Original Article

FREQUENCY OF PPH AFTER ADMINISTRATION OF MISOPROSTOL IN FEMALES UNDERGOING NORMAL VAGINAL DELIVERY

Tayyaba Majeed,[1] Iram Mobusher,[2] Nadeem Shahzad,[3] Mumtaz Akhtar[4]

Abstract

Post-partum hemorrhage (PPH) can be noted as the condition when there is a loss of greater than 500 ml of blood following vaginal birth or of greater than 1000 ml in caesarian section. Those effected by PPH need elaborate measures to restore and maintain the circulation of blood, and thus, the perfusion pressures in critical structures. There are situations during PPH that lead to extensive surgery and are continuing bleeding secondary to a uterus being atonic and unresponsive, being ruptured, or having a large cervical laceration. Many drugs are available for the management of PPH but only few are present that prevent PPH to begin with. So we conducted this study to prevent PPH in females going through routine vaginal delivery in order to implement this in the procedures and ensure that excessive blood loss, along with other terrible outcomes of PPH, are not reached.

Objective: To determine the frequency of PPH after administration of Misoprostol in females undergoing normal vaginal delivery.

Materials and Methods: This descriptive case series study was carried out in Unit IV, Department of Obstetrics and Gynaecology, Lady Aitchison Hospital, Lahore. The non-probability purposive sampling technique was used for this study. After approval from the ethical committee, 220 high risk patients, who fulfilled the inclusion criteria, were selected. Informed consent was obtained and patient demographic information (name, age, gestational age, contact) will be recorded. Labour was monitored by the oxytocin and delivery of placenta was by the controlled cord traction. Then 600μg of misoprostol was placed per rectal by researcher herself and the patient was monitored ½ hourly for blood loss within the next 24 hours. PPH was labeled as per operational definition. Females, who developed PPH, were managed as per hospital protocol. Data was entered and analysed as per SPSS qualitative variable like parity and PPH were presented as frequency and percentage.

Results: In the aforementioned research, the average age of the subjects was 29.89 ± 5.88 years with mean gestational age of 38.86 ± 1.38 weeks the mean blood loss was 374 ± 134.92 ml. PPH occurred in 35.45% of

Majeed T.[1]
Professor of Obstetrics and Gynaecology
Central Park Medial College, Lahore

Mobusher I.[2]
Senior Registrar Obstetrics and Gynaecology
Lady Willingdon Hospital, Lahore

Shahzad N.[3]
Assistant Professor Obstetrics and Gynaecology
KEMU / Lady Willingdon Hospital, Lahore

Akhtar M.[4]
Department of Obstetrics and Gynaecology
Lady Aitchison Hospital, Lahore

patients. Statistically, there was a drastic difference between the PPH of the patients and the blood loss i.e. p-value = 0.000.

Conclusion: The frequency of PPH after administration if misoprostols in females undergoing normal vaginal delivery was low and less blood loss was observed.

Keywords: *Postpartum hemorrhage, PPH, misoprostol, pregnant females, normal vaginal delivery, NVD.*

Introduction

Post-partum hemorrhage is one of the most frequently occurring causes of maternal mortality in developing countries. Any bleeding from the genital tract that leads to hemodynamic instability (decreased blood pressure, increased pulse rate) or decrease in haematocrit by 10% is called post-partum hemorrhage (PPH).[1]

Bleeding that occurs within the first 24 hours of birth is considered primary PPH while sudden loss of fresh blood after the first 24 hours and till the first six weeks is called secondary PPH.[2]

Prevalence of PPH in Pakistan is 34%. Pakistan is one of the 129 countries that the United Nations Millennium Goals, comprising of eight ambitious goals, are directed towards. One of these goals is the reduction of maternal mortality rate by 75% between 1990 – 2015.[3]

It is prostaglandin F.I synthetic analog and is effective drug for prevention of PPH. It is inexpensive. Easily available, even can be used by paramedical staff mid wife, does not require specific storage condition with half life of several years, can be used per rectal in unconscious patient. It has few side-effects (shivering and pyrexia).[4] One study reported that the incidence of PPH was only 1.6% among females given misoprostol.[5] Mobeen et al., reported the frequency of PPH was ranged from 16.5% to 19%.[1,6] But Hoj et al. Reported that PPH is found to be 45% even after administration of misoprostol.[7]

Rationale of this study is to assess the frequency of PPH in females undergoing normal vaginal delivery. In above quoted articles, we observed that the frequency of PPH has a contradiction. In routine, no drug is used to prevent PPH, however, the rate of PPH is increasing and it is a life – threatening issue for delivering females. On the basis of above – mentioned contradictory evidences, we are unable to implement the use of misoprostol for prevention of this hazardous issue. Through this study we want to assess that whether misoprostol is effective in prevention of PPH. So that in future we can implement the results of our study.

Materials and Methods

The purpose of this research was to figure out the frequency of postpartum haemorrhage after administration of misoprostol in females undergoing normal vaginal delivery. It was a descriptive case series, carried out in Unit IV, Lady Aitchison Hospital, Lahore from January 2013 to June 2013. Sample size of 220 cases were calculated with confidence interval (C.I) of 95%, margin of error 5% and prevalence of PPH to be 16.5% in females undergoing NVD after administration of misoprostol. Non-probability, purposive sampling technique was used. Inclusion criteria were females of age 20 to 40 years and females undergoing delivery at term (gestational age > 36 weeks on USG) and antenatal record. Exclusion criteria where females with severe toxemia allergic to prostaglandin, multiple pregnancies (on ultrasound), non-cephalic or malpresentation (on ultrasound) and females with PIH (BP greater or equal 140/90 mm Hg), DM (GTT > 40 mg/dl), preeclampsia (PIH with +1 protein urea on dipstick method) or eclampsia (convulsions). After approval from the ethical committee, 220 high risk patients, who fulfilled the inclusion criteria, were selected. Informed consent was obtained and patient demographic information (name, age, gestational age, contact) will be recorded. Labour was monitored by the oxytocin and delivery of placenta was by the controlled cord traction. Then 600 µg of misoprostol was placed per rectal by researcher herself and the patient was monitored ½ hourly for blood loss within the next 24 hours. PPH was labeled as per operational definition. Females, who developed PPH, were managed as per hospital protocol. Data was entered and analysed as per SPSS qualitative variable like parity and PPH were presented as frequency and percentage.

Results

A total of 220 patients partook in this research. With the average age of the subjects involved being 29.89 ± 5.88 years with minimum and maximum ages being 20 and 40 respectively **(Table 1).** The average gestational age was taken to be at 38.86 ± 1.38 weeks with 37 and 42 weeks being the minimum and maximum respectively **(Table 2).** The study results showed that

28 (12.73%) patients appeared with no parity, 56 (25.45%) patients appeared with parity one, 76 (34.55%) appeared with parity two, 44 (20%) appeared with parity three and 16 (7.27%) patients appeared with parity four. For this research the average blood loss of the subjects involved was 374 ± 134.92 ml with minimum and maximum values of 150 and 690 ml respectively **(Table 3).**

Table 1: Descriptive Statistics of Age (Years).

Age (year)	n	220
	Mean	29.89
	SD	5.88
	Minimum	20.00
	Maximum	40.00

Table 2: Descriptive Statistics of Gestational Age (Weeks).

Gestational Age (weeks)	n	220
	Mean	38.86
	SD	1.38
	Minimum	37.00
	Maximum	42.00

Table 3: Descriptive Statistics of Blood Loss.

Blood Loss	n	220
	Mean	374.93
	SD	134.92
	Minimum	150.00
	Maximum	690.00

The study results showed that the PPH was recorded in 78 (35.5%) patients whereas it was absent in 142 (64.5%) patients. In this study, the mean value of blood loss in PPH that occurred in patients was 453.26 ± 159.32 ml whereas the mean value of it in patients with no PPH was 331 ± 95.67 ml. Statistically, there was a drastic difference between the PPH of the patients and the blood loss i.e. p-value = 0.000 **(Table 4).** The study results showed that there were 117 patients who had age less than 30 years, in which PPH occurred in 43 and did not occur in 74. Similarly, there were 103 patients above the age of 30, from which 35 patients suffered from PPH and 68 did not. Statistically, there is insignificant difference between the age in categories and the PPH of the patients i.e. P-value = 0.67.

Table 4: Comparison of Blood Loss in Patients with or without PPH.

		PPH	
		Yes	No
Blood Loss	n	78	142
	Mean	453.26	331.90
	SD	159.32	95.67

t-test value = 6.14
p-value = 0.000 (Significant)

Table 5: Descriptive Statistics of PPH in different Age Group.

		PPH		Total
		Yes	No	
Age (Years)	< 30	43	74	117
	≥ 30	35	68	103
Total		78	142	220

Chi Square value = 0.18
p-value = 0.67 (Insignificant)

Discussion

This descriptive case series study was carried out in Unit IV, Department of Obstetrics and Gynaecology, Lady Aitchison Hospital, Lahore to determine the frequency of PPH after administration of Misoprostol in females undergoing normal vaginal delivery.

PPH is considered the champion contributor of maternal mortality. Even though the brunt of PPH is seen in developing countries, the identification and proliferation of PPH is on the increase in developed nations. Prostaglandins are effective in controlling haemorrhage. Misoprostol can be proven vital in alleviating the incidence of BPH without the side effects usually associated with general uterotonic medication. A surprising exception to this rule is misoprostol, hav-

ing uterotonic properties for use in active control of the 3rd stage of labour.[8]

In our study the incidence of PPH 35.45% in females undergoing normal vaginal delivery and were administrated with misoprostol. The mean blood loss value was found 374 ± 134.92 ml. Different authors conducted study on the administration of misoprostol and showed the results as:

Sanghvi, H. et al,[9] showed that wherever misoprostol was tested, near complete uterotonic coverage (92%) was seen compared with 25% in places where misoprostol was not available. 92% of women who used misoprostol said they would utilize it again in their following deliveries, 88% stated that they would even consider paying for the service.

Derman, R. J et al described that misoprostol greatly lessened the occurence of PPH by 53% from 12 – 6%. Misoprostol reduced acute PPH incidence by an additional 20% from 1.2 to 0.2.[10] Mobeen, N. et al, showed that the drug also resulted in a major alleviation in the rate of PPH (16.5% vs. 21.9% in control group).[11]

One study reported that the incidence of PPH was only 1.6% among females given misoprostol.[5] Mobeen et al., and Mirtemouri et al., reported the frequency of PPH was range from 16.5% to 19%. But Hoji et al, reported that PPH is found to be 45% even after administration of misoprostol.[7]

Hashima-e-Nasreen et al, demonstrated that the prevalence of PPH was lesser in the misoprostol group when compared with the control group (1.6% vs. 6.2%). This meant that the medication provided 81% protection against the adoption of primary PPH in women, women from the control group were more likely to need emergency referrals and blood transfusion.[12]

In a study conducted with the help of placebo – controlled trials in 2002 – 2005, Derman et al, helped explain the effect of misoprostol in preventing the haemorrhage. Specifically 1620 women in four primary health centres in the rural parts of India were randomly decided to either be given oral misoprostol (n = 812) or placebo (n = 808) after the delivery. According to this study, the misoprostol was very effective in comparison to the placebo in reducing the rate of acute PPH (12% versus 6.4%, $p < 0.00001$; RR = 0.53, 95% Cl: 0.39 to 0.74). The same medication also drastically reduced severe acute PPH (1.2% versus 0.2%, $p < 0.00001$; RR = 0.20, 95% Cl: 0.04 to 0.91).[10]

A similar study was conducted in Pakistan in 2006 – 08, Mobeen et al, studied whether misoprostol was effective in a demographic of 1119 women given domestic birth. While 534 women were randomised to receive 600 micrograms of oral misoprostol after their deliveries while the others received a placebo. Thus, the medication was proved effective in alleviating the incidences of PPH (16.5% versus 21.9%, $p < 0.00001$; RR = 0.76, 95% Cl: 0.59 to 0.97).

A combined analysis and study of the aforementioned researches bring us to the conclusion that misoprostol resulted in 24% and 41% reduction in the occurrence of acute PPH and acute severe PPH. In another study, Ayyad et al, in his study showed that the incidence of PPH in 14 (7%) patients who were treated with the misoprostol medication. (14) 663 women in vaginal delivery were randomly tested with 400 micrograms of rectal misoprostol or oxytocin 10 IU IM after the delivery of the baby. No significant difference or conclusion resulted from this. It was concluded that rectal microprostol has shown itself to be effective as parenteral oxytocin in stopping PPH.[14]

In another study, findings showed that the usage of sublimal misoprostal for the first time for around 600 micrograms controlled PPH within 20 minutes for about 82% women. It led to better haemoglobin levels and less bleeding.

Conclusion

The frequency of PPH after administration of misoprostol in females undergoing normal vaginal delivery was low and less blood loss was observed among females. Now we can understand the implementation of misoprostol in females undergoing normal vaginal delivery.

References

1. Mobeen N, Durocher J, Zuberi N, Jahan N, Blum J, Wasim S, et al. Administration of misoprostol by trained traditional birth attendants to prevent postpartum haemorrhage in homebirths in Pakistan: a randomised placebo – controlled trial. BJOG. 2011; 118 (3): 353-61.
2. Hofmeyr GJ, Gülmezoglu AM, Novikova N, Linder V, Ferreira S, Piaggio G. Misoprostol to prevent and treat postpartum haemorrhage: a systematic review and meta – analysis of maternal deaths and dose – related effects. Bull World Health Organ, 2009; 87 (9): 666-77.
3. Sanghvi H, Ansari N, Prata NJ, Gibson H, Ehsan AT, Smith JM. Prevention of postpartum hemorrhage at

home birth in Afghanistan. Int J Gynecol Obstet. 2010; 108 (3): 276-81.
4. Prata N, Passano P, Bell S, Rowen T, Potts M. New hope: community – based misoprostol use to prevent postpartum haemorrhage. Health Policy and Planning, 2013; 28 (4): 339-46.
5. Hashima EN, Nahar S, Al Mamun M, Afsana K, Byass P. Oral misoprostol for preventing postpartum haemorrhage in home births in rural Bangladesh: how effective is it? Glob Health Action, 2011: 4.
6. Mirteimouri M, Tara F, Teimouri B, Sakhavar N, Vaezi A. Efficacy of Rectal Misoprostol for Prevention of Postpartum Hemorrhage. Iran J Pharmaceut Res. 2013; 12 (2): 469.
7. Hoj L, Cardoso P, Nielsen BB, Hvidman L, Nielsen J, Aaby P. Effect of sublingual misoprostol on severe postpartum haemorrhage in a primary health centre in Guinea-Bissau: randomised double blind clinical trial. BMJ. 2005; 331 (7519): 723.
8. Raghavan S, Abbas D, Winikoff B. Misoprostol for prevention and treatment of postpartum hemorrhage: What do we know? What is next? International Journal of Gynecology and Obstetrics, 2012; 119: S35-S8.
9. Sanghvi H, Ansari N, Prata NJ, Gibson H, Ehsan AT, Smith JM. Prevention of postpartum hemorrhage at home birth i.
10. Derman RJ, Kodkany BS, Goudar SS, Geller SE, Naik VA, Bellad M, et al. Oral misoprostol in preventing postpartum haemorrhage in resource – poor communities: a randomised controlled trial. The Lancet, 2006; 368 (9543): 1248-53.
11. Mobeen N, Durocher J, Zuberi N, Jahan N, Blum J, Wasim S, et al. Administration of misoprostol by trained traditional birth attendants to prevent postpartum haemorrhage in homebirths in Pakistan: a randomised placebo – controlled trial. BJOG: An International Journal of Obstetrics and Gynaecology, 2011; 118 (3): 353-61.
12. Nasreen HE, Kabir ZN, Forsell Y, Edhborg M. Low birth weight in offspring of women with depressive and anxiety symptoms during pregnancy: results from a population based study in Bangladesh. BMC Public Health, 2010; 10 (1): 515.
13. Oladapo OT. Misoprostol for preventing and treating postpartum hemorrhage in the community: A closer look at the evidence. International Journal of Gynecology and Obstetrics, 2012; 119 (2): 105-10.
14. Ayyad I, Omar A. Prevention of post partum haemorrhage by rectal misoprostol: A randomised controlled trial. Middle East Journal of Family Medicine, 2004; 5 (5).
15. León W, Durocher J, Barrera G, Pinto E, Winikoff B. Dose and side effects of sublingual misoprostol for treatment of postpartum hemorrhage: what difference do they make? BMC pregnancy and childbirth, 2012; 12 (1): 65.