

Effect of placental cord blood drainage on duration of third stage of labourSajida Parveen^{1*}, Rabia Razaq², Muhammad Umer Razaq³, Sadaf Mubeen⁴, Fakhria Ijaz⁵, Shanza Ghaffar⁶¹Department of Gynecology and Obstetrics, Lady Willington Hospital Lahore (54810), Pakistan²Department of Gynecology and Obstetrics, Allied Hospital Faisalabad (38000), Pakistan³Department of Pediatric Medicine, Mayo Hospital Lahore (54810), Pakistan⁴Department of Gynecology and Obstetrics, Lady Aitcheson Hospital Lahore (54810), Pakistan⁵Department of Gynecology and Obstetrics, Lady Willington Hospital Lahore (54810), Pakistan⁶Department of Gynecology and Obstetrics, Lady Willington Hospital Lahore (54810), Pakistan

ARTICLE INFO

*Article history:**Received: 21 November, 2019**Accepted: 18 January, 2020**Online: 02 February, 2020**Keywords:**Prolonged third stage of labour**Placental blood drainage**Delayed cord clamping*

This article is open access under terms of Creative Commons Attribution License 4.0. which permits unrestricted use, distribution and reproduction in any medium provided the original work is cited properly.

DOI: 10.37978/gulf.v3i1.82**Correspondence:**

sajidaparveen@gmail.com

ABSTRACT

Introduction: *Third stage of labour start after delivery of baby and continues till delivery of placental and membranes. Post-partum hemorrhage is most common complication of this stage.***Objectives:** *To compare the mean duration of third stage of labour in patients undergoing spontaneous vaginal delivery with and without placental cord blood drainage.***Materials and Methods:** *This randomized control trial was carried out in three tertiary care hospitals of Punjab, Department of Obstetrics & Gynecology, Allied Hospital, Faisalabad, Lady Aitcheson Hospital Lahore and Lady Willington Hospital Lahore. From 1st July 2018 to 30th December 2018, 188 cases (94 in each group) were selected using non probability consecutive sampling. Total 188 patients were enrolled in the study after taking informed consent and allocated into control and case group by lottery method. In control group cord was clamped from both sides while in case group cord was unclamped from other side and duration of third stage was noted for both groups. Ethical approval was taken from hospital ethical committee.***Results:** *The mean age was 29.06 ± 4.9 years with minimum age of 21 years and maximum age of 45 years. More patients belong to younger age group (20 years to 35 years) i.e. 119 while 69 belonged to elder age group i.e. 36 year to 50 years 63.2 % and 36.7% respectively. Mean duration of third stage of labour in case group was 8.5±2.9 minutes and in control group 10.8±5.4 minutes. More distribution of patients in younger age group 20 -35 years and less in 36 to 50 years i.e. 67% and 33% respectively.***Conclusion:** *This study concluded that unclamping placenta from mother side significantly reduces the third stage of labour***Introduction**

Postpartum hemorrhage accounts for 127,000 deaths annually worldwide (1) and its incidence is increasing in developed nations (2). It is the major cause of maternal mortality globally (3, 4). The active management during the third stage of labor is recommended as a preventive strategy. Active management consists of measures to reduce the duration of the third stage of labor and the blood loss that occurs during this stage (5). Uterotonics and immediate umbilical cord clamping are techniques that have been proposed. Uterine massage is no longer recommended for the prevention of postpartum hemorrhage and controlled cord traction has already been shown to be ineffective in vaginal deliveries (6). Current recommendations state that cord ligation should be postponed in view of the known benefits to the neonate (6).

A different strategy for accelerating uterine emptying is placental cord drainage, which involves clamping and cutting the

umbilical cord following delivery of the baby and then immediately unclamping the maternal end of the cord, allowing the blood to flow freely into a container until successful uterine emptying (7). The few randomized clinical trials conducted to evaluate placental cord drainage have shown a significant reduction in the duration of the third stage of labor following drainage (8, 9). A Cochrane review also revealed a reduction in the duration of the third stage of labor with placental cord drainage (7). Nevertheless, placental cord drainage is still not used routinely in clinical practice. The purpose of the present study was, therefore, to determine the effectiveness of placental cord drainage in the third stage of labor. The objective of this study is to compare the mean duration of third stage of labour in patients undergoing spontaneous vaginal delivery with and without placental cord blood drainage.

Materials and Methods

This randomized control trial was carried out in three tertiary care hospitals of Punjab, Department of Obstetrics

&Gynecology, Allied Hospital, Faisalabad, Lady Aitchison Hospital Lahore and Lady Willingdon Hospital Lahore. From 1st July 2018 to 30th December 2018, 188 cases (94 in each group) were selected using non probability consecutive sampling. Females having singleton term pregnancy (Gestational age 37 to 40 weeks confirmed by certain LMP and early ultra sound) with cephalic presentation and had spontaneous vaginal delivery were included in study while patients having premature rupture of membranes, antepartum hemorrhage confirmed by clinical examination or females having history of postpartum hemorrhage, intrauterine fetal death and patients with medical disorder like valvular heart disease, bleeding disorder (determined by blood test(CBC,PT/INR<3) and hepatitis B or C (determine by HbsAg and anti HCV screening) were excluded from study.

Sample size was calculated from Win pepivr. 11.15 with 80% power of study using 95% confidence interval and expected duration of placental cord blood drainage among cases group A 5.1±2.4 minutes Vs 7.0± 6.1 minutes in control B group with ratio of sample size B:A 1to detect difference of 3.0. Require sample 188 (94 in each group).

188 pregnant women full filling the selection criteria were enrolled from labour room and were randomized in to study and control groups. For all women when obstetrician performed vaginal delivery the time of birth was recorded and then cord was clamped and cut immediately after birth. In control group cord was left clamped and sign of placental separation were assessed and placental was delivered. In case group, group A, after cutting of cord, cord was unclamped from mother side and blood was allowed to drain in container till signs of placental separation. Cord was re-clamped and placenta was delivered. The duration of third stage of labour was measured in minutes that starts immediately after delivery of fetus and ends with expulsion of placental and fetal membranes and recorded in data sheet. After delivery IV oxytocin given and uterine message was done in both groups and were kept under observation for 12 hours to look for any complication. Those patients who developed complications were treated according to hospital protocol. All information was entered in structured performa.

The data was entered and analyzed through SPSS version 22. Quantitative data were presented as mean and standard deviation. Qualitative data was presented as frequency and percentages. Data was stratified for age, parity and gestational age and post stratification T test is applied p-value ≤ 0.05 was taken significant.

Results

In our study total 188 patients were enrolled mean age was 29.06 ± 4.9 years with minimum age of 21 years and maximum age of 45 years. More patients belong to younger age group (20 years to 35 years) i.e. 119 while 69 belonged to elder age group i.e. 36 year to 50 years 63.2 % and 36.7% respectively. Mean

gestational age was 38.86 ± 2.18 weeks with minimum gestational age 37 week and maximum gestational age 40 years.

Frequency of parity in sample patients was parity 1 were 26%, parity 2 were 17%, parity 3 were 24%, parity 4 were 23%, parity 5 were 6.9% and parity 6 were 2.6%. Duration of third stage of labour was 8.5 ± 2.9 minutes in case group while 10.8 ± 5.4 minutes. Data was cross tabulated for duration of labour and age, in younger age group duration was 9.6 ± 4.2 minutes while in elder age group patients of case group have mean duration of 9.9 ± 4.9 minutes. T value was 0.500 and p value was 0.617.

Table 1: Primary maternal outcomes

Primary maternal outcomes	Placental cord drainage		Control group		p-value
	mean	SD	mean	SD	
Duration of the third stage of labor (minutes)	8.5	2.9	10.8	5.4	0.66
Blood loss (ml)	241	50.5	199	44.9	0.39
Hematocrit 24–48 h postpartum	31.3	3.4	32.6	4.5	0.21

Similarly cross tabulation was done for duration of third stage of labour and parity in parity ≤3 mean duration of third stage of labour was 9.9 ± 4.7 minutes and in parity > 3 mean duration was 9.3 ± 3.9 minutes. T test was 0.862 and p value was 0.390. Cross tabulation for duration of gestational age and duration of third stage of labour was also done, in ≤ 38 week of gestation mean duration was 9 ± 3.5 minutes and in < 38 week of gestation mean duration of labour was 10 ± 4.8 minute. T test was 1.435 and p value was 0.153.

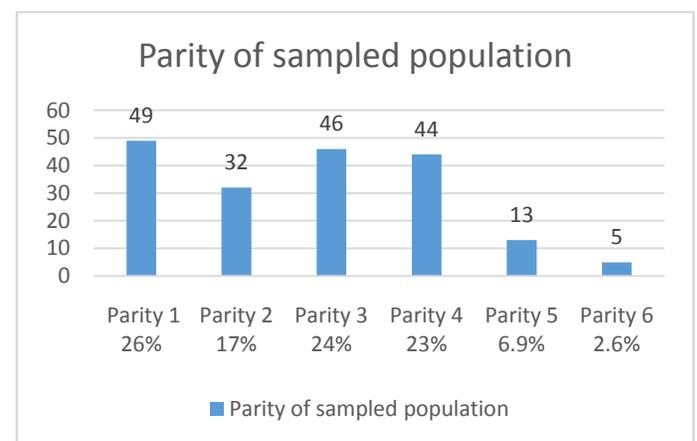


Figure 1: Frequency of Parity in Sampled Population

Table 2: Cross tabulation for duration of labour

Age Group	Duration of Labour	T test, p-value
20-35 year	9.6 ± 4.2 mins	t=0.500, p=0.617
36-50 year	9.9 ± 4.9 mins	
Duration of Labour and Parity		
Parity	Duration of Labour	T test, p-value
Parity ≤3	9.9 ± 4.7 mins	t=0.862,

Parity >3	9.3 ± 3.9 mins	p=0.390
Labour and Gestational Age		
Gestational age	Duration of Labour	T test, p-value
≤38 week	9 ± 3.5 mins	t=1.435,
>38 week	10 ± 4.8 mins	p=0.153

Discussion

The most important point in pregnancy is child birth or labour especially in third stage of labour which can complicate the normal process. Delivery of placenta is important and serves as end point of labour. Placental cord drainage involves the clamping and cutting of the umbilical cord after delivery of the baby but, afterwards, immediately unclamping the maternal side of the cord and allowing the blood to drain freely. This may be in conjunction with other interventions such as routine administration of oxytocic, controlled cord traction or maternal effort. The numbers of studies in this review were limited, but cord drainage seems to significantly reduce the length of third stage of labour (10).

The mean age of patients in our study was 33.87±5.5 years, more patients in younger age group and mean gestation age was 38.86 weeks. These results were similar with international studies. In international study mean gestation age was 39.8 week and mean age was 28 years. (11). An international study was carried out at Babylon University in 2010 and mean age varied between 26 to 29 years (12). Mean gestational age in another study was 38.2 weeks and mean age was 23 years. Around 88% of control group and 87% of study group of women belong to younger age group i.e. between 21 – 30 yrs. [13] In another study similar results were concluded, mean gestational age was 38.7 weeks in study group and 38.5 weeks in control group (14). These endorse the results of our study. The parity of patients was para 1 to para 6 and majority of patients were primigravida i.e. 24.5% which is similar to other studies i.e. para 1 to 6 (11). In another study, there were more primigravida in both control and study groups, when compared with multi gravid (13).

Mean duration of third stage of labour was 8.5 in case group and 10.8 in control group. There was significant difference in duration of third stage of labour between two groups. This matches the results of international studies in which mean duration in case group was 8 min and 15 minutes in control group, (11) while in another study mean difference between two groups was 5 minutes (15).

While in one international study no significant difference was found in duration of labour between two groups (16) while in another study the third stage of labor was significantly shorter in the cord drainage group than in the control group (3.5 ± 1.9 vs. 7.7 ± 3.4 minutes, respectively; $p < 0.001$) (17). A study was conducted in India in which two hundred 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 baseline statistics in both the group were comparable. The duration of third stage of labour was 210.5 s in the study group and 302.5 s in the control group. The 'p' value was statistically significant ($p \leq 0.0001$) (18). Data was cross tabulated for age, gestational age and parity. No significant p value was found.

Conclusion

Placental cord blood drainage reduces the duration of third stage of labour. Placental blood drainage does not need any extra cost, equipment or effort and it is a simple, non-invasive safe method that can be practiced even by midwives in rural settings as a part of management of third stage of labour in reducing the duration of third stage.

Conflict of Interest: This study has no conflict of interest to declare by any author.

Disclosure: None

Human and Animal Rights: No rights violated.

References

- World Health Organization; Education material for teachers of midwifery: midwifery education modules—second edition Managing postpartum hemorrhage. http://whqlibdoc.who.int/publications/2008/9789241546669_5_eng.pdf Published 2008.
- Mutihir JT, Utoo BT. Postpartum maternal morbidity in Jos, North-Central Nigeria. *Niger J Clin Pract* 2011;14:38–42. doi: [10.4103/1119-3077.79238](https://doi.org/10.4103/1119-3077.79238)
- Ghazal-Aswad S, Badrinath P, Sidky I, Abdul-Razak Y, Davison J, Mirghani HM. Confidential enquiries into maternal mortality in the United Arab Emirates: a feasibility study. *J ObstetGynaecol Res* 2011;37:209–214. doi: [10.1111/j.1447-0756.2010.01338.x](https://doi.org/10.1111/j.1447-0756.2010.01338.x)
- Gogarten W. [Postpartumhemorrhage—an update]. *Anesthesiol Intensivmed Notfallmed Schmerzther* 2011;46:508–514. doi: [10.1055/s-0031-1284470](https://doi.org/10.1055/s-0031-1284470)
- Wood J, Rogers J. The third stage of labourIn: Alexander J, Levy V, Roth C, eds. *Midwifery practice: core topics 2*. London: MacMillan Press Ltd; 1997.
- World Health Organization; WHO recommendations for the prevention and treatment of postpartum haemorrhage. http://apps.who.int/iris/bitstream/10665/75411/1/9789241548502_eng.pdf Published 2012.
- 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;:CD004665 doi: [10.1002/14651858.CD004665.pub3](https://doi.org/10.1002/14651858.CD004665.pub3)
- Jongkolsiri P, Manotaya S. Placental cord drainage and the effect on the duration of third stage labour, a randomized controlled trial. *J Med Assoc Thai* 2009;92:457–460.
- Sharma JB, Pundir P, Malhotra M, Arora R. Evaluation of placental drainage as a method of placental delivery in vaginal deliveries. *Arch GynecolObstet* 2005;271:343–345. doi: [10.1007/s00404-004-0619-9](https://doi.org/10.1007/s00404-004-0619-9)
- Soltani H, Dickinson F, Symonds I. Placental cord drainage after spontaneous vaginal delivery as part of the management of the third stage of labour. *Cochrane Database of Systematic Reviews*. 2005.
- Giachalone P, Vignal J, Daures J, Boulout P, Hedon B, Laffargue F. A randomised evaluation of two techniques of management of the third stage of labour in women at low risk of postpartum haemorrhage.

- BJOG: An International Journal of Obstetrics and Gynaecology. 2000;107(3):396-400
12. Mohammed M, Jeborry AI. Efficacy of cord blood drainage, at college of Medicine. Department of Obstetrics Gynecology, Babylon University. Med J Babylon. 2010.
 13. Meena S, Bebincy D.. 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. 2018.
 14. Shrivage JC, Silpa P. 2007, Randomized controlled trial of placental blood drainage for the prevention of post partumHaemorrhage. Indian J Obstet Gynecol. 2007;57(3):213-5.
 15. Placental cord drainage after spontaneous vaginal delivery as part of the management of the third stage of labour [Internet]. Cochranelibrary-wiley.com. 2018. Available from: <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD004665.pub2/full>
 16. Thomas I, Jeffers T, Brazier J, Burt C, Barr K. Does Cord Drainage of Placental Blood Facilitate Delivery of the Placenta?. The Australian and New Zealand Journal of Obstetrics and Gynaecology. 1990;30(4):314-318.
 17. Unal C, Asıcıoglu B, Temizkan O, Yıldırım G, Arıcı B, Gulova S et al. Influence of Placental Cord Drainage in Management of the Third Stage of Labor: A Multicenter Randomized Controlled Study. American Journal of Perinatology. 2014;32(04):343-350.
 18. Roy P, Sujatha M, Bhandiwad A, Biswas B, Chatterjee A. Placental Blood Drainage as a Part of Active Management of Third Stage of Labour After Spontaneous Vaginal Delivery. The Journal of Obstetrics and Gynecology of India. 2016;66(S1):242-245.