International Journal Dental and Medical Sciences Research
Volume 4, Issue 5, Sep-Oct 2022 pp 34-37 www.ijdmsrjournal.com ISSN: 2582-6018

Active versus Expectant Management of Third Stage of Labour.

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Submitted: 01-09-2022 Accepted: 10-09-2022

ABSTRACT

Background-Post-partum hemorrhage (PPH) is the leading cause of maternal mortality worldwide, including India. Active management of third stage of labour was introduced to curtail this preventable cause and gradually became incorporated globally in the management of third stage of labour, despite its adverse effects.

Aims and Objectives: This study was aimed to compare the effects of active versus expectant management of third stage of labour on the incidence of post-partum hemorrhage, increase in maternal morbidity postpartum (afterpains, nausea and vomiting, need for analgesia) and neonatal outcomes (admission to neonatal intensive care unit, neonatal jaundice, low birth weight).

Methods: This study was designed as a prospectiverandomized pilot study with 30 women each assumed to be at low risk of PPH to be randomly assignedto active management (uterotonic within 1 minute of delivery of baby, early cord clamping and controlled cord traction delivery of placenta) or expectant management (no uterotonics, delay cord clamping till pulsation ceases and spontaneous delivery of placenta by aid of gravity or maternal bearing down efforts). However, the study was stopped after 11 cases (5 cases in expectant management group and 6 cases in active management group) as all the cases in the expectant management needed administration of uterotonics for some reason or the other, thus making it impractical to conduct further study.

Results: The study was conducted only on 11 women. Of the 6 women in active management group; there were no increase in duration of third stage of labour, no post-partum blood loss >500 ml, no difference in hemoglobin level >1g/dl, no difference in packed cell volume>3, no requirement of therapeutic uterotonics or blood transfusion. Everyone experienced nausea in the immediate post-partum period, everyone required analgesics for afterpains the score of which on a scale of 1 to 10 was more than 6 for everyone. Of the five women in expectant management group,duration of third stage of labour was less than 30 minutes for four patients whereas one patient developed retained placenta. One patient developed atonic uterus after delivery of placenta. Three patients were presumed to have PPH after delivery of placenta.Difference in hemoglobin levels of two patients was >1 g/dl. Difference in packed cell volume was >3 for two patients. Estimated post-partum blood loss was 500-1000 ml for two patients. None of them required blood transfusion. Nausea was experienced by two women. Everyone required analgesics for afterpains the score of which on a scale of 1 to 10 was more than 6 for everyone. There were no adverse neonatal outcomes in either group.

Conclusion: The study revealed that it is not advisable to do expectant management of third stage of labour as risk of PPH and complications of third stage of labour increases. Active management of labour is very important in decreasing these risks. But uterotonics should not be used excessively and injudiciously for every woman and the adverse effects of nausea, vomiting, afterpains, need for analgesia should also be considered.

Keywords: third stage of labour, AMTSL, physiological management, expectant management, comparison, afterpains

I. INTRODUCTION

Mankind cannot continue without reproduction. Deliveries have been occurring since the beginning of mankind when there was still no concept of obstetrics. So, in those days; deliveries were happening at home with a senior female relative of the family conducting it. Uterotonics were not even known back then. However, a large number of women suffered from post-partum hemorrhage resulting in maternal mortality especially in poor countries where several other factors like malnourishment, anemia, infectious diseases also played a contributing role. So with the advent of uterotonics and the need to curb maternal mortality rate due to this preventable cause, active management of third stage of labour was introduced which soon became incorporated in labour management worldwide even in developed countries where severe post-partum bleeding occured less often. So the question arises whether it

International Journal Dental and Medical Sciences Research
Volume 4, Issue 5, Sep-Oct 2022 pp 34-37 www.ijdmsrjournal.com ISSN: 2582-6018

is justified to routinely *do* active management of third stage of labour in all cases, even for healthy women at low risk of bleeding? It is also important to consider its adverse effects on maternal morbidity such as after-pains, nausea, vomiting, etc.

This study was aimed to compare the effects of active versus expectant management of third stage of labour on the incidence of post-partum hemorrhage, increase in maternal morbidity postpartum (afterpains, nausea and vomiting, need for analgesia) and neonatal outcomes (admission to neonatal intensive care unit, neonatal jaundice, low birth weight).

II. MATERIALS AND METHODS

This pilot study was originally designed as a prospective randomized case control study, with a total of 60 women (30 cases and 30 control) being admitted in labour room of a tertiary care centre and meeting the inclusion criteria to be included in the study. Randomization was done using the sealed envelope system. Randomly computer-generated treatment allocations were kept in sealed opaque envelopes.Oncea patient consented to participate in the study, an envelope was opened and the patient was then offered the allocated treatment. Inclusion criteria for the study were women at low risk of hemorrhage and expected to give birth vaginally with age <35 years, parity<5, first stage of labour <15 hours, no previous history of post-partum hemorrhage (PPH), hemoglobin >10g/dl, singleton pregnancy, cephalic presentation, term (>37 weeks) gestation and no medical complications that would contraindicate ergometrine or would increase the risk of bleeding (cardiac disease, hypertension, use of heparin).Exclusion criteria included hypertension in pregnancy or first or second stage, cardiac disease, coagulation defects, epidural anesthesia, antepartum hemorrhage, first stage >15 hours, previous history of PPH, previous history of uterine scar or lower segment cesarean section, grand multiparity, multiple pregnancy, polyhydramnios, preterm gestation (<37 weeks), intrauterine fetal death, non-cephalic presentation, anti-coagulation therapy, uterine fibroids, hemoglobin <10g/dl, oxytocin augmentation, instrumental vaginal delivery, cervical lacerations and patient refusal. Informed written consent were taken from patient and their relatives. The staff of labour room were carefully informed about the respective components of active and expectant management of third stage of labour.

Expectant management of third stage of labour: The main principle was a 'hands off' approach. A prophylactic uterotonic after delivery of baby was not administered; umbilical cord was neither clamped nor cut until cord pulsation ceased; signs of placental separation were awaited and placenta was delivered spontaneously or with the aid of gravity and maternal effort.

Active management of third stage of labour: In active management, prophylactic uterotonic drug (oxytocin 10 units intramuscularly) was routinely administered with, or immediately after the birth of the baby; umbilical cord was clamped and cut before cessation of cord pulsation and placenta was delivered by controlled cord traction method.

Demographic details and data pertaining to different parameters of labour and fetal outcome were collected using pre-prepared data collection forms. Routine antenatal investigations were done. Pre-delivery vitals of the mother were noted. Labour was constantly monitored and partogram charting was done. Duration of second and third stage were recorded using stopwatch. Post-partum blood loss was measured by placing a plastic drape beneath the patient's perineum to collect the blood which was transferred to a calibrated measuring container, and also by estimating approximate blood loss from gauzes used during delivery and floor spill. Post-delivery vitals were noted. Complete hemogram was done on admission in labour room and postnatally after 24 hours. Patients developing PPH and retained placenta were managed according to WHO guidelines.Postnatally, data were collected as regards to maternal anemia, need for blood transfusion, nausea and vomiting between birth of baby and discharge from labour ward, afterpains-abdominal pain associated with the contracting uterus in the post-partum period. Data regarding neonatal outcomes like admission to NICU (neonatal intensive care unit), neonatal jaundice requiring phototherapy or exchange transfusion, APGAR score <7 at birth, birthweight were noted using pre-prepared data collection sheets.

However, the study was stopped before completion after 11 enrollments (5 in expectant management group and 6 in active management group) as all the patients who were allocated in the expectant management group needed administration of uterotonics at some point during their management thus defeating the whole point of the study.

Statistical analysis: As the study was not completed, statistical analysis is not applicable.

Ethical considerations: The study was conducted after approval of the ethics committee of the institiute(IEC-AIIMS-P ALL INDIA

International Journal Dental and Medical Sciences Research
Volume 4, Issue 5, Sep-Oct 2022 pp 34-37 www.ijdmsrjournal.com ISSN: 2582-6018

INSTITUTE OF MEDICAL SCIENCES, PATNA PHULWARISHARIF PATNA BIHAR-2021/764).

III. RESULTS

The study was supposed to be conducted on a total of 60 women with 30 women each in both the active management group and the expectant management group. However, after conducting it on 11 women (5 in expectant management and 6 in active management group), it was observed that the study was not feasible for further continuation as all the patients of expectant management group needed therapeutic administration of uterotonics due to presumed PPH, atonic uterus or retained placenta. Thus, it was concluded that active management should be done in all patients and further expectant management should be stopped.

The results of the six women in the active management group are as follows. 3 women were primigravida, 2 were second gravida and 1 was third gravida. The period of gestation for all was between 37 completed weeks to 40 weeks. There was no pregnancy associated risk factors or significant past medical, surgical or family history. Duration of second stage was less than one hour for all and duration of third stage was less than 15 minutes for all. None of them had estimated post-partum blood loss more than 500 ml.Hemoglobin levels were above 10 g/dl both before and after delivery. The difference in packed cell volume before and after delivery was <3. None of them required further therapeutic uterotonics or blood transfusion. However, everyone experienced nausea in the immediate post-partum period, everyone required analgesics for afterpains the score of which on a scale of 1 to 10 was more than 6 for everyone. None of the neonates had low birth weight orrequired admission to NICUor developed jaundice requiring phototherapy or exchange transfusion.

The results of the five women in the expectant management group are as follows. 3 women were primigravida, one was second gravida and one was fourth gravida. Period of gestation was between 37 to 40 weeks for all. There was no pregnancy associated risk factors or significant past medical, surgical or family history. Duration of second stage was less than one hour for all. Duration of third stage of labour was less than 30 minutes for four patients whereas one patient developed retained placenta. There were no signs of placental separation even after 30 minutes of delivery of baby. Patient was administered uterotonics, bladder was emptied, uterine massage done after which placental separation signs were seen and placenta was then delivered by controlled contraction. One patient developed atonic uterus after delivery of placenta. Uterine massage was started which was not enough to contract the uterus and thus uterotonics had to be administered following which contraction of uterus was seen. Three patients were presumed to have PPH after delivery of placenta due to continuous, slow trickling of fresh blood per vaginum after delivery of placenta and thus were administered uterotonics. Hemoglobin levels of all patients before delivery was above 10 g/dl. However, after delivery hemoglobin levels of two patients decreased to <10 g/dl. Difference in packed cell volume before and after delivery was >3 for two patients Estimated post-partum blood loss was less than 500 ml for three patients and between 500-1000 ml for two patients. None of them required blood transfusion. Nausea was experienced by two out of 4 women. Everyone required analgesics postpartum for afterpains the score of which on a scale of 1 to 10 was more than 6 for everyone. There were no adverse neonatal outcomes like low birth weight, NICU admission or neonatal jaundice requiring phototherapy or exchange transfusion.

IV. DISCUSSION

This study was intended to determine the adverse effects of uterotonics and to determine whether expectant management of third stage of labour can be done for patients with low risk of bleeding. However, the discontinuation of the study before its completion due to third stage complications and presumed PPH tells us that active management of third stage of labour is important to reduce morbidity and mortality due to PPH and it should be continued for everyone. However the findings of postpartum nausea, severe afterpains score and need foranalgesics postpartum after administration of uterotonics suggests that although uterotonics are unavoidable, they should be given judiciously and should not be used rampantly without indication without taking into account its adverse effects.

Some of the previous studies conducted on active and expectant management of third stage of labour had the following results.C M Begley et al (1990) conducted a randomized control trial on 1429 women to compare active and physiological management of third stage of labour and found that active management group had higher incidence of nausea, vomiting, severe after birth pains, hypotension, manual removal of placenta and secondary PPH [1].

J Rogers et al (1998) conducted the Hinchingbrooke randomized controlled trial on 1512 women to compare active versus physiological management of third stage of labour and found that rate of PPH was significantly lower with active (6.8%) than with expectant management (16.5%) but there was more vomiting in active group [2].Yildirim D et al (2016) conducted a randomized control trial on 654 women to compare and active physiologic management and concluded that active management did nor decrease the risk of severe PPH in low risk women although it was associated with higher postpartum hemoglobin levels [3]. A Cochrane review (2019) by C M Begley et al concluded that there is uncertainty of the finding that active management reduced risk of severe primary PPH> 1000 ml at the time of birth because of very low quality evidence [4]. Active management is associated with certain harms such as postnatal hypertension, pain and return to hospital due to bleeding [4]. In women with low risk of bleeding, it is uncertain whether there exists any difference between active and expectant management for severe PPH or maternal anemia [4]. Thus, women should be allowed to make informed choice by giving information on the benefits and harms of both methods [4].

Limitations: The main limitation of this study is its verry small sample size due to its discontinuation before completion. Therefore, it is not advisable to make any conclusions based on the results of this study. Also since this study was conducted at a tertiary care centre with one to one care during labour and round the clock monitoring by obstetrician, this might be one reason for presuming PPH in expectant management group as patient was always under watchful observation by experienced obstetricians. This led to early intervention to control PPH which was only presumed. There might also have been a bias in monitoring of patients in expectant management group knowing that they did not receive uterotonics and might develop complications during third stage of labour.

V. CONCLUSION

The study revealed that it is not advisable to do expectant management of third stage of labour as risk of PPH and complications of third stage of labour increases. Active management of labour is very important in decreasing these risks. But uterotonics should not be used excessively and injudiciously for every women and the adverse effects of nausea, vomiting, afterpains, need for analgesia should also be considered.

Ethical clearance: This study was conducted only after ethical approval from the Institute's ethics committee. (AIIMS/PATNA/IEC/2021/674)
Data availability: This study contains the following available data- Data file 1.
Consent: Written and informed consent were taken from all participants.
Competing Interest: The authors declare that there is no competing interest.
Grant information: The authors declare that no grants were involved in supporting this work.
Acknowledgements: None

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