

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

"A Randomized Controlled Trial"

Thesis

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Contents

List of Abbreviations	i
List of Tables	iii
List of Figures	v
Protocol	--
Introduction and Aim of the Work.....	1
Review of Literature	5
<i>Chapter 1</i>	
* Postpartum Hemorrhage	5
<i>Chapter 2</i>	
* Measures to Reduce Blood Loss in Labor	22
<i>Chapter 3</i>	
* Oxytocin	45
Patients and Methods	56
Results	63
Discussion	82
Summary	90
Conclusion	93
Recommendations	94
References	95
Arabic Summary	--

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

List of tables

<i>Table</i>	<i>Title</i>	<i>Page</i>
1	International maternal mortality ratio, 1990-2013	6
2	Percent distribution of maternal deaths in Egypt, by time of death, 2000-2013	8
3	Percent distribution of maternal deaths in Egypt, by direct and indirect causes, 2000-2013	9
4	The causes of PPH	11
5	Differences between the two study groups regarding demographic data, gestational age and parity	64
6	Differences between the two study groups regarding rates of use of oxytocin for augmentation of labor and episiotomy	65
7	Difference between the two study groups regarding estimated postpartum blood loss	67
8	Differences in blood loss between the two study groups according to the presence of episiotomy	68
9	Difference between the two study groups regarding rates of primary PPH	69
10	Difference between the two study groups regarding hemoglobin concentration	70
11	Difference between the two study groups regarding hematocrit value	71
12	Difference between the two study groups regarding allowable blood loss	72
13	Difference between the two study groups regarding pulse rate	73
14	Difference between the two study groups regarding systolic blood pressure	74
15	Difference between the two study groups regarding diastolic blood pressure	75
16	Difference between the two study groups regarding duration of third stage of labor in minutes	76
17	Difference between the two study groups regarding rates of retained placenta and need for additional uterotonics	77

List of tables

<i>Table</i>	<i>Title</i>	<i>Page</i>
18	Differences between the two study groups regarding rates of nausea/vomiting and severe pain	79
19	Difference between the two study groups regarding breast feeding	81

List of Figures

<i>Fig.</i>	<i>Title</i>	<i>Page</i>
1	Modified Early Obstetric Warning System (MEOWS) chart	14
2	Technique of bimanual uterine compression	17
3	Technique of compression of abdominal aorta and palpation of femoral artery	18
4	Brandt-Andrews maneuver for cord traction	39
5	Mechanism of uterine massage	41
6	Umbilical vein injection with oxytocin	43
7	Chemical formula of oxytocin	45
8	Bar-Chart showing difference between the two study groups regarding rate of use of oxytocin for augmentation of labor	65
9	Bar-Chart showing difference between the two study groups regarding rates of episiotomy	66
10	Box-and-Whisker Plot Chart showing difference between the two study groups regarding estimated postpartum blood loss	67
11	Bar Chart showing differences in blood loss between the two study groups according to the presence of episiotomy	68
12	Bar-Chart showing difference between the two study groups regarding rate of primary PPH	69
13	Bar-Chart showing difference between the two study groups regarding hemoglobin concentration (gm/dl)	70
14	Bar-Chart showing difference between the two study groups regarding hematocrit value	71
15	Bar Chart showing difference between the two study groups regarding allowable blood loss	72
16	Bar Chart showing difference between the two study groups regarding pulse rate	73
17	Bar Chart showing difference between the two study groups regarding systolic blood pressure	74

List of Figures (Cont.)

<i>Fig.</i>	<i>Title</i>	<i>Page</i>
18	Bar Chart showing difference between the two study groups regarding diastolic blood pressure	75
19	Bar Chart showing difference between the two study groups regarding duration of third stage of labor in minutes	76
20	Bar-Chart showing difference between the two study groups regarding rates of retained placenta	78
21	Bar-Chart showing difference between the two study groups regarding rates of need for additional uterotonics	78
22	Bar-Chart showing difference between the two study groups regarding rates of nausea/vomiting	80
23	Bar-Chart showing difference between the two study groups regarding rates of severe pain	80
24	Bar-Chart showing difference between the two study groups regarding failure of breast feeding	81

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.