Original Article

Role of Complementary Prophylactic Use of Misoprostol in Prevention of PPH in High Risk Obstetric Patients in KHUH, Bahrain

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Abstract

Objective: The aim of the study was to find out women at risk of PPH received the complementary misoprostol apart from routine AMTSL and to find out the incidence of PPH in these cases.

Methodology The study was carried out at King Hamad University Hospital Bahrain from August 2016 - October 2017.Its a retrospective cohort study involving 450 Patients. Data collection from the medical record in the labour ward and operation theatre using Hospital management information system. A simple excel sheet was used. The data was fed to SPSS version 23.0 and statistically analyzed using chi square test to calculate "P" value. PPH is defined as blood loss of more than 500ml after a vaginal delivery or more than 1 liter after a caesarean section. It affects 2% of women giving births and kills more than 100,000 women per year globally. Uterine atony is the leading cause of immediate PPH (75–90 percent). In this study apart from AMTSL we added misoprostol per rectum with routine syntocinon to reduce the risk of PPH due to hypotonia.

Results The total number of cases studied were 450 and out of them 94 had PPH which is 2.6%.PPH due to hypotonia was n=58 (61%). Among 450 total 36 were excluded because of PPH due to other causes. Among 414 patients 356(85%) received misoprostol and 58(15%) did not receive misoprostol had PPH.PPH in patients who received misoprostol was only 0.8%.

Conclusion: The incidence of PPH is significantly higher in the group that did not receive Misoprostol compared to the group that received Misoprostol P<0.001.

Key Words: Postpartum haemorrhage (PPH), Uterine atonia, Misoprostol, AMTSL (active 3rd stage management).

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Introduction

The leading cause of maternal mortality and morbidity worldwide is postpartum hemorrhage (PPH) but a significant disparity exists between developed countries MMR is 13% and developing countries 33.9%.[1]

Bahrain is a cosmopolitan country having different nationals residing here. All of them have different risk factors according to their ethnic origin and race. As doctors, we come across many patients who develop postpartum hemorrhage due to hypotonia and had to undergo anesthesia, surgical intervention and blood transfusion with its risks. We observed that this gives excessive physical and emotional trauma to the patient, nursing staff and physicians. In order to avoid this, it was decided to add misoprostol to treatment to all patients with risk factors for PPH.

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An observation was made that additional use of Misoprostol 800 microgram per rectum along with use of syntocinon infusion after the delivery of baby and before the delivery of the placenta, the incidence of PPH due to hypotonia was almost negligible.

The literature shows using of Misoprostol in 3rd stage of labor in low resourced places orally, where syntocinon is not available, but our study comprises giving misoprostol in addition to routine syntocinon.

Our purpose is to implement extra precautionary measures in high risks patients to decrease the incidence of PPH and avoiding maternal morbidity and mortality.

Risk factors significantly associated with PPH include age, parity, gestational age, uterine overdistension, prolonged labour, instrumental delivery, induction of labour, amnionitis, caesarean section, and geographic region. The cause of PPH in 90% of cases is Uterine atonia. The administration of Oxytocin after delivery of baby, delivering placenta by CCT controlled Cord traction and uterine message are the three key components of active management of third stage of labour (AMTSL) to prevent uterine atonia.[2] Oxytocin is a hormone released from the Posterior pituitary releases Oxytocin that causes contraction of uterine muscles to prevent PPH. Oxytocin requires temperature regulation for storage and skilled personnel to administer. More recently, research has been directed towards the efficacy and use of Misoprostol. Whereas Misoprostol, is also very efficacious does not have limitations like oxytocin. It is asynthetic prostaglandin E_1 analogue causes contraction of uterus and prevents postpartum hemorrhage. Misoprostol is economical and can be given vaginally, rectally, sublingually or orally. The literature review revealed conflicting evidence of misoprostol's effectiveness for the prevention and control of postpartum hemorrhage. The transitory side effects are shivering and pyrexia and demonstrated that sublingual administration had the fastest action and best bioavailability. However, in literature, there remains much confusion on the dosage and route. Our hospital practice was to give 800ugm per rectum after the delivery of the baby.

The lower incidence of maternal deaths due to PPH in developed countries is because of timely medical treatment to prevent and treat PPH.[3] A near miss, or severe acute maternal mortality (SAMM) refers to a "woman who nearly died but survived a complication that occurred during pregnancy, childbirth, or within 42 days of termination of pregnancy".[4] The PPH not only leads to anemia, blood transfusion but can also lead to intensive care unit admission. The excessive nonstoppable bleeding can lead to hysterectomy, cardiac and renal complications, shock, pituitary necrosis acute respiratory distress syndrome and disseminated intravascular coagulation.[5]. The information to prevent and treat PPH should be spread worldwide to reduce the large number of maternal deaths. Due to the availability of information, skilled personnel and medication it is of less relevant concern but in underdeveloped countries where access to the hospital is difficult, it is a huge problem. Because of good medical care, most of the women do not have fears, but still the anxiety and fear are there in cases of PPH. The complementary use of misoprostol along with oxytocic and AMTSL can reduce these problems to almost nil. Following complementing misoprostol in managing the high-risk women helped us in attaining not only good maternal care but avoiding patient anxiety, fear, and burden on the staff of situation, transfer to theatre and blood transfusion.

Methodology

It is a retrospective cohort study conducted among the pregnant women attending the King Hamad University Hospital. This study was conducted over a period of 1 year and 3 months from August 2016 - October 2017. The Total deliveries for the said period were 3420. Its a retrospective cohort study involving 450 Patients. Data was collected from the record in pharmacy, labour ward and operation theatre using hospital management information system. The 450 patient comprises of high risk patients who had PPH and also did not receive misoprostol those who received misoprostol prophylactically and had no PPH. Informed consent was taken from the patients. The patients who had PPH due to other causes and those who had PPH before insertion of Misoprostol were excluded. The data was collected on a well-designed Performa. After the performs were filled excel sheet was used for performing statistical. The data was fed to SPSS version 23.0 and statistically analyzed using chi square test to calculate "P" value for patients who received misoprostol and did not have PPH and those patients who had misoprostol and had PPH.

This study was approved by the Research and Education department at King Hamad University Hospital. The patients involved in this study were high

risk patients for PPH due to hypotonia and PPH due to other causes were excluded. Initially, some patients were getting the routine 3rd stage management and some were also getting complementary misoprostol. The aim of this study was to confirm that the observation of the reduced incidence of PPH due to hypotonia by complementing misoprostol.

Results

Total of 450 patients 94 had PPH which is 2.6% of total deliveries. PPH due to hypotonia and other causes are shown in table I.

Table No I: Incidence of PPH (n=94)

Cases	Number of Cases	Percentage
Uterine atony	58	61.70%
Lacerations	24	25.50%
RPPOCS	7	7.40%
Coagulopathy	5	5.31%
Total	94	99.91%

Table no II. The more the age and the parity the risk of PPH is higher.

Table No II: Age related risk for PPH	
<25yrs	12.66%
>25yrs	87.30%
Parity related risk for PPH	
Single	26.80%
Multi	73%

The larger risk factors in our cohort of patients were induction in 33%, short labour in 20% of patients, LSCS in 19.3% etc. More than one risk factor was found in 40% of patients.

Table No III: Risk factors for PPH	
C-section	19.30%
Induction of Labour	33%
short labor	20%
Anemia	15%
Prolonged Labour	8%
PET	7.00%
Macrosomia	7.00%
APH	5.70%
GDM	5.50%
Previous scar in labour	5.50%
Vaccum	4.80%
PROM	2%
Fibroid	2%
Forceps	2%
Polyhydramnios	1.10%
PPH Previous	2.20%

In cases of C-section with previous surgery in order to prevent PPH not only understanding about associated risk factors but alsoproper surgical technique at different steps. Apart from messaging the uterus misoprostol should be given rectally immediately after delivery of baby**.**

Table no IV explaining among 450 cases studied ,PPH occurred in 94 cases, 356 were high risk cases who received complimentary misoprostol along with routine management.

Table No IV: Total patients studied (n=450)	
No PPH	356
PPH	94
PPH due to other causes	36
Hypotonia only	94-36=58
Among group studied 414(after excluding 36)	
Patients Received Misoprostol	(356)85%
Patients did not receive Misoprostol	(58)15%
PPH in group received misoprostol	
No PPH=353	No PPH=99.1%
PPH=3	PPH=0.8%
(p<0.001)	

The incidence of PPH is significantly higher in the group that did not receive Misoprostol compared to the group that received Misoprostol (chi square p<0.001).

The amount of blood loss in vaginal births in patients who did not receive the misoprostol was 500ml in10 cases, vacuum delivery in 5 cases about 800ml, a case of previous PPH loss of 800ml. Severe PPH of 1.5-2 litre were in two cases of vacuum delivery.

The dose of misoprostol used rectally in 90% of cases were 800ugm and 10% were 400ugm. The side effects of misoprostol were pyrexia and shivering but were transitory.

Discussion

The prevalence of PPH has been reported form 13% - 33.4% worldwide and different amongst developed and undeveloped countries. The incidence of PPH in King Hamad University Hospital in this study was 2.6%. The incidence of PPH due to hypotonia was1.6%, lacerations were 0.70% and placenta related problems were 0.20%. The efficacy of misoprostol in reducing the incidence of PPH in literature.[6] Most of the studies are being compared with oxytocics and to adapt it as an alternative to oxytocics because of cost and

temperature problems and safety.[7,8] We in our study were utilizing misoprostol as complementary to further reduce the incidence of primary as well secondary PPH due to hypotonia. According to who recommendations published in 2012, the efficacy of both oxytocin and

misoprostol are well established. Transient side effects of shivering and pyrexia are there but they may be more route dependent, in most of the studies misoprostol was utilized orally.

In order to prevent PPH the following uterotonics can be used during the third stage of labor. These drugs are Oxytocin, 10 IU, IV/IM, syntometrine I/m where oxytocin is not available and blood pressure is normal or misoprostol (600ugm) can be given orally. In the absence of skilled personnel misoprostol (600ugm) can be given orally.[9]

The two largest trials of misoprostol for the treatment of PPH (Winikoff 2010, Blum 2010) noted by GDG (guideline development group) reported that 800Ugm of misoprostol is acceptable sublingual dose to treat PPH. Although some members showed concern for hyperpyrexia due this high dose.[10]

Misoprostol is prostaglandin E1 analogue, has been suggested as an alternative for routine management of the third stage of labour. In a Cochrane review done in 2012 they studied the effects of prophylactic prostaglandin in the third stage of labour and reached to the conclusion that oral or sublingual misoprostol has excellent results as compared to placebo in reducing blood loss after delivery. The margin of benefit may be affected by whether AMTSL was used or not. A trial in 2012 found that intramuscular oxytocin was less effective than sublingual misoprostol in reducing PPH, with only transient side effects are more in the misoprostol group. The sublingual mode and/or powdered formulation may increase the effectiveness of misoprostol as compared to injectable oxytocin. Some more research is needed for this confirmation.[11-13]

In literature, most of the studies discuss treatment third stage with misoprostol at home or prevention of PPH at home delivery. In our study, we are using misoprostol with routine AMTSL for the prevention of PPH. In one study they do not recommend misoprostol inactive bleeding for PPH but injectables.[14]

We had an observation that since we were using misoprostol as complementary with AMTSL in patients the incidence of PPH was almost negligible. [15-18] In our study in cases of c-sections where both oxytocin and misoprostol were used the blood loss was minimal.[19]. In the literature, misoprostol has proved to be more effective than oxytocin showing less blood loss during c-sections.[20] We came across scanty studies in literature where misoprostol was routinely used along with AMTSL for the prevention of PPH. It's easy to insert rectally/sublingually right after delivery of shoulder and after delivery of the baby at c-section. It helps in easy and smooth delivery of the placenta.

We feel that it's a very good option to reduce staff burden on delivery suite, their apprehension, wastage of resources, patient fears and maintain a good reputation of the health facility.

Conclusion

This study helped us to confirm that the complementary use of misoprostol along with AMTSL in vaginal delivery and c-section in high risk patients can prevent the PPH and minimize the blood loss.

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