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Original Research Article

The effect and safety of placental blood drainage as a part of active management of third stage of labour in spontaneous vaginal delivery

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ABSTRACT

Background: In placental cord drainage facilitates placental delivery in both vaginal and caesarean section deliveries. The present study was done to evaluate the effect and safety of placental blood drainage as a part of active management of third stage of labour to reduce the duration and blood loss during third stage of labour.

Methods: The study was conducted in department of Obstetrics and, SN Medical College, Agra, Uttar Pradesh, India on 400 term pregnant women, with single live intrauterine fetus in cephalic presentation, without any complication. They were randomly divided into to study and control group. Study group: It comprised of 200 Gynaecology cases, underwent active management of third stage of labour with placental blood drainage. Control group: It comprised of 200 cases, underwent active management of third stage of labour (AMTSL) alone. Duration and blood loss during third stage were noted.

Results: The mean duration of third stage of labour was 3.61 ± 0.972 mins in study group and 8.15 ± 1.711 mins in control group. The mean blood loss during third stage of labour was 168.14 ± 76.703 ml and 287.40 ± 85.808 ml in study and control group respectively.

Conclusions: Duration of third stage, blood loss during third stage, and hemoglobin deference between pre and post-delivery were reduced significantly in study group than control group.

Keywords: AMTSL, Placental blood drainage, Third stage of labour

INTRODUCTION

Although third stage of labour occupies a very short period of time when compared to the several hours devoted to labour, this crucial period involves many hazards to the maternal life and health. Now days all the clinicians focus on third stage of labour because it is associated with life threatening complications such as postpartum hemorrhage, retained placenta, shock, pulmonary embolism, and uterine inversion.

Out of above complications postpartum haemorrhage (PPH) is the most common and dreaded complication of

third stage of labour.¹ In rural India 2-6% and 6% pregnant women are land up in to PPH after vaginal and caesarean section respectively.² Out of total maternal mortality 25-30% is due to PPH. Placental cord drainage facilitates placental delivery in both vaginal and caesarean section deliveries because it is likely to decrease placental volume and surface area that might facilitate placental separation and uterine contraction, which facilitates early expulsion of placenta and reduces the duration of third stage of labour.^{4,5}

The present study was tried to justify above hypothesis and confirming the finding of previous study in North Indian region.

METHODS

The study was carried out on 400 term pregnant women with single live intrauterine pregnancy with vertex presentation that underwent spontaneous vaginal delivery in department of obstetrics and gynaecology, S. N. Medical College Agra. All cases were randomly allocated into two groups equally.

Study group was under went placental blood drainage along with active management of third stage of labour.

Control group was under went active management of third stage of labour alone.

Cases in both the groups were subjected to detailed history taking together with examination and investigations.

Partographic monitoring of labour was done in all cases. The duration of first and second stage of labour were recorded. Also the need for induction and augmentation was noted. Following delivery of baby, the umbilical cord was clamped with two clamps, cut between the clamps, and the baby was handed over to the paediatrician, according to standard protocol Both the groups were subjected to active management of third stage of labour.

Placental blood drainage

The women of study group underwent placental cord drainage in addition of active management of third stage of labour. Unclamping was performed on the maternal

side of the cord and the blood in the placenta was allowed to drain freely.

In both the groups, the duration of the Third Stage of Labour, the time interval between the deliveries of the baby to expulsion of placenta, was estimated with a stop watch controlled by the assistant and the blood loss in third stage of labour measured. Complete removal of the placenta and membranes was then confirmed. Maternal pulse, blood pressure, and temperature were recorded within 15 minutes in the first hour and then hourly for the following six hours.

RESULTS

Table 1 depicts the distribution of cases according to the duration of third stage of labour. Majority of cases (97%) in study group had duration of third stage of labour <6 min while in control group majority of cases (87.5%) had >6 min. The mean duration was 3.61 ± 0.972 minutes and 8.15 ± 1.711 minutes in study group and control group respectively. This duration of third stage of labour in both study and control group were statistically significant ($p=0.000$).

Table 2 shows distribution of cases according to blood loss in third stage of labour. In study group maximum no. of cases (68%) had blood loss during third stage of labour <200cc while in control group maximum no. of cases (75.5%) had 200-400cc blood loss. The mean blood loss in Study and control groups was 168.14 ± 76.703 ml and 287.40 ± 85.808 ml respectively. This blood loss during third stage of labour was statistically significant $p=0.000$.

Table 1: Distribution of cases according to duration of third stage of labour

Duration (Min)	Study group (%) N=200	Control group (%) N=200	Chi-square value and significance
<3	69 (34.5%)	0 (0%)	293.952 (p=0.000)
3.1-6	125 (62.5%)	25 (12.5%)	
6.1-9	6 (3%)	106 (53%)	
>9	0 (0%)	69 (34.5%)	
Mean	3.61 (± 0.972)	8.15 (± 1.711)	

Table 2: Distribution of cases according to blood loss during third stage of labour.

Blood loss (ml)	Study group (%) N=200	Control group (%) N=200	Chi-square value and significance
0-100	38 (19%)	1 (0.5%)	169.672 (p=0.000)
101-200	98 (49%)	34 (17%)	
201-300	33 (16.5%)	83 (41.5%)	
301-400	18 (9%)	68 (34%)	
401-500	7 (3.5%)	6 (3%)	
>500	6 (3%)	8 (4%)	
Mean	168.14 \pm 76.703	287.40 \pm 85.808	

It was clear from Table 3, the change in hemoglobin concentration <1 gm% was noticed in 192(96%) cases of study group and 126(63%) cases of control group but the

change of 1-2 gm% was found in 7(3.5%) and 70(35%) cases of study and control group respectively. Only 5 cases had change in hemoglobin >2gm%. This change in

hemoglobin before and after delivery was statistically significant ($p=0.000$). Table 4 shows correlation between

amount of blood loss and duration of third stage of labour was statistically significant, positively correlated.

Table 3: Distribution of cases according to change in hemoglobin before and after delivery.

Change in HB (gm%)	Study group (%) N=200	Control group (%) N=200	Chi-square value and significance
<1	192 (96%)	126 (63%)	66.820 ($p=0.000$)
1-2	7 (3.5%)	70 (35%)	
>2	1 (0.5%)	4 (2%)	

Table 4: Correlation of blood loss with duration of third stage of labour.

Duration (min) blood loss (ml)	0-3	3-6	6-9	9-12	Correlation coefficient (p-value)
0-100	12	29	1	0	0.461 (0.000)
101-200	44	78	18	15	
201-300	16	25	43	34	
301-400	1	8	45	17	
401-500	0	2	3	5	
>500	0	2	4	8	
Total	400				

Table 5: Distribution of cases according to post-partum complications.

Complications	Study group (%) N=200	Control group (%) N=200	Chi-square value and significance	
Immediate	Pph	6 (3%)	8 (4%)	0.296 ($p=0.586$)
	Incomplete removal of placenta	12 (6%)	18 (9%)	1.224 ($p=0.832$)
	Retained placenta	1 (0.5%)	2 (1%)	0.242 ($p=0.634$)
	Need for manual removal of placenta	0 (0%)	1 (0.5%)	2.324 ($p=0.932$)
Up to 6 hours	Fever	9 (4.5%)	11 (5.5%)	3.35 ($p=0.340$)
	Pph	0 (0%)	1 (0.5%)	2.42 ($p=0.591$)
	Urinary complaints	2 (1%)	3 (1.5%)	0.345 ($p=0.364$)
Up to 24 hours	Fever	4 (2%)	6 (2%)	0.446 ($p=0.800$)
	Urinary complaints	12 (6%)	11 (5.5%)	1.68 ($p=0.436$)

Table 5 depicts the incidence of post-partum complication in study and control groups and there is no statistically significant difference.

DISCUSSION

Pregnancy is joyful for every family but it may take toll on the maternal health. These are devastating for the family and can be prevented to some extent by careful management of labour especially third stage of labour. We were studied various parameters of third stage of labour discussed below

The mean duration of third stage of labour between study and control group was 3.61 ± 0.972 and 8.15 ± 1.71 minutes correspondingly. We found it was 0-6 minutes in

majority (97%) of study group women. While in control group duration of third stage of labour was 6-12 minutes in majority (87.5%) of women. This difference between study and control group was statistically significant ($p=0.000$). Above results of our study were comparable with a comparative prospective study by Roy P et al, in 2016. They took 200 term pregnant women allocated to study and control group with equal representation of sample in both the groups. They found mean duration of third stage of labour was 3.50 ± 1.39 minutes (210.5 ± 83.4 sec) in study group but 5.03 ± 1.57 minutes (302.5 ± 94.3 sec) in control group.⁶ According to Meena SA in 2017, the mean duration of third stage of labour was 3.56 ± 1.32 and 5.06 ± 1.38 minutes in placental blood drainage and control groups respectively.⁷ Results of above studies were statistically significant.

Blood loss during third stage of labour was classified in denominations of 100 ml. Most of study group bled in range of 0-200 ml (68%) while in majority of control group (75.5%), the amount of blood loss was ranged from 101-400 ml. In a very similar study by Shrivage JC et al in 2007 the mean blood loss during third stage of labour was 175.05±118.15 ml in study group and 252.05±145.48 ml in control group.⁸ Another similar randomized controlled trial published in 2017, the mean blood loss was 197.4±18.4 and 243.8±40.4 ml in study and control group respectively.⁹ Finding of our study was consistent with finding of other studies.

Majority of study and control group cases showed <1 gm change in hemoglobin. Change in hemoglobin between study and control group was statistically significant. Our finding was consistent with a study by Roy P et al, on placental blood drainage published in 2016. They noticed mean change in hemoglobin 0.6 gm% in study group and 1.1 gm% in control group.⁶ A study by Metin KABA et al 2016, on placental blood drainage reported a change in hemoglobin 0.6 gm% in both groups.¹⁰

Placental blood drainage as part of active management of third stage of labour was effective in reducing the duration, the blood loss, and also the incidence of PPH. Placental blood drainage is a simple, safe, and non-invasive method of managing the third stage of labour, which can be practiced in both tertiary care centres as well as rural setup in addition to the routine uterotonics..

CONCLUSION

In present study, authors found that placental blood drainage brought about the significant reduction in duration of third stage of labour and blood loss during third stage of labour. This is a very simple procedure which require no specialized equipment and training. It can be performed as a prophylactic measure to reduce incidence of post-partum hemorrhage and other complications associated with third stage of labour. The health personnel conduct delivery at the peripheral health center can be trained about this simple measure to reduce maternal morbidity and mortality. Reduction in amount of blood loss also reduces the incidence of anemia in post-partum Indian women who already have poor iron reserve. No increase in incidence in the number of retained placenta or other complication was found in our study.

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