

Impact of Reorientation and Training of Active Management of the Third Stage of Labor in a New Medical College of Chhattisgarh, India

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ABSTRACT

Introduction: Active management of third stage of labor (AMTSL) is a best practice that reduces the incidence of postpartum hemorrhage (PPH). The present study was done with an objective to document the prevalent practice in regard to various components of AMTSL and the impact of reorientation session.

Materials and methods: A total 200 women fulfilling the inclusion criteria (low-risk singleton pregnancy at term) and anticipating vaginal delivery were enrolled in the study. In the first stage of the study, observation and documentation of ongoing practice of management of third stage of labor in 100 consecutive women (group I) was followed by reorientation session. In the second stage, again 100 women were observed and documented as above (group II). The changes and its impact in terms of blood loss and incidence of PPH were noted and compared with group I.

Results: None of the women of group I was given injection oxytocin in comparison to 77 women of group II. Controlled cord traction (CCT) was done in 44 women of group I as against 97 of group II women. No significant change in the timing of cord clamping was observed. The PPH occurred in only three women of group II in comparison to 11 of group I ($p \leq 0.05$).

Conclusion: The level of adherence to AMTSL was low particularly for the use of oxytocin as first-line prophylactic uterotonic. The change in practice after a session of reorientation was positive and was associated with significant reduction in the incidence of PPH. The study reiterates the importance of frequent trainings.

Keywords: Active management of third stage of labor, Maternal mortality, Postpartum hemorrhage, Visual estimation of blood loss.

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INTRODUCTION

The Millennium Development Goals have already ended 2015, and many resource-poor countries including India have fallen short of achieving the same.^{1,2} The new Sustainable Development Goals have set the objectives of reducing global maternal mortality ratio (MMR) to less than 70 per 100,000 live births by the year 2030.³ This needs urgent strategies to reduce the deaths due to PPH, which is the major contributor to maternal mortality (accounting for up to 35% cases) in the developing countries. There is evidence of substandard care in most of deaths. These deaths are largely preventable.⁴

Research has validated that the AMTSL is a best practice that reduces the incidence of severe PPH by nearly 70%⁵ as well as the need for blood transfusion (which has its own medical risks), hospital stay, and ultimately, death and suffering from PPH.

The World Health Organization's (WHO) recommendation of AMTSL includes three essential components, the first one is the administration of uterotonic, preferably oxytocin within 1 minute of birth of the baby, delayed cord clamping, and CCT to deliver the placenta.⁶ These steps are in contrast to the expectant management of third stage of labor where routine uterotonic is not administered, the signs of placental separation are awaited, and the placenta is allowed to be delivered spontaneously. Placental cord drainage cannot be recommended as a routine practice.⁷ The risk of manual removal of the placenta is reported to be reduced too by the routine use of AMTSL.⁸

The AMTSL was introduced to all maternity care units globally by way of teaching and training, but in spite of that, PPH remains a major contributor to maternal mortality in low-income countries.

Although AMTSL is widely promoted, data on the use of the practice are limited. The present two-stage study was done with an objective to document the prevalent practice in regard to various components of AMTSL to be followed by a reorientation training session of the staff and reevaluating the impact of that training in terms of individual components of AMTSL including its effect on the blood loss during labor at a recently started medical college situated in a tribal-dominated geographical area

of the state of Chhattisgarh, India. The ultimate aim remains to decrease PPH through proper use of active management.

MATERIALS AND METHODS

This prospective case series study was conducted in the Department of Obstetrics and Gynecology at the recently established Government Medical College, Ambikapur district of Surguja division of the state of Chhattisgarh, over a period from November 2016 to March 2017. During the study period, all women fulfilling the inclusion criteria (Age ≥ 18 and < 35 years, ≥ 35 and < 42 weeks of gestation and low-risk singleton pregnancy) who were anticipating vaginal delivery were enrolled in the study. A detailed history as per proforma was taken from them. The history included the basic demographic profile, i.e., age, educational status, their socioeconomic status, and their booked/unbooked status for antenatal care. Their gestational age at the time of delivery was noted. A detailed obstetric history including gravidity as well as parity of woman and details of previous obstetric events, such as previous live births, abortions, and dilation and curettage were recorded. Past history and family history of any significant medical or surgical illness were noted. History was followed by detailed physical examination including vital parameters. Cardiovascular system and respiratory system were examined. A thorough obstetric examination was done. Women were monitored throughout labor. Quantification of blood loss was done by visual assessment of blood loss method with the help of pictogram.

The first stage of study involved the observation and documentation of ongoing practice of management of third stage of labor in 100 consecutive women. These women constituted group I. This was followed by a detailed reorientation and training session of the staff members of labor room team (physicians, nurses, and midwives) by the faculty members of Department of Obstetrics and Gynecology explaining all the components of AMTSL practice over a period of 2 days. In particular, the staff nurses were counseled to keep a syringe prefilled with 10 units of oxytocin as soon as the woman enters the second stage of labor and inject it on the anterolateral aspect of thigh within a minute after the delivery of the baby, but only after excluding the presence of the another baby in case of an undiagnosed twin pregnancy. They were trained to clamp the cord after 1 minute when the pulsations stop. They were made confident to perform the correct practice of CCT in models as well as on laboring women under guidance of training faculty during reorientation session.

In the second stage, again, 100 women were enrolled as above and changes in practice of management of third

stage of labor were noted. These women constituted group II. The changes observed in lieu of reorientation program as well as its impact in terms of blood loss and incidence of PPH were noted and compared with group I. Informed consent was obtained from the women of both the groups before they were observed.

Exclusion criteria: Grand multiparity, multiple gestation, pregnancy, hypertension, premature rupture of membranes, previous lower segment cesarean section, and asphyxiated newborn.

Statistical analysis was done after compiling the results, using the Statistical Package for the Social Sciences version 20 software and presented in figures and tables. Chi-square test was used for comparisons with statistical significance as p-value of less than or equal to 0.05.

RESULTS

Majority women of both the groups (I and II) were not booked for antenatal care (84 and 78% respectively). The demographic profile of women of both the groups is given in Table 1. Women of both groups were matched statistically in terms of age with the mean age of 23.3, gravidity and gestational age, the mean being 36.87 weeks.

The practice pattern of various components of AMTSL is depicted in Table 2. None of the women of group I was given injection oxytocin in comparison with 77 women of group II who were administered 10 units of injection oxytocin intramuscularly within 1 minute of delivery of the baby.

The change in practice in implementing the timing of cord clamping is shown in Graph 1. In 64 women of group I, the cord was clamped before 1 minute. As compared with 53 women of group II, cord clamping within 1 to 3 minutes was done in 36 women of group I vs 47 women of group II. No significant change in the timing of cord clamping was observed in spite of the repeat training.

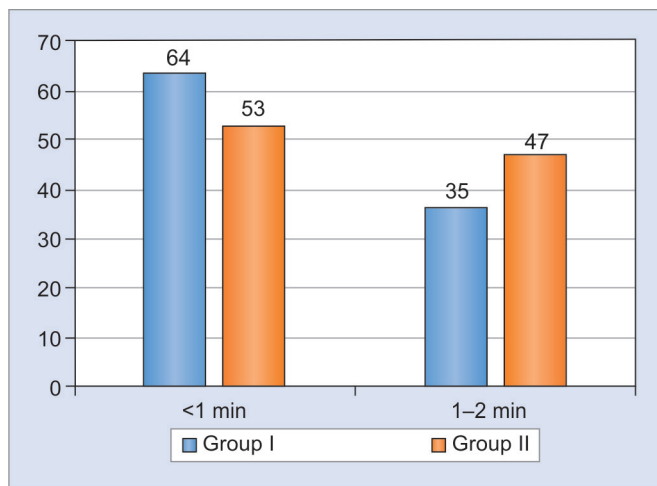
The third element of AMTSL, i.e., CCT, is shown Table 3. The CCT was done in 44 women of group I as

Table 1: Demographic profile of cases

	Mean	Standard deviation	Confidence interval
Age (years)	23.386	± 3.124	20.262–26.51
Gravidity	1.75	± 0.91	0.84–2.66
Gestational age (weeks)	36.87	± 1.93	34.94–38.8

Table 2: Comparison of uterotonic administration component of AMTSL

Uterotonic administration	Group I	Group II
Inj oxytocin	0	77
Misoprostol	100	23



Graph 1: Comparison of timing of cord clamping after delivery of baby

against 97 of group II women (p-value is less than 0.001 and the difference is highly significant statistically). There was no instance of retained placenta in either group.

Table 4 depicts that greater number women of group II had blood loss of less than 500 mL (the threshold for PPH) in comparison with women of group I, i.e., 97 vs 89 respectively, where as blood loss of more than 500 mL was experienced in only three women of group II in comparison with 11 of group I (p < 0.05, significant).

The PPH in both the groups could be managed by medical means and no woman had to be shifted to the operation theater for any surgical procedure.

DISCUSSION

Reduction of deaths due to PPH is an achievable goal, particularly in low-resource settings. Deaths due to PPH remain the greatest preventable sector. The package of AMTSL has the potential to reduce the risk of PPH. India accounts for 19% of global maternal deaths, three-quarters of which come from nine states including our state of Chhattisgarh.^{9,10} The MMR of Chhattisgarh has been reported as 230 in comparison with the contemporary figure of 178 at the national level.^{11,12} The scenario is even more grim in unfavorable geographic locations like division of Surguja where this figure reached 271, which, along with division of Bastar (MMR of 272), is an area contributing to more maternal deaths in comparison with the division of Raipur (MMR of 211) which is the capitol city of Chhattisgarh state and having had the privilege of a medical college for decades. The government of Chhattisgarh has started the medical college in Surguja division in 2015. The district hospital of Ambikapur has started functioning as a medical college hospital. The Department of Obstetrics and Gynaecology has always been a busy one with average annual delivery rate of around 6,000 cases. Majority of the deliveries are being

Table 3: Comparison of practice of CCT

CCT	Group I	Group II
Done	44	97
Not done	56	3

p = 0.001 (highly significant)

Table 4: Comparison of amount of blood Loss

Blood loss (in mL)	Group I	Group II
<500	89	97
500-1000	10	3
>1000	1	0

p-value = 0.0095 (significant)

conducted by the labor room nursing staff. The same staff were given the training of AMTSL in January 2016. The staff acknowledge the importance of AMTSL in preventing excessive blood loss.¹³ On evaluation of implementation of various components, it was surprising that they were not using injection oxytocin as the preferred uterotonic agent for AMTSL, but instead using tablet misoprostol 600 µg orally. Misoprostol is a reasonable agent for the management of third stage of labor when other agents are not available, but in health care facilities where oxytocin is available, it has to be the drug of choice. The explanation given was that it was easier to give tablets rather than injection as the injection had to be loaded and given within a minute of delivery. Sometimes, there also was a shortage of staff in the labor room but the main reason appeared to be the ease of administration. In the second phase of the study, the same staff could give injection oxytocin in 77 % of women. This shows the effect of positive attitude, counseling, and monitoring after the reorientation session.

The superiority of prophylactic oxytocin in decreasing PPH greater than 500 to 1000 mL has already been proved over placebo as well as other uterotonic agents, and it remains the first-line agent for the purpose.¹⁴⁻²⁰ Springhall et al²¹ reported a customized approach in the selection of the prophylactic oxytocic agent and concluded that even in women with augmented or induced labor, the use of syntometrine did not reduce the rate of PPH when compared with oxytocin. Chaudhuri and Majumdar²² observed that a combination of 400 µg of sublingual misoprostol with oxytocin was more effective in reducing blood loss after vaginal delivery as compared with oxytocin alone among women at risk of PPH. In our study, we were following the AMTSL protocol of WHO only, so we did not use the combination and we have already excluded most cases who were at higher risk of PPH.

Rath⁵ has emphasized that prophylactic oxytocin is the most important component of AMTSL. But in spite of the availability of the drug, the strict adherence to its

administration was not observed in other studies too.²³ The need of the hour is the frequent reorientation sessions and positive attitude as observed in the present study. Use of oxytocin was associated with significant reduction in the incidence of PPH in our study (Table 4). Simply sticking to this crucial step can go a long way in reducing blood loss as well as maternal morbidity and mortality.

There has been little research into the effects of the individual components of AMTSL. The CCT has not been found to reduce the risk of significant hemorrhage after childbirth.²⁴ It has been reported to have the advantage of reducing the risk of manual removal of the placenta, but it is a must that the competence of skilled birth attendants is ensured beforehand.²⁵ Although it was made to perform in 97% of cases after reorientation session in the present study, there was no instance of retained placenta in either group. It may therefore be made optional, particularly in view of the discomfort associated with its use.

No remarkable shift in the instances of delaying the cord clamping from <1 minute to >1 minute was observed after reorientation. It was rather less in group II. In no woman, the cord clamping was delayed to >3 minutes. Early cord clamping seems to be a set reflex action on the part of the birth attendant which even the repeat training could not alleviate. This observation calls for another session of training with stronger motivation for this component in lieu of the positive effect on the newborn.

CONCLUSION

The AMTSL is an important tool in preventing PPH, but in spite of the awareness and training regarding various components of AMTSL as well as its positive effects on the incidence of PPH, the level of adherence to various components was low, particularly for the most crucial step of using oxytocin as the first-line agent for prophylactic uterotonic action. The change in practice after a session of reorientation was very positive in this regard and was found to be associated with a significant reduction in the incidence of PPH. The results of this study highlight the need for a regular reorientation, positive attitude, and continuous monitoring.

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