

# Evaluation of Complications And Anesthesia Practice In Cases With Cesarean Section For Placenta Previa

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## ABSTRACT

**Background:** It is reported that preterm births related to placenta previa increase perinatal mortality.

**Material and Method:** This retrospective study evaluated operation records for cesarean sections performed at Mustafa Kemal University between January 2009 and December 2012 for which a diagnosis of placenta previa was made.

**Results:** We evaluated 67 cases (Table 1). Nineteen cases (28.4%) were urgent and 48 cases (71.6%) were elective. Although no differences existed according to mean age of gravida and number of previous cesarean section operations, significant differences were found between the urgent and elective cases with respect to many other characteristics, including preoperative and postoperative hemoglobin values, operation periods, number of cases requiring hysterectomy, hypogastric artery ligation, number of patients requiring blood transfusion, and number of patients requiring postoperative intensive care.

**Conclusion:** To decrease maternal and fetal morbidity and mortality, performing preoperative preparations carefully, choosing the right anesthesia method, effectively evaluating blood loss, and optimizing communication between anesthesiologist, obstetrician, and blood bank workers are necessary to manage cesarean section in pregnant women with placenta previa. Cesarean sections that are urgent, related to previa, and in cases where parity is equal to or greater than 2 can result in the need for hysterectomy. These conditions increase operation periods, blood transfusion needs, and risk of admission to an intensive care unit. Necessary preparations must be performed preoperatively.

**Key words:** Cesarean section, placenta previa, anesthesia

### Introduction

Placenta previa is defined as the placenta covering the internal cervical opening partially or completely; it is the settlement of placenta within the uterus. When the placenta covers all of the internal part of the uterus, it is called total; partial coverage is called partial placenta previa, and settling closely is termed marginal placenta previa(1). Bleeding caused by obstetric procedures in general is one of the most important causes of maternal mortality and morbidity (2, 3). Insufficient or untimely preoperative preparations can lead to more bleeding and probable and common intravenous coagulation defections.

Placenta previa is associated with an increase in preterm birth and perinatal mortality and morbidity (4). Cases with the anomaly of placental settling have high rates of coagulation, intensive care unit admission, and mortality and morbidity. For these reasons, anesthesiologists and obstetricians should know how to manage peripartum bleeding based on the anomaly of placental settlement. The aim of this study was to retrospectively evaluate results with the use of anesthesia in placenta previa during cesarean section.

### Material and Methods

After obtaining the approval from the Local Human Ethics Committee, obstetric and gynecologic operation and anesthesia records in pregnant women who received a diagnosis of placenta previa and underwent cesarean section operation between January 2009-2012 were evaluated retrospectively. Cases in which bleeding and coagulation disorders manifested were excluded from the study. The following information was recorded for every patient: age; whether an urgent or elective operation was performed, anesthesia methods (general or regional), gravida, parity, number of abortions, previous cesarean section numbers, newborn 1-minute and 5-minute Apgar scores, duration of operations; hemoglobin values of preoperative and postoperative and hysterectomy, hypogastric artery ligation, history of bladder repairing, and number of existing to postoperative intensive care and blood transfusion needs were recorded.

Events were classified according to whether an operation was urgent (Group U) or elective (Group E), and also according to whether the woman was going to have 2 or more (parity > 2; Group P > 2) or less than 2 (parity<2; Group P<2) parity numbers. Events in group U and group E were compared with respect to preoperative and postoperative hemoglobin values, operation periods, number of intraoperative complications (hysterectomy, hypogastric artery ligation, bladder reparation) numbers; number of patients taken to postoperative intensive care; and number of patients receiving intraoperative blood transfusions. Some parameters were compared for Group P > 2 and Group P<2. Statistical analysis was performed with the SPSS (SPSS for Windows, release 13.0) statistical package and data are presented as means and standard deviations. Comparison of intraoperative and postoperative complications between groups was made with Chi-square and Fisher's Exact tests; data obtained from measurement was evaluated by Mann-Whitney U tests. Results were evaluated with a reliability interval of 95%, and the significance level is P<0.05.

### Results

A total of 67 cases were examined. Average age of subjects at the time of the cesarean sections was 31 (5).

The operations lasted for between 45 minutes and 180 minutes; average period was 89.6 (40.2) minutes.

General anesthesia was used in 60 (89.6%) of cases; in the other 7 cases (10.4%) regional anesthesia was used. Prior cesarean sections ranged from 0-3 and the average was 1.3 (0.8) (Table 1).

Number of patients (n)	67
Age (year)	31 (5)
Gravida (n)	3.3 (1.5)
Parity(n)	1.7 (1.0)
Abortus (n)	0.4 (0.9)
Live (n)	1.7 (0.9)
Operation time (minute)	89.6 (40.2)
Preoperative Hb (g/dl)	10.8 (1.2)
Postoperative Hb (g/dl)	9.7 (1.0)
Cesarean section number	1.3 (0.8)
Apgar I	7.1 (1.8)
Apgar II	8.5 (1.7)
<b>Method of anesthesia</b>	
General (n+%)	60 (89.6%)
Regional (n+%)	7 (10.4%)

**Table 1: The demographic data of the patients with anesthetic and operative management**

Fifty-eight (86.6%) of the sixty seven cases involved in the study were in women who had at least one previous cesarean section. With respect to hysterectomy, none of the 9 women with no cesarean section had undergone the procedure; 2 (6.9%) of patients with one cesarean underwent hysterectomy; and 4 patients (66.7% of the total) with 3 cesarean sections in their medical history had undergone hysterectomy. When the cases are classified as Group U and Group E, 19 (28.4%) of procedures were urgent, and 48 (71.6%) were elective. No difference existed between these two groups according to age, gravida, and number of previous cesarean sections. Preoperative (10.2 [1.2] and 11.0 [1.1]; P=0.33) and postoperative (9.3 [0.9] and 9.9 [1]; P=0.027) hemoglobin values, duration of operations (107.5 [39.4] and 82.5 [38.7]; P=0.015); number of hysterectomies (8 [42.1%] and 8 [16.7%]; P=0.028) were found to be significantly different between those undergoing elective or urgent surgery. Some other points of comparison between group U and group E, respectively, for which very significant differences were found include hypogastric artery ligation (14 [73.7%] and 16 [33.3%]; P<0.01); number of patients requiring blood product transfusion (15 [78.9%] and 16 [33.3%]; P<0.01); and number of patients exiting to the intensive care unit (5 [26.3%] and 2 [4.2%]; P<0.01) (Table 2) (Graph 2).

State of Operation	Group U (n=19)	Group E (n=48)	p
Age (year)	31 (4)	31 (5)	0.403
Gravida (n)	1.5 (1.3)	3.2 (1.6)	0.130
Parity(n)	1.9 (1.3)	1.6 (0.9)	0.514
Abortus (n)	0.3 (0.4)	0.4 (1.1)	0.525
Ceserean section number	1.6 (0.9)	1.2 (0.7)	0.181
Preoperative Hb (g/dl)	10.2 (1.2)	11.0 (1.1)	0.033*
Postoperative Hb (g/dl)	9.3 (0.9)	9.9 (1)	0.027*
Operation time (minute)	107.5 (39.4)	82.5 (38.7)	0.015*
Hysterectomy (n+%)	8 (42.1%)	8 (16.7%)	0.028*
Hypogastric artery ligation (n+%)	14 (73.7%)	16 (33.3%)	0.003**
Bladder repairing (n+%)	2 (10.5%)	2 (%4.2)	0.326
Intensive care unit exit (n+%)	5 (26.3%)	2 (%4.2)	0.008**
Blood transfusion (n+%)	15 (78.9%)	16 (%33.3)	0.001**

Table 2: Comparison of groups for according to operations. Group U; Urgent, Group E; Elective. \*p<0.05,\*\*p<0.01

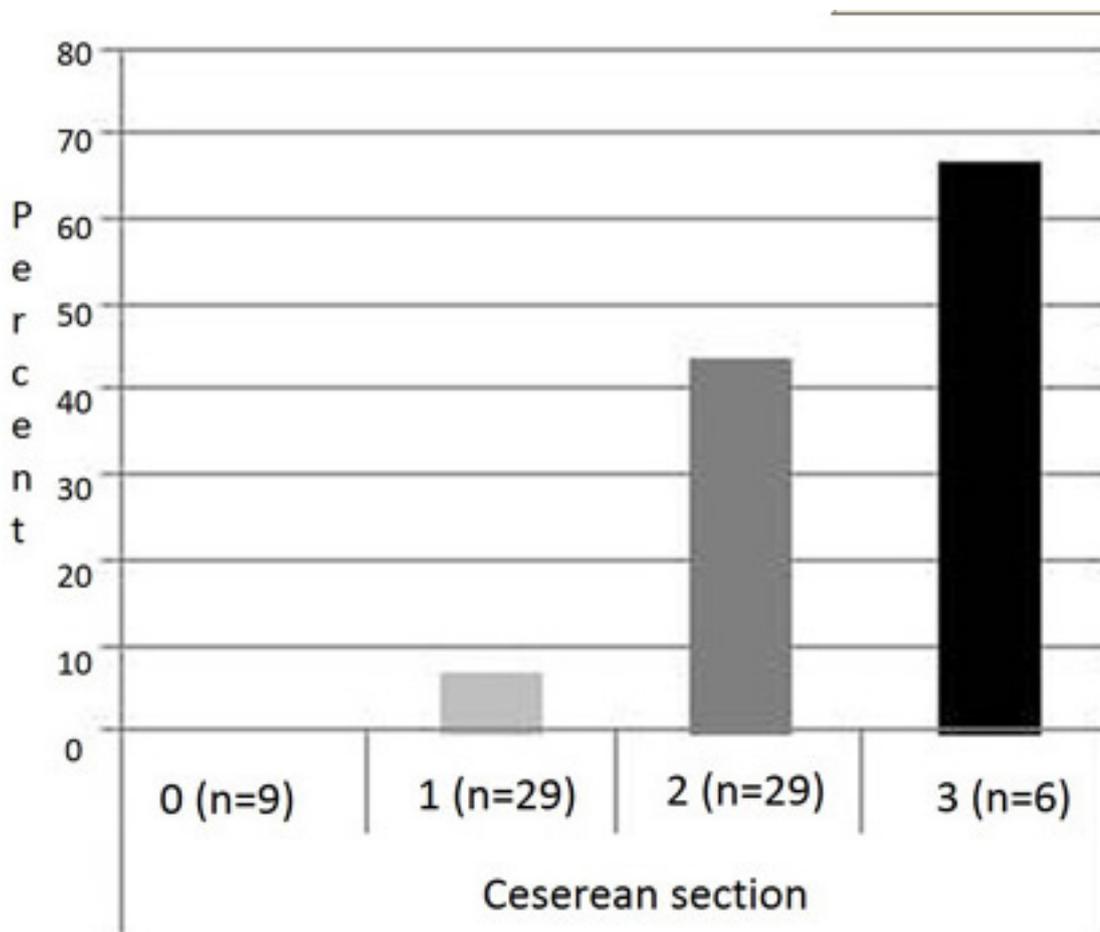


Figure 1: The percentage of blood transfusion according to the state for operations \*P?0.01, Group U; Urgent, Group E; Elective

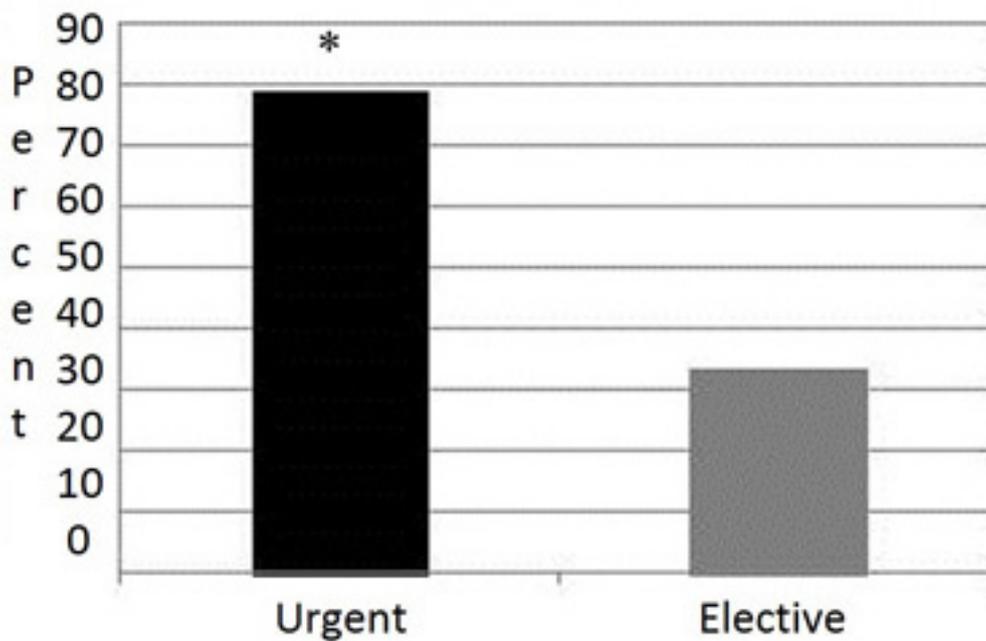


Figure 2: The percentage of hysterectomy with the number of previous cesarean

Parity	Group P≥2 (n=38)	Group P<2 (n= 29)	p
Preoperative Hb (g/dl)	10.5 (1.2)	11.1 (1.1)	0,157
Postoperative Hb (g/dl)	9.5 (1.0)	10.1 (0.9)	0,073
Operation time (minute)	107.3 (41.4)	66.4 (23.8)	0,000**
Histerektomi (n+%)	14 (36.8%)	2 (6.9%)	0,005**
Hypogastric artery ligation (n+%)	23 (60.5%)	7 (24.1%)	0,003**
Bladder repairing (n+%)	4 (10.5%)	0 (0%)	0,075
Intensive care unit exit (n+%)	7 (18.4%)	0 (0%)	0,015*
Blood transfusion (n+%)	25 (65.8%)	6 (20.7%)	0,000**

Table 3: Comparison of groups according to the number of parity .Group P > 2; Parity > 2, Group P<2; Parity <2. \*p<0.05,\*\*p<0.01

The cases were grouped according to the number of parity, if parity number was 2 (Group P > 2) case numbers were (43.3%) 29, and if parity number was <2 (Group P<2), that was (56.7%) 38. No differences existed between groups according to age, preoperative and postoperative hemoglobin values, or number of bladder repairs. For the patients who were exited to postoperative intensive care (7 [18.4%] and 0 [0%]; P= 0.015), significantly different operation periods were found (107.3 [41.4%] and 66.4 [23.8%]; P<0.01) incidence of hypogastric artery ligation (23 [60.5%] and 7 [24.1%]; P<0.013) incidence of hysterectomy (14 [36.8%] and 2 [6.9%]; P<0.013) and number of patients needing blood product transfusions (25 [65.8%] and 6 [20.7%]; P<0.01) were also significantly different (Table 3).

**Discussion**

A diagnosis of abnormal placentation can cause life-threatening consequences and affects obstetric surgery and anesthesia methods (5). In cesarean operations with placenta previa, complications can include more bleeding, disseminated intravascular coagulation, sepsis, reoperation, hysterectomy, bladder and ureter injuries depending on the placental set-

tlement place. Furthermore, placenta previa cases have high rates of admission to intensive care(6). This complication can affect surgical procedures as well, including the time it takes to perform surgery and intraoperative liquid management (blood transfusion is also common). Insufficient preparation can cause an increase in perioperative mortality and morbidity risk.

The evaluation of patients before the operation in terms of clinical and laboratory data has great importance for planning anesthesia methods. Urgency of surgery and patient preference guide choice of anesthesia method(7).

Placenta previa is seen in approximately 0.5% of the general population; its incidence is higher in women who have undergone multiple cesarean sections, who smoke, or who have a uterine scar. Other factors include high maternal age, multiparity, previous abortions, drug utilization, pathologic presentation, uterine anomalies, and preterm activities (8, 9). A study by Milosevic et al reported frequently the recurrent cesarean numbers that caused risk factors for placenta previa. In our study, while there was no cesarean history in 13.4% of

cases, cesareans were done in 86.6% at least (10). In the study by Zaki and colleagues in 23,070 births, it was shown that pregnant women with placenta previa have a higher risk rate for postpartum bleeding and intraoperative blood product use (11). Placental settlement anomalies can be seen with bladder invasion and so cause for a radical operation for the patient. So the operation period can prolong and increase the need for blood products during surgery (12, 13). Although intravenous oxytocin is administered after birth to women with placenta previa, placenta implantation place cannot be contracted adequately and so there is a direct correlation between placenta previa and blood transfusion as a result (14).

In cesarean section operations in patients diagnosed by placenta settlement anomaly, it is important to have an adequate blood supply and cardiovascular support protocols in place, as placenta previa is an important reason for obstetric bleeding (1,6,15). Gaundan A et al have reported that in 13.71% of urgent cesarean sections and 5.06% of elective cases that is included (15). In our study, 46.3% of all study cases needed blood transfusion, and the difference was significantly different between urgent or elective cesarean section cases with placenta previa taken to the operating room. While blood products were needed in 78.9% urgent cesarean section cases, they were given in 33.3% of cases with elective cesarean section operations. The placental settlement anomaly is one of the most common causes for peripartum hysterectomy (16). Complication rates are higher in urgent cesarean sections than in instances where it is an elective surgery (17). In our study, patients undergoing elective cesarean received from previa according to the emergency cesarean hysterectomy, hypogastric artery ligation, bladder repairing, and removal rates of postoperative intensive care unit was different. Having recurring cesarean section operations also contributed to complications because it made placenta previa more likely and also caused uterine scars (18). Patients with complete placenta previa or placenta accreta who have cesarean section operations in their history have a high risk of postpartum bleeding, transfusion, obstetric hysterectomy, and perinatal morbidity (19). In cesarean sections executed because of placenta previa, the risk of hysterectomy is approximately 4 times higher. In one study, it was asserted that for one cesarean section the risk was 0.65%, ascending to 1.5% with 2 cesarean sections, 2.2% with 3, and more than 10% with 4 cesarean sections (20). In this study, while one of the women with placenta previa and no cesarean history had to undergo hysterectomy, 6.9% of cases of placenta previa that had one cesarean section underwent hysterectomy; this percentage increased greatly to 43.5% with two cesarean sections and 66.7% with 3 cesarean sections. Overall, hysterectomy was performed in 27.6% of women who had cesarean section before. On the other hand, hysterectomy was performed in none of the women who had not undergone cesarean section before. Although the difference was insignificant, it is thought to be due to the limited number of our study cases. Furthermore, high parity and existing placenta previa also combine to increase the risk of hysterectomy (21-23).

Of our 67 cases of placenta previa in this study, 38 (56.7%) had parity of 2 or more. A significant difference existed with parity < 2 versus >2 in terms of the incidence of hysterectomy, hypogastric artery ligation, operation period, blood product transfusion, and rate of existing postoperative intensive care.

General and regional anesthesia had no difference in intraoperative effects for these patients (6). We also found no difference between general and regional anesthesia in caesarean sections. Type of anesthesia also had no significant impact in many of the other parameters studies (hysterectomy, blood product transfusion, hypogastric artery ligation, and bladder reparation).

As a conclusion, decreasing maternal and fetal mortality and morbidity with cesarean sections performed due to placenta previa requires careful preoperative preparations, the right anesthesia method, effective evaluation of blood loss, and strong communication between the anesthesiologist, obstetrician, and blood bank workers. Cesarean sections that are related to previa urgent in cases where parity is equal to or greater than two can result in hysterectomy. These conditions increase operation periods, blood transfusion needs, and risk of intensive care admission; necessary preparation should therefore be performed preoperatively.

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