POSTPARTUM HEMORRHAGE;
COMPARISON OF EFFICACY OF ERGOMETRINE WITH MISOPROSTOL IN PROPHYLAXIS IN CESAREAN SECTION

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ABSTRACT... Introduction: Worldwide PPH remains one of the most common cause of maternal mortality and is largely preventable maternal deaths mainly in low income countries. 80% of it occurs due to uterine atony and uterotonics can decrease the risk of uterine atony. Misoprostol has powerful uterotonic effect because it is well absorbed and has potential to be used more widely than would be possible with injectable uterotonics alone. **Objective:** The objective of this study is to compare efficacy of misoprostol with ergometrine in cesarean delivery for management of PPH. **Study Design**: Randomized controlled trial. **Duration of study:** The duration of study was six months from 1/1/2010 to 30th/6/2010. **Setting:** Department of Gynae and obstetrics, DHQ hospital, Faisalabad. **Subjects and methods:** All patients fulfilling inclusion criteria were included in study and before cesarean section Hb was carried out and Patients were divided into two groups, GP_1, and GP_2. GP_1 was given 800 ug MP per rectal just before starting cesarean Section and GP_2 was given intravenous ergometrine at delivery of head or anterior shoulder. Blood loss was measured objectively after delivery of the baby with help of standard size kidney tray of 500cc and post operative Hb was Carried out on 3rd post operative day. **Results:** 187 Patients were randomly allocated in GP_1 and GP_2 each. In GP_1, misoprostol was given 800 µg per rectal just before starting cesarean section and 13 patients (7%) out of 187 have blood loss more than 500ml measured by standard size kidney tray while in GP_2 intravenous ergometrine was given at delivery of the head and in this group 25 patients (13.5%) out of 187 had blood loss more than 500ml, so misoprostol was found to be a better uterotonic than ergometrine for prevention of PPH. On the third post operative day Hb was carried out and in GP_1 13 patients (7%) out of 187 had their Hb less than 9 g/dl while in GP_2 25 patients (13.5%) had Hb less than 9 g/d1. **Conclusions:** Mp is stable, cost effective and easily administrable drug and was found to be comparatively more powerful uterotonic than ergometrine for preventing uterine atony.

Key words: PPH, MP, ergometrine, Prevention of PPH.

INTRODUCTION

Primary (PPH) postpartum hemorrhage is defined as the loss of more than 500ml of blood during the first 24 hrs postpartum[1] (WHO, 2003). This compares with 1000ml of blood loss for caesarean section[2]. It is one of the leading cause of maternal morbidity and mortality[3]. Every day, 1500 women around the world die from pregnancy complications, mostly in developing counties severe bleeding mainly PPH accounts for 25% of those deaths (due to PPH)[4] (WHO, 2010), so the prevalence is 34% in Pakistan[5-7]. The most common point at which PPH occurs is during the 3rd stage of labour, when the uterus may suddenly lose its ability to contract.

Risk factors for uterine atony are prolonged 1st and 2nd stage of labour, augmented labour, retained placenta, placenta accreta, multiple pregnancy, polyhydramnios and uterine fibroids. Multiparity and precipitate labour also promote uterine atony[8] other causes of primary PPH include retained placental tissues and consumptive coagulopathy[9-11].

Prevention of uterine atony is the key to reducing the incidence of PPH. The benefits of active management of 3rd stage are well documented. It decreases need for blood transfusion, postpartum anaemia and less use of additional therapeutic uterotonic therapy[12-13]. The most widely used agents are injectable oxytocin and ergometrine. They require parenteral administration and therefore skills to give injections as well as sterile needles and syringes. In addition ergometrine requires refrigeration and oxytocin may be inactivated if exposed to high ambient temperatures. For this reason the use of MP to prevent PPH has attracted considerable attention[14]. A letter published in 1996 first suggested the use of MP for 3rd stage of labour[15].

Multiple randomized double blind placebo controlled trails showed MP can be given in low resource community settings safely and effectively where other uterotonic are not available[16,17].

As lot of work is being done in the context of efficacy of

various uterotonics & comparison of uterotonic with each other in terms of their efficacy and feasibility. This study is also a part of this effort. It will add to data already existing and work being carried out in this regard. MP being a strong uterotonic, cost effective, easy to administer, does not require refrigeration and is not contraindicated in hypertensive patients so attention should be given to its use in PPH and need to be compared with other conventional uterotonic for its efficacy.

MATERIAL AND METHODS

This prospective randomized controlled trail was conducted at DHQ hospital Faisalabad from 01-01-2010 to 30-06-2010. All patients booked or un-booked undergoing cesarean section with P4 or below and patients having hemoglobin > 11 g/dl are included in my study. Multipara P4 or more alive children, patients with extension of scars or haemorrhage due to tears are excluded.

DATA COLLECTION PROCEDURE

Detailed history and examination and baseline investigations of these patients including HB, HBsAg, Anti HCV, RBS and urine examination done. Patients were counselled before cesarean section and benefits and side effects of drugs were explained to patients.

Total 374 patients were selected. Patients were randomly divided into 2 groups 1 & 2. 187 patients were in GP_1 and they were given 800 µg MP per rectally just before starting cesarean section and 187 patients were in GP_2 and they were given intravenous ergometrine at the delivery of head or anterior shoulder. A standard size kidney tray of about 500cc was used in study and it was used to measure blood loss subjectively, blood loss more than that was considered PPH, then on 3rd post operative day, Hb was carried out and all that information was entered on a proforma. Data was analyzed by SPSS-10.

Mean and standard deviation were calculated for numerical variables i.e. age and parity. Frequency and percentages were presented for categorical variables i.e. amount of blood loss and postoperative hemoglobin. Chi-Square test was used to compare blood loss and post operative hemoglobin in both drug groups. P-value < 0.05 was considered significant.

RESULTS

Age

The range of the patients' age included in the study was 19-35 years with mean age 27.07± 3.50 (Table-I). The mean age of patients in misoprostol group was 27.35 ± 3.31 and mean age of the patients in ergometrine group was 26.79± 3.67 (Table-II)

Parity

Range of the patients parity included in the study was 0-3 and mean parity was 1.17 ± 0.86 (Table-I). In misoprostol group mean parity was 1.17 ± 0.88 and in ergometrine group it was 1.18 ± 0.85 (Table-II). 49 patients in misoprostol group were primipara and 39 patients in ergometrine were primipara.

Blood loss

Out of 187 patients who were in misoprostol group 13 patients (7%) underwent PPH while in ergometrine group 25 patients (13%) underwent PPH (Table-III).

Postoperative Haemoglobin

In misoprostol group 13 patients (7%) had postoperative HB less than 9g/dl while in ergometrine group 25 patients

Table-I. Age gravity and parity

	No. of patients	Minimum	Maximum	Mean	St. Deviation
Age	374	19	35	27.07	3.5
Gravidity	374	01	05	2.38	0.89
Parity	374	-	03	1.17	0.86

Baseline characteristics of woman in both groups

Table-II. Age and parity

Drug used	Characteristics	Minimum	Maximum	Mean	St. Deviation
Misoprostol	Age	19	35	27.35	3.31
Ergometrine	Age	19	34	26.79	3.67
Misoprostol	Parity	-	03	1.17	0.88
Ergometrine	Parity	-	03	1.18	0.85

Table-III. Comparison of efficacy of ergometrine with misoprostol in prophylaxis of PPH

Drug used	No. of patients	PPH	No PPH
Misoprostol	187	13 (7%)	174 (93%)
Ergometrine	187	25 (13%)	162 (87%)
Chi-square value = 4.218		*DF = 1*	*P-value = 0.04*

Table-IV. Comparison of postoperative Hb in both groups

Drug used	>9 g/dl	<9 g/dl	Total
Misoprostol	174	13 (7%)	187
Ergometrine	162	25 (13%)	187
	339	38	374
Chi-square value = 4.218		*DF = 1*	*P-value = 0.04*

(13%) had less than 9g/dl HB on 3rd postoperative day (Table-IV).

DISCUSSION

Uterine atony is responsible for upto 80% of primary PPH, prevention of uterine atony is the key in reducing the incidence of PPH. The benefits of active management of the third stage of labour are well documented[19]. Active management of the third stage of labour included a prophylactic oxytocin given within 2 min of the baby's birth, immediate clamping and cutting of the cord and delivery of placenta by controlled cord traction method. In a randomized double blind prospective study intramuscular syntometrine (synthetic oxytocin 5 IU and ergometrine 0.5 mg) was a better choice than syntocinon (synthetic oxytocin) in the management of the third stage of labour[20]. Syntometrine not only reduced blood loss after delivery but was associated with a 40% reduction in the risk of PPH. Haemobate or carboprost, a 15 methyl analogue of prostaglandin F_2 (PGF_2) is as effective as syntometrine in the prophylaxis of primary PPH but there is a significant increase in diarrhea with PGF_2 medication[19]. These prostaglandins are also much more expensive then oxytocin or ergometrine rectal or oral misoprostol (600 mg) are significantly less effective than oxytocin (10IU) in the active management of third stage of labour[20].

A prospective study conducted in Military Hospital Rawalpindi from July1, 2006 to Dec 31, 2006 to compare the efficacy of ergometrine with MP in prophylaxis of PPH. Total of 200 patients were included in study and they were divided into 2 groups equally, one was given ergometrine intravenously and other was given 800 µg MP per rectally. In group-1 15% patients developed PPH while in group-2 8% patients developed. These results are quite comparable to my study results as 7% patients in misoprostol group and 13.5% patients in ergometrine group had PPH, so results were better with MP[20].

A randomized controlled study in Gambia comparing 600 microgram MP orally with 2mg oral ergometrine and this study showed significantly lower pre-delivery to post-delivery drop in Hb in MP group compared to ergometrine group but no statistical difference in greater blood loss (>750 and >1000 ml). The results of this study are comparable to my study as MP group showed less drop in postoperative Hb than ergometrine group[21].

A study conducted at Sheikh Zayed Medical College in 2010. The result are comparable[22] with my study i.e incidence of PPH is 7%. In India a randomized placebo controlled trail undertaken from sep. 2002 to Dec. 2005.

812 patients received MP while 808 patients received placebo after delivery. 25 midwives participated in course of study. Postpartum blood loss was determined by midwives using polyurethane drop with a receptacle specifically developed for that study. Incidence of PPH in this study with MP use was 6.4% which is quite comparable to my study in which 7% patients in MP group developed PPH[23].

CONCLUSIONS

The leading cause of PPH i.e. uterine atony can be successfully treated with MP.

Misoprostol is a potent uterotonic agent. It is found to be more efficacious than ergometrine for prophylaxis of PPH. MP is less expensive than other preparations and does not require refrigeration. Its route of administration is non invasive than other uterotonic agents. It has a longer half life. These features of MP make it a better option in undeveloped countries like ours.

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