

Original Article

Spontaneous delivery or manual removal of the placenta during cesarean section: A randomized controlled trial

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Abstract

Objective: To compare the blood loss and time between spontaneous delivery and manual removal of the placenta during caesarean section. **Methods:** We prospectively randomized and compared outcomes of 100 gravid women with manual (n=50) or spontaneous (n=50) placental delivery at cesarean section. Operative blood loss was measured directly. **Results:** Blood loss measured after placental delivery at cesarean was greater in the manually delivered group (100.9±22.5 mL) than in the spontaneously delivered group (55.11±21.07 mL, P<0.001). The mean interval between delivery of the newborn and the placenta was longer in spontaneous delivery group (62.02 vs 50.5 seconds) but the mean duration of the operation was similar. **Conclusion:** Spontaneous delivery of placenta as compared to manual expression reduces significantly the blood loss without increasing the operating time. Blood loss following delivery of the placenta at cesarean section was significantly less after spontaneous expulsion of the placenta as compared to manual expression of the placenta.

Key words: placental delivery, spontaneous, manual

Introduction

Obstetric hemorrhage continues to be an important cause of maternal morbidity and mortality. One of the most common complications at cesarean section is hemorrhage. At term the gravid uterus is perfused at a rate of 500 to 750 mL/min. This physiologic hyper perfusion results in an average blood loss at caesarean delivery of approximately 1000 mL.

Studies of the possible role of technique of placental delivery on blood loss at cesarean delivery have not been reported. In texts of operative obstetrics that address placental delivery, a manual shearing of the placenta from its attachment at the decidua basalis after delivery of the fetus is suggested. Spontaneous expulsion of the placenta is not discouraged unless occurring in an untimely fashion.

There are two main methods for placental delivery during cesarean section. Some experts manually cleave the placenta from the decidua basalis and remove it from the uterus, while others prefer to wait for spontaneous delivery. We, the obstetricians should make efforts to minimize the blood loss at the time of caesarean section. When we choose any one of the methods we have to weigh the merits and demerits of both.

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In the present study we observed both types of placental separation with regard to the blood loss and the time taken for separation of the placenta.

Methods

A prospective study was carried out in the Department of Obstetrics and Gynecology, JLN Medical College and Associated Group of Hospitals, Ajmer. One hundred patients undergoing cesarean section for various indications were selected randomly for the study. These patients were divided into two groups randomly. Group I – spontaneous separation of placenta and Group II – manual removal of placenta.

Each patient was subjected to thorough history and examination. Ultrasonography, BT, CT, Hb (by Sahli’s method) were done. The exclusion criteria were gestational age less than 34 weeks, multiple pregnancy, polyhydramnios, placenta previa, abruptio placenta, PIH, preeclampsia, eclampsia, premature rupture of membrane, previous cesarean, pregnancy with myoma, severe medical and surgical complications involving heart, lung, kidney or brain disease, severe anemia and bleeding disorders.

After delivery of the baby, uterine incision was secured with Green Armytage forceps. The time of delivery of the baby was noted. Uterine cavity was packed with one or two dry sponges (pre weighted with kidney tray) around the placenta to soak the blood during separation of the placenta. The time of delivery of placenta was noted.

In patients allocated for spontaneous separation of placenta (Group I) controlled cord traction was used to deliver the placenta. In patients allocated for manual removal (Group II) placenta was removed manually soon after delivery of the baby.

All soaked sponges were weighed in grams and the blood loss was measured in mL.

$$\text{Blood loss in mL} = \frac{\text{Weight of soaked sponges with KT} - \text{Weight of dry sponges with KT}}{1.05}$$

KT = Kidney Tray

Charles M et al. (1992) measured blood loss by volume and gravimetric assessment.

Means were reported with their standard deviations for continuous variables. Statistical significance was tested using the Students ‘t’ test.

Results

Demographic characteristics of all patients are compared in Table 1. Parity and ethnicity were not significantly different in this study. No differences existed between the groups for indications for cesarean delivery.

Table 1. Characteristics of study participants.

	Spontaneous (n=50)	Manual (n=50)
Maternal age (years)	24.6 (3.83)	23.4 (3.25)
Gestational age (weeks)	38.9 (1.51)	38.9 (1.07)
Pre operative Hb level (g/dL)	1.1 (0.829)	10.07 (0.829)
Indication for caesarean		
Fetal distress	28 (56)	20 (40)
Breech	12 (24)	8 (16)
Contracted pelvis	4 (8)	4 (8)
Precious baby	2 (4)	2 (4)
Intrauterine growth retardation	1 (2)	6 (12)
Cephalopelvic disproportion	1 (2)	2 (4)
Elderly primi	1 (2)	1 (2)
Bad obstetric history	1 (2)	7 (14)
Region		
Rural	8 (16)	8 (16)
Urban	42 (84)	42 (84)

NB: Values are expressed as n (%) or mean (SD)

The results for the primary outcome for the whole sample are show in Table 2.

The time interval between the incision and the delivery of the infant was similar between groups, but there was a slightly longer interval (~10 seconds) between the delivery of the infant and of the placenta in the spontaneous delivery group, compared with the manual removal group which did not result in a longer operating time overall (Table 3).

Table 2. Shows primary outcome.

	Spontaneous	Manual	P value	Significance
Mean hemoglobin (gm/dL)				
Before surgery	10.10± 0.829	10.07±0.829	>0.05	Not significant
After 48 hours of surgery	9.43±0.917	8.76±0.917	<0.001	Highly significant
Difference	0.67	1.31		
P value	P<0.001	P<0.001		Highly significant
Mean Blood Loss (mL)	55.11±21.07	100.9±22.52	<0.001	Highly significant
Mean time taken for placental delivery (sec.)	60.02±21.68	50.5±20.5		

Table 3. Time taken for placental delivery.

Time taken for placental delivery (in seconds)	Spontaneous		Manual	
	No.	%	No.	%
0-20	1	2	2	4
20-40	5	10	16	32
40-50	10	20	16	32
40-60				
50-60	16	32	4	8
60-80	12	24	6	12
80-100	3	6	6	12
100-120	2	4	0	0
120-140	1	2	0	0
Total	50	100	50	100

Table 4. Blood loss in placental delivery.

Blood loss (mL)	Spontaneous		Manual	
	No.	%	No.	%
20-40	12	24	1	2
40-60	26	52	3	6
60-80	5	10	7	14
80-100	5	10	10	20
100-120	2	4	24	48
120-140	0	0	5	10
Total	50	100	50	100

Table 5. Difference in hemoglobin before and after surgery (in spontaneous and manual group).

Difference in hemoglobin (g/dL)	Spontaneous (Group I)		Manual (Group II)	
	No.	%	No.	%
	0-0.4	26	52	2
0.4-0.8	12	24	7	14
0.8-1.2	5	10	11	22
1.2-1.6	4	8	22	44
1.6-2	3	6	8	16
Total	50	100	50	100

Blood loss was significantly greater in the manually detached placenta group than in the spontaneously delivered placenta group ($P < 0.001$) (Table 4).

Maximum number of patients – 24 (48%) in group II (manual) lost between 100-120 mL of blood. Maximum blood loss was seen in 5 (10%) patients which was 120-140mL. In comparison to this, maximum patients 26 (52%) in group I (spontaneous) lost between 40-60 mL of blood. Maximum blood loss 100-120 mL in this group was seen only in 2 (4%) cases.

Nine patients of manual group and 2 patients of spontaneous group required 1 unit of blood transfusion.

Gol et al⁴ concluded that manual delivery of the placenta is not associated with a significantly greater risk of operative blood loss compared with spontaneous placental separation.

McCurdy et al², Wilkinson⁷, Morales et al⁶ Dehbashi³ concluded in their study that the blood loss measured at caesarean delivery was greater in manually delivered group than in the spontaneously delivered group.

The decrease in postoperative hemoglobin was significantly greater in the group with manual removal than in the spontaneous expulsion group at 48 hours (Table 5).

Most of the patients 26 (52%) in group I had minimal difference 0-0.04 gm/dL in hemoglobin 48 hours after surgery; whereas maximum number 22 (44%) of patients in group II showed a difference of 1.2-1.6 gm/dL in hemoglobin level after 48 hours of surgery.

Hidar et al⁵, Baksu et al¹ concluded that decrease in post operative hemoglobin ($P < 0.05$) and hematocrit ($P < 0.001$) was significantly greater in manual removal group at 48 hours post operatively.

Comment

In this study a significant decrease in blood loss was seen in patients undergoing cesarean delivery in whom the placenta was spontaneously removed rather than manually. Additional support for greater blood loss in the manual placental delivery group was found with a significantly greater decrease in hemoglobin concentration at 48 hours after operation (1.31 vs 0.67 g/dL). The duration of surgery was not altered by the mode of placental delivery.

Spontaneous separation of placenta is advocated at the time of caesarean section because reduced blood loss helps in decreasing the post operative morbidity and improves post operative recovery.

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