

## PLACENTA PREVIA: COMPARISON OF THE OUTCOMES OF CASES MANAGED WITH PLANNED CESAREAN SECTION VERSUS EMERGENCY CESAREAN SECTION

### PLANLANMIŞ SEZARYEN VEYA ACİL SEZARYEN UYGULANMIŞ OLGULARIN SONUÇLARININ KARŞILAŞTIRILMASI

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#### ABSTRACT

**Objective:** The aim of this study was to compare perinatal and operative outcomes of patients with placenta previa managed with planned cesarean section versus emergency cesarean section between the years 2000 and 2004 in the Istanbul Faculty of Medicine.

**Materials and methods:** The data of 60 patients with placenta previa managed between January 2000 and December 2004 were retrospectively reviewed. We divided the patients into two groups according to their emergency state at the time of delivery. Group I (n=25): patients with placenta previa who were delivered by emergency cesarean section due to life-threatening vaginal bleeding and group II (n=35): patients with placenta previa who were delivered by a planned cesarean section with obstetric indications after initial admission to our clinic. We compared maternal morbidity in terms of operative and postoperative complications and perinatal outcomes of the two groups. The amounts of blood transfusion were also evaluated.

**Results:** The mean ages of the first and the second groups were 31.6 and 31.7 years, respectively ( $p=0.927$ ). The duration of surgical procedures was not significantly different between the two groups (100.6 minutes in group I and 90.6 minutes in group II,  $p=0.792$ ). The total blood transfusion between only cesarean groups was not different significantly (the mean blood transfusion amount in group I was 449 ml and in group II was 448 ml,  $p=0.693$ ). A total of 12 obstetric hysterectomies were performed in the two groups. Among the patients who underwent hysterectomy, the mean amount of blood transfusion in the emergency cesarean hysterectomy group was significantly higher than that in the elective cesarean hysterectomy group (2750 ml versus 1078 ml,  $p<0.001$ ). The operative time of the obstetric hysterectomy procedure was higher in the emergency group than that in the elective group (231 minutes versus 171 minutes,  $p<0.001$ ). No maternal deaths were observed in any group. One bladder injury occurred in a patient with placenta percreta.

**Conclusion:** Emergency cesarean versus planned cesarean section approach in patients with placenta previa did not show any significant difference regarding the duration of cesarean section, the amount of blood transfusion, or maternal morbidity and mortality. However, the patients who required hysterectomy due to intraoperative massive bleeding (mostly associated with abnormal placentation) in the emergency cesarean section group had significantly more blood transfusion and longer duration of operative time than those in the elective cesarean section group. Therefore, it is the emergent hysterectomy procedure which influences perioperative outcomes in patients with placenta previa and not the cesarean section.

**Key words:** Placenta previa, cesarean section, hysterectomy, maternal morbidity and mortality

#### INTRODUCTION

Placenta previa is generally defined as the implantation of the placenta over or near the internal os of the cervix. There are three types of placenta previa; total, partial, and marginal. The higher incidence of low-lying placenta and placenta previa is sonographically diagnosed in the second trimester and ranges from 6% to 46%. This rate, however, decreases to as low as

0.5 % at delivery (11). Despite advances in blood transfusion techniques and surgical procedures, abnormal placentation still remains a difficult challenge for obstetricians. Intrapartum maternal hemorrhage and the need for emergency cesarean section or hysterectomy related to abnormal placentation are main causes of maternal-fetal morbidity and mortality. The overall incidence of placenta previa at delivery is repor-

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ted as 0.5 % in most studies (3, 5) and the risk factors for placenta previa include advanced maternal age (above 35 years), parity, smoking, and, most importantly, prior cesarean delivery. Placenta previa with prior cesarean delivery increases risk up to 1% - 4%. As the number of previous cesarean deliveries increases, the incidence of placenta previa and abnormal placentation shows a linear increase (3). Vaginal ultrasound is the most accurate method for localizing and diagnosing placenta previa, because it can provide a better resolution in the lower margin of the placenta (4, 6, 11). There is a little increase in congenital anomalies associated with placenta previa when compared to normal pregnancies, but this increase could be attributable to advanced maternal age (2).

In current practice, patients with placenta previa usually present with two clinical forms. The first clinical form is massive life-threatening vaginal bleeding for which patients with placenta previa most often require emergency surgical interventions and immediate delivery. Whether diagnosed before or not, these patients have many more intraoperative risks than patients with placenta previa who are delivered electively. In the second clinical form, patients with placenta previa are diagnosed prenatally or with a second trimester vaginal ble-

eding for which conservative management is successful. These patients are usually delivered by physicians at the time when the fetal lung maturity becomes suitable for delivery or when obstetric indications require delivery.

The objective of this article was to compare perinatal and operative outcomes of patients with placenta previa managed emergently versus conservatively until elective cesarean section between the years 2000-2004 in the Istanbul Faculty of Medicine.

**MATERIALS and METHODS**

Pathological reports, patients' charts, and department statistics were collected from clinical archive from January 2000 to December 2004 to search for records of patients with placenta previa. In this retrospective study, records of 60 patients with placenta previa out of 10556 patients delivered during this period were assessed. Twenty-five patients with placenta previa were delivered emergently because of excessive life-threatening vaginal bleeding and 35 patients with placenta previa were delivered with a planned cesarean section because of other obstetric indications. We compared the two groups' morbidity in terms of operative and postoperative complications,

**Table 1. Characteristics of the patients included in this study**

Characteristics of the patients	Emergency CS (n=25)	Elective CS (n=35)	p value
Age>35 (n and %)	6 (24 %)	13 (37.1%)	p=0.591
Parity>3 (n and %)	1 (4% )	8 (22.8%)	p=0.066
Nulliparity (n and %)	10(40% )	6 (17.1%)	p=0.165
Prior cesarean section (n and %)	5 (20%)	14 (40%)	p=0.285
Mean gestational age at diagnosis (weeks)	29.5	31.3	p=0.123
Mean hospitalization before delivery (days)	7.0	12.8	p=0.120

CS: Cesarean section

**Table 2. Major intra- and postoperative complications**

	Emergency CS (n=25)	Elective CS (n=35)	p value
Mean duration of procedure (minutes)	100.6	90.6	p=0.792
Mean blood transfusions (ml)	449	448	p=0.693
Mean hospitalization after delivery (days)	5.48	5.31	p=0.566
Placenta accreta, increta or percreta	3 (12%)	9 (25.7%)	p=0.345
Emergency hysterectomy	3 (12%)	9 (25.7%)	p=0.345
Mean blood transfusions during hysterectomy (ml)	2750	1078	p=0.001
Duration of hysterectomy (minute)	231	171	p=0.001
No complication	24 (96%)	33 (94.2 %)	NA
Bladder injury	0	1 (2.8%)	NA
Ureteric injury	0	0	NA
Wound infection	1 (4%)	1 (2.8%)	p=1.000
Burst abdomen	0	0	NA
Thrombosis	0	0	NA
Wound dehiscence	0	0	NA
Maternal mortality	0	0	NA

CS: Cesarean section, NA: Not applicable

**Table 3. Types of obstetric hysterectomy performed for intraabdominal excessive bleeding related to abnormal placentation**

Hysterectomy procedure	Emergency CS (n=25)	Elective CS (n=35)
Total hysterectomy	0	2 (5.7%)
Subtotal hysterectomy	0	1 (2.8%)
Total hysterectomy and bilateral uterine artery ligation	2 (8 %)	1 (2.8%)
Subtotal hysterectomy and bilateral uterine artery ligation	1 (4 %)	5 (12.8 %)
Total	3 (12%)	9 (25.7 %)

CS: Cesarean section

**Table 4. Perinatal outcomes of two groups**

Perinatal Complications	Emergency CS (n=25)	Elective CS (n=35)	p value
Mean umbilical artery Ph	7.24	7.22	p=0.958
Mean APGAR scores ( 1 minutes)	5.8	6.9	p=0.036
Mean APGAR scores ( 10 minutes)	8.5	8.2	p=0.540
Fetal death	1 (4 %)	2 (5.7 %)	p=1.000
Mean birth weight (g)	2271.2	2699.8	p=0.031
Mean gestational age at delivery (weeks)	33.34	35.4	p=0.002

CS: Cesarean section

rates of blood transfusion and perinatal outcomes. Rates of placenta accreta, placenta previa, emergency cesarean section, and hysterectomy were calculated. Statistical analysis were performed using the SPSS software program (SPSS Inc., Chicago, Illinois, USA). Mann Whitney-U test, Fisher exact test, and student's t-test were used for comparing the two groups. P value  $\leq 0.05$  was accepted as statistically significant.

## RESULTS

The patients with placenta previa constituted of 0.5 % of live births in our cohort. The mean age of the first group was 31.6 ( range: 20-41) and of the second groups was 31.7 (range: 20-40). Mean gestational ages at diagnosis [group I :29.5 (range: 21-35) and group II :31.3 (range: 20-39) weeks] and at delivery [group I:33.3 (range: 28-37) and group II:35.4 (range: 28-41)] did not differ significantly between the two groups. The numbers of patients with prior cesarean section, hospitalization before delivery, and the duration of surgical intervention between the two groups (100.6 minutes in group I versus 92.2 minutes in group II) did not show a significant difference. The comparison of the total amount of blood transfusion between the two groups did not reveal any statistically significant difference (Table 1 and 2). In the emergency group, there were 3 (12%) patients and in second group there were 9 (25.7%) patients with abnormal placentation such as accreta, increta or percreta. In the first group, three patients with placenta previa with abnormal placentation had emergency hysterectomy and in the second group, nine patients had hysterectomy during cesarean section because of excessive bleeding from the placental bed site. In the presence of abnormal

placentation, subtotal hysterectomy combined with bilateral uterine artery ligation was the most commonly preferred surgical intervention (Table 3).

The mean amount of blood transfusion in the emergency cesarean hysterectomy group was significantly higher than that in the elective cesarean hysterectomy group ( $p < 0.001$ ). Also, the duration of the obstetric hysterectomy surgical procedure was longer in the emergency group than that in the elective group ( $p < 0.001$ ). There were no maternal deaths due to placenta previa in either groups. Complications due to surgical interventions in the treatment of placenta previa were rare in our series. Only a bladder injury occurred in one case with placenta percreta. Two wound infections treated with proper antibiotic regimens were detected in all series (Table 2).

In our series, four fetuses died within 10 minutes after delivery due to severe blood loss and anemia. Mean birth weight was higher in the second group (2271 g versus 2699 g;  $p = 0.031$ ). Also APGAR scores were relatively better in the second group ( $p = 0.036$ ). The characteristics of perinatal data are summarized in Table 4.

## DISCUSSION

Placenta previa usually presents with life-threatening vaginal bleeding and requires immediate cesarean section and delivery. In these cases, multiple transfusions and proper surgical interventions may reduce maternal mortality and morbidity. Surgeon's skills and logical protocols developed for the management of this condition are important in reducing mortality and complications, but in this study all surgical interventions were performed by our department surgeons. Emergency ce-

sarean section has more complication rate and maternal morbidity rates than that in the elective cesarean section in older studies (8, 10). In modern obstetrics, the knowledge from older studies could not be applied to current practice. Advances in blood transfusions and surgical techniques may prevent maternal deaths and complications due to placenta previa. In this study there was no increase in maternal morbidity and complications. However, the number of the patients in our study is very low and further studies with large series are needed to prove this issue.

Current treatment for these patients is close observation and proper blood transfusions. If delivery is inevitable, the risk of placenta accreta and the necessity of hysterectomy should be considered and immediate surgical preparation and blood transfusion should be taken to reduce the risk of maternal morbidity. In this study, there was no statistically significant difference between the two groups regarding the amount of blood transfusion. In the emergency cesarean section group which required obstetric hysterectomy for placentation abnormalities, the blood transfusion amount was significantly higher. An unexpected massive bleeding from abnormal placentation during operation can cause fear and decreased judgment capability, even in experienced hands. The most recent studies revealed that placenta previa and abnormal placentation are the most common indications for obstetric hysterectomies (1, 9). Accordingly, during this period (between the years 2000 and 2004; our unpublished data) placentation abnormality due to accreta was the most common cause for obstetric hysterectomy. Emergency cesarean section has more complication rates when compared with elective cesarean section such as bladder injuries, bowel lacerations, pelvic hematomas and wound infections. In this study, we had two wound infections in both groups and one bladder injury and reparation due to placenta percreta in the elective cesarean section group. In this study, comparison of complications between the two groups showed no statistically significant difference.

Most data obtained from literature showed that perinatal outcome for patients with placenta previa does not differ from those of normal pregnancies (7, 8) Prematurity is the most common reason for fetal morbidity and mortality. In our study, data obtained from the patients was identical to this, although in our series two babies died from severe anemia due to fetal hemorrhage during delivery. Although we did not further subdivide groups according to localization of placentas, anterior localization of placenta previa may especially prolong the time to deliver the baby during the operation. When the

placenta is in anterior location, the surgeon generally has to incise the placenta which could cause fetal hemorrhage. It is important to emphasize that a neonatal team must be also ready for neonatal resuscitation and blood transfusion in case of unexpected fetal hemorrhage.

Based on the results of this study, we can conclude that emergency cesarean section due to placenta previa does not increase maternal mortality and morbidity in the presence of modern blood transfusion techniques and surgical improvements. There is a significant increase in blood transfusion amount and the operation time among the patients managed with emergency cesarean section due to placenta previa. It is also important to remember that anterior localization of placenta previa is a special condition that the surgeon could incise the placenta during cesarean section and fetal hemorrhage could occur. The neonatal team has to be ready for this condition.

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