

Placental blood drainage in third stage of labour in term spontaneous vaginal delivery and it's effect on maternal health

Apurba Kumar Bhattacharya, Binoy Kumar Borah, Rashi Bishnoi

Corresponding author: Dr Rashi Bishnoi, Postgraduate Trainee, Department of Obstetrics and Gynaecology, Jorhat Medical College and Hospital, Jorhat, Assam, India; Email – rashi.bishnoi.rb94@gmail.com

Distributed under Attribution-Non Commercial – Share Alike 4.0 International (CC BY-NC-SA 4.0)

ABSTRACT

Objectives: To evaluate the effectiveness of placental blood drainage as a part of active management in third stage of labour. **Materials and methods:** The study was conducted in the Department of Obstetrics and Gynaecology, Jorhat Medical College and Hospital for a period of one year. Eighty pregnant patients with 37 or more weeks of gestation, with single live fetus in cephalic presentation, who underwent a spontaneous vaginal delivery, were included in the study. The patients were prospectively randomized equally into two groups (40 each in the study and control groups). 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 by collecting in a disposable conical measuring bag. **Results:** The baseline statistics in both the group were comparable. The duration of third stage of labour was 201.75 ± 66.98 seconds in the study group and 305.25 ± 88.89 seconds in the control group. The 'p' value was statistically significant ($p < 0.0001$). The mean blood loss in study group was 146.4 ml and was 303 ml in the control group ($p < 0.0001$). The incidence of postpartum haemorrhage was 12.5 % in control group. The mean drop in Hb % level was 0.25 gm/dl in study group and 0.68 gm/dl in control group. These above differences were both statistically significant. **Conclusion:** The duration, blood loss, and incidence of PPH were all significantly decreased when placental blood drainage was used as part of active management of the third stage of labour. In addition to the standard uterotonic, placental blood drainage is a simple, safe, and non-invasive approach of managing the third stage of labour. It can be used in both tertiary care facilities and rural settings.

Keywords: Third stage of labour, spontaneous vaginal delivery, maternal health, placental blood drainage.

A life-threatening obstetric haemorrhage happens in about 1 in 1000 births¹. With an estimated mortality rate of 14,000 per year, or one maternal death every four minutes globally, PPH is the top cause of maternal death globally².

Most of these deaths occur within four hours of delivery, indicating that the third stage of labour is to be blamed^{3,4}. Third stage of labour begins immediately after delivery of foetus (or) fetuses and it involves separation and expulsion of placenta with its entire membranes.⁵ It has been demonstrated that atonic haemorrhage can be avoided by

actively managing the third stage of labour. Placental blood drainage has recently been encouraged as part of active third-stage labour management. Placental blood drainage entails clamping and cutting the umbilical cord after the baby is delivered, then unclamping the maternal side of the cord and allowing the placenta's blood to drain freely⁶.

It's been proposed that emptying blood from the placenta might diminish its bulkiness, allowing the uterus to contract and retract, facilitating placenta delivery. As a result, it could aid in the prevention of PPH, as well as the morbidity and

Received: 4th December 2023, Peer review completed: 20th May 2024, Accepted: 29th May 2024.

Bhattacharya AK, Borah BK, Bishnoi R, Deori C. Placental blood drainage in third stage of labour in term spontaneous vaginal delivery and it's effect on maternal health. The New Indian Journal of OBGYN. 2024; 11(1): 186 - 88.

mortality that comes with it ⁷.

Aim: To evaluate the effect of placental blood drainage in third stage of labour on maternal health.

Material and methods

This prospective randomized controlled study was carried out in the department of Obstetrics and Gynaecology, Jorhat Medical College and Hospital, Jorhat during a period of one year from July, 2021 to June, 2022. This study included eighty (80) spontaneously delivered patients willing to participate and meeting the inclusion and exclusion criteria admitted in the department of obstetrics and gynaecology, Jorhat medical college and hospital, Jorhat.

It was a hospital based prospective comparative study of two groups - the study group (group A) consisted of 40 patients in whom the placental blood was drained. The rest of the 40 patients were placed as controls (group B) where the cord blood was not drained.

Study outcome: The present study was designed to evaluate the effectiveness of placental blood drainage after spontaneous vaginal delivery in third stage of labour in decreasing the duration, blood loss, and complications of the third stage, against no drainage of placental blood.

Inclusion criteria -

1. Singleton pregnancy.
2. Vertex presentation.
3. Gestational age of 37 week or term pregnancy.
4. No major medical or obstetrical complications like diabetes, antepartum haemorrhage (APH), pre labour rupture of membranes (PROM), heart disease, chronic hypertensive disease, previous caesarean section.
5. Spontaneous vaginal delivery.

Exclusion criteria -

1. HB < 10gm/dl
2. History of APH/ bleeding per vaginum
3. Instrumental delivery
4. Multiple pregnancies
5. Malpresentation
6. Large baby (>4kg)
7. Polyhydramnios
8. Known coagulation disorder
9. Previous surgeries on uterus
10. Retained placenta
11. Episiotomy/Perineal tear

Statistical analysis: Data were compiled and analyzed using Microsoft Excel and data are presented in terms of percentage, mean ± SD. Chi square test for qualitative data and student t test for quantitative data is used to find the p value. P value <0.05 was considered as statistically significant.

Results

The duration of third stage of labour was 201.75 ± 66.98 seconds in the study group and 305.25 ± 88.89 seconds in the control group. The ‘p’ value was statistically significant (p < 0.0001) (table 1).

Table 1: Duration of third stage of labour

Parameters	Number	Mean	SD	P - value
III stage duration of labor (in seconds)	Control 40	305.2500	88.8960	<0.0001, Statistically significant
	Study 40	201.7500	66.9821	

The mean blood loss in study group was 146.4 ml and was 303 ml in the control group (p < 0.0001) (table 2).

Table 2: Amount of blood loss

Blood loss (ml)	Group			
	Group A		Group B	
	N	%	N	%
0-100	8	20	0	0
101-200	23	57.5	9	22.5
201-300	8	20	18	45
301-400	1	2.5	8	20
401-500	0	0	1	2.5
501 or more	0	0	4	10
Mean	146.4		303	
P- value	0.001 ; Statistically significant			

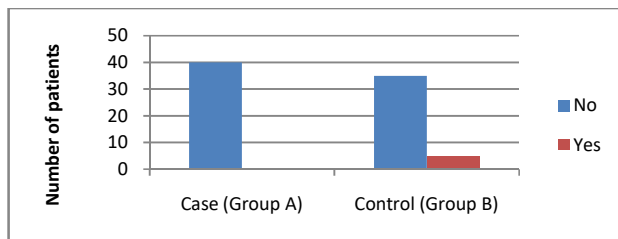


Figure 1: Postpartum haemorrhage

In our study, blood loss of more than 500 ml occurred in 12.5 % of the control group (figure 1). None of the two groups lost more than 1000 ml. 20% in control group and 2.5% in study group needed blood transfusion. P value was calculated using Pearson Chi-square test, which was 0.0337,

Table 3: Mean drop in Hb % level

Hb difference before and after delivery	Number	Mean	SD	P - value
Control	40	0.6800	0.2911	<0.0001
Study	40	0.2525	0.0905	

that is significant. The mean drop in Hb % level was 0.25 gm/dl in study group and 0.68 gm/dl in control group. These above differences were both statistically significant (<0.001) (table 3).

Discussion

In our study, the duration of third stage of labour was 3.36 minutes in the study group versus 5.09 minutes in the control group, the difference being statistically significant. In a study by Giacalone et al ⁸, 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 ⁹, 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 146.4 ml in the study group and 303 ml in the control group, the difference being statistically significant. In a similar study by Gulati et al ⁹, 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. Shrivage et al ¹⁰ reported that the average blood loss in the study group was 175.05 ml, while in the control group it was 252.05 ml. The mean blood loss in placental cord drainage group was 174.69 ± 13.69ml compared to 196.25 ± 15.06ml in the control group (p<0.001) in a study by Afzal. ¹¹

The incidence of PPH was 12.5 % in the control group while no patients in study group had PPH in our study, the difference being statistically significant. In another study by Gulati et al ⁹, 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 Shrivage et al ¹⁰, 3 % in the study group and 10 % in the control group.

In our study there was a significant change in the Hb gm% (0.25 gm% in the study group vs 0.68 gm% in the control group). But, in a study by Soltani et al ⁶, 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.

Conclusion

From the present study it can be concluded that 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.

Conflict of interest: None. **Disclaimer:** Nil.

References

1. Abou Zahr C. Global burden of maternal death and disability. Br Med Bull 2003; 67: 1-11.

2. Lethaby A, Farquhar C. Antifibrinolytics for heavy menstrual bleeding. Cochrane database. 2000; 4: CD000249
3. Ramanathan G, Arulkumaran S. Postpartum haemorrhage. Curv Obstet Gynaecol. 2006; 16(1): 6-13.
4. Kane TT, el-Kady AA, Saleh S, Hage M, Stanback J, Potter L. Maternal mortality in Giza, Egypt: magnitude, causes and prevention. Stud Fam Plann. 1992; 23: 45-57.
5. Cunningham G, et al. Williams Textbook of Obstetrics and Gynaecology. 23rd edition. New York: McGraw Hill. 2010. pp146-47.
6. Soltani H, Dickinson F, Symonds IM. Placental cord drainage after spontaneous vaginal delivery as part of active management of the third stage of labour. Cochrane Database of systematic reviews. 2005; 4: CD004665.
7. Wood J, Rogers J. The third stage of labour. In: Alexander J, Levy V, Roth C editor(s). Midwifery practice: core topics 2. London: MacMillan PRESS Ltd; 1997.
8. Giacalone PL, Vignal J, Daures JP, et al. A randomized evaluation of two techniques of management of third stage of labour in women at low risk of postpartum hemorrhage. BJOG. 2000; 107(3): 396 - 400.
9. Gulati N, Chauhan MB, Rana M. Placental blood drainage in management of third stage of labour. J Obstet Gynaecol India. 2001; 51: 46 - 8.
10. Sharavage JC, Silpa P. Randomized controlled trial of placental blood drainage for the prevention of postpartum haemorrhage. J Obstet Gynaecol India. 2007; 57(3): 213 - 5.
11. Afzal MB, Bushra N, Waheed K, Sarwar A, Awan NU. Role of placental blood drainage as a part of active management of third stage of labour after spontaneous vaginal delivery. J Pak Med Assoc. 2019 Dec; 69(12):1790-93.

Apurba Kumar Bhattacharya ¹, Binoy Kumar Borah ², Rashi Bishnoi ³

¹ Professor & HOD, Department of Obstetrics and Gynaecology, Nalbari Medical College and Hospital; ² Associate Professor, Department of Obstetrics and Gynaecology, Kokrajhar Medical College and Hospital;

³ Postgraduate Trainee, Department of Obstetrics and Gynaecology, Jorhat Medical College and Hospital, Jorhat, Assam, India.