

Placental Cord Drainage and the Effect on the Duration of Third Stage Labour, A Randomized Controlled Trial

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Objective: To assess the effect of placental cord drainage on the duration of third stage labor, and to clarify the safety of this method regarding to postpartum hemorrhage, retained placenta, incidence of manual removal of placenta, and the need for blood transfusion.

Design: Randomized controlled trial.

Setting: King Chulalongkorn Memorial Hospital.

Material and Method: One hundred women in the third stage of labour after vaginal delivery were randomized. In the study group, placental cord drainage was performed. In both groups, the placenta was delivered by Brandt Andrew method. One case of placenta succenturiata was subsequently excluded. The duration of third stage was compared as the primary outcome. The incidence of postpartum hemorrhage, retained placenta, manual removal of placenta, and the need for blood transfusion were compared.

Results: In 99 cases with normal placentas, 49 cases were assigned to the study group, 50 cases were assigned to the control group. The third stage of labor was significantly shorter after placental cord drainage (5.1 ± 2.4 minutes vs. 7.0 ± 6.1 minutes). There was no postpartum hemorrhage, uterine atony, hypovolemic shock, or the need for blood transfusion in neither groups.

Conclusion: Placental cord drainage shortens the duration of third stage labour. This method appears to be safe and does not increase postpartum complication.

Keywords: Placental cord drainage, Third stage labour, Retained placenta, Postpartum hemorrhage

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The third stage of labor begins immediately after the delivery of the fetus and ends with the expulsion of the placenta and fetal membrane. In the management of the third stage of labor nowadays, it is a common practice to clamp both sides of the cord and cut it then wait until there are signs of placental separation, then deliver the placenta by controlled cord traction or Brandt-Andrews maneuver.

Unclamping the cord at the maternal side and releasing of the placental blood has been suggested for facilitating delivery of the placenta. It is physiologically plausible that draining blood from the placenta would reduce its bulkiness, allowing the

uterus to contract and retract effectively leading to delivery of the placenta and may reduce the duration of third stage labor.

Razmkhah⁽¹⁾, in 1999, first reported that duration of third stage labor was significantly shorter when using the placental cord drainage method, similar results were reported by other investigators^(2,3). However, one study⁽⁴⁾ found no extra benefit from placental cord drainage. Regarding postpartum complications, most studies found no significant increase in postpartum complications⁽¹⁻³⁾. However, postpartum hemorrhage was increased in one study⁽⁴⁾.

The primary objective of the present study was to assess the effect of placental cord drainage on the duration of third stage labor. The secondary objective is to clarify the safety of this method regarding postpartum hemorrhage, retained placenta, incidence

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of manual removal of placenta, and the need for blood transfusion.

Material and Method

The parturients who were admitted to the labour room, King Chulalongkorn Memorial Hospital, and met the study criteria were recruited. The protocol was explained to the parturients and informed consent was obtained.

The inclusion criteria were singleton, term pregnancy (gestational age 37 complete weeks confirmed by certain LMP or early ultrasound), no maternal obstetric or medical complication, no fetal compromise or anomaly, the route of delivery was normal vaginal delivery, forceps extraction, and vacuum extraction.

Parturients with preterm delivery, postterm delivery, premature rupture of the membranes, antepartum hemorrhage, history of postpartum hemorrhage, previous cesarean section, multifetal gestation, and fetal death were excluded from the present study.

The parturients were randomized to the study group or the control group according to the code kept in a sealed envelope. The envelope was opened when the obstetrician performed vaginal delivery. For all women, the time of birth was recorded and then the cord was clamped and cut immediately after birth.

In the control group, the cord was left clamped and the signs of placental separation were assessed. When there were signs of placental separation, the placenta was delivered by Brandt-Andrew maneuver.

In cord drainage group, after cutting of the cord, the cord was unclamped and free release of the blood was allowed into the container until there were signs of placental separation. The cord was then re-clamped and the placenta was delivered by Brandt-Andrew maneuver. The duration of third stage of labour was recorded in project summary sheet. The released blood was also recorded in millilitres (mL) by scaled container.

Signs of placental separation were as follows⁽⁵⁾:

1. The uterus became globular and firmer,
2. There was a sudden gush of blood,
3. The umbilical cord protruded farther out of the vagina.

A retained placenta was diagnosed if the time of third stage was more than 30 minutes, and the placenta was delivered by manual removal.

Postpartum hemorrhage was defined as the clinically estimated blood loss over 500 millilitres (mL) in the labour room or on the obstetric ward.

The duration of third stage labour, incidence of postpartum hemorrhage, incidence of retained placenta, manual removal of the placenta, uterine atony, and the need for blood transfusion were collected and analyzed by another researcher who was blinded to group assignment.

Statistical analysis

Descriptive statistics were used to analyze demographic data labor and delivery characteristics. Chi-square test was used to compare the categorical variables (%) and unpaired t-test or Mann-Whitney test where appropriate to compare continuous variables (mean \pm SD) between two groups. A p-value of less than 0.05 was considered statistically significant difference.

Results

One hundred women were recruited and randomized, 50 women were in the study group, and 50 women were in the control group. One case of placenta succenturiata was diagnosed in the study group; this case was excluded from the study. There were no statistical significant differences between the study and the control group regarding maternal age, gestational age, parity, and mode of delivery, as shown in Table 1.

There were no significant differences in duration of first stage labour, second stage labour, birthweight, placental weight, cord length, and oxytocin use, as shown in Table 2.

Mean duration of third stage labour was significantly shorter in the study group compared to the control group (5.1 ± 2.4 minutes vs. 7.0 ± 6.1 minutes). The mean volume of released blood was 32.3 mL minimal and maximal volume were 4 mL and 90 mL, respectively.

In the control group, one case required manual removal of the placenta because the third stage was prolonged. There was no postpartum hemorrhage, uterine atony, hypovolemic shock, or the need for blood transfusion in neither groups.

Discussion

The main purpose of the present study was to assess the effect of placental cord drainage on duration of third stage labour. Can this method reduce the duration of third stage labour? In the present study, the authors found that mean duration of third stage labour in the study group was 5.1 ± 2.4 minutes and 7.0 ± 6.1 minutes in control group. The duration was

Table 1. Patient characteristics

	Study group (n = 49)	Control group (n = 50)	p-value
Age (years)	25.1 ± 5.4	26.2 ± 5.8	0.32
Gestational age (weeks)	38.5 ± 1.2	38.4 ± 1.2	0.53
Parity n (%)			0.20
0	25 (51)	32 (64)	
1 or more	24 (49)	18 (36)	
Mode of delivery n (%)			0.26
Normal labour	33 (67.3)	27 (54)	
Forceps extraction	12 (24.5)	14 (28)	
Vacuum extraction	4 (8.2)	9 (18)	

Data were represented as mean ± SD

Table 2. Labour and delivery characteristics

	Study group (n = 49)	Control group (n = 50)	p-value
Duration of first stage labour (hours)	9.1 ± 7.8	9.2 ± 6.4	0.700
Duration of 2nd stage labour (minutes)	39.0 ± 60.0	49.0 ± 61.0	0.248
Duration of 3rd stage labour (minutes)	5.1 ± 2.4	7.0 ± 6.1	0.047*
Time of first sign of placental separation (minutes)	3.0 ± 1.4	3.9 ± 2.3	0.076
Birth weight (grams)	2963.0 ± 331.0	3035.0 ± 333.0	0.289
Placental weight (grams)	578.0 ± 83	595.0 ± 114	0.409
Cord length (cm)	52.2 ± 10.5	50.9 ± 10.5	0.546
Released blood (ml)	32.3 ± 22.5	N/A	N/A
Oxytocin use n (%)			0.272
Yes	39 (79.6)	35 (70)	
No	10 (20.4)	15 (30)	

Data were represented as mean ± SD

* Statistical significance (p < 0.05)

Table 3. Amount of released blood and duration of third stage labour

	Less than 40 mL	More than 40 mL
Number of cases: n (%)	31 (63.3%)	18 (36.7%)
Mean duration of third stage labour (min)*	4.7 ± 2.4	5.7 ± 2.3

Data were represented as mean ± SD

* p = 0.15

significantly shorter in the study group (p = 0.047, Mann-Whitney test for non parametric data).

We observed that the standard deviation of the control group was wider than the study group. This data showed that the duration of third stage labour was more varied in the control group than in the

study group. When the subject in the study group was subgrouped by the amount of blood released (group I: less than 40 ml, group II: more than 40 ml, because the mean amount of released blood was 32.3 ± 22.5 ml), subgroup analysis was performed to compare the duration of the third stage. Third stage of labour was

slightly shorter in the group with less than 40 ml of released blood. However, this did not reach statistical significance ($p = 0.15$) as shown in Table 3.

Regarding the safety of placental cord drainage, data from the present study revealed that there were no postpartum hemorrhage, uterine atony, hypovolemic shock in neither groups. There was one case of manual removal of placenta due to retained placenta in the control group, but none in the study group. Our data support the safety of placental cord drainage and there is no increase in postpartum complication.

Overall, the presented data showed that placental cord drainage can significantly shorten the duration of third stage labour. The method is easy to perform, safe, and does not increase postpartum complication.

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การทำคลอดรกโดยวิธีการปล่อยเลือดออกจากสายสะดือต่อระยะเวลาการคลอดรก

พิพัฒน์ จงกลศิริ, ศักนัน มะโนทัย

วัตถุประสงค์: เพื่อศึกษาถึงการทำคลอดรกโดยวิธีการปล่อยเลือดออกจากสายสะดือ ต่อระยะเวลาการคลอดรก และความปลอดภัย ในแง่ของการตกเลือดหลังคลอด รกค้าง การล้วงรก และ ความจำเป็นที่ต้องให้เลือดหลังคลอด

วัสดุและวิธีการ: ในระยะที่สามของการคลอดหลังการคลอดทางช่องคลอด ได้แบ่งผู้คลอดเป็นกลุ่มศึกษา และ กลุ่มควบคุมโดยการสุ่ม ในกลุ่มศึกษาทำการคลอดรกโดยวิธีการปล่อยเลือดออกจากสายสะดือ ในกลุ่มควบคุมไม่ได้มีการกระทำใด ๆ หลังจากนั้น ทั้งสองกลุ่มทำการคลอดโดยวิธี Brandt-Andrews ภายหลังจากที่มีสัญญาณของรกหลุดตัวแล้ว เปรียบเทียบระยะเวลาการคลอดรก อัตราการตกเลือดหลังคลอด รกค้าง การล้วงรก และ ความจำเป็นที่ต้องให้เลือดหลังคลอดในทั้งสองกลุ่ม

ผลการศึกษา: 99 รายของผู้คลอดที่รกปกติ 49 รายในกลุ่มศึกษา และ 50 รายในกลุ่มควบคุม พบว่าระยะเวลาการคลอดรกในกลุ่มที่มีการปล่อยเลือดสั้นกว่าอย่างมีนัยสำคัญทางสถิติ (5.1 ± 2.4 นาทีในกลุ่มปล่อยเลือดเทียบกับ 7.0 ± 6.1 นาทีในกลุ่มควบคุม) ไม่พบการตกเลือดหลังคลอด ภาวะมดลูกไม่หดตัว ภาวะช็อค และ ความจำเป็นที่ต้องให้เลือดในทั้งสองกลุ่ม

สรุป: ระยะเวลาการคลอดรกสั้นลงในการทำคลอดรกโดยวิธีการปล่อยเลือดออกจากสายสะดือ วิธีการคลอดรกโดยวิธีนี้เป็นวิธีที่ปลอดภัย และไม่พบภาวะแทรกซ้อนหลังคลอด