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Drainage of Placental Cord Blood– a Part of Active Management of Third Stage of Labor and for the prevention of PPH

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Abstract
Objective:- *To evaluate the effectiveness of placental cord blood drainage in reducing the duration of blood loss in third stage of labor, and the incidence of postpartum hemorrhage.*
Method:- *This prospective study was conducted in the Department of Obstetrics and Gynecology, Pacific Medical College and Hospital , Udaipur from October 2016 to April 2017 . Placental blood was drained in all the patients in the study group, whereas in the control group the cord blood was not drained. Blood lost in the third stage of labour was measured and blood from the episiotomy was mopped, and the mops were discarded separately.*
Results:- *The mean duration of third stage was 5.06 minutes in the study group and 8.20 minutes in the control group. This difference was statistically significant (P<0.001). The average third stage blood loss was 185.4 ml in the study group and 269.6 ml in the control group. This difference also was statistically significant (P< 0.001). The incidence of postpartum haemorrhage was 2 % in study group and 9 % in control group. The mean drop in Hb % level was 0.7 gm/dl in study group and 1.3 gm/dl in control group. These above differences were both statistically significant. None of the women required blood transfusion.*
Conclusion:- *Drainage of placental cord blood is a simple safe and non-invasive method of great use in day to day obstetric practice not requiring any extra effort, cost or equipment which reduces the duration of blood loss in third stage which can be practiced in both tertiary care centres as well as rural setup in addition to the routine uterotonics and hence thereby preventing postpartum hemorrhage.*
Keywords:- *AMTSL(Active Management of Third Stage Of Labor) GA(Gestational Age) , PPH(Postpartum Heamorrhage) ,*

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I. Introduction

Postpartum haemorrhage is the most common and dreaded complication of third stage of labor. Third stage of labour is always a time of anxiety as the normal case can within a minute become abnormal and successful delivery can swiftly turn into a maternal mortality. Numerous factors lead to increased incidence of postpartum hemorrhage like prolonged labor, multifetal gestation, large baby, anemia, preeclampsia and operative vaginal delivery.

Labor is a physiological process, but it is often associated with morbidity and mortality, with the most common cause being blood loss [1]. Life-threatening obstetric hemorrhage occurs in approximately 1 per 1000 deliveries [2]. The most recent Practice Bulletin from the American College of Obstetrics and Gynaecology estimates a total of 1,40,000 maternal deaths per year or 1 woman every 4 min [3].

Although one or more risk factors may increase the chance of postpartum hemorrhage, two-thirds of postpartum hemorrhage cases occur in women with no known risk factors. Hence, all pregnant women remain at risk for this catastrophic event.

The active management of third stage of labor (AMTSL), as approved by FIGO in 2003, acts prompt to time to combat postpartum hemorrhage, should it occur, so that the valuable lives of pregnant mother can be saved [4]. The present study was undertaken for evaluating the effectiveness of drainage of placental cord blood after vaginal delivery which is simple, safe and noninvasive method of shortening the third stage of labor and reducing the amount of blood loss.

II. Materials and Methods

The present study was a hospital based prospective study conducted on One hundred patients with term pregnancy (at or beyond 37 weeks GA) with a single live fetus in cephalic presentation who had vaginal delivery .

There were two groups , of which the study group consisted of 50 patients—in whom the placental blood was drained. The rest of the 50 patients were placed in control group where the cord blood was not drained.

After a detailed history taking, general physical and obstetric examination were performed. Informed consent was taken from those who fulfilled the inclusion criteria. Once the women delivered vaginally without any instrumentation, she was randomized into study or control group

Inclusion criteria:

- Singleton pregnancy
- Vertex presentation
- Gestational age of 37 weeks (or) more
- No major medical (or) obstetric complications
- Spontaneous vaginal delivery

Exclusion criteria:

- Hb < 7 gm/dl
- Overdistended uterus (hydramnios, multiple pregnancy, large baby),
- Antepartum hemorrhage,
- Induced labor,
- Instrumental delivery
- Any coagulation disorders.

In each patient, the pre-delivery pulse rate, blood pressure, and Hb gm% were noted. Labour was monitored carefully using a partogram and augmentation was done whenever required. In the study group placental end of the cut umbilical cord was unclamped immediately after it was cut and left open to drain blood in a kidney tray until the flow ceased. This prevented the drained blood from getting mixed with blood lost in the third stage. In the control group placental end of the cut umbilical cord remained clamped. Blood lost in the third stage was measured . Mops used for episiotomy were discarded. This was found to be an efficient way of collecting blood after delivery without interfering with perineal suturing. If there was excessive bleeding due to uterine atony in 500 mL of saline drip containing 10 units oxytocin was started. If the uterus still did not contract adequately prostodin (PGF_2a) 250 mcg was given intramuscularly.

The duration of the third stage was calculated using a stop watch. The patient's post-delivery pulse rate, blood pressure were noted. The women were kept under observation for the next 2 hrs to watch for complications, if any. Blood Hb gm% was measured after 24rs h of delivery in both the groups and difference from that of the antenatal value was observed.

III. Results

The total number of patients studied was 100 equally distributed in both the groups. The majority of patients in both the groups were aged between 21 and 24 years . As seen in Table 1 the two groups were well matched in demographic variables. The mean gestational age in both the groups was 38.4 weeks in the study group and 38.0 weeks in the control group.

Table 1 shows Demographic variables (mean)

Variables	Study group	Control group	p value
Age (years)	22.44	23.27	>0.05
Gravida	1.82	1.96	>0.05
Parity	0.86	0.94	>0.05
Gestational Age (weeks)	38.40	38.00	>0.05

Table 2 shows duration of third stage of labor (mean)

Duration	Study group	Control group	Pvalue
Mean	5.06 minutes	8.02minutes	<0.001

The mean duration of third stage of labour was 5.06 minutes in the study group and 8.20 minutes in the control group. The difference in the duration of third stage of labour is statistically significant

Table 3 shows amount of Blood Loss

Blood Loss(ml)	Study group	Control group
<100ml	Nil	Nil
101-200ml	27	10
201-300ml	16	22
301-400ml	5	13
401-500ml	1	2
>500ml	1	3
Mean value	185.4 ml	269.6 ml

The mean blood loss in study group was 185.4 ml and was 269.6 ml in the control group. There was a statistically significant decrease in the blood loss in the study group Its pvalue <0.0001 ; statistically significant

Table 4 shows difference in Hb % 24hrs after delivery

Hb%	Study group	Control group
Before delivery	10.6	10.1
After delivery	9.9	8.8
Decrease in Hb %	0.7	1.3

The mean drop in Hb % level was 0.7 gm/dl in study group and 1.3 gm/dl in control group . These above differences were both statistically significant Its pvalue <0.0001 ; statistically significant

Table 5 shows the incidence of PPH

PPH	Study group (no.)	Control group (no.)
Yes	2	9
No	48	41

The incidence of postpartum haemorrhage was 2 % in study group and 9 % in control group .Its pvalue <0.01, significant
The vital parameters in both the groups were comparable.

IV. Discussion

In our study, the mean duration of third stage of labour was 5.06 minutes in the study group versus 8.20 minutes in the control group, the difference being statistically significant. In the study conducted by Giacalone et al. [5], a RCT involving 500 patients, the median value of duration of III stage of labour was 8 min in the study group and 15 min in the control group. In another study by Gulati et al. [6], 200 pregnant women were evaluated and a significant difference in the mean duration was noted—5.72 min in the control group and 2.94 min in the study group.

The average blood loss in the third stage, in our study was 185.4 ml in the study group and 269.6 ml in the control group, the difference being statistically significant. In a similar study by Gulati et al. [6], the amount of blood lost in the III stage of labour was 193.63 ml in the study group and 247.59 ml in the control group. Shravage et al. [7] reported that the average blood loss in the study group was 175.05 ml, while in the control group it was 252.05 ml.

In our study there was a significant change in the Hb gm% 0.7 gm% in the study group vs. 1.2 gm% in the control group). But, in a study by Soltani et al. [8], there was no significant change in mean Hb gm% after birth, it being 1.2 gm% in the study group and 1.3 gm% in the control group.

The incidence of PPH was 2 % in the study group versus 9 % in the control group in our study, the difference being statistically significant. In another study by Gulati et al. [6], the incidence of postpartum haemorrhage was 6 % in the study group as compared to 12 % in the control group. There was a statistically significant difference in the incidence of PPH noted by Shravage et al. [7], 3 % in the study group and 10 % in the control group.

V. Conclusion

Drainage of placental cord blood is simple, safe and noninvasive method of great use in day to day obstetric practice not requiring any extra effort, cost or equipment which can be practiced in both tertiary care centres as well as rural setup in addition to the routine uterotonics. It is also considered as part of active management of third stage of labor (AMTSL) was effective in reducing the duration, the blood loss and also the incidence of PPH [9].

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Conflict of interest

The authors declare no conflict of interest.

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