



## Randomized controlled trial of placental blood drainage for the prevention of postpartum hemorrhage

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**OBJECTIVE(S)** : To evaluate the effectiveness of placental blood drainage via the umbilical cord in reducing the duration of blood loss in third stage of labor, and the incidence of postpartum hemorrhage.

**METHOD(S)** : A randomized controlled trial was carried out on 200 pregnant women. In the study group the placental end of the cut umbilical cord was unclamped immediately after it was cut and in the control group it remained clamped. Placenta was delivered by controlled cord traction. Intravenous methergin was given after delivery of placenta in both the groups. The duration of third stage and the amount of blood loss were noted. The results were analysed by 'Z' test and unpaired 't' test.

**RESULTS** : The duration of third stage was 5 minutes in the study group and 7.4 minutes in the control group. This difference was statistically significant ( $P < 0.001$ ). The average third stage blood loss was 175 ml in the study group and 252 ml in the control group. This difference also was statistically significant ( $P < 0.001$ ). The incidence of postpartum hemorrhage was decreased in the study group (3% vs 10%). None of the women required blood transfusion.

**CONCLUSION(S)** : Placental blood drainage is a simple safe and noninvasive method which reduces the duration of blood loss in third stage thereby preventing postpartum hemorrhage.

**Key words** : placental blood drainage, third stage of labor, postpartum hemorrhage

### 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. India has a maternal mortality rate of 4/1000 live births, whereas it is 0.1 – 0.4 / 1000 live birth in developed countries. The commonest cause of maternal mortality is postpartum hemorrhage which accounts for about 25-30% of maternal mortality.

Numerous factors lead to increased incidence of postpartum hemorrhage like prolonged labor, multifetal gestation, large baby, anemia, preeclampsia and operative vaginal deliveries.

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.

Most of the existing drugs (methergin, oxytocin, carboprost) to prevent and manage postpartum hemorrhage are administered through parenteral routes which reduce the incidence by 40%. In rural India access to such medications and well equipped facilities are limited.

The present study was undertaken for evaluating the effectiveness of placental blood drainage via umbilical cord during vaginal delivery which is simple, safe and noninvasive method of shortening the third stage of labor and reducing the amount of blood loss.

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### Methodology

This was a randomized controlled trial on 200 pregnant women admitted to our labor ward.

The inclusion criteria were full term singleton, pregnancy, with vertex presentation expected to have spontaneous vaginal delivery. The exclusion criteria were hemoglobin less than 7 g/dL, overdistended uterus (hydramnios, multiple pregnancy, large baby), antepartum hemorrhage, induced labor, instrumental delivery and known coagulation disorders.

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 according to the computer generated randomization table.

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 vessel 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 using a Kelly's pad which was used during delivery and the blood lost was collected in a clean metal bowl which was kept at the tail end of Kelly's pad. Mops used for episiotomy were discarded. This was found to be an efficient way of collecting blood after delivery without interfering with perineal suturing. Placenta was delivered by controlled cord traction, once signs of placental separations were seen. Intravenous methergin was given after delivery of placenta in both the groups. The duration of third stage was calculated using a stopwatch. 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 prostadin (PGF<sub>2a</sub>) 250 mg was given intramuscularly.

Once the uterus was well contracted and active bleeding had stopped, remaining blood in the vagina was removed

and sterile sanitary pad was given. The blood collected in the metal bowl was measured using a measuring jar. Care was taken not to mix the drained blood from the cord with the blood lost during the third stage.

The pulse rate, blood pressure and state of the uterus were noted immediately after delivery. The women were kept under observation for next one hour for any complications. Blood transfusion was given whenever the blood loss was more than 1000 mL or if indicated by the clinical status of the patient.

Statistical analysis was done calculating mean and standard deviation. Test of significance used were Z test and unpaired 't' test. P value < 0.05 was taken as significant.

## Results

As seen in Table 1, the two groups were well matched in demographic variables. Table 2 shows the duration of various stages of labor. Average duration of first and second stage of labor were comparable in the two groups.

The average duration of third stage of labor was 5.02±1.71 minutes in the study group and 7.42±2.56 minutes in the control group. This difference was highly significant (P< 0,001).

The average third stage blood loss was 175.05±118.15 ml in the study group and 252.05±145.48 mL in the control group. This difference was highly significant (P<0.001). The number of cases which needed oxytocin was three in the study group and seven in the control group. While prostadin was needed in one case in the study group and three cases in the control group. There were no cases of retained placenta, The incidence of PPH was 3% in the study group and 10% in the control group.

**Table 1. Demographic variables (mean ± SD).**

Variables	Study group	Control group	Z value	P value
Age	23.33±3.84	23.53±3.63	0.37	> 0.05
Gravidity	1.89±0.97	1.96±1.40	0.41	> 0.05
Parity	0.82±0.98	0.93±0.96	0.81	> 0.05
Gestational age	38.78±0.95	38.54±0.88	1.85	> 0.05

**Table 2. Duration of Labor (Mean  $\pm$  SD).**

Duration	Study group	Control group	P value
1 <sup>st</sup> stage (hrs)	10.17 $\pm$ 2.31	9.64 $\pm$ 1.70	0.0659
2 <sup>nd</sup> stage (minutes)	24.15 $\pm$ 9.64	22.08 $\pm$ 8.45	0.1079
3 <sup>rd</sup> stage (minutes)	5.02 $\pm$ 1.71	7.42 $\pm$ 2.56	<0.001

## Discussion

Giacalone <sup>1</sup> 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 third stage of labour was 8 minutes in cord drainage group and 15 minutes in the control group.

Gulati et al <sup>2</sup> studied 200 pregnant women to evaluate placental blood drainage during vaginal delivery as a method of shortening the duration of third stage and reducing the amount of blood loss and concluded that duration of third stage of labour in the control group was 5.72 minutes and in the study group it was 2.94 minutes. Amount of blood lost in the third stage of labour was 247.59 ml in the control group and 193.63 ml in the study group. Incidence of postpartum hemorrhage was 12% in the control group and 6% in the study group. Retained placenta was observed in 4% in the control group and in 0% in the study group.

Sharma et al <sup>3</sup> reported a study on 958 women having vaginal delivery, who were randomized to the drainage method (478 women) or controlled cord traction method (480 women) for placental delivery. The mean duration of third stage of labor was 3.24 minutes and 3.2 minutes in the placental drainage group in contrast to 8.57 min and 6.2 min in controlled cord traction method in primigravida and multigravida respectively.

The Cochrane database of systemic reviews <sup>4</sup> studied the effect of placental cord drainage on the third stage of labor. They selected the randomized trials involving placental cord drainage as a variable within the package of intervention as part of the management of the third stage of labor and concluded that cord drainage results in statistically significant reduction in the length of the third stage of labor.

In our study, the mean duration of third stage was 5.02 $\pm$ 1.71 minutes in the cord drainage group compared to 7.42 $\pm$ 2.56

minutes in the control group. The average blood loss in third stage of labor was 175.05 $\pm$ 118.15 mL in the study group compared to 252.05 $\pm$ 145.48 mL in the control group. The incidence of postpartum hemorrhage was 3% in the study group and 10% in the control group. There were no cases of retained placenta.

Great efforts were taken to measure the blood loss carefully, but the measurement remains open to inaccuracies due to inclusion of some amniotic fluid and omission of some blood that can spatter on drapes and gowns. This can especially affect the measurement of lower amounts of blood loss. However, the likely measurement error should be random and will therefore reduce the power, but not bias the results <sup>5</sup>.

## Conclusion

Placental blood drainage is simple, safe and noninvasive method of great use in day to day obstetric practice not requiring any extra effort, cost or equipment. This is relevant in rural areas also.

## References

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