Effect of methylergometrine, oxytocin and sublingual misoprostol in reducing blood loss at cersarean section

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إهداء

الي روح أبي الغالية أدعو الله أن يجعله في ميزان حسناته وان يسكنه فسيح جناته

Abstract

Postpartum hemorrhage (PPH) has been defined as a blood loss of more than 500 ml after vaginal delivery and more than 1000 ml after cesarean delivery.

Aim of the Work

To compare the effectiveness and safety of sublingual Misoprostol (400ug) administered immediately after delivery of the neonate with intravenous Methylergometrine (0.2 mg) and with intravenous Oxytocin (20 IU) in reducing blood loss during cesarean section.

Results:

There is no statiscal difference between 3 groups but the advantages of misoprostol make it more used.

Key words :

Post partum haemorrhage, uterotonics, Cesarean section

List of Contents

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List Of Tables

List Of Figures

Introduction

Each nation must decide whether it will build monuments to hardship and suffering or take steps to avoid misery. Although fully 4 years remain until the target date of 2015, it is already predicted that the Millennium Development Goal No. 5, to reduce the maternal mortality rate by 75%, will not be reached ***(Lalonde et al, 2006).*** The definition of maternal mortality in the 10th revision of the International Statistical Classification of Diseases and Related Health Problems includes deaths due to both direct obstetric causes and to conditions aggrevated by pregnancy or delivery ***(WHO,2007).***

Maternal mortality is a catastrophe which affects not only the woman but also her family and the community at large. An estimated 515, 000 women die yearly as a result of pregnancy related complication and about 98% of these deaths occur in developing countries .

The world Health Organization (WHO) estimated that 529,000 women died from obestetric causes in the year 2000 ***(WHO,2007).*** In Egypt a maternal **mortality rate in (2005)** was 65 maternal deaths per 100.000 live birth and this equal to 349 maternal deaths due to direct obstetric causes ***(Central Agency for Public Mobilization and Statistics, 2007).***

Haemorrhage remains in the top five causes of maternal death in the UK and other countries, both developed and developing ***(UK Department of health, 2008)*** In the developing world at least one woman dies in childbirth every minute, of whom 15-25% die from PPH ***(Mousa et al.,2007).***

Postpartum hemorrhage was defined as blood loss of greater than 500 ml after giving birth vaginally or as blood loss greater than 1000 ml after cesarean section; however the quantity of blood loss doesn't always accurately define the pathology, since for certain individuals a loss of as much as 500 ml after vaginal birth is considered within normal limit ***(Stafford et al.,2008).***

Postpartum haemorrhage would be better defined as the peripartum fall in haemoglobin (or haematocrit) level of at least 10% as suggested by the ***(ACOG, 2006).***

Various prophylactic strategies have been used to prevent this potential life – threatening emergency. Systematic reviews have concluded that active management of third stage of labour, particularly the prophylactic use of uterotonic agents can significantly decrease the incidence of postpartum haemorrhage compared with that of expectant management ***(Callaghan, 2010).*** An ideal uterotonic agent should promote prompt, strong and sustained uterine contractions without any significant adverse effects ***(Shull et al.,2007).***

Although many delivery units use oxytocin as first line agent to prevent uterine atony at cesarean section, it may not be the ideal agent for prevention of PPH especially in compromised patients with preeclampsia, cardiac disease or prolonged labor. Oxytocin and specifically its preservative chlorobutanol increases the heart rate and has negative inotropic, antiplatelet and antidiuretic effects ***(Grotegut et al.,2011).***

Sublingual misoprostol appears to be effective in reducing postpartum blood loss during cesarean section. In addition, misoprostol offers several advantages over oxytocin including long half life, stability at room temperature and oral administration which make it as a suitable alternative for routine management of third stage of labor particularly in low resource countries ***(Beverly, 2010).***

Aim of the Work

To compare the effectiveness and safety of sublingual Misoprostol (400ug) administered immediately after delivery of the neonate with intravenous Methylergometrine (0.2 mg) and with intravenous Oxytocin (20 IU) in reducing blood loss during cesarean section.

Postpartum Haemorrhage

Haemorrhage remains in the top five causes of maternal death in the UK and other countries, both developed and developing ***(U.K department of health,2008).*** In the developing world at least one woman dies in childbirth every minute, of whom 15-25% with from PPH ***(Mousa and Alfirevic, 2007).*** In developing countries, where nearly half the women deliver without the aid of a skilled birth attendant ***(WHO, 2005),*** there is simply not enough time to seek treatment for PPH. The only way to help women is through preventive measures ***(FIGO and POPPHI, 2009).***

PPH is defined as blood loss of more than 500mL following vaginal delivery or more than 1000mL following cesarean delivery ***(Bateman, 2010).*** A more accurate definition of PPH is any blood loss that causes a pathological change (e.g., low blood pressure) that threatens the women's life ***(Stafford, Dildy,2OO8).*** A loss of these amounts within 24 hours of delivery is termed early or primary PPH, whereas such losses are termed late or secondary PPH if they occur 24 hours after delivery ***(Path,2008).***

The traditional definition of postpartum haemorrhage of blood loss of ≥ 500mL carries little clinical significance. Postpartum haemorrhage would be better defined as the peripartum fall in haemoglobin (or haematocrit) level of at least 10% as suggested by the American College of Obstetricians and Gynecologists ***(ACOG, 2006).***

According to the World Health Organization, 25% of the current estimate of annual maternal deaths can be attributed to PPH ***(WHO, 2007).***

In industrialized countries, PPH usually ranks in the top 3 causes of maternal mortality, along with embolism and hypertension. In the developing world, several countries have maternal mortality rates in excess of 1000 women per 100,000 live births, and World Health Organization (WHO) statistics suggest that 25% of maternal deaths are due to PPH, accounting for more than 100,000 maternal deaths per year ***(Jongkolsiri and Manotaya,2009).***

Egypt has an improved but relatively high maternal mortality ratio of 55 maternal deaths per 100,000 live births in 2008 ***(Egypt CAPMAS, 2009),*** although 60% of births are medically assisted and 49% are facility-based (EDHS, 2008). Postpartum haemorrhage is the leading factor contributing to 27% of maternal deaths, with poor obstetric management cited as the most frequent avoidable factor, contributing to 43% of maternal deaths ***(Egypt MOHP, 2007).***

Many factors influence whether or not PPH is fatal. The high incidence of severe anemia among women in developing countries contributes to the high death rate. A woman who is already anaemic is unable to tolerate blood loss than a healthy one. Another important factor is that many births in developing countries occur at home because of cultural preferences, economic reasons, poor quality of services, or services that are difficult to access. A woman may give birth alone or in the presence of an untrained birth attendant or family members. If a woman begins to haemorrhage, the attendant is often unprepared to handle the emergency. In many cases, long delays occur in making the decision to seek help and in transporting the woman to a hospital or center equipped to treat PPH ***(Driessen and Marine,2011).***

The etiology of postpartum haemorrhage:

Haemorrhage following delivery is from excessive bleeding from the placental implantation site, trauma to the genital tract and adjacent structures, or both (Table 1). Postpartum haemorrhage is a description of an event rather than a diagnosis, and when encountered, its cause must be determined.

Table (1): Predisposing factors and causes of immediate postpartum haemorrhage *(Cunningham et al., 2005)*.

Bleeding from Placenta! Implantation Site
Hypotonic myometrium—uterine atony
Some general anesthetics—halogenated hydrocarbons
Poorly perfused myometrium—hypotension Haemorrhage Conduction analgesia
Overdistended uterus—large fetus, twins, hydramnios
Following prolonged labour
Following very rapid labour
Following oxytocin-induced or augmented labour
High parity
Uterine atony in previous pregnancy
Chorioamnionitis Retained placental tissue
Avulsed cotyledon, succenturiate lobe
Abnormally adherent—accreta, increta, percreta
Trauma to the Genital Tract
Large episiotomy, including extensions Lacerations of perineum, vagina, or cervix Ruptured uterus
Coagulation Defects

PPH had many potential causes, but the most common by a wide margin is uterine atony, i.e. failure of the uterus to contract and retract following delivery of the baby. PPH in a previous pregnancy is a major risk factor and every effort should be made to determine its severity and cause. In a recent randomized trial in the United States, birth weigh, magnesium sulfate use and previous PPH were all positively associated with increased risk of PPH ***(Oyelese and Yinkamd,2010).***

As away of remembering the cause of PPH, several sources have suggested using the "4T's" as a mnemonic: Tone, Tissue, Trauma and Thrombosis ***(Anderson and Atches,2007).***

Tone:

Uterine atony and failure of contraction and retraction of myometrial muscle fibers can lead to rapid and severe haemorrhage and hypovolemic shock. Overdistension of the uterus, either absolute or relative, is a major risk factor for atony. Overdistension of the uterus can be caused by multifetal gestation, fetal macrosomia, polyhydramnios, or fetal abnormality (e.g., severe hydrocephalus); a uterine structural abnormality; or a failure to deliver the placenta or distension with blood before or after placental delivery ***(Mukher and Soma,2009).***

Poor myometrial contraction can result from fatigue due to prolonged labour or rapid forceful labour, especially if stimulated. It can also result from the inhibition of contractions by drugs such as halogenated anesthetic agents, nitrates, nonsteroidal anti-inflammatory drugs, magnesium sulfate, beta-sympathomimetics, and nifedipine. Recent data suggest that grand multiparity is not an independent risk factor for PPH ***(Smith and Brennan,2006).***