

Comparative study between active management and expectant management of third stage of labour

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Abstract

Background: The third stage of labour is a period during the course of labour which begins immediately after delivery of baby till separation and expulsion of placenta and its attached membranes. Significant complications occur during third stage of labour. Most common and dreaded complication being is postpartum hemorrhage. Present study was aimed at comparing the expectant and active management of third stage of labour in preventing blood loss by affecting the duration of third stage of labour. **Material and Methods:** Present study was hospital based comparative observational study conducted in pregnant women, maternal age < 30 years, gestational age > 37 weeks, singleton pregnancy, Cephalic presentation, No antenatal complication, delivered at our hospital. 150 pregnant women were randomly divided by a computer assisted randomization table into 2 groups as Group A- 75 patients with active management of third stage of labour and Group E: 75 patients with expectant management of third stage of labour. **Results:** There was no significant difference in mean age, parity, mean gestational age, mean systolic/ diastolic blood pressure distribution in two groups. (p>0.05) Majority of patients in Group A (71 cases) and Group E (67 cases) require 5-10 minutes for 3rd stage of labor. The mean duration for 3rd stage of labor in group A was less (6.17 ± 1.71 minutes) compared to group E (7.61 ± 2.52 minutes) with statistically significant difference. Majority of patients in Group A (67 cases) had blood loss < 200 ml and Group E (32 cases) had blood loss 201-300 ml. The mean blood loss during labor in group A was less (160.62 ± 43.96 ml) compared to group E (294.42 ± 59.74 ml) with statistically significant difference. **Conclusion:** The active management of the third stage of labour decreased post-partum blood loss as well as duration of third stage of labour as compared with expectant management.

Keywords: The active management of the third stage of labour, AMTSL, post-partum hemorrhage, third stage of labour, expectant management.

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INTRODUCTION

The third stage of labour is a period during the course of labour which begins immediately after delivery of baby till

separation and expulsion of placenta and its attached membranes. Significant complications occur during third stage of labour. Most common and dreaded complication being is postpartum haemorrhage.¹ According to the World Health Organization, normal blood loss during the third stage of labour is ≤ 500 ml.¹ Uterine atony, prolonged third stage (>30 min) and retained placenta are the most common causes of severe haemorrhage.^{2,3} PPH is difficult to anticipate, but predisposing factors include distended uterus, prolonged labour, previous PPH and high parity. In addition, studies have shown nulliparity, high age and obesity to be associated with major blood loss, but PPH also occurs in women without risk factors.³ To reduce blood loss after delivery, the WHO, since 2007, recommends the Active Management of the Third Stage of

Labour (AMTSL) which include; uterotonics agents, preferably oxytocin 10uIM, immediately after the delivery of the baby, controlled cord traction (CCT) for delivery of the placenta, massage of uterine fundus after delivery of placenta.^{4,5} While in expectant management there is no use of prophylactic uterotonic agent, no cord clamping until pulsation cease and delivery of placenta by maternal effort and gravity rather than cord traction and no routine use of uterine massage until the uterus is atonic.⁶ Though international bodies as WHO, International federation of Gynaecologists and Obstetricians and the International Confederations of Midwives recommend AMTSL in all vaginal deliveries to prevent PPH, the value of implementing all components of AMTSL in healthy women has not yet been established worldwide.^{7,8} Present study was aimed at comparing the expectant and active management of third stage of labour in preventing blood loss by affecting the duration of third stage of labour.

MATERIAL AND METHODS

Present study was hospital based descriptive observational study conducted in Department of OBGY, MIMSR Medical College, Latur, India. Study duration was of 24 months from November 2018 to October 2020. The permission from institutional ethics committee was taken.

Inclusion criteria: maternal age < 30 years, gestational age > 37 weeks, singleton pregnancy, Cephalic presentation, No antenatal complication

Exclusion criteria: Gestational age < 37 week, Parity > 3, Multi fetal gestation, Polyhydramnios/ Oligohydramnios, Prolonged pregnancy, APH, PROM, IUFD, Abnormal presentations, Previous history of LSCS/VBAC, Fibroid complicating pregnancy, Retained placenta.

Study was explained and a written informed consent was taken for participation. A detailed history regarding age, menstrual history, and parity, family history, past history, clinical symptoms and signs was recorded. The staff of the delivery ward was carefully informed about the respective components of active and expectant management, and the importance of correctly measuring blood loss.

150 pregnant women were randomly divided by a computer assisted randomization table into 2 groups of 75 subjects each.

Group A- 75 patients with active management of third stage of labour.

Group E: 75 patients with expectant management of third stage of labour.

Active management includes early cord clamping immediately after birth, administration of injection

oxytocin 10 IU intramuscular within 2 minutes of child birth, controlled cord traction, and uterine massage.

Expectant management includes waiting for signs of placental separation, and deliver placenta spontaneously with maternal efforts and gravity, use of 10IU oxytocin after delivery of placenta. The pads soaked with amniotic fluid were removed and dry weighed sterile towels was placed under the mother immediately after the birth of the baby while waiting for the placenta to be delivered. The total blood loss was measure by auxiliary staff weighing all sanitary towels and pads before and after use. Total blood loss was divided into two categories: 1. Blood loss occurring from the birth of the baby to the expulsion of the placenta. 2. Blood loss occurring from after the expulsion of the placenta up to 2 hours postpartum.

After an observation period of about 2 hours, the mothers was transfer to the postnatal ward. In cases of profuse hemorrhage, as evaluated by the midwives, or if the placenta was not delivered within 45 minutes of the birth, then follow up of the hospital routines for either large hemorrhage or manual removal of the placenta was done

Data was compared and analyzed statistically for the significance of observed differences if any. Statistical analysis was done by using SPSS software and conclusions were drawn. Statistical data was collected by a blinded observer in the form of observation charts. Statistical analysis was done by using proportions and percentage for qualitative characters and chi-square or z-test was applied for quantitative type of data, mean and SD was calculated. Z-test and ANOVA was used where ever necessary.

RESULTS

It was observed that majority of patients in Group A (47 cases) and Group E (34 cases) were from age group 21-25 years. The mean age in group A was 24.13 \pm 2.78 years and group E was 24.17 \pm 3.06 years. It was observed that majority of patients in Group A (40 cases) were primi and Group E (39 cases) were multigravida. The mean gestational age in group A was 37.18 \pm 1.03 weeks and group E was 37.21 \pm 0.93 weeks. The mean hemoglobin in group A was 11.53 \pm 1.01 gm% and group E was 11.54 \pm 1.06 gm%. The mean systolic blood pressure in group A was 114.85 \pm 6.46 mm of Hg and group E was 117.33 \pm 6.25 mm of Hg. The mean diastolic blood pressure in group A was 75.41 \pm 7.43 mm of Hg and group E was 76.35 \pm 6.18 mm of Hg. There was no significant difference in mean age, parity, mean gestational age, mean systolic/ diastolic blood pressure distribution in two groups. (p>0.05)

Table 1: Maternal characteristics

Characteristic	Group A	Group E	P value
Age group			
16-20	06	12	
21-25	47	34	
26-30	20	28	X ² =5.75; DF=3; P=0.12 (NS)
31-35	02	01	
Mean age (years)	24.13 ±2.78	24.17 ±3.06	P=0.93 (NS)
Parity			
Primi	40	36	X ² =0.43; DF=1; P=0.62 (NS)
Multi	35	39	
Mean Gestational age	37.18 ±1.03	37.21 ±0.93	0.85 (NS)
Mean Hb (gm%)	11.53 ±1.01	11.54 ±1.06	0.95 (NS)
Blood Pressure (mm of Hg)			
SBP	114.85 ±6.46	117.33 ±6.25	0.83 (NS)
DBP	75.41 ±7.43	76.35 ±6.18	0.92 (NS)

It was observed that majority of patients in Group A (71 cases) and Group E (67 cases) require 5-10 minutes for 3rd stage of labor. The mean duration for 3rd stage of labor in group A was less (6.17 ±1.71 minutes) compared to group E (7.61 ±2.52 minutes) with statistically significant difference. (p<0.05)

Table 2: Comparison of duration of 3rd stage of labor among two groups:

Duration (minutes)	Group A	Group E	P value
<5	04	00	X ² =12.12; DF=2; P=0.002 (S)
5-10	71	67	
>10	00	08	
Mean Duration	6.17 ±1.71	7.61 ±2.52	<0.0001 (S)

It was observed that majority of patients in Group A (67 cases) had blood loss <200 ml and Group E (32 cases) had blood loss 201-300 ml. The mean blood loss during labor in group A was less (160.62 ±43.96 ml) compared to group E (294.42 ±59.74 ml) with statistically significant difference. (p<0.05)

Table 3: Comparison of blood loss during labor among two groups:

Blood loss (ml)	Group A	Group E	P value
≤200	67	12	X ² =83.69; DF=3; P<0.0001 (S)
201-300	08	32	
301-400	00	31	
401-500	00	00	
>500	00	00	
Mean blood loss (ml)	160.62 ±43.96	294.42 ±59.74	<0.0001 (S)

It was observed that there was decrease in both systolic and diastolic blood pressure post operative in both groups with statistically significant difference. (p<0.05) The comparison of blood pressure difference before and after delivery shows Group E has more drop in blood pressure (9.75% and 13.63%) compared to Group A (3.6% and 4.71%) with statistically significant difference. (p<0.05)

Table 4: Comparison of mean blood pressure before and after delivery:

Blood Pressure	Group A		Group E		P value
	SBP	DBP	SBP	DBP	
Pre-delivery	114.85 ±6.46	75.41 ±7.43	117.33 ±6.25	76.35 ±6.18	0.83 (NS)
Post-delivery	110.72 ±6.80	71.86 ±7.69	105.89 ±7.80	65.94 ±6.95	<0.001 (S)
Difference pre and post	3.60%	4.71%	9.75%	13.63%	<0.0001 (S)
P value	0.002 (S)	0.004 (S)	<0.0001 (S)	<0.0001 (S)	

It was observed that there was decrease in hemoglobin post operative in both groups with statistically significant difference. (p<0.05). The comparison of hemoglobin difference before and after delivery shows Group E has more drop in hemoglobin (11.52%) compared to Group A (6.33%) with statistically significant difference. (p<0.05)

Table 9: Comparison of mean hemoglobin before and after delivery:

Hemoglobin	Group A	Group E	P value
Pre-delivery	11.53 ±1.01	11.54 ±1.06	0.95 (NS)
Post-delivery	10.80 ±0.98	10.21 ±0.96	<0.003 (S)
Difference pre and post	6.33%	11.52%	<0.0001 (S)
P value	<0.0001 (S)	<0.0001 (S)	

DISCUSSION

As Postpartum hemorrhage is difficult to anticipate, predisposing factors should be kept in mind like distended uterus, prolonged labour, previous history of PPH, high parity, obesity, advanced age etc. these are independent variables that can affect amount of blood loss postpartum.⁹ Extensive work has been done internationally to compare active vs. expectant management of third stage of labour. Although active management is precisely described, it is not always strictly applied, and the one which applied is rather non-specifically referred to as the 'mixed' management, comprising the physiologic protocol diluted with one or two constituents of an active management.⁹ Kavita A. Chandnani *et al.*,¹⁰ compared expectant and active management of third stage of labour observed average age was comparable in both the groups, being 26 ± 4.3 years in expectant group and 26 ± 4.7 years in active group. This finding was in accordance to present study. Similarly, Jangsten *et al.*,¹¹ in their randomized control trial have demonstrated that there was no significant difference in age distribution in two groups. In the present study, It was observed that majority of patients in Group A (40 cases) were primi and Group E (39 cases) was multigravida. There was no significant difference in parity distribution in two groups. (p>0.05). Similar findings were noted by Kavita A. Chandnani *et al.*,¹⁰ and Jangsten *et al.*,¹¹ The mean gestational age in group A was 37.18 ±1.03 weeks and group E was 37.21 ±0.93 weeks. There was no significant difference in gestational age distribution in two groups. (p>0.05) In a study by Kavita A. Chandnani *et al.*,¹⁰ to compare expectant and active management of third stage of labour observed average gestational age in expectant management group was 38 weeks and in active management group was 39 weeks with no statistical difference. Similarly, Jangsten *et al.*,¹¹ in their randomized control trial have demonstrated that there was no significant difference in gestational age in two group In a study by Kavita A. Chandnani *et al.*,¹⁰ to compare expectant and active management of third stage of labour observed the mean duration of third stage of labour was shorter, 5.32(±3.05) minutes vs 13.46 (±8.73) minutes in the active management group, which was statistically significant (P=0.001). 22% cases in group A had mean duration of third stage of labour ≤ 5mins compared to 66 % in group B whereas, in group A i.e., expectant management 53% of patients had mean duration of third

stage ≥11 min compared to 10% in group B. This was similar to present study. In other studies done by Karim *et al.*,¹² and Taylor *et al.*,¹³ demonstrated that active management of third stage of labour was superior on the expectant management with statistically significant decrease in duration of 3rd stage of labour. Dogukan Yildirim *et al.*,¹⁴ compared active management protocol in women to expectant management protocol for third stage of labour observed mean duration of the third stage of labor was significantly (P < 0.001) shorter in the active management group. This was similar to studies done by Jangsten E *et al.*,¹¹ Maryam K *et al.*,¹⁴ Niven RB *et al.*,¹⁵ In the present study, it was observed that majority of patients in Group A (67 cases) had blood loss <200 ml and Group E (32 cases) had blood loss 201-300 ml. The mean blood loss during labor in group A was less (160.62 ±43.96 ml) compared to group E (294.42 ±59.74 ml) with statistically significant difference. (p<0.05) In other studies done by Karim *et al.*,¹² and Taylor *et al.*,¹³ demonstrated that active management of third stage of labour was superior on the expectant management with statistically significant decrease in the blood loss. A Cochrane database meta-analysis by Begley *et al.*,¹⁶ showed that although active management reduced mean blood loss and postpartum hemorrhage (>500 cc), there was no statistically significant reduction in severe postpartum hemorrhage (>1000 cc) for women at low risk for bleeding as well as in mean duration of third stage of labour, which was in contrast to present study. In a study by Kavita A. Chandnani *et al.*,¹⁰ observed there were no statistically significant differences in prepartum hemoglobin levels (10.7 gm% in expectant management: 10.2 gm% in active management group). Hemoglobin level 24 hours post delivery fell by more than 2 g/dl in 20 patients in expectant group as compared to only 6% in active group (P<0.01). This finding was in accordance to present study. Similarly, Jangsten *et al.*,¹¹ noted that there was no significant difference in hemoglobin pre delivery in two groups while 24 hours postpartum fell in hemoglobin was more in expectant group as compared to active group. The WHO and professional bodies recommend active management of the third stage of labour (AMTSL) for all vaginal births in order to prevent PPH. This involves prophylactic administration of uterotonic medicines before delivery of the placenta in addition to other non-pharmacological interventions, such as late cord clamping and controlled cord traction of the umbilical cord. The active management of the third stage of labour decreased post-partum blood loss as well as duration of third stage of labour as compared with expectant management.

CONCLUSION

The active management of the third stage of labour decreased post-partum blood loss as well as duration of third stage of labour as compared with expectant management. It is reasonable to advocate the active management of third stage of labour as the reduction of blood loss has a much greater impact on women's health in low income countries compared with high income countries.

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