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Original Research Article

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

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ABSTRACT

Background: Present study was undertaken to evaluate the effectiveness of placental cord blood drainage after vaginal delivery in reducing the duration and blood loss during third stage of labour in Primi/Multigravida (up to G3) between the age group of 18-35 years, with term, singleton alive pregnancy with vertex presentation, adequate liqour, with average size (estimated foetal weight 2-4Kg) fetus, without any complications, expected to spontaneous vaginal delivery.
Methods: It is a randomized clinical controlled trial on 400 pregnant women admitted in labour ward at KGMCH, Asaripallam, Kanyakumari district between January 2015 to December 2015. All women enrolled were subjected to history taking general and obstetric examination. In the study group, placental end of the previously clamped and cut umbilical cord was unclamped immediately after vaginal delivery, while remaining clamped in the control group.
Results: Duration of third stage of labour blood loss during third stage postpartum hemorrhage and need for blood transfusion haemoglobin difference between antenatal and postnatal period was significantly reduced in the study group than control group.
Conclusions: Placental Cord blood drainage is simple, safe, non-invasive method which reduces the duration and blood loss of third stage of Labour.

Keywords: Placental cord blood drainage, Post-partum haemorrhage, Third stage of labour

INTRODUCTION

India accounts for 20% of maternal deaths globally and it is estimated that a woman is dying every 5 minutes due to obstetric complications[1]. Maternal deaths are caused by obstetric complications like postpartum haemorrhage, sepsis, unsafe abortion, toxaemiasand obstructed labour. As per a report by WHO (World Health Organization) 2005, 25-30% of maternal deaths are caused by postpartum haemorrhage (PPH).[1] Prevalence of PPH all over the world is approximately 6% and it is the most common preventable complication of third stage of labour.[3] Althoughthe third stage of labour occupies a very short duration, it is the most crucial period, as complications during this stage may be hazardous to maternal life.[2]

Normal duration of third stage varies from 5 to 15 minutes and it is shown in literature that, the best predictor of post-partum haemorrhage, is third stage of labour that lasts for more than 18 minutes.[4]

Placental cord blood drainage includes unclamping the previously cut and clamped umbilical cord. The present study was undertaken to evaluate the efficacy of placental cord blood drainage after vaginal delivery as a part of

management of the third stage of labour in reducing the duration and blood loss during third stage of labour thereby preventing postpartum haemorrhage.

The present study is conducted to evaluate the efficacy of placental cord blood drainage after vaginal delivery in reducing the duration and blood loss during third stage of labour and PPH.

METHODS

It is a randomised clinical controlled trial on 400 pregnant women admitted to labour ward at Kanyakumari Government Medical College Hospital, Kanyakumari district, India from January 2015 to December 2015.

Primi/mutigravida (upto third gravida), in the age group between 18-35 years, with term, singleton, alive pregnancy.in vertex presentation with adequate liquor, average size foetus (E.F. weight 2-4kg) who were expected to have spontaneous delivery included in study group.

Anaemia/preeclampsia/coagulation disorder complicating pregnancy, overdistended uterus (hydrominos/multiple pregnancy/large baby), antepartum haemorrhage, induced labour, instrumental delivery, previous LSCS, premature rupture of membrane, retained placenta were excluded from the study.

Detailed history was taken from all women. General and obstetric examinations were done in all cases gestational age was confirmed by menstrual history, ultrasonogram, and abdominal examination. Routine urine and haematological examination were done. Vitals, uterine contraction, foetal heart rate and progress of labour were monitored carefully using partogram. Labour was augmented with oxytocin in active phase of labour. All women in the study group were explained in detail about the procedure of cord blood drainage and informed consent was obtained.

400 pregnant women were randomly allocated in to study group (200) and control group (200). Placental end of the previously clamped and cut umbilical cord was unclamped immediately and it was left open to drain the blood until the flow ceased in study group whereas the umblical cord remain clamped in control group.

Blood collection Drape was applied in both groups after delivery of the baby. Placenta was delivered by controlled cord traction in both groups. AMSTL followed in both groups. Episiotomy was sutured in layers, if it was given. Women in both groups were observed and vitals monitored for two hours. uterus was palpated and assured that the uterus contracted well.

Duration and blood loss during third stage of labour, occurence of postpartum haemorrhage, need for blood transfusion, haemoglobin difference between antenatal and post natal period (48 hours after delivery) were measured.

RESULTS

Total 400 cases were enrolled for study 200 in group 1 (control) and 200 in group 2 (study). Mean age of control group was 23.47 and study group was 24.18. Using Pearson-Chi Square test, P value is 0.140 which is not significant.

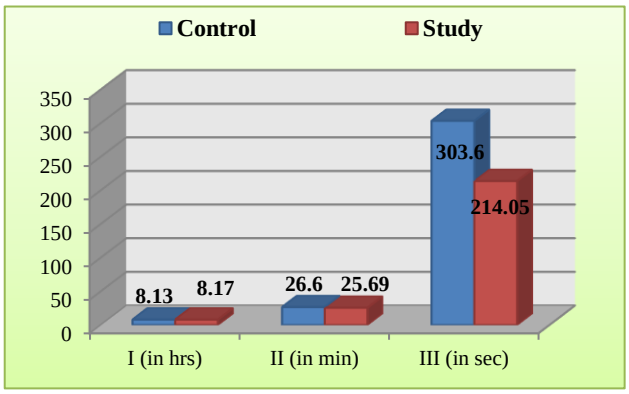

Figure 1: Duration of stages of labour.

Antenatal care between both groups was compared 96% of control group and 97% of study group were booked cases. P Value is 0.58 which is not significant.

While comparing obstetric formula between control and study groups, 51.5% of control group and 60.5% of study group were primigravida. 48.5% of control and 39.5% of study group were multigravida. P value was 0.070 which is not significant.

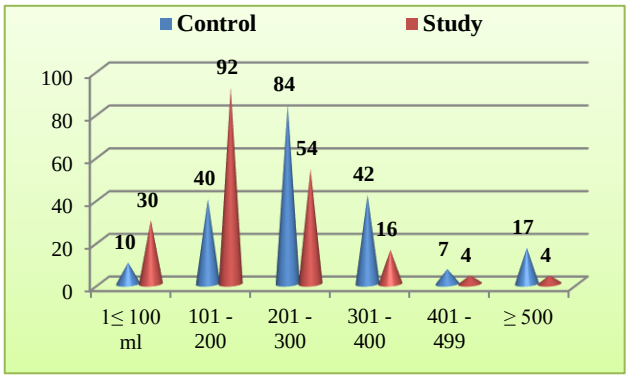

Figure 2: Blood loss during stage III of labour.

Quantitative parameters like height, weight and BMI were calculated and compared between control and study groups. Mean height was 154.3 cm in control group and 154.5 cm in the study group. Mean weight was 59.21 kg in control group and 59.15 kg in study group. Body mass index calculated by weight / height (in m^2). Mean value of BMI in control group was 24.85 and 24.77 in study group. P value was not significant difference between

control and study group regarding height, weight and BMI.

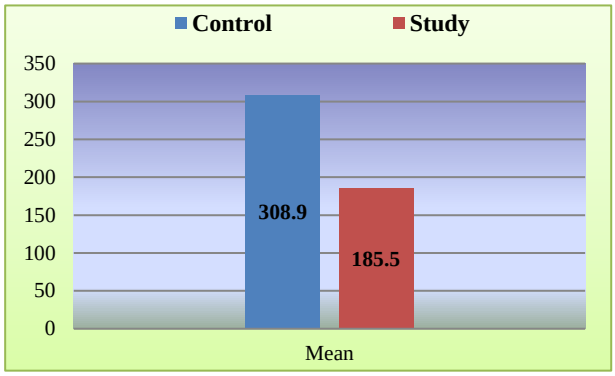

Figure 3: Blood loss.

Mean gestational age was compared, it was 38.2 in the control group was and 38.31 in the study group. P value was 0.126 which is not significant.

Table 1: Maternal demography.

	Control group (n=200)	Study group (n=200)	P value (<0.05= significant)
Maternal age (mean±SD)	23.47±3.07	24.18±3.07	0.14
Antenatal care			
Booked cases	192	194	0.58
Unbooked cases	8	6	
Obstetric formula			
Primi	103	121	0.070
Multi	97	79	
Height (mean±SD)	154.3±0.051	154.5±0.04	0.688
Weight (mean±SD)	59.21±6.9	59.15±6.5	0.929
BMI (mean±SD)	24.85±2.72	24.77±2.60	0.743
Duration of stages of labour			
I (hrs)	8.13±2.72	8.17±2.66	0.85
II (months)	26.60±9.025	25.69±8.11	0.29
III (months)	5.06±1.38	3.56±1.32	<0.001
Mode of delivery			
LN with episiotomy	183	178	0.441
LN with LP	8	7	
LN	9	15	

LN-labour natural, LP-perineal laceration.

Labour was augmented with oxytocin drip, in active phase of labour in both groups. Almost 90.5% of control group and 92% of study group were augmented with oxytocin. P value was 0.596 which is not significant. Duration of stages of labour was compared. Mean duration of first stage is 8.13 hrs in control group and 8.17 hrs in study group. P value was calculated by t test which was 0.85, that is not significant.

Table 2: Maternal outcome.

	Control	Study	P value
Blood loss during third stage (mean±SD)	308.95±173.86	185.58±110.09	0.001
Post-partum haemorrhage	17	4	0.004
Need for blood transfusion	15	4	0.010
Haemoglobin difference	0.68±0.3	0.28±0.15	<0.001

Mean duration of second stage of labour in control group was 26.60 minutes. Standard deviation was 9.02. Mean duration in study group was 25.69 minutes. Standard deviation was 8.11. P value (calculated by t test) was 0.29, that is not significant. Mean duration of third stage of labour in control group was 303.6 seconds (5.06 minutes) and in study group was 214 seconds (3.5 minutes) P Value was <0.001 (t test) which is highly significant

Mode of delivery was compared between control and study groups. Preliminary mediolateral episiotomy was given after crowning of head in 91.5% of control group and 89% of study group. Perineal laceration occurred in 4% of control group and 3.5% of study group. 4.5% in the control group and 7.5% in study group were delivered by labour natural. P value calculated by Pearson chi-square test. P value was 0.441 which is not significant.

Mean Blood loss during third stage of labour was 308.95 ml in control group and 185.95 ml in study group. P value was 0.001. Birth weight of the baby was compared. Average birth weight in control group was 2.84 kg and in study group was 2.87 kg. Standard deviation and P value were calculated using t test. P Value was 0.414 which is not significant.

8.5% of control group and 2% of study group had blood loss ≥500 ml. None of both groups had more than 1000ml of blood loss. P value was 0.004. 7.5% in control group and 2% in study group needed blood transfusion. P Value was 0.010, that is significant.

Haemoglobin difference before and after delivery was calculated in both control and study groups. The mean difference in Hb% in control group was 0.68. In study group, it was 0.28. P Value was calculated using t test. P value was <0.001 and it is highly significant.

DISCUSSION

This study was conducted at KGMCH to study the efficacy of Placental Cord Blood drainage versus none as a part of management of third stage of labour after vaginal delivery.

In this study, placental cord blood was drained by unclamping the previously clamped and cut cord in 200 vaginal deliveries and in another 200 vaginal deliveries, the cord was remain clamped and it was not drained.

In present study, around 88% of control group and 87% of study group of women were between 21 – 30 yrs. Mean age in control group is 23.4 years, and in study group is 24.18. Both groups (Control and study) are comparable regarding the age group. 'P' Value calculated and it is also not significant. In another study conducted by Melal Mohammed at Babylon University[5] ,2010 mean age varied between 26 to 29 years

In present study, 96% of control group and 97% of study group were booked, and there was no significant difference between control and study groups in terms of antenatal care. In present study, there were more primigravida in both control and study groups, when compared with multi gravida.

In the control group around 52% were primigravida and 48% were multi gravida. In the study group around 61% were primigravida and 39% were multi gravida. The mean gestational age was 38.2 weeks in control group and 38.3 weeks in study group. Hence it was comparable in both groups. In a similar randomized controlled trial by Shravage JC et al mean gestational age was 38.7 weeks in study group and 38.5 weeks in control group.[6] In another study by Sharma et al, mean age group varied between 38.5-38.7 in both groups.[7]

In present study, in terms of height, weight and body mass index, both control and study groups were comparable. In present study, around 91% in control group and 92% in study group were augmented with oxytocin and both groups were comparable in terms of oxytocin acceleration.

In a similar study by Soltani H, both groups were comparable in terms of augmentation of labour.[8] In another study by Melal Mohammed at Babylon, augmentation with oxytocin was comparable in both groups. Mean duration of first stage was 8.13 hrs in control group and 8.17 hrs in study group, which was comparable and the P value was not significant.

Mean duration of second stage was 26.60 minutes in control group and 25.69 minutes in study group which was also comparable and the P value was not significant. In a similar study by Shravage JC in 200 pregnant women, mean duration of I stage of labour in control group was 9.6 hrs and in study group was 10.17 hrs, II stage of labour in control group was 22.05 months and in study group was 24.15 months.[6] Both stages (I and II) were comparable between 2 groups. Around 92% of women in control group and 89% of study group were delivered by labour natural with episiotomy, around 9% of control group and 8% of study group were delivered by labour natural. 4% of control and 3.5% of study group were delivered by labour natural with perineal laceration. In a similar study by Soltani, mode of delivery was comparable.[8] Birth weight between 2-4 kg were taken for the study. Mean birth weight was 2.84 kg in control group and 2.87 kg in study group and hence it was comparable. P value was not significant. This was similar to a study done by Sharma et al.[7] The mean birth weight was 2.9 kg in study and 2.8 kg in control group.

The mean duration of III stage of labour was 5.06 minutes (303.6 seconds) in control group and in study group it was 3.5 minutes (214 seconds) and the difference was 1.5 minutes and the result was statistically highly significant (P value is <0.001). In a similar study conducted by Soltan H et al it was revealed that 1257 women, cord blood drainage reduced the duration of third stage by a mean of 3 minutes, and the same was shown in French cochrane review.[8] In a study by Giaclaone et al, the mean value in control was 15 min and 8 min in study group.[9]

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. P value was <0.001 which is highly significant. In a similar study conducted by Soltani H et al and French Cochrane review 2012 cord blood drainage reduced the blood loss during third stage by average of 77 ml.[8] In another study by Melal, it was 184 ml in study group and 249 ml in control group.[5]

In present study, the incidence of post-partum Haemorrhage in the control was 8.5% and in the study group it was 2%. P value was 0.004 which is significant. In a similar study by Sharavage et al, J.N. Medical College, Belgaum the incidence was 3% in the study and 10% in the control groups. Gulati et al studied 200 women and reported that incidence of PPH was 6% in study group and 12% in the control group.[10] In a study by Soltani, there was no significant difference noted between both groups, regarding the rate of PPH/Blood transfusion.[11]

Mean haemoglobin difference in control group was 0.68 gms and in the study group was 0.28 gms. The difference between the control and study group was statistically highly significant as shown by the P Value which is <0.001. In a similar study by Mohammed M in 200 women and another study by Giaclone in 200 women, the difference in Hb% (before and 2 days postnatal) was more in control group than in study group and the result was significant.

CONCLUSION

Placental cord blood drainage reduces the duration of third stage of labour. It reduces the blood loss during third stage of labour. Incidence of post-partum Haemorrhage is reduced in cord blood drainage group and the need for blood transfusion after delivery is also decreased in placental blood drainage group. The

decrease in Hb% after delivery is less with the placental blood drainage group. 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 blood loss during third stage.

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REFERENCES

1. Mudaliar AL, Menon MK. Mudaliar, Menon's clinical obstetrics. Gopalan S, Vanita J editors. 11th Ed. Universities Press;2010:93-105,338-50,441-7.
2. Studd J Current progress in Obstetrics and Gynecology. 2012;1:118-135.
3. Khan KS, Wojdyla D, Say L, Gülmezoglu AM, Van Look PF. WHO analysis of causes of maternal death: a systematic review. Lancet. 2006;367(9516):1066-74.
4. A manual of active management of the third stage of labour (AMTSL) National Rural Health Mission by Department of public health and Preventive Medicine, Chennai. 2005-2012.
5. Mohammed M, Jeborry AI. Efficacy of cord blood drainage, at college of Medicine. Department of Obstetrics Gynecology, Babylon University. Med J Babylon. 2010.
6. Shravage JC, Silpa P. 2007, Randomized controlled trial of placental blood drainage for the prevention of post partum Haemorrhage. Indian J Obstet Gynecol. 2007;57(3):213-5.
7. Sharma JB, Pundir P, Malhotra M, Arora R. Evaluation of placental drainage as a method of placental delivery in vaginal deliveries. Arch Gynecol Obstet. 2005;271:34-5.
8. Soltani H, Poulose TA, Hutchon DR. Placental cord drainage after vaginal delivery as part of management of the third stage of labour. Cochrane Database Syst Rev. 2011 Sep 7;(9):CD004665.
9. Giacalone PL, Vignal J, Daures JP, Boulot 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: Int J Obstet Gynecol. 2000;107(3):396-400.
10. Gulati N, Chauhan MB, Rana M. Placental blood drainage in Management of third stage of labour. Indian J Obstet Gynaecol. 2001;51:46-8.
11. Soltani H, Dickinson F, Symonds I, Soltani H. Placental cord drainage after spontaneous vaginal delivery as part of the management of the third stage of labour. Cochrane Database Syst Rev. 2005 Oct 19;(4):CD004665.

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