



## "PLACENTAL CORD BLOOD DRAINAGE AND IT'S EFFECTS ON THIRD STAGE OF LABOUR"

**Dr Rita D**

Professor and HOD, Department of OBG, NMCH&RC , Raichur.

**Dr Ravali G\***

Junior Resident, Department of OBG, NMCH&RC , Raichur. \*Corresponding Author

**Dr Shweta Singh**

Junior Resident, Department of OBG, NMCH&RC , Raichur.

### ABSTRACT

**Background:** Postpartum hemorrhage is accountable for around 25% of maternal mortality in the developing countries. The third stage prolongation is considered the first cause of postpartum hemorrhage. Timely placenta expulsion and an effective uterine contraction to stop bleeding are key element to prevent third stage complications and manual removal of placenta. **Aims and objectives:** To compare the effectiveness of placental cord drainage during vaginal delivery in reduction of PPH and duration of third stage of labour. **Methods:** The study was carried out among 100 pregnant women (where placental cord blood was drained in 50 cases and placental cord blood was not drained in 50 cases), who have admitted and delivered at Navodaya Medical College, Raichur, Karnataka. **Results:** The mean duration of third stage was 5.1 minutes in the study group and 7.26 minutes in the control group. The incidence of PPH was decreased in the study group (4% vs 12%). Duration of third stage of labour, blood loss during third stage, postpartum hemorrhage, need for blood transfusion and haemoglobin difference between antenatal and postnatal period was significantly reduced in the study group than control group. **Conclusion:** Placental cord blood drainage is simple, safe, non-invasive and one of the effective method in reducing the duration and extent of blood loss during third stage of Labour.

**KEYWORDS :** Placental cord blood drainage, Postpartum hemorrhage, Manual removal of placenta, Blood transfusion

### INTRODUCTION:

Postpartum hemorrhage is accountable for around 25% of maternal mortality in the developing countries. <sup>[1]</sup> The third stage prolongation is considered the first cause of postpartum hemorrhage. The third stage of labor starts after fetus complete expulsion and ends by placenta complete expulsion.<sup>[2]</sup> Delayed cord clamping and controlled cord traction is the prevalent practice in the active management of third stage of labour.<sup>[3]</sup>

The complications of third stage include uterine atony, retained placenta, postpartum hemorrhage, hemorrhagic shock, and even maternal death. Uterine atony is the chief cause of PPH. Timely placenta expulsion and an effective uterine contraction to stop bleeding are key element to prevent third stage complications.

Placental expulsion depends on its separation from uterine wall, capillary hemorrhage, contractility of the uterine muscle, maternal effort, and gravity effect on the placenta. Placenta delivery is generally completed within 15 minutes following the fetus delivery in 90% of cases.

The new method in third stage management is placenta cord drainage. The hypothesis behind this technique is that low weight of the placenta may facilitate its delivery. From the physiological point of view, placenta cord drainage may decrease its bulkiness, consequently, it increases the uterine contractility and makes it more efficient.<sup>[4]</sup>

Effective uterine contraction mostly will shorten the third stage duration and decrease the risk for postpartum hemorrhage and manual removal of placenta.

### AIMS AND OBJECTIVES

The objective of the study is to compare the effectiveness of placental cord drainage during vaginal delivery in reduction of PPH and duration of third stage of labour.

### MATERIALS AND METHODS

This is prospective randomized controlled trial conducted over a period of twelve months from June 2021 to July 2022. Study was conducted on a sample size of 100 pregnant woman with singleton, live, term, pregnancy with vertex presentation who

delivered in Navodaya Medical College and Research Centre, Raichur after obtaining institutional ethical committee clearance.

Women were divided according to computer generated randomization table into 2 groups: -

- Group-A (study): where placental cord blood was drained (50 cases) and
- Group-B (control): where placental cord blood was not drained (50 cases).

All the patients in the study group were counselled regarding the procedure of cord drainage and an informed consent was obtained. Immediately after delivery, the linen soiled with amniotic fluid was removed and kidney tray of volume 500ml is used for measurement of accurate blood loss.

In the study group the placental end of the cut umbilical cord was unclamped immediately after it is cut and left open for blood to drain in a vessel until the blood flow ceased. In the control group the placental end of the cut umbilical cord remained clamped.

Prophylactic intramuscular oxytocin 10 IU for active management of the III stage of labour was given immediately after delivery of baby. Blood lost in the third stage of labour was measured by collecting the blood in a kidney tray taking care that the blood from episiotomy wound did not get mixed with the uterine loss.

The mops used for episiotomy were separated & discarded. The duration of the third stage was calculated using a stop watch. Once the uterus was well contracted and the active bleeding had stopped, the remaining blood in the vagina was removed and a sterile sanitary pad was given. The women were kept under observation for the next one hour to watch for complications if any. Hemoglobin was measured after 48 hours of delivery in both the groups and difference from that of the antenatal value was observed. The patients were carefully watched in the post-natal ward for 48 hours for any complications.

### Inclusion Criteria:

- Primi and multi gravida

- Singleton term pregnancy
- Vertex presentation
- Spontaneous vaginal delivery
- Women with written and informed consent

**Exclusion Criteria:**

- Hemoglobin less than 7 g/dL
- Over distended uterus
- Antepartum hemorrhage
- Instrumental delivery
- Previous caesarean section Rh negative pregnancy
- Coagulation disorders
- Medical disorders (chronic liver diseases, pulmonary diseases, cardiac diseases, renal disease)
- IUD
- Malpresentations

**RESULTS:**

After statistical analysis (chi square) of data, final observations and results were tabulated as below using the Statistical Package for Social Sciences (SPSS) Version 21.

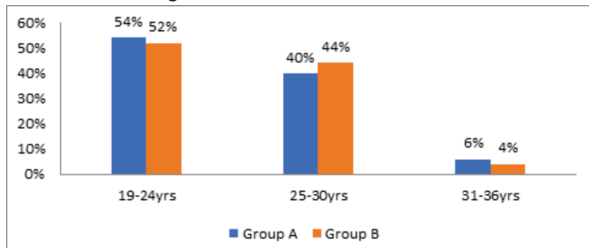


Figure 1: Age Distribution (n=100)

Figure 1 shows mean age of control group was 24 and study group was 24.4, P value was 0.5 which is not significant.

**Table 1: Mean Duration Of Third Stage Of Labour**

Duration of 3rd stage labour(mins)	Group A /Study group		Group B/Control group	
	No. of pregnant women	%	No. of pregnant women	%
1-3	11	22	0	0
4-6	32	64	27	54
7-9	5	10	15	30
10-12	2	4	5	10
13-15	0	0	3	6
Total	50	100	50	100

Table 1 shows Mean duration of third stage of labor in control group was 7.26 minutes and in study group was 5.1 minutes. P Value was < 0.0001 which is highly significant.

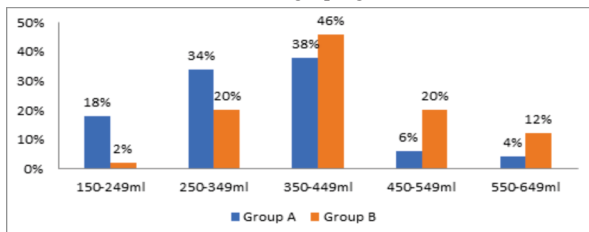


Figure 2: Mean Blood Loss

Figure 2 shows Mean blood loss during third stage of labour was 395ml in control group and 316ml in study group. P value was < 0.0001 which is highly significant.

**Table 2: PPH Distribution**

PPH	Study group		Control group	
	No. of pregnant women	%	No. of pregnant women	%
Yes	2	4	7	14
No	48	96	43	86
Total	50	100	50	100

Table 2 shows 14% of control group and 4% of study group had blood loss >500 ml. And none of both groups had more than 1000ml of blood loss.

**Table 3: Mean Hemoglobin Difference**

	Study group	Control group	P value
Mean hemoglobin difference pre delivery	10.898	11.036	0.3907
Mean hemoglobin difference post delivery	10.248	9.774	0.0247
Mean hemoglobin difference	0.65	1.262	<0.0001

Table 3 shows haemoglobin difference before and after delivery was calculated in both control and study groups. The mean difference in Hb% in control group was 1.262 gm/dl and in study group, it was 0.65gm/dl. P value was < 0.0001 and it is highly significant.

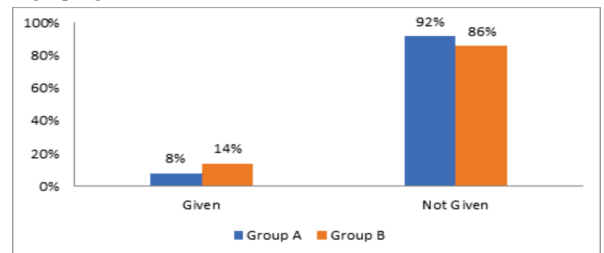


Figure 3: Need For Blood Transfusion

Figure 3 shows that in study group 8% women required blood transfusion and in control group 14% required blood transfusion. P value is 0.3377 which is not significant.

**DISCUSSION**

In the present study, mean duration of third stage was 5.1minutes in the study group and 7.26 minutes in the control group. The incidence of PPH was decreased in the study group compared to control group (4% vs 12%) and the mean difference in Hb% in control group was 1.262 gm/dl and in study group, it was 0.65gm/dl was found to be significant.

In the present study, the age group of women varied between 19-36 years which corresponds to the reproductive age of women. The mean age was 24.4 years in group A and 24 years in group B. Maximum percentage of women belonged to the age group of 19-24years. In a similar randomized clinical controlled trial by Dr. Pinkee Meena et al the mean age of women who entered the study was 22 years.

**Comparison Of Mean Duration Of Third Stage Of Labour With Other Studies**

Mean duration of third stage of labour	Study group(mins)	Control group(mins)	P value
Present study	5.1	7.26	<0.0001
Shravage et al.	5.02± 1.71	7.42± 2.56	< 0.001
Giacalone et al	8	15	<0.001

In the present study, the study group(Group A) showed a mean duration of 5.1 mins after draining the umbilical cord blood in third stage of labour and control group (Group B) showed a mean duration of 7.26 mins. P' value was <0.0001 which is significant. In similar study done by Shravage et al. (2007) reported in their study that the mean duration of third stage was 5.02± 1.71 minutes in the cord drainage group compared to 7.42± 2.56 minutes in the control group. In another randomized controlled trial by Giacalone (2000) et al, he reported a randomized study comparing 239 women who had placental cord drainage with 238 women with expectant delivery of the placenta. The median value of duration of 3rd stage of labour was 8 minutes in cord drainage group and 15 minutes in the control group.<sup>[5]</sup>

In the present study the mean blood loss was 316ml in the study group & 395 ml in the control group and 12% of control group and 4% of study group had blood loss > 500 ml. None of the both groups had blood loss more than 1000ml. In similar study by Shravage JC et al (2007) reported in their study that average third stage blood loss was  $175.05 \pm 118.15$  ml in the study group and  $252.05 \pm 145.48$  mL in the control group. This difference was highly significant ( $P < 0.001$ ). In another similar study done by Meena SA et al. mean blood loss was 308 ml in control group and 185ml in study group. Hence cord blood drainage reduced the blood loss by 123 ml.

#### Comparison Of Mean Hremoglobin Difference With Other Studies

Mean Hemoglobin difference(gms)	Study group	Control group	P value
Present study	0.65	1.262	<0.0001
Meena SA et al	0.28	0.68gms	<0.001

In the present study, Hemoglobin level was measured at admission before delivery and 48 hours after the birth of the baby. The mean Hb% in the study group A before delivery 10.898 and after delivery 10.248. The mean Hb% in the group B before delivery 11.036 and after delivery 9.774. The 'p' value was <0.0001. In similar study by Meena SA et al. (2017) mean haemoglobin difference in control group was 0.68gms and in the study group was 0.28gms. The difference between the control and study group was statistically highly significant.<sup>[6]</sup>

In present study 14% in control group and 8% in study group needed blood transfusion. P Value was 0.3377, which is not significant. In a similar study by Soltani et al. % (2011), the requirement of blood transfusion did not differ significantly in two groups. None required blood transfusion in the study group and 1/250 required blood transfusion in the control group. The 'p' value was 0.5, hence not significant.<sup>[7]</sup>

#### CONCLUSION

Placental cord blood drainage was done to assess the effectiveness of placental cord drainage during vaginal delivery which is simple, safe and non-invasive method of reducing the duration of third stage of labor, decreasing the extent of blood loss, anemia thereby reducing the incidence of postpartum hemorrhage, need for blood transfusion and manual removal of placenta.

#### REFERENCES

1. Chaudhary M, Shah M, Makwana N. Placental cord drainage during third stage of labour: a randomized control trial at a tertiary care centre. *Int J Reprod Contracept Obstet Gynecol* 2020;9:1143-7.
2. Rekha Upadhyay, et al. The maternal side of placental cord blood drainage in the management of the third stage of labor: Relook the basic step in minimizing the maternal blood loss. *Int J Clin Obstet Gynaecol* 2019;3(5):144-147.
3. Shravage J C, et al. Randomized controlled trial of placental cord blood drainage for the prevention of postpartum hemorrhage. *J Obstet Gynecol India* Vol. 57, No. 3: May/June 2007 Pg 213-215.
4. Dr. Pinkee Meena, et al. Placental cord blood drainage after vaginal delivery as part of the management of third stage of labour: A systematic review of randomized controlled clinical trial. *Int J Clin Obstet Gynaecol* 2019;3(1):154-158.
5. Giacalone PL et al. A randomised evaluation of two techniques of management of the third stage of labour in women at low risk of postpartum haemorrhage. *BJOG*. 2000 Mar; 107(3):396-400.
6. Meena SA, Bebinicy DS, Devika. Placental cord blood drainage after vaginal delivery as part of the management of third stage of labour: a systematic review of randomized controlled clinical trial. *Int J Reprod Contracept Obstet Gynecol* 2017;6:4001-5.
7. Soltani H, Poulouse TA, Hutchon DR. Placental cord drainage after vaginal delivery as part of the management of the third stage of labour. *Cochrane Database Syst Rev*. 2011 Sep 7, (9):CD004665.
8. Williams textbook of obstetrics 26<sup>th</sup> Edition.
9. World Health Organization; WHO recommendations for the prevention and treatment of postpartum hemorrhage. Published Accessed July 17, 2013.19, 2012.
10. Postpartum hemorrhage. ACOG practice bulletin 2017