



EFFECT OF PLACENTAL REMOVAL METHOD ON THE DURATION OF SURGERY AND PUERPERAL INFECTION AFTER CESAREAN DELIVERY

Mahin Najafian¹, Nahid Shahbazian¹, Neda Torabifar²

¹Associated professor obstetric and gynecologist, Fertility Infertility and Perinatology Research Center, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

²Resident of gynecology and obstetric department of obstetrics and Gynecology, Fertility Infertility and Perinatology Research Center, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

*Corresponding Author Email: torabi.n@ajums.ac.ir

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ABSTRACT

We aimed to determine the effect of manual removal and spontaneous delivery of placenta on operative time and post cesarean infection. It was a prospective study on 262 women with normal and term pregnancy. Those were selected for elective cesarean section in Razi and Imam khomeini hospitals in Ahvaz Jundishapur University of medical sciences. The subjects were select by simple random sampling in two groups based on the method of placental removal: study group (manual placental removal were 131) and control group (spontaneous placental removal were 131). Post cesarean endometritis was determined by at least two temperature $> 38/50^{\circ}\text{C}$ 6 h apart after the first 24 h. Till 10 days offer cesarean section and uterine tenderness or foul- smelling lochia. Operative time was recorded from the initial skin incision to the completion of skin closure. There was no significant difference in incidence of post cesarean infection between two groups. (Study group % 11/4 and control group % 9/9 $p > 0.05$). The mean time of interval between newborn birth and placental removal in spontaneous delivery was $4 \pm 1/2$ minute as compare with manual removal group that was $1 \pm 1/1$ minute ($p < 0.001$). However this span was more in study group there were no significant difference in total operating time between the two groups. The finding of our study suggests that, there is not an association between the method of placental delivery and post cesarean infection in elective cesarean section.

Keywords: placental delivery, spontaneous, manual, puerperal infection.

INTRODUCTION

During the past decades the rate of cesarean delivery has been a noticeable increase¹. Some of short term morbidities of caesarean delivery are hemorrhage, postoperative fever and endometritis². The infection is one of a major possible complication of caesarean delivery. The risk of endometritis after cesarean delivery is about eight-fold higher than after vaginal delivery³. It determined as maternal temperature was at least 38°C twice after the first 24 hours and the women also had either uterine tenderness or foul- smelling lochia⁴. A number of operative and obstetric factors have impact on post cesarean endometritis. Obstetric factors include: the duration of labor, rupture of the membranes and the length of time between membrane rupture and operative delivery, the number of vaginal exam, null parity and gestational age. Operative factors include: the skill of the operating surgeon operative time- Type of anesthesia, maternal obesity.³ There is various techniques for cesarean section. The differences among these techniques include the type of the abdominal incision, site of repairing the uterus (extra or intra-abdominal), single or double layer repair of the uterus. The method of removing the placenta after the birth of the baby.⁵ there are two methods of delivery of placenta at cesarean section Manual removal and spontaneous delivery⁶; in manual removal method the surgeon inserting his hand between the placenta and the uterus and manually drawing out the placenta from the uterus. In spontaneous method, the physician applies limited traction to the umbilical cord combined with massage of the uterus and then waits for the independent or spontaneous release of the placenta¹. Some trials showed significantly a reduced risk of post operative endometritis^{7,8} and blood loss⁹⁻¹² with spontaneous delivery of the placenta. However, some other clinical trials have

reported no significant difference between the two techniques of placental removal.¹³⁻¹⁵ The main aim of this study was to determine if is there any difference between spontaneous and manual removal of placenta during caesarean delivery on postpartum infection; we also examined the effects of placental delivery on time of surgery.

METHODS

We conducted a randomized controlled trial in the departments of obstetrics and Gynecology of two hospitals (Razi and Emam Khomeini, Ahwaz) from July 2011 – march 2012. The institutional ethics committee approval was obtained before the initiation of this study (Ethical number: Ajums. REC.1392.136). This study involved the singleton pregnant women at term (≥ 37 week) who admitted for elective caesarean delivery. Patients with gestational diabetes, severe preeclampsia, placenta preavia, maternal coagulopathy, anemia ($\text{Hb} < 8 \text{ g/dl}$) previous history of a significant disease including heart disease, liver, renal disorders and women that were complicated during surgery were excluded from the trial. The sample size was 262 patients that randomly were assigned in equal numbers to manual placental removal (study group) or spontaneous deliver) of placenta (control group). Caesarean delivery was performed by senior obstetric residents. The techniques of caesarean section in tow groups were similar. The women's abdomen was scrubbed for 3-5 minutes with 1 % providing-iodine solution. Foley catheter was retained in the operative room. The type of anesthesia was regional in all patients. Incision of skin was pfannenstiell in all cases of primary cesarean delivery. The myometrium was incised as transverse lower segment. After delivery of the baby were added 30 units of oxytocin to the intravenous fluids. After the

umbilical cord was divided, two grams of first-generation cephalosporin was given for antibiotic prophylaxis. The placenta was removed manually or spontaneously. In the control group uterine massage and gentle traction on umbilical cord was applied until the placenta separated spontaneously. In the study group, surgeon's dominant hand was introduced into the uterine cavity and removing the placenta by detaching it from the uterine cavity. In all patients the uterus was pulled through the abdominal incision for repair and massage. Uterine incision closed in one layer using a No. 1 absorbable suture. The operative time was recorded by the circulating nurse provider as the time from the initial skin incision to the completion of skin closure. During the hospitalization maternal temperature were detected every 6 h if patients don't have fever, discharged and temperature controlled by themselves in home and reported by the telephone for 10 days after c/s. Infection morbidity defined as postpartum endometritis was diagnosed

by at least two temperature > 38.5°C 6 h apart after the first 24 h postpartum and at least two of the following: uterine tenderness. Foul-smelling lochia or leukocytosis (WBC= 15000-30000)³. Complete physical examination including a pelvic examination was performed when maternal temperature of >38°C was identified. Sample size was calculated on the basis of previous studies⁴, (assuming alpha = 0/05, Beta = 0/05, power = %95). A total size of 262, with 131 in each group, was required. Data were analyzed with SPSS 10.0 and for statistical significance were analyzed by using the T-test.

RESULTS

A total of 262 women with viable singleton pregnancy were included in the study, 131 women had manual removal of placenta and 131 women had spontaneous placental delivery. Table 1 showed the demographic and clinical characteristics of patients in the two groups.

Table 1: Demographic and clinical characteristics of patients

	Manual removal N = 131	Spontaneous removal N = 131
Age (year)	23/3 ± 4/41	22/4 - 3/42
gestational age (wk)	37/1 ± 2/2	37/3 ± 2/5
Total weight (kg)	70/4 ± 6/8	69/8 ± 5/7
Gravidity (n)	2/38 ± 1/6	2/2 ± 1/8
Cesarean Indication (%)		
Previous caesarean	74/8	71/7 %
CPD	13/7 %	16/1 %
Mal presentation	12/5 %	12/2 %

The results of operating time and postoperative outcome for the two groups are shown in Table 2. The time interval between the delivery of the infant and of the placenta in the spontaneous delivery group (4 ± 1/2) was longer, compared with the manual group (1 ± 1/1) but there were no statistically significant difference in total operating time between the two groups (p > 0.05). The incidence of post cesarean infection

was % 10/6 overall. Post cesarean infection occur in 15 (11/4 %) of women who had manual removal of placenta an 13 (% 9/9) in spontaneous delivery (p > 0/05). No statistically significant difference in post cesarean infection was noted between the two groups'. Day numbers of hospitalization of two groups was similar.

Table 2: Results of operating time and postoperative outcome

	Method of placental removal	
	Manual Mean ± SD	Spontaneous Mean ± SD
Total operating time (minute)	38 ± 10	40 ± 12
Time taken for placental Delivery (minute)	1 ± 1/1	4 ± ½
Hospital stay (Day)	4 ± 1/5	3/2 ± 1/5
Post cesarean endometritis (%)	% 11/4	% 9/9

One patient in control group and two patients in study group developed wound infection that determined by slightly discharge from incision without fever or wound dehiscence or need to re hospitalization.

DISCUSSION

Delivery by cesarean section is one of the most commonly performed major abdominal operations in women all over the world.¹⁶ Although cesarean birth is considered as safe, maternal morbidity and mortality are higher than vaginal Birth.³ Endometritis is the most common complication of c/s.¹¹ It is important to identify the techniques could reduced infection. Recent study suggested the method placenta removal in c/s could influence the risk of post cesarean complication. Tangwong wan *et al.* reported that manual removal of placenta increased the risk of post cesarean endometritis than spontaneous delivery of placenta.³ Lasey *et al.*, Atkinson *et al.*, magan *et al.* and mcurdy *et al.* also reported the similar results in their studies. In contrast to

these studies, some of the previous trials have shown that there is no difference in risk for post cesarean infection between the two methods.^{14,17,18} merchary *et al.* concluded that manual removal of placenta did not increased the risk for fever and wound infection. In our study, we found no increase in risk of post cesarean infection in manual delivery of placental groups. Theoretically, even in the spontaneous placental delivery group, curettage of the uterine cavity by the gauze that used to remove clots and placental fragments can cause endometritis.

The duration of surgery and hospital stay had no significant different between two groups (P > 0/05). Gahlot Ajay *et al.* also reported that the duration of surgery was not altered by the method of placental delivery.¹⁹

CONCLUSION

This finding has shown that there is no difference between methods in post cesarean puerperal infection. Our results were contrast with previous studies (3,7,8), the reason might

be because our subjects were only elective Cesarean section whether almost other studies were contain elective and emergency cesarean section. This is possible the manual removal placenta increased risk in emergent cesarean section. For further study we are recommending to more research in this field in only emergent cesarean section.

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