International Journal of Clinical Obstetrics and Gynaecology

ISSN (P): 2522-6614
ISSN (E): 2522-6622

www.gynaecologyjournal.com
2022; 6(2): 105-108
Received: 09-01-2022
Accepted: 20-02-2022

Dr. Rita D
Professor and HOD, Department of OBG, NMCH&RC, Raichur, Karnataka, India

Dr. Gowthami K
Junior Resident, Department of OBG, NMCH&RC, Raichur, Karnataka, India

Dr. Lathasri A
Junior Resident, Department of OBG, NMCH&RC, Raichur, Karnataka, India

Corresponding Author:
Dr. Gowthami K
Junior Resident, Department of OBG, NMCH&RC, Raichur, Karnataka, India

Intraumbilical vein injection of oxytocin versus normal saline with active management of third stage of labour: A randomised controlled trial

Dr. Rita D, Dr. Gowthami K and Dr. Lathasri A

DOI: https://doi.org/10.33545/gynae.2022.v6.i2b.1171

Abstract
Introduction: Postpartum haemorrhage remains a leading cause of maternal mortality (25.0%) especially in developing countries. Prolonged third stage of labour owing to placenta retention and uterine atony are among the underlying cause of most cases of PPH. Intraumbilical vein injection (IUV) is inexpensive, non-surgical, non-aggressive, cheap and pharmacological method which may be included in prevention and treatment of PPH and in retained placenta.
Objectives: To study the efficacy of intraumbilical vein injection of 20 IU oxytocin with comparison with normal saline and its effect of duration of 3rd stage of labour, reduction of blood loss and incidence / prevention of retained placenta.
Methods: A RCT of 80 Patients in normal labour at NMCH&RC. Study group (group A - 40) will receive 20 IU(4ml) oxytocin diluted with 26 ml of normal saline intraumbilically (total 30ml) and the control group (group B - 40) will receive intraumbilical 30 ml normal saline. Medications are given directly in the umbilical vein after clamping, injection given over 1 minute. Active management of the third stage of labour (prophylactic injection of 10 IU oxytocin within 2 minutes of birth, early clamping of the umbilical cord and controlled cord traction) was used in both groups.
Results: The mean estimated blood loss was significantly lower in women treated with oxytocin compared with women in the normal saline group (148.35 ml compared with 364.50 mL, respectively; $P< .001$). The third stage of labour was significantly shorter in the oxytocin group than in the normal saline group (2.33 minutes compared with 5.20minutes, respectively; $P< .001$). The percentages of placentas remaining undelivered beyond 15 minutes were 0% in both the groups.
Conclusion: The use of intraumbilical injection of oxytocin with the active management of the third stage of labour significantly reduced postpartum blood loss and the duration of the third stage thereby decreasing maternal morbidity and mortality and incidence of blood transfusion.

Keywords: PPH, intraumbilical, oxytocin, normal saline

Introduction

Obstetric haemorrhage is leading cause of maternal mortality causing 295,000 deaths per year worldwide according to WHO, while Southern Asia accounted for nearly one fifth i.e. 58000 [1]. India has Maternal Mortality Ratio of 113/1,00,000 live births. Assam has the highest maternal mortality ratio 215 as per census 2016-2018 (SRS), while in Karnataka the mortality ratio is 92 [2].

The wife of the Shah Jahan of India, the Empress Mumtaz, had 14 children and died after her last childbirth due to postpartum haemorrhage in 1630.

Maternal mortality due to haemorrhage accounts for 25-30% of which postpartum haemorrhage is a significant cause and one of the most dreaded and common complication of third stage of labour accounting for 15-25% [3]. The most common causes of postpartum haemorrhage are uterine atony, retained placental pieces, coagulation disorders, tears of birth canal, multiple pregnancy, large baby, age of mother < 18 or >40 years. Other causes may be anaemia, obesity, hypertension, following LSCS, induction of labour, placenta previa, accreta, increta, percreta & episiotomy [1]. Labour is controlled by a fine balance of neurological, hormonal, physiological and psychological interactions. This should be borne in mind when deciding on the management of the third stage of labour. The principle management of third stage of labour is aimed at reducing the time of delivery of the placenta, thereby minimizing serious adverse effects such as blood loss and retained placenta [4].

The placenta separates as a result of capillary haemorrhage and the shearing effect of uterine muscle contraction. The degree of blood loss associated with placental separation and delivery depends on how quickly the placenta separates from the uterine wall and how effectively uterine muscle contracts around the placental bed during and after separation. The blood flow through the placental site each minute is 500-800ml. If there was no mechanism after delivery to control the bleeding, this is how quickly the woman would lose blood. She would bleed to death in a matter of minutes. Hence, immediate intervention is required in third stage of labour.

Postpartum Haemorrhage (PPH) is commonly defined as a blood loss of 500 ml or more within 24 hours after birth [3]. Most deaths resulting from PPH occur during the first 24 hours after birth: the majority of these could be avoided through the use of prophylactic uterotonics during the third stage of labour and by timely and appropriate management.

Aims and Objectives

- To study the effect of intraumbilical 20 IU oxytocin in comparison with normal saline along with AMTSL on duration third stage of labour
- To assess the amount of blood loss following intraumbilical oxytocin.
- To assess the time required for placental separation following intraumbilical oxytocin.
- To assess the incidence and prevention of retained placenta.

Materials and Methods

After taking ethical committee clearance, a randomised control trial was done, with sample size of 80 patients in normal labour at Navodaya medical college and research centre, Raichur with a study period of 6 months from January 2021 to June 2021. Consent from the participating women was taken.

Study group (Group A- 40) will receive 20IU(4ml) oxytocin diluted with 26 ml of normal saline (total 30ml) intraumbilically and the control group (Group B - 40) will receive intraumbilical 30 ml normal saline as a placebo. After clamping, medications are given directly into the umbilical vein, injection is given over 1 minute.

Active management of the third stage of labour (prophylactic injection of 10 IU oxytocin within 2 minutes of birth, early clamping of the umbilical cord and controlled cord traction) was used in both groups.

Inclusion criteria

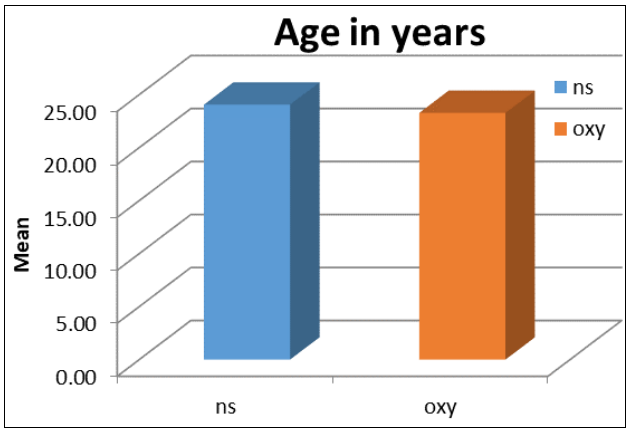
- No risk factors for PPH
- Gestational age b/w 37-42 weeks
- Singleton pregnancy
- Live fetus
- Cephalic presentation
- Neonatal birth weight of 2.5-4 kg
- Parity b/w one and five
- Maternal age younger than 35yrs
- Vaginal birth

Exclusion criteria

- Blood pressure 140/90mmHg or greater
- Placenta previa, Placental abruption
- H/o any bleeding during pregnancy
- H/o curettage
- LSCS / any uterine scar
- H/o any PPH
- Hydramnios
- Signs and symptoms of maternal infection
- Known uterine anomalies
- H/o any drug use during labour
- Abnormal placentation (acreta, increta & percreta)
- Coagulation defects
- Instrumental deliveries
- Haemoglobin <8gm/dl
- H/o anticoagulant drugs

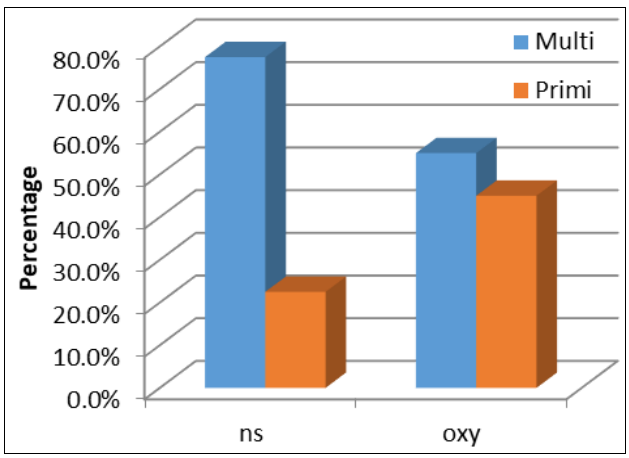
Observation and Results

After statistical analysis of data, final observations and results were tabulated as below.



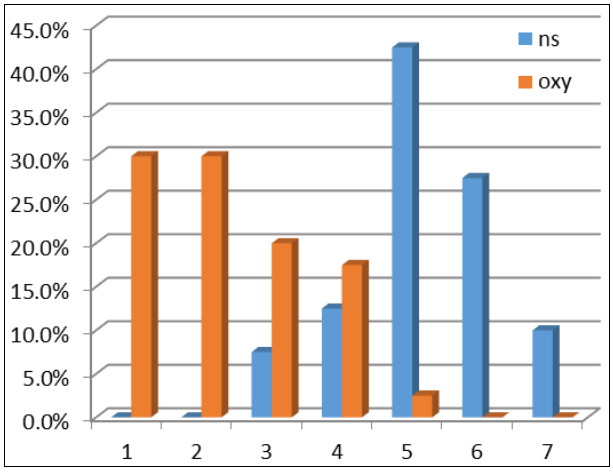
Graph 1: Age distribution in present study

In the study group, out of 40 women, 44.5% women were in the age group of 22-25yrs. In the control group 46% women belonged to age group of 22-25yrs. P = 0.361 which is > 0.05, hence it is statistically insignificant.

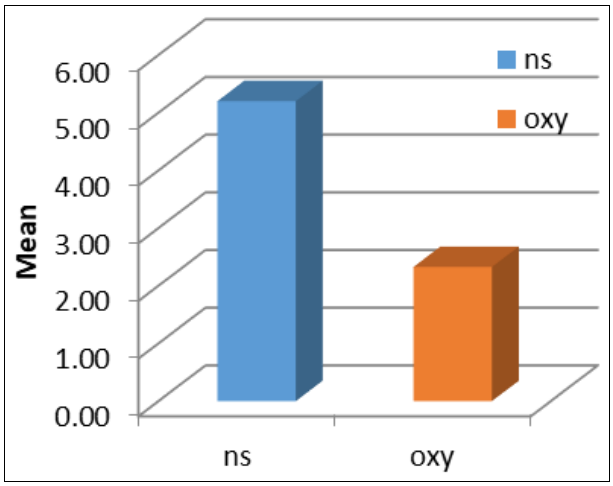


Graph 2: Parity of women in present study

The above graphs shows the number of women belonging to the primigravida group and multigravida group, with more than 50% women belonging to the multigravida group. P = 0.05 which is found to be statistically insignificant.

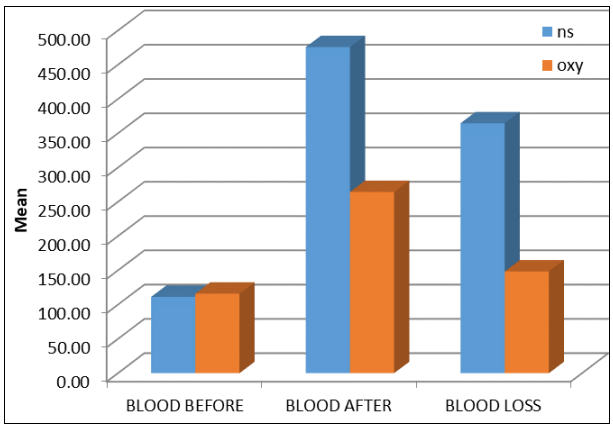


Graph 3a: Duration of third stage of labour

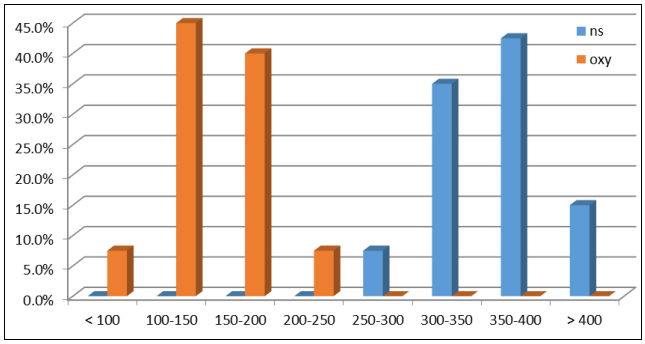


Graph 3b: Duration of 3rd stage

The above graphs 3a and 3b show the duration of labour in the study group and control group. In the study group 80% had duration of third stage lasting between 1-3 min and 20% between 3-5 min, whereas in the control group 70% had duration of third stage between 5-7 min and 20% between 3-5 min and 10% had between 7-10 min. P value was <0.001 which is statistically significant.

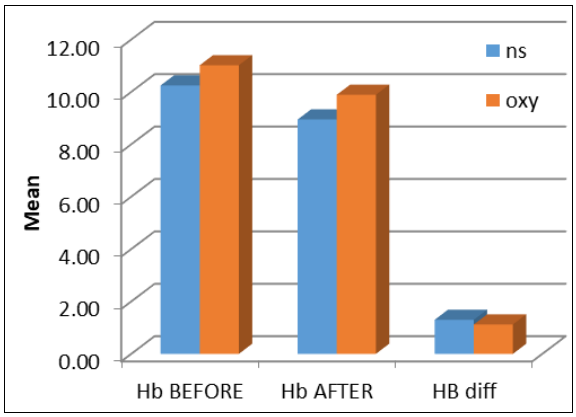


Graph 4a: Distribution of blood loss in two groups



Graph 4b: Distribution of ns and oxy two groups

These graphs show the distribution of blood loss in the study group and control group. In the study group 45% had blood loss of around 100-150ml and 7.5% had blood loss of less than 100ml, 40% had blood loss of 151-200ml. Whereas in the control group 42.5% had blood loss of between 351-400ml and 7.5% had blood loss between 251-300ml, 300-350ml is 35%, more than 400ml is 15%. P value is < 0.001, which is statistically very significant.



Graph 5: Difference in Hb % before and after delivery in both cases and control group

The graph shows fall in Hb % in study group and control group. The fall is more in control group that is 1.30gm ± 0.55%, who did not receive oxytocin compared to the study group who received oxytocin that is 1.13 ± 0.30gm%. Mean difference being 0.17gm% which has been found to be highly significant with P value = 0.001.

Discussion

The results of present study showed that intraumbilical vein injection of oxytocin was effective at shortening the duration of the third stage of labour, decreased the blood loss and reducing the need for manual placental removal. Oxytocin injected into the umbilical vein reaches the placental bed in relatively high concentrations. This stimulates uterine contractions, thus decreasing the area of the placental attachment site. The resulting tension causes the decidua spongiosa to give way with the formation of a hematoma. The hydraulic effect of injected solution would contribute to placental detachment by applying mechanical pressure. This accelerates the process of placental separation and expulsion, thus resulting in a shorter duration of

the third stage of labour and a lesser amount of blood loss. Therefore, relation between amount of blood loss and duration of placental separation could be established.

In the present study, mean duration of 3rd stage in intraumbilical oxytocin group is 2.33+/-1.16mins and normal saline group is 5.3+/-1.04mins and amount of blood loss is 148.35+/-30ml and 354.50+/-47.47ml in intraumbilical oxytocin and normal saline group respectively.

Ghulmiyyah *et al*. randomly assigned 79 women to two groups similar to our study. They found the mean drop in haemoglobin was significantly reduced in the oxytocin group (1.3 g/dL compared with 1.9 g/dL). However, they did not find a clinically significant reduction in the duration of the third stage of labour (5.9 compared with 7.8 minutes).

Present study did not show a significant Hb difference, because of active management of the third stage of labour for both groups and appropriate procedures.

Neetu Verma *et al*. randomly assigned 300 women to two groups similarly. They found that there is statistically significant reduction in the duration of third stage of labour (1.83±0.64 min in group B vs 2.92±0.79 min in group A), amount of blood loss (203.73±62.11 ml in group B vs 328.83±87.18 ml group A) and fall in haemoglobin (9.28±1.03 g/dl in the study group A vs 9.97±1.28 g/dl in group B) and haematocrit (31.20±3.05% in study group A vs 33.60±3.31% in study group B) were noted.

Conclusion

The use of intraumbilical injection of oxytocin with the active management of the third stage of labour significantly decreased postpartum blood loss and the duration of the third stage thereby decreasing maternal morbidity and mortality, incidence of blood transfusion and retained placenta.

In developing countries, prevalence of anaemia is common due to nutritional and environmental factors. In these cases, even a relatively small reduction of postpartum blood loss is clinically relevant.

References

1. A Comparative Study of the Efficacy of the Intraumbilical & Intravenous Oxytocin in the Management of Third Stage of Labour. Indu Sharma1 *et al.*: Int J Med Res Prof. 2018 Mar;4(2):180-84. DOI: 10.21276/ijmrp.2018.4.2.040
2. Indian health ministry-sample registration system, 2021 Feb.
3. Active management of third stage of labour: a comparative study of intra-umbilical oxytocin versus intramuscular oxytocin. Neerja Gupta *et al*. http://dx.doi.org/10.18203/2320-1770.ijrcog20173458
4. To study the effectiveness of intraumbilical vein oxytocin injection along with active management of third stage of labour: A randomized control trial. Varsha patil *et al*. International Journal of Clinical Obstetrics and Gynaecology. 2018;2(3):87-91.
5. Effect of intraumbilical vein oxytocin injection on third stage of labor* Anisodowleh Nankali *et al*. Taiwan J Obstet Gynecol 2013 Mar;52(1):57-60. DOI: 10.1016/j.tjog.2013.01.010.
6. Using intraumbilical vein injection of oxytocin in routine practice with active management of the third stage of labor: a randomized controlled trial. Kemal Güngördük *et al*. 2010 Sep;116(3):619-624. DOI: 10.1097/AOG.0b013e3181edac6b
7. Study of effect of intra-umbilical oxytocin along with active management in third stage of labour. Neetu Verma *et al.*, 2021. DOI: http://dx.doi.org/10.18203/2320-1770.ijrcog20213472
8. Williams obstetrics 25th edition
9. FOGSI Guidelines on PPH 2014
10. ACOG Clinical management guidelines October 2017
11. Green top guidelines no 52, 2016