Prophylactic Oxytocin Before Versus After Placental Delivery to Reduce Blood Loss in Vaginal Delivery

"A Randomized Controlled Trial"

Thesis

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By

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Reham Mohamed Farghal

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List of Abbreviations

AMTSL	:	Active management of third stage of labor
CCT	:	Controlled cord traction
ECG	:	Electrocardiogram
FDA	:	United States food and drug administration
FIGO	:	The International Federation of Gynecology and Obstetrics
G	:	Gram
HELLP	:	Hemolysis, elevated liver enzymes and low platelet count
IM	:	Intramuscular
IU	:	International units
IV	:	Intravenous
Mcg	:	Micrograms
MDGs	:	Millennium development goals
MEOWS	:	Modified early obstetric warning system
Mg	:	Milligram
Mins	:	Minutes
Ml	:	Milliliter
Mmhg	:	Millimeter mercury
NICE	:	National Institute for Health and Care Excellence

List of Abbreviations (Cont.)

NSAID	:	Non steroidal anti-inflammatory drugs
OTR	:	Oxytocin receptors
PG	:	Prostaglandin
POPPHI	:	Prevention of postpartum hemorrhage initiative working group
PPH	:	Post partum hemorrhage
RANZCOG	:	The Royal Australian and New Zealand College of obstetricians and gynecologists
RBC	:	Red blood cell volume
RCOG	:	Royal College of obstetricians and gynecologists
SOGC	:	The society of obstetricians and gynecologists of Canada
TA	:	Tranexamic acid
UNCoLSC	:	The United Nation Commission on Life-Saving Commodities for Women and Children
UNICEF	:	The United Nations Children's Fund
UVI	:	Umbilical vein injection
WHO	:	World Health Organization

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Abstract

Background: PPH has been a leading cause of maternal death around the globe. Prophylactic oxytocin is one of the main components of the active management of the third stage of labor to reduce blood loss. The timing of administration of prophylactic oxytocin varies considerably worldwide and it may have significant impact on the maternal and neonatal well-being.

Objectives: To assess the efficacy and safety of the timing of administration of prophylactic oxytocin via intramuscular route (before compared to after placental delivery) on blood loss in vaginal delivery.

Methods: It is a double blinded study in which 403 patients were randomized in two groups to receive oxytocin 10 IU IM either before or after placental delivery. Primiparous patients, patients with high risk for PPH and those with multiple vaginal or cervical tears were excluded from the study. All patients underwent controlled cord traction, immediate cord clamping. Results: Our results have shown that there were no statistically significant differences between the two study groups regarding the estimated blood loss (P=0.39), incidence of PPH (P=0.78), length of third stage of labor in minutes (P=0.29), the rates of retained placenta (P=0.77) and the need for additional uterotonic (P=0.96).

Conclusion: The administration of prophylactic intramuscular oxytocin after placental expulsion in vaginal delivery has the same efficacy and safety as when it is used before placental delivery and it is considered an easier alternative especially if there is only a single birth attendant.

Keywords: Prophylactic oxytocin; Vaginal delivery; Placental delivery

Introduction

Postpartum Hemorrhage (PPH) is commonly defined as a blood loss of 500 ml or more within 24 hours after birth. PPH is the leading cause of maternal mortality in low-income countries and the primary cause of nearly one quarter of all maternal deaths globally ***(WHO Recommendations 2012).***

The mortality rate due to postpartum hemorrhage is estimated to be about 140 000 per year, or 1 maternal death every 4 minutes. PPH occurs in 5% of all deliveries and is responsible for a major part of maternal mortality. The majority of these deaths occur within 4 hours of delivery, which indicates that they are a consequence of the third stage of labor. Nonfatal PPH results in further interventions, iron deficiency anemia, pituitary infarction (Sheehan's syndrome) with associated poor lactation, exposure to blood products, coagulopathy, and organ damage with associated hypotension and shock ***(SOGC guideline no.235, 2009).***

Although maternal mortality has declined in Egypt from 84 maternal deaths/100000 live birth in 2000 to 55 maternal deaths/100000 live birth in 2011 and 52 maternal deaths/100000 live birth in 2013 but still Postpartum hemorrhage is the leading cause of maternal deaths in Egypt representing 34% of maternal deaths in 2000, 20.3%of maternal deaths in 2012 and 19.7%of maternal deaths in 2013 ***(UNICEF Egypt, 2015).***

The majority of these cases of postpartum hemorrhage could be avoided through the use of prophylactic uterotonics during the third stage of labor and by timely and appropriate management ***(WHO, 2012).***

Prophylactic oxytocics should be offered routinely in the active management of the third stage of labor in all women as they reduce the risk of PPH by about 60% ***(RCOG Guideline 2009).***

There are different uterotonic drugs that can be used, e.g. oxytocin (intravenous (IV) or intramuscular (IM)); syntometrine (IM); ergometrine (IV or IM) and misoprostol. There is also debate over the route of administration and dosage of the drugs used. However, recent guidelines from WHO, FIGO, ICM and NICE all recommend the use of 10 IU (international units) of oxytocin IM ***(ICM-FIGO 2003; NICE 2007; WHO 2012) (Begley et al. 2015).***

The timing of the administration of oxytocic drugs varies greatly among practitioners. The main recommended approach in the active management is to administer relevant drugs at the delivery of the anterior shoulder. This, however, can make the process complicated in many busy maternity units and increases the demand for having more than one healthcare professional present at the time of birth. In the practical setting, many clinicians use oxytocics immediately after the birth of the baby. There are others who administer the oxytocic drugs at the crowning of the head or even after the delivery of the placenta. The latter is mainly reported in the American literature and it is believed to reduce the risk of placental retention ***(Soltani et al. 2010).***

It has been recommended that administration of the prophylactic uterotonic should take place within 1 minute of delivery of the baby. However, in practice, in most busy maternity units, this is often not feasible because most deliveries are attended by only one health-care professional. The timing of oxytocin administration has

implications for maternal blood loss, neonatal blood volume or haemodynamics, and health-care resources needed at the time of birth ***(Qureshi and Lubano 2011).***

Aim of the work

The aim of the study is:

To assess the efficacy and safety of the timing of administration of prophylactic oxytocin via intramuscular route (before compared to after placental delivery) on blood loss in vaginal delivery.