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Research article

Effectiveness of placental blood drainage on blood loss and duration of the third stage of labor among mothers

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Abstract

Background: Pregnancy and childbirth is a universally celebrated event yet for many thousands of female it is a private hell that may well end in death. Unfortunately, many of pregnancy and labour related complications cannot be predicted early and a significant proportion of mothers die within 24 hours of delivery indicating the significance of appropriate care in delivery and postpartum. Haemorrhage is the main cause of death among women during their delivery. Placental blood drainage helps in the reduction of length and blood loss of the third stage of labour. **Aim:** The main objective of this study is to assess and compare the effectiveness of placental blood drainage on blood loss and duration of the third stage of labour among mothers in intervention and control groups. **Method:** The research approach used was the quantitative approach. The research design selected for this study is experimental design. **Result:** The results show that the amount of blood loss was 221.73 ml for mothers in the intervention group and in the control group, it was 333.67 ml. The mean duration of the third stage of labour was 4.40 minutes in the intervention group and 7.36 minutes in the control group. The P value was < 0.001 which showed that there was the positive and highly statistically significant difference in the blood loss and duration of the third stage of labour between mothers in the intervention group and control group. This reveals that placental blood drainage during the third stage of labour was highly effective. **Conclusion:** This placental blood drainage is the safe, simple, and effective method in reducing the blood loss and duration of the third stage of labour.

Keywords: Placental blood drainage, the third stage of labour, blood loss, duration.

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1. Introduction

Labour and birth are natural processes. It represents both an end and a beginning. This experience serves as the culmination of the approximate nine months that the expectant couple has spent preparing to welcome and to incorporate a new member. Postpartum haemorrhage is the most common and dreaded complication of the third stage of labour. In India, haemorrhage ranks first as the cause of maternal death. Postpartum haemorrhage occurs in approximately 4% of vaginal deliveries and estimates are that it causes significant morbidity and 25% of all maternal childbirth-related deaths.

Placental blood drainage is an additional intervention which is used for active management of the third stage of labour. This involves releasing of the maternal end of the clamped umbilical cord to allow the blood from the placental side to drain out, which reduces the size of the placenta and thereby hoping to help separation and reduce the chance of a retained placenta [1, 2, & 3]. Midwives are responsible for providing the necessary care for women during pregnancy, labour, and delivery and the puerperium [4&5]. Releasing the cord clamp and allowing drainage of placental blood minimizes fetomaternal haemorrhage and assists placental delivery [6]. Placental blood drainage aids for earlier placental

separation and reduces the risk of postpartum complications. It also helps in reducing the blood loss in the third stage of labour after spontaneous vaginal delivery. Placental blood drainage is a simple, safe, and non-invasive method of great use in day to day obstetric practice not requiring any extra effort, cost or equipment [7].

Objectives of the study

1. To assess the total amount of blood loss and the duration of the third stage of labour among placental blood drained group and non drained group.
2. To compare the amount of blood loss and the total duration of the third stage of labour between two groups.
3. To establish the association between the amount of blood loss and total duration of the third stage of labour with selected demographic variables – age and obstetrical variables such as parity and level of haemoglobin.

Hypothesis

H1: The amount of blood test and the total duration of the third stage of labour are significantly less when the placental blood is drained.

2. Methodology

The research approach used for this study is the quantitative approach. The effectiveness of placental blood drainage during the third stage of labour was assessed in two groups namely intervention group and control group. The research design selected for present study is experimental design. Independent variable in this study is Placental blood drainage during the third stage of labour. Blood loss and Duration of the third stage of labour are the dependent variables in this study. Random allocation of samples was used as sampling technique. The sample size was 30.

The setting of the study:

The study was conducted at a private maternity hospital in Puducherry which is a 150 bedded hospital which is specialized in obstetrics and neonatal care. The target population in the study was all the mothers admitted for delivery in the private maternity hospital in Puducherry during the study period. A total number of mothers admitted to the hospital for delivery during that data collection period where 60. The sample selected for the present study was decided to be 30 mothers admitted to the hospital who have to fulfil the inclusion criteria (without any obstetrical complication during the time of pregnancy and labour).

Criteria for selection of the sample:

Inclusion criteria

Mothers, who are admitted in or after the second stage of labour, in the age group of 20-35 years, at term gestation, having a singleton pregnancy, undergo normal delivery, and who are willing to participate in the study.

Exclusion criteria:

Mothers who are in labour below 20 years and above 35 years, having medical or obstetric conditions like gestational diabetes, eclampsia, etc... that affects postpartum blood loss, undergone instrumental delivery or caesarean section or had significant perineal trauma or retained products of conception.

The data collection instrument consists of three parts.

- 1) Part A: Demographic data
- 2) Part B: Obstetrical data
- 3) Part C: Observation checklist for assessing blood loss and duration of the third stage of labour.

Description of the intervention

In both experimental and control groups, immediately after the baby was born the time was noted. The cord is clamped and cut. In the study group, the placental blood was drained from the maternal cut end of the umbilical cord by removing the clamp of the cord which was clamped during the birth of the baby. The blood from the placenta was collected through the cord in a bowl until the flow ceases. Then after the visualization of the signs of the placental separation, the placenta was delivered by controlled cord traction.

In the control group, maternal end of the cut umbilical cord remains clamped. Using Kelly's pad, blood loss in the third stage was measured and the blood loss was collected in a clean bowl which was kept at the tail end of Kelly's pad. The placenta was delivered by controlled cord traction, once signs of placental separations were seen.

After delivery of the baby, intramuscular oxytocin was given to both the groups. The duration of the third stage was calculated using a stopwatch. When the uterus starts contracting well and active bleeding stops, remaining blood in the vagina was removed and the sterile sanitary pad was given. The blood collected in the bowl has been measured using a measuring jar. The reliability of the tool was checked by using inter-rater reliability method ($r=0.9$).

3. Results

Table No 1: Distribution of mean level of blood loss between mothers in intervention and control group

S N	Groups	Mean blood loss	Mean difference	SD	't' value	'P' value
1	Intervention group	221.73	111.94	54.25	7.06	<0.001
2	Control group	333.67		87.02		

The above table signifies that the blood loss was 221.73 ml for mothers in the intervention group and in the control group it was 333.67 ml with the P-value <0.001, there was the statistically significant difference in the blood loss between the mothers in the intervention and control group. This reveals that placental blood drainage was very effective in minimizing the blood loss in the third stage of labour.

Figure No 1: Mean level of blood loss in the third stage of labour between mothers in intervention and control group.

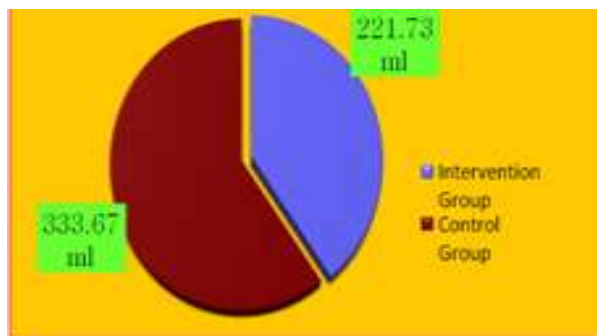
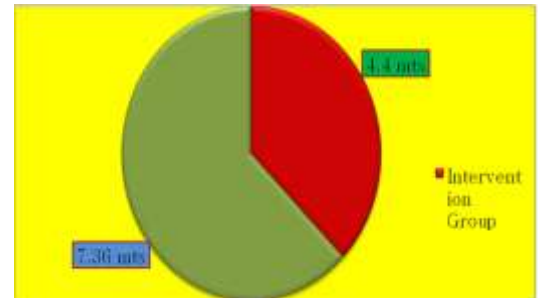


Table No 2: Distribution of mean level of duration of the third stage of labour between mothers in intervention and control group.

S N	Groups	Mean blood loss		Mean difference	SD	't' value	'P' value
		In sec	In min				
1.	Intervention group	264.13	4.40	2.96	145.38	3.866	<0.001
2.	Control group	441.93	7.36		102.94		

The mean duration of the third stage of labour was 4.40 minutes for mothers in the intervention group and in the control group, it was 7.36 minutes. The P value was < 0.001 which showed that there was the positive and highly statistically significant difference in the duration of the third stage of labour between mothers in the intervention group and control group which revealed that placental blood drainage during the third stage of labor was highly effective.

Figure No 2: Mean level of duration of the third stage of labour between mothers in intervention and control group.



4. Discussion

The aim of this study was to assess the effectiveness of placental blood drainage on blood loss and duration of the third stage of labour among mothers admitted in labour room. The study was conducted using experimental design among mothers in a selected hospital at Puducherry. The sample size was 30. Both primigravida and multigravida mothers were included in the study. Placental blood drainage was done to determine the blood loss and duration of the third stage of labour among the mothers. The effectiveness was analyzed using descriptive statistics (frequency, mean, standard deviation) and inferential statistics (t-test and chi-square test). The data was analyzed based on the objectives of the study. The discussion of the present study is based on the findings obtained from the statistical analysis of assessment of the subject's blood loss and duration of the third stage of labour.

Shravage & Silpa[8] conducted a randomized controlled trial of placental blood drainage for the prevention of postpartum haemorrhage 200 pregnant women in Belgaum. The result shows that the duration of the third stage was 5 minutes in the study group and 7.4 minutes in the control group. The average third stage blood loss was 175 ml in the study group and 252 ml in the control group. The incidence of postpartum haemorrhage was

decreased in the study group. The results were almost similar to the present study results. On analysis of the present study, the mean blood loss of mothers in the intervention and control group was found that the blood loss was 221.73 ml for mothers in the intervention group and in the control group it was 333.67 ml. with the P-value <0.001, there was the statistically significant difference in the blood loss between mothers in the intervention group and control group.

According to a randomized controlled study conducted by Jongkolsiri & Manotaya [9] on placental cord drainage and the effect on the duration of third stage labour among 100 women in the third stage of labour at Thailand in the year 2009, the results show that the third stage of labour was significantly shorter after placental cord drainage (5.1 +/- 2.4 minutes vs. 7.0 +/- 6.1

minutes). The authors concluded that placental cord drainage is a safe method, shortens the duration of third stage labour not increase postpartum complication.

According to another study conducted by Gulati & et al [10] with 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 the 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. The incidence of postpartum haemorrhage was 12% in the control group and 6% in the study group. These results are similar to a present study in which the mean duration of the third stage of labour among the mothers in the intervention and control group, it was found that the mean duration of the third stage of labour was 4.40 minutes for mothers in the intervention group and in the control group it was 7.36 minutes. The P value was <0.001 which showed that there was the positive and highly statistically significant difference in the duration of the third stage of labour between mothers in the intervention group and control group.

Conclusion

The major conclusion drawn from this present study was that the placental blood drainage during the third stage of labour helped to reduce the blood loss significantly ($p < 0.001$) and it significantly reduces the duration of the third stage of labour ($p < 0.001$) between mothers in the intervention group and control group. This reveals that placental blood drainage during the third stage of labour was highly effective in reducing the blood loss and duration of the third stage of labour.

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