 24.6% of total maternal deaths.

In spite of mortality alone, severe obstetric morbidity may be a more recent sensitive measure of pregnancy outcome<sup>2</sup>. PPH occurs in 13% deliveries with a blood loss more than 1 litre, while threatening hemorrhage is reported in 1: 1000 deliveries.

Primary PPH is defined as a blood loss of more than 500 ml after vaginal delivery and 1000 ml after Caesarean delivery in first 24 hours<sup>4</sup>. PPH is commonly due to abnormalities of one or a combination of four basic processes, tone (Poor uterine contraction after delivery),

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tissue (retained product of conception or blood clots), trauma (to genital tract), or thrombin (coagulation abnormality)<sup>5</sup>, most common cause is uterine atony (75-90%)<sup>4</sup>.

Blood loss after delivery could be reduced by managing third stage of labour actively with prophylactic use of utero tonics<sup>6</sup>. Although effective methods for prevention and treatment of such hemorrhage exist, such as syntocinon, but these are not feasible in low resource, poor communities where many births occur at home<sup>7</sup>. Also these are heat labile and need experienced personnel for its administration.

Misoprostol which is a prostaglandin E1 analogue has the potential in reducing the high incidence of PPH in developing countries<sup>8</sup>, because it has a strong utero tonic effect, is cheap, can be given orally and does not require refrigeration for its storage<sup>9</sup>. Its results are comparable to 10 units intravenous syntocinon<sup>10</sup>. It has fewer side effects and could be given to hypertensive patients<sup>3</sup>. It also does not require the use of sterile syringes and needles<sup>3</sup>. So, the risk of infection transmission is omitted and also that of the need of trained staff.

This study is being conducted to compare the effectiveness of oral Misoprostol 600 micrograms with 10 units of intravenous (I.V) syntocinon in the prophylaxis of PPH during the management of 3<sup>rd</sup> stage of labour, so that this easily administered drug, a potential alternative to syntocinon, could be used in PPH prophylaxis in a community home-birth setting. Traditional birth attendants could be trained to manage third stage of labour actively.

This will help in reducing the incidence of PPH in countries like Pakistan where home births by traditional birth attendants is still being practiced in great number.

## MATERNAL AND METHODS SETTING

This study was carried out at:

- Labour Room, department of Obstetrics & Gynaecology, Sheikh Zayed Medical

College/Hospital Rahim Yar Khan.

## SAMPLE SIZE

100 pregnant women in Labour were divided into two equal groups.

Group A: 50 patients were given 600 microgram oral Misoprostol.

Group B: 50 patients were given 10 units intravenous syntocinon.

## Inclusion Criteria:

All patients of primary postpartum hemorrhage due to

- Gravida 4 or more
- Spontaneous vaginal delivery
- Singleton pregnancy
- Patients with alive fetuses
- Cephalic presentation

## Exclusion Criteria:

- PPH due to causes other than uterine atony
- Patients with placental abruption
- Patients with Polyhydromnios
- Patients with previous history of PPH
- Patients with Hypertension

## STUDY DESIGN

It was a quasi-experimental study.

## DATA COLLECTION PROCEDURE

Pregnant patients with term pregnancy were admitted in Labour room. The diagnosis of term pregnancy was made by history, examination and ultrasonography. General physical, abdominal and vaginal examination was done to confirm that patient is in labour.

The patients were informed about the study and consent was taken to get them enrolled in the study.

The patients were monitored throughout the labour and partogram was maintained. Those ending up in caesarean section or instrumental vaginal delivery due to any reason were excluded from the study.

The patients were randomly divided into two groups, with 50 patients in each group. Misoprostol and syntocinon were given alternately one by one to patients at the time of delivery of anterior shoulder of baby. Six hundred microgram oral Misoprostol was given to 50 patients and were placed in group A. 10 units intravenous syntocinon were given to 50 patients as PPH prophylaxis and were placed in group B. The patients were observed for the development of PPH due to uterine atony after other causes of PPH have been ruled out. Uterine atony was diagnosed when uterus was palpable on abdominal examination. Amount of blood loss was observed by the delivering obstetrician by continues trickle of unusual blood, sudden heavy bleeding or presence of clots in vagina and change in vital signs before and after delivery. All information was recorded and entered in a specifically designed proforma. Descriptive statistics was calculated by using program SPSS 10.

Chi-square test was applied to compare the effectiveness of both drugs in terms of non development of PPH.  $P < 0.05$  will be considered significant.

## RESULTS

Present study was conducted on 100 pregnant patients with term pregnancy in Labour. The mean age was  $28.86 \pm 2.94$ . Age of the patients ranged from 19-43 years. Most of the patients were between 24-28 years of age (37%). 31 patients were between 29-33 years (31%), 14 patients were between 19-23 years of age (14%), 12 patients were 34-38 years of age (12%) and only six patients were between 39-43 years of age (6%).

Mean parity of patients was 3.94+. Majority of the patients (67%) fell in parity group 3-5 i.e. 67 patients. 17% patients were between parity 0-2 and 16% patients between parity group six or more i.e. 16 patients.

In 58% of patients presenting complaint was labour pains, 15% patients presented with leaking liquor while 27% patients presented with both labour pains and leaking per vaginum.

Table-I. General Characteristics		
Age (in years)	No of Patients	%age
19-23	14	14
24-28	37	37
29-33	31	31
34-38	12	12
39-43	06	06
Parity		
0-2	17	17
3-5	67	67
6 or more	16	16
Presenting complaint of the patients		
Labour Pain	58	58
Leaking Liquor	15	15
Both	27	27

Duration of labour was less than 2 hours in 7 patients i.e. (7%). In 59 patients duration of labour was between 2-12 hours, while 38% had duration of labour more than 12 hours while in 6 patients duration of labour was unknown.

Table-II. NO of patients developing PPH in both drugs		
Drugs	No of patients	%age
Misoprostol	03	06
Syntocinon Group	06	10

The total number of the patients develop PPH in both groups were nine. In Misoprostol group, three patients (6%) developed mild to moderate PPH, which settled after uterine massage or after additional uterotonic drug. None of the patients developed severe PPH requiring surgical intervention. In syntocinon group, six patients (12%) developed PPH, the intensity of which was also mild to moderate. None of the patients required surgical intervention. The difference in proportions was statistically non-significant as  $P$ -value=0.29.

Development of minor side effects were relatively higher in Misoprostol group such as nausea, vomiting, shivering and pyrexia as compared to syntocinon group. Nausea and vomiting in Misoprostol group was 10%, while 4% in syntocinon group ( $P = .24$ ). Shivering and mild pyrexia was 12% in Misoprostol group while 5% in syntocinon group ( $P = .29$ ).

Mean rise in pulse rate in Misoprostol group after delivery was  $8 \pm 3$  beats/min and mean rise in pulse rate in syntocinon group after delivery was  $12 \pm 4$  beats/min ( $P < .001$ ).

Table-III. Development of side effects B/W two group of patients		
Side effects	Misoprostol %	Syntocinon %
Nausea + Vomiting	10	4
Shivering + Mild Pyrexia	12	5
Mean rise of pulse rate (Beats/min)	8	12
Mean fall Hb (g/dl)	0.53	0.71

Mean fall in haemoglobin in Misoprostol group was  $.53 \pm .29$ g/dl after delivery while in syntocinon group it was  $0.71 \pm 0.6$ gdl ( $P = 0.59$ ).

So, in this study, effectiveness of both syntocinon and Misoprostol has been found comparable, Misoprostol being slightly more effective than syntocinon in managing third stage of labour prophylactically. Minor side effects were slightly higher in Misoprostol group than syntocinon group, but no serious side effects found in either group.

## DISCUSSION

Pregnancy and child birth is a physiological state but it involves a significant health risk even for women with no pre-existing health problem, PPH being the most significant contributor to maternal morbidity and mortality. Most postpartum haemorrhage are caused by uterine atony (75%-90%) and occur in immediate postpartum period.

In this study, total 100 patients were studied for the development of PPH, out of which 9 patients developed PPH. Age of the patients ranged from 19-43 years. Among nine patients, six patients (66%) were above 30 years and 3 patients (33%) were below 30 years. This study showed that the risk of PPH increases with advanced maternal age, as revealed from a study conducted in Nigeria Ijauja and colleagues<sup>11</sup>.

This study also showed that the risk of PPH due to uterine atony increases with increasing parity. Out of nine patients who developed PPH, six belong to parity group 4 or more. These results are comparable with the study of Harrison who reported a two fold increased risk of postpartum haemorrhage due to uterine atony for women parity score of 5 or more<sup>12</sup>.

In our study most of the patients who developed PPH had duration of labour more than 12 hours which showed that prolonged labour was a leading cause for uterine atony followed by multiparity. This result is comparable to the study conducted at Hyderabad Medical Complex in which grand multiparity obstructed labour were the main risk factors for uterine atony playing their role in 50% of cases<sup>13</sup>. These results were also correlated with the study conducted in Karachi<sup>14</sup>, in which prolonged labour was proposed to be the major risk factor for uterine atony.

In our study, 2 groups of the patients were made and were observed for development of PPH. Out of 100 patients, 50 patients were given 600 microgram oral Misoprostol and other 50 patients were given 10 units intravenous syntocinon in the prophylactic active management of 3rd stage of labour. Only nine patients developed PPH in both groups with intensity remaining mild to moderate. This suggests that active management of 3rd stage of labour reduces the incidence of development of severe PPH. This is according to a technical consultation of World Health Organization on the prevention of postpartum haemorrhage held in 2006 which recommends that active management of the 3rd stage of labour should include administration of a uterotonic soon after birth of the baby; delayed cord clamping and delivery of the placenta by controlled cord traction, followed by uterine massage.

In our study, 3 out of 50 patients developed PPH in Misoprostol group i.e. 6% while in syntocinon group 6 out of 50 patients developed PPH i.e. 12%. So the risk of development of PPH in low risk group is 50% more in syntocinon group as compared to Misoprostol group according to the present study. These results are comparable with a study conducted at University College, Hospital London: in which 600 microgram oral Misoprostol was studied for the prevention of postpartum haemorrhage (PPH). In study PPH occurred in 6% of the women<sup>15</sup>.

These results are also comparable to a study conducted at the Chinese University of Hong Kong, Prince of Wales Hospital, Shatin, New Territories, Department of Obstetrics and Gynaecology Kwong Wah Hospital, Kowloon and Department Obstetrics and Gynaecology Tuen Mun Hospital Tuen Mun, New Territories, Hong Kong<sup>16</sup>, where it was found that there were no significant differences between the two groups of Misoprostol and syntocinon in the incidence of postpartum haemorrhage.

Another study by Oboro showed similar results in which prompt response to Misoprostol was noted while managing PPH<sup>17</sup>. Our study has comparable results with another study conducted at Zimbabwe where both syntocinon and Misoprostol were found equally effective in reducing PPH<sup>18</sup>.

This study showed that the development of minor side effect is more common in Misoprostol group as compared to syntocinon group. The results are comparable with the study of Ng PS, Chan ASM, et al who found incidence of these minor side effects more common in Misoprostol group<sup>16</sup>.

## CONCLUSION

The present study shows that Misoprostol is an effective, inexpensive and easily administered drug that can be used safely by midwives and traditional birth attendants to avoid this major life threatening cause of maternal death. Also, it has fewer minor side effects with no serious dangers to life. It is stable in hot climates like Pakistan so, it does not need refrigeration. It does not need skilled

personnel for its use so, number of deaths because of PPH can be greatly reduced in countries like Pakistan where still large number of deliveries are carried out at home by traditional birth attendants.

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*At 20 years of age the  
will reigns, at 30 the  
wit, at 40 the  
judgment.*

**Benjamin Franklin**