



Aegean Journal of Obstetrics and Gynecology

Original Article

Comparison of maternal morbidity in emergency and elective cesarean section

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ABSTRACT

Objective: We aimed to compare emergency and elective cesarean patients in our hospital in terms of epidemiological features and maternal morbidity. **Material and methods:** We randomly retrospectively reviewed the records of 302 cesarean cases. Demographic features and indications for emergency (group 1) and elective cesarean section (C/S) (group 2) were recorded. The groups were compared in terms of indications and intraoperative and postoperative morbidity.

Results: It was found that the mean hematocrit decrease in group 1 was not different from group 2 (5.70 ± 1.16 and 5.62 ± 0.67). When the groups are examined according to cesarean indications; In group 1 patients, fetal distress, cephalopelvic disproportion (CPD), non-progress of labor, abruptio placentae were significantly higher compared to group 2, whereas in group 2 patients the previous 1 C / S and previous 2 C / S indications were significantly higher. Intraoperative hemorrhage and bladder injury were more common in group 1 patients compared to group 2 patients. When the groups are examined according to postoperative maternal complications; In group 1 patients, transfusion, prolonged bladder catheterization, admission to intensive care unite (ICU), was significantly higher compared to group 2.

Conclusion: It was found that many intraoperative and postoperative complications were more common in the emergency C/S group. It was also detected that all cases with bladder injuries had previous cesarean sections. Therefore, performing cesarean deliveries under elective conditions and planning is important to reduce the morbidity associated with the possible complication risk of the surgical procedure.

Key Words: cesarean; complication; morbidity

ARTICLE INFO

DoiÇ 10.46328/aejog.v2i3.59

Article history:

Received: 06 June 2020

Revision received 29 June 2020

Accepted 01 August 2020

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Introduction

Cesarean section, which is an important obstetric operation, is defined as the delivery of the fetus by making an incision in the abdomen and cutting the uterine muscles [1]. In this procedure, which had high mortality rates in the early days, mortality decreased significantly with asepsis and improvements in the surgical technique. Despite its necessity under certain circumstances, C/S carries its own risks.

Elective C/S has fewer maternal and fetal complications than emergency C/S due to both superior preoperative preparation and the presence of a specially trained surgical team [2-4]. In addition, there has been a significant increase in the frequency of C/S in many countries around the world [5, 6]. In many developed countries, this incidence ranges from 10% to 25% [7].

The proportion of births by C/S has increased due to abandonment of the use of forceps and of vaginal breech delivery, frequent fetal monitoring and the belief that birth by C/S results in a better perinatal outcome [8]. However, compared with vaginal delivery, maternal mortality and morbidity are increased following C/S [9].

The incidence of maternal morbidity is higher in patients with emergency C/S than in those with elective C/S.

Moreover, previous C/S and advanced maternal age increase the risk of morbidity [10, 11].

In this study, we aimed to compare emergency and elective cesarean patients in our hospital in terms of epidemiological features and maternal morbidity.

Material and methods

In this study, we randomly retrospectively reviewed the records of 156 patients who underwent emergency C/S and 146 patients who underwent elective C/S between January 2018 and March 2018. The approval for the research was granted by the Institutional Ethics Committee (Gazi Yasargil Training and Research Hospital Ethics Committee, decision no: 2018/112). Both groups were compared in terms of epidemiological factors and maternal morbidity. Patients' age, gravida, parity, gestational week, number of past C/S and indications for C/S were recorded. Patients who underwent C/S due to sudden indication without any preoperative preparation were accepted as emergency C/S (Patients who have not undergone preoperative laboratory examinations and anesthetic evaluation under elective conditions, group 1) while patients who underwent surgical planning and preoperative preparation were accepted as elective C/S (group 2).

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Our caesarean indications were classified as Previous 1 C/S, Previous 2 C/S, Previous 3 or more C/S, placenta previa, chorioamnionitis, malpresentation, hypertensive diseases of pregnancy, uterine rupture, fetal distress, cephalopelvic disproportion (CPD), multiple pregnancy, non-progress of labor, placental abruption and macrosomia. Except for the head presentation, all other presentations were accepted as malpresentation. Loss of a blood volume greater than 1000 cc during the operation was accepted as hemorrhage. Patients who were hospitalized for longer than 2 days after the operation were accepted as 'prolonged maternal stay'. The following were considered as intraoperative complications: bladder injury, bowel injury, hysterectomy and intraoperative hemorrhage (>1000 cc). Postoperative complications included abdominal distension, relaparotomy, wound dehiscence, prolonged maternal stay, infection, transfusion, bladder catheterization and admission to the intensive care unit (ICU).

We performed all statistical analyzes using SPSS software (Version 26.0; SPSS Inc., Chicago, IL, USA). Demographic data were calculated using descriptive statistics. Mean and standard deviations were used to describe the data. Kolmogorov - Smirnov test was used to assume the normal distribution of variables. Continuous variables were compared by independent t-test and Chi-square test. A two-sided P value < 0.05 was considered significant for all analyses.

Results

The study involved 302 patients who underwent C/S in our hospital. Of them, 146 (48.3%) had an emergency C/S (group 1) and 156 (51.7%) had elective C/S (group 2). The mean patient age was 29.17 ± 6.45. The mean age was 28.89 ± 6.62 in group 1 and 29.43 ± 6.31 in group 2. The overall mean gravida was 3.31 ± 1.66. This mean was 3.15 ± 1.81 in group 1 and 3.46 ± 1.50 in group 2. The overall mean parity was 2.19 ± 1.54. The mean parity was 2.02 ± 1.68 in group 1 and 2.35 ± 1.39 in group 2. The overall mean gestational week was 37.15 ± 2.72. The mean gestational week was 36.71 ± 3.49 in group 1 and 37.55 ± 1.64 in group 2 (Table 1.). It was found that the mean hematocrit decreases in group 1 was not different from group 2 (5.70 ± 1.16 and 5.62 ± 0.67, p=0.46).

Table 1. Demographic data of the patients

Characteristics	Group 1 (N=146)	Group 2 (N=156)	P-value
Age (years) (mean±SD)	28.89±6.62	29.43±6.31	0.47
Gravida (mean±SD)	3.15±1.81	3.46±1.50	0.11
Parity (mean±SD)	2.02±1.68	2.35±1.39	0.60
Gestational week (mean±SD)	36.71±3.49	37.55±1.64	0.09

When the groups are examined according to cesarean indications; In group 1 patients, fetal distress (p<0.001), CPD (p=0.002), non-progress of labor (p=0.04), abruptio placentae (p=0.02) were significantly higher compared to group 2, whereas in group 2 patients the previous 1 C / S (p=0.001) and previous 2 C / S (p<0.001) indications were significantly higher (Table 2).

When the groups are examined according to intraoperative maternal complications hemorrhage and bladder injury were more common in group 1 patients compared to group 2 patients (p=0.04 and p=0.08, respectively). While in group 1, 136 (93.15%) patients did not develop any Intraoperative complications, group 2 did not develop any Intraoperative complications in 154 (98.71%) patients (Table 3.).

Table 2. Indications of caesarean section (C/S)

Indications	Group 1 n, (%)	Group 2 n, (%)	P-value
Previous 1 C/S	31 (22.14)	59 (37.82)	0.001*
Previous 2 C/S	13 (8.90)	48 (30.76)	<0.001*
Previous 3 or more	11 (7.53)	25 (16.02)	0.06
Placenta Previa	5 (3.42)	1 (0.64)	0.09
Malpresentation	13 (8.90)	9 (5.76)	0.3
Hypertensive diseases of pregnancy	6 (4.10)	3 (1.92)	0.27
Ruptured uterus	1 (0.68)	0 (0,0)	0.32
Foetal distress	26 (17.80)	3 (1.92)	<0.001*
CPD	12 (8.21)	1 (0.64)	0.002*
Retained 2'nd twin	7 (4.79)	4 (2.56)	0.30
Non progress of labour	8 (5.47)	2 (1.28)	0.04*
Chorioamnionitis	2 (1.36)	0 (0,0)	0.15
Abruptio placentae	5 (3.42)	0 (0,0)	0.02*
Macrosomia	6 (4.10)	1 (0.64)	0.051

CPD: Cephalopelvic disproportion, * statistically significant

When the groups are examined according to postoperative maternal complications; In group 1 patients, transfusion (p<0.04), prolonged bladder catheterization (p=0.04), admission to ICU (p=0.03), was significantly higher compared to group 2. While it was found that 123 (84.24%) patients in group 1 did not develop any postoperative complications, group 2 did not develop any postoperative complications in 144 (92.30%) patients (Table 4).

Table 3. Intraoperative maternal complications of caesarean section (C/S)

Complication	Group 1 n, (%)	Group 2 n, (%)	P-value
Bladder injury	3 (2.05)	0 (0,0)	0.08
Hemorrhage	6 (4.10)	1 (0.64)	0.04*
Obstetrical hysterectomy	1 (0.68)	1 (0.64)	0.96

* statistically significant

Discussion

In emergency caesarean group, fetal distress, CPD, non-progress of labor, abruptio placentae were significantly higher compared to elective caesarean section group, whereas in elective caesarean group the previous 1 C / S and previous 2 C / S indications were significantly higher.

Intraoperative hemorrhage and bladder injury were more common emergency caesarean group compared to the elective caesarean group. When the groups are examined according to postoperative maternal complications; In emergency caesarean group, transfusion, prolonged bladder catheterization, admission to ICU, was significantly higher compared to the elective caesarean group.

Caesarean section is a surgical procedure applied to reduce maternal and infant mortality and morbidity. This procedure requires experienced medical personnel and support [12].

Table 4. Postoperative maternal complications of caesarean section (C/S)

Complication	Group 1 n, (%)	Group 2 n, (%)	P- value
Abdominal distension	0 (0,0)	3 (1.92)	0.08
Relaparotomy	0 (0,0)	2 (1.28)	0.15
Wound dehiscence	0 (0,0)	2 (1.28)	0.15
Prolong maternal stay	1 (0.68)	1 (0.64)	0.96
Infection	2 (1.36)	0 (0,0)	0.15
Transfusion	4 (2.73)	0 (0,0)	0.04*
Prolong catheterization	4 (2.73)	0 (0,0)	0.04*
Admission to ICU	12 (8.21)	4 (2.56)	0.03*

* statistically significant

In a multicenter, prospective study, it has been shown that maternal complications increase with C/S, but with elective C/S, neonatal complications can be reduced [13]. The mean age of patients with elective C/S was reported to be higher than that patients who underwent emergency C/S [14]. There was no significant age difference between the groups in our study. In addition, in this study, the most common indications for elective C/S and emergency C/S were reported as previous C/S and fetal distress respectively, whereas in our study the previous C/S was the most common indication for C/S in both groups.

Intraoperative and postoperative complications were reported to be higher in emergency C/S [15]. In a previous study, maternal complications were found to be higher with emergency surgery, and the number of multiparous patients in both groups was found to be higher than the number of primiparas [16]. In contrast, another study found the proportion of C/S patients who were primipara to be higher [17]. In our study, in group 1, 36 (24.65%) patients were nulliparous, and 110 (75.35%) patients were multiparous. In group 2, there were 8 (5.12%) nulliparous patients, and 148 (94.88%) patients were multiparous.

In a Croatian study, 52% of C/S were performed as emergency C/S and 48% were performed electively [18]. In our study, 156 (51.7%) of the 302 C/S performed were elective and 146 (48.3%) were emergency.

Emergency C/S indications are most commonly reported as fetal distress, prolonged premature rupture of membranes, dystocia and hypertensive diseases of pregnancy [19, 20].

When the results of our study are examined in terms of indications, the most frequent indication was previous C/S in both emergency and elective C/S. Normally, previous C/S cases are operated electively in our hospital. However, in our study, it was found that the number of previous C/S was higher in emergency C/S cases as well. The possible reason for this is that the elective planning of previous C/S cases could not be made.

Blood transfusions are needed more often in emergency C/S, but even with a planned, low-risk C/S, hemorrhage can occur [21]. Postpartum hemorrhage has been reported as the most frequent cause of maternal mortality [22].

According to the results of our study, it was found that both intraoperative complications such as intraoperative bleeding and bladder damage and postoperative complications such as transfusion, prolonged bladder catheterization, admission to ICU were more common in the emergency C/S group. This was probably due to the presence of more risky indications such as placenta previa, hypertensive diseases of pregnancy, and CPD in the emergency C/S group. The risk of maternal morbidity and mortality is mainly related to caesarean indications, and this risk is higher with conditions such as placenta previa, hypertensive diseases of pregnancy and rupture of the uterus. In our study, it was found that all cases with bladder injuries had previous cesarean sections. Therefore, considering the risk of bladder damage in previous C/S cases may be important in terms of morbidity

In conclusion, according to the results of our study, it was found that many intraoperative and postoperative complications were more common in the emergency C/S group. It was also found that all cases with bladder injuries had previous cesarean sections. Therefore, performing cesarean deliveries under elective conditions and planning is important to reduce the morbidity associated with the possible complication risk of the surgical procedure.

Disclosure

The authors report no conflict of interest

References

- [1] Cunningham FG, Leveno KJ, Bloom SL, Hauth JC, Rouse DJ, Spong CY. Williams Obstetrics 23rd Edition. Williams Obstetrics 2001;89-91.
- [2] Dolores Tighe, MSN R, Sandra Reed Sweezy, MS R. The preoperative experience of cesarean birth: preparation, considerations and complications. J Perinat Neonatal Nurs 1990;3(3):14-30.
- [3] Bucklin BA, Hawkins JL, Anderson JR, Ullrich FA. Obstetric Anesthesia Workforce Survey. Anesthesiology 2005;103(3):645-53.
- [4] Datta S KBS. Obstetric anesthesia handbook. Springer 2005;172-230.
- [5] Landon MB, Hauth JC, Leveno KJ, Spong CY, Leindecker S, Varner MW, et al. Maternal and perinatal outcomes associated with a trial of labor after prior cesarean delivery. N Engl J Med 2004;351(25):2581-9.
- [6] KP. SS. History of caesarean in section. J Obs Gynecol India 2009;59:413-23.
- [7] DK. E. Dewhurst's Textb. Obstet Gynaecol 2007;223-4.
- [8] Benjamin P. Sachs, MB, BS, DPH F. Clinical Obstetrics And Gynecology 2001;553-60.
- [9] Adashek JA, Peaceman AM, Lopez-Zeno J, Minogue JP, Socol ML. Factors contributing to the increased cesarean birth rate in older parturient women. Am J Obstet Gynecol 1993;169(4):936-40.
- [10] Pallasmaa N, Ekblad U, Gissler M. Severe maternal morbidity and the mode of delivery. Acta Obstet Gynecol Scand 2008;87(6):662-8.

- [11] Sobande A, Eskandar M. Multiple Repeat Caesarean Sections: Complications and Outcomes. *J Obstet Gynaecol Canada* 2006;28(3):193-7.
- [12] Tita ATN, Landon MB SC. Timing of elective repeat cesarean delivery at term and neonatal outcomes. *N Engl J Med* 2009;360(2):111-20.
- [13] Chongsuvivatwong V, Bachtiar H, Chowdhury ME, Fernando S, Suwanrath C, Kor-Anantakul O, et al. Maternal and fetal mortality and complications associated with cesarean section deliveries in teaching hospitals in Asia. *J Obstet Gynaecol Res* 2010;36(1):45-51.
- [14] Valsa Diana AT. Emergency and elective caesarean sections: comparison of maternal and fetal outcomes in a suburban tertial care hospital in puducherry. *Int J Reprod Contracept Obs Gynecol* 2016;5(9):3060-5.
- [15] Hall MH. Variation in caesarean section rate. Maternal mortality higher after caesarean section. *BMJ Br Med J* 1994;308(6929):654-5.
- [16] Ghazi A, Karim F, Hussain AM, Ali T. Maternal morbidity in emergency versus elective caesarean section at tertiary care hospital. *J Ayub Med Coll Abbottabad* 2011;24(1):10-3.
- [17] Tasneem A. Emergency vs planned C/S-analysis of 889 cases at Rawalpindi General Hospital during 2001. *Pak J Obs Gynaecol* 2008;16(1-2):6-11.
- [18] Elvedi V, Klepac-pulani T, Peter B. Maternal and Fetal Outcome in Elective versus Emergency Caesarean Section in a Developing Country. *Coll Antropol* 2006;30:113-8.
- [19] Pallasmaa N, Ekblad U, Aitokallio-Tallberg A, Uotila J, Raudaskoski T, Ulander VM, et al. Cesarean delivery in Finland: Maternal complications and obstetric risk factors. *Acta Obstet Gynecol Scand* 2010;89(7):896-902.
- [20] Haider G, Zehra N, Munir AA. Frequency and indications of cesarean section in a tertiary care hospital. *Pak J Med Sci* 2009;25(5):791-6.
- [21] Liu S, Liston RM, Joseph KS, Heaman M, Sauve R. Maternal mortality and severe morbidity associated with low-risk planned cesarean delivery versus planned vaginal delivery at term. *Can Med Assoc J* 2007;176(4):455-60.
- [22] Ko SY, Park SW, Sohn IS, Lee JY, Kwon HS, Hwang HS et al. Interventional management for complications following C/S published on line before print. *Br J Radiol* 2010;84:204-9.