ISSN:0975-3583,0976-2833 VOL12,ISSUE07,2021

Primary Postpartum Hemorrhage Control Using Intrauterine Misoprostol plus Intravenous Oxytocin in Cesarean Section

LubnaAmmer El-Hammroni, Ali El-Shabrawy Ali, WaelSabryNossair and Safaa Abdel-Salam Ibrahim

Obstetrics & Gynecology Department, Faculty of Medicine, Zagazig University, Egypt.

Corresponding author:**LubnaAmmer El-Hammroni**, Email: **Lubna.ammer**86@yahoo.com

ABSTRACT

Postpartum hemorrhage (PPH) finding more methods either pharmacologic or non-pharmacologic to such a tragic event should be exceedingly invigorated to minimize the mortality and morbidity. Every attempt should be done towards the prevention of PPH. Of course, the use of oxytocin did such, but in spite of that, still, about half a million deaths each year from pregnancy and delivery complication most of them are in the third world. PPH comes as a leading cause of the maternal loss. Needless to say, that blood loss in women who's their iron stores are already severely depleted have more morbidity and mortality. Many uterotonics have been evaluated for years for the prevention of PPHand efforts have been done to improve the preventive measures for PPH which finalized in 2012 by the addition of misoprostol as an alternative for oxytocin.

This study aimed to review Postpartum Hemorrhage Control Using Intrauterine Misoprostol plus Intravenous Oxytocin duringCesarean Section.

Keywords:Postpartum Hemorrhage; **Cesarean Section**; **Misoprostol plus Intravenous Oxytocin**

INTRODUCTION

Postpartum hemorrhage (PPH), the prominent reason for maternal deaths (one-quarter of maternal deaths) has a prevalence rate of 6-10.8% **(1-3)**. More than one-third of all maternal mortality in Asia and Africa are due to PPH**(4)**.The average blood loss in PPH is variable according to the type of delivery; in vaginal delivery (500 mL of blood or more), cesarean section (CS) delivery (1000 mL or more), and in an emergency hysterectomy, it was 3500 mL **(5)**.

Misoprostol, a prostaglandin E1 (PGE1) analogue, selectively binds to prostanoid receptors (EP-2/EP-3). Its efficacy as a stimulant of the myometrium of the pregnant uterus has been shown has been shown in many research studies **(6,7)**. Moreover, pharmacokinetic research studies showed that it has a higher bioavailability after sublingual administration than after oral or vaginal administration

ISSN:0975-3583,0976-2833 VOL12,ISSUE07,2021

(8). Thus, its administration sublingually for the prevention of PPH has been evaluated and proved its effectiveness **(9)**.

To the best of our knowledge, there is only two research study by **QuirogaDíaz et al. (10)** studied the effect of the intrauterine use of misoprostol (800 microg) versus placebo for the prevention of PPH after CS delivery.Anotherrandomized controlled study by **Alalfy et al.(11)**tested the hypothesis that adding intrauterine misoprostol (400 microg) to the conventional oxytocin 10 IU can decrease the incidence of PPH in CS delivery more than that reduction achieved by the traditional oxytocin drip alone and reduce the amount of blood loss.

Postpartum hemorrhage

No single satisfactory definition of PPH exists and a number of definitions are currently in use worldwide**(1).** While existing definitions allow comparison of rates of PPH among different countries, the clinical relevance of these volumes of blood loss in otherwise fit, healthy women is questionable**(2)**.

The causes of PPH can be classified into four main groups: 1) uterine atony, 2) placental problems including retained placenta and abnormal placental implantation, 3) genital tract trauma, and 4) systemic medical disorders (including inherited and acquired coagulation defects)**(3)**.

A large proportion of women who develop PPH do not have identifiable risk factors, so all women must be considered to be at risk. However, antenatal screening is important to identify women who are at high risk of PPH, so that appropriate management plans can be developed and implemented**(4)**.

Determination of rates of clinically severe hemorrhage may be more useful. The severity of PPH will be influenced by the rate and the total volume of blood loss and also the response to treatment. The clinical impact of blood loss will be influenced by maternal health with existing anemia and other medical conditions, making women more vulnerable to decompensation with bleeding around delivery**(3-5)**.

PPH management:

Postpartum hemorrhage (PPH) is the leading cause of death related to pregnancy worldwide. Most deaths resulting from PPH are preventable**(12)**. Physicians, nurses, midwives, and other birth attendants should be aware of the risk factors for PPH and be trained adequately in the preventive measures and management strategies for this pregnancy complication**(13)**.

ISSN:0975-3583,0976-2833 VOL12,ISSUE07,2021

Newer, less invasive technologies such as embolization may improve outcomes with PPH. Reducing the incidence of PPH and the mortality resulting from the condition should be a key goal of obstetrics services worldwide**(11)**.

First-line measures should be directed to the treatment of atony, which is the most common cause of PPH: primarily, uterine massage to stimulate uterine muscle contractions and a trial of therapy with a uterotonic agent**(14,15)**. The choice and dosing of uterotonic agents as a first-line therapy should be administered according to local guidelines. The bladder should be emptied and an indwelling catheter should be inserted**(15,17)**. Therefore, an obstetric review to identify and manage other causes for PPH, that is, retained placenta or genital tract trauma, should be performed.

if initial measures fail to stop bleeding and uterine atony persists, other pharmacologic (uterotonics and hemostatic agents) and mechanical or surgical measures should be instituted **(18)**. Progression to secondary measures should ideally trigger the initiation of a predefined management algorithm for the aggressive treatment of persistent PPH. Escalation of mechanical or conservative surgical interventions in cases of ongoing uterine atony will depend on the availability of expertise. Options include intrauterine balloon tamponade or hemostatic brace sutures (such as B-Lynch or modified B-Lynch suture) surgical ligation of the uterine arteries and radiologic uterine artery embolization. Surgical interventions should be performed by the most experienced obstetrician available**(19,20)**.

Early and aggressive treatment of PPH is a key factor in reducing the morbidity and mortality associated with this global health problem. The numerous risk factors for and causes of PPH necessitate a well-established and multidisciplinary approach to management**(21,22)**. The recommendations and treatment algorithm presented here are intended as a guide for clinicians in development of such a management plan. The consensus panel recognizes that the evidence and grade for the recommendations made in this document are of relatively low level. There is an urgent need for research in many areas relating to PPH, in particular, the hemostatic evaluation and the use of hemostatic agents for women with persistent PPH unresponsive to initial clinical maneuvers**(23,24)**.

Efficacy of misoprostol

Misoprostol administration, orally or rectally, has been demonstrated its efficacy in preventing PPH. It is considered as an effective alternative to other

ISSN:0975-3583,0976-2833 VOL12,ISSUE07,2021

conventional ecbolic drugs **(7)**. There are several studies about the efficacy of misoprostol either orally or sublingually for reducing the amount of postpartum blood loss. Some showed that misoprostol 400 mg is as effective as or more effective as oxytocin orsyntometrine**(25-27)**.

Previous study reported that the intrauterine misoprostol, when added to oxytocin, reduced the mean reduction in the levels of hemoglobin and hematocrit. They also reported that the rates of use of extra uterotonics, blood transfusion, and adverse events did not differ significantly between the two groups (misoprostol plus oxytocin versus oxytocin alone). However, they found that this one trial had a low risk of bias**(28)**.

Conde-Agudelo et al. (29) conducted a systematic review and meta-analysis of the usage of misoprostol to reduce the intraoperative and the postoperative hemorrhage during CS delivery. Among the seventeen studies included (3174 women), seven were for misoprostol versus oxytocin and 8 for misoprostol plus oxytocin versus oxytocin alone. They found that there were no significant differences in the intraoperative and the postoperative hemorrhage between sublingual or oral misoprostol, and the oxytocin. However, they found that rectal misoprostol, when compared with oxytocin, had a significant reduction in the intraoperative and the postoperative hemorrhage.

CONCLUSION

Intrauterine misoprostol with oxytocinis effective in decreasing the incidence of PPH and reducing the amount of postpartum blood loss. Also, it reduced the need for blood transfusion and the extra ecbolics. In addition, it is as safe as oxytocin alone.

No Conflict of interest.

REFERENCES

1- **Fawole B, Awolude OA, AdenijiAO,Onafowokan O.** WHO recommendations for the prevention ofpostpartumhaemorrhage: RHL guideline (last revised: 1 May 2010).The WHO Reproductive Health Library; Geneva: World HealthOrganization.

2- **Calvert C, Thomas SL, Ronsmans C, Wagner KS, Adler AJ, Filippi V.** Identifying regional variation in the prevalence of postpartum haemorrhage: a systematic review and meta-analysis. PLoS ONE. 2012;7(7):e41114.

ISSN:0975-3583,0976-2833 VOL12,ISSUE07,2021

3- **Prata N, Bell S, Weidert K.** Prevention of postpartum hemorrhage in lowresource settings: current perspectives. Int J Womens Health. 2013 Nov 13;5:737–52.
4- **Khan KS, Wojdyla D, Say L, Gülmezoglu AM, Van Look PFA.** WHO analysis of causes of maternal death: a systematic review. Lancet. 2006 Apr 1;367(9516):1066–74.
5- **Feitsa AH, Kanhai HH.** Misoprostol in the management of postpartum hemorrhage.IntCongr Series 2005;1279:358e63.
6- **Lam H, Tang OS, Lee CP, Ho PC.** A pilot-randomized comparison of sublingualmisoprostol with syntometrine on the blood loss in third stage of labor.ActaObstetGynecolScand 2004;83:647e50.
7- **Miller S, Lester F, Hensleigh P.** Prevention and treatment of postpartumhemorrhage: new advances for low-resource settings. J Midwifery WomensHealth 2004;49:283e92.
8- **Schaff EA, Dicenzo R, Fielding SL**. Comparison of misoprostol plasma concentrationsfollowingbuccal and sublingual administration. Contraception2005;71:22e5.
9- **World Health Organization. Geneva 7.**Motherebaby package: implementingsafe motherhood in countries, vol. 94; 1998. p. 11.
10- **QuirogaDíaz R, Cantú Mata R, E Tello Gutiérrez H, Puente Villalobos M, Montemayor Garza R, Martínez Mendoza A.** Intrauterine misoprostol for the prevention of bleeding cesarean. GinecolObstetMex 2009;77(10):469–74.
11- **Alalfy, Mahmoud; lasheen, Yossra; Elshenoufy, Hossam; Elzahaby, I. M.; Kaleem, Heba W.; Rashwan, Ahmed S. S. A. (2018).** The efficacy of intrauterine misoprostol during cesarean section in Prevention of primary PPH, A randomized controlled trial. The Journal of Maternal-Fetal & Neonatal Medicine, 1–201.
12- **Dildy GA, Paine AR, George NC, Velasco C.** Estimating blood loss: can teaching significantly improve visual estimation? ObstetGynecol 2004; 104:601–6.
13- **Grant JM.** Treating postpartum haemorrhage. Br J ObstetGynaecol 1997; 104:vii
14- **Patton K, Funk DL, McErlean M, Bartfield JM**. Accuracy of estimation of external blood loss by EMS personnel. J Trauma 2001;50:13–20.
15- **Meiser A, Casagranda O, Skipka G, Laubenthal H.** Quantification of blood loss. How precise is visual estimation and what does its accuracy depend on? Anaesthesist 2001;50:13.
16- **Oyelese Y, Ananth CV.** Postpartum hemorrhage: epidemiology, risk factors, and causes. ClinObstetGynecol 2010;53:147-156.
17- **Khan KS, Wojdyla D, Say L, et al.** WHO analysis of causes of maternal death: a systematic review. Lancet 2006;367:1066-1074.
18- **Bateman BT, Berman MF, Riley LE.** The epidemiology of postpartum hemorrhage in a large, nationwide sample of deliveries. AnesthAnalg 2010;110:1368-1373.
19- **Demers C, Derzko C, David M.** Gynaecological and obstetric management of women with inherited bleeding disorders. Int J GynaecolObstet 2006;95:75-87.

ISSN:0975-3583,0976-2833 VOL12,ISSUE07,2021

20- Levy GG, Carbonne B, Courtois F, et al. Recommandations pour la pratique Clinique Hémorragies du post-partum immediate. J GynecolObstetBiolReprod (Paris) 2004;33(Suppl n°8):4S1-4S136.

21- **Stones RW, Paterson CM, Saunders NJ.** Risk factors for major obstetric haemorrhage. Eur J ObstetGynecolReprodBiol 1993;48:15-18.

22- **Royal College of Obstetricians and Gynaecologists**. Green-top Guideline No. 52: Prevention and management of postpartum haemorrhage. 2009 (revised 2011).

23- **James AH, Jamison MG.** Bleeding events and other complications during pregnancy and childbirth in women with von Willebrand disease. J ThrombHaemost 2007;5:1165-1169.

24- **Othman ER, Fayez MF, El Aal DEMA, Ali MK.** Sublingual misoprostol versus intravenous oxytocin in reducing bleeding during and after cesarean delivery: A randomized clinical trial. Taiwanese Journal of Obstetrics and Gynecology. 2016 Dec 1;55(6):791–5.

25- **Enakpene CA, Morhason-Bello IO, ArowojoluAO,Omigbodun AO.**Oral misoprostol for the prevention of primary postpartumhemorrhage during third stage of labor. J ObstetGynecol Res 2007;33:810e7.

26- **Walley RL, Wilson JB, Crane JM, Matthews K, Sawyer E, Hutchens D**. A doubleblindplacebo controlled randomized trial of misoprostol and oxytocin in themanagement of the third stage of labor. BJOG 2000;107:1111e5.

27- **Acharya G, Al-Sammarai MT, Patel N, Al-Habib A, Kiserud T.** A randomized,controlled trial comparing effect of oral misoprostol and intravenous syntocinonon intra-operative blood loss during cesarean section.ActaObstetGynaecolScand 2001;80:245e50.

28- **Baskett TF, Persad VL, Clough HJ, Young DC.**Misoprostol versus oxytocin forthe reduction of postpartum blood loss.Int J GynecolObstet 2007;97:2e5.

29- **Conde-Agudelo A, Nieto A, Rosas-Bermudez A, Romero R.** Misoprostol to reduce intraoperative and postoperative hemorrhage during Cesarean delivery: A systematic review and meta-analysis. Am J Obstet Gynecol. 2013 Jul;209(1):40.e1-40.e17.