

ORIGINAL ARTICLE

Maternal and Neonatal Outcomes in Elective versus Emergency Cesarean Section: A Comparative Study

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ABSTRACT

Aim: The aim of this study was to compare the Maternal and Neonatal Outcomes in Elective versus Emergency Cesarean Section

Material and Methods: The current prospective comparative study was carried out at the department of Gynaecology Department, Khalifa Gulnawaz Teaching Hospital Bannu from January 2023 to June 2023 following permission from the ethical committee of the hospital. Pregnant women who had one previous cesarean delivery, gestational age ≥ 37 weeks, delivery by repeat cesarean section and with singleton pregnancy were included in this stud. The study participants were divided in to group A (Emergency caesarean section) and group B (elective caesarean section). Both groups of participants had had one previous cesarean. Group A included women who selected trial of labor after cesarean (TOLAC) who needed an emergency cesarean section owing to fetal distress or labor progression issues. The study excluded individuals who delivered normally. Group B included women who selected elective repeat cesarean section after a previous cesarean delivery. They did not engage in any labor. The study evaluated maternal and newborn outcomes both during and after surgery. Possible outcomes included, postpartum hemorrhage (PPH), uterine rips, extended hospital stay, blood transfusions, thrombosis, bladder damage and wound infection. Neonatal outcomes included NICU admissions, poor Apgar score, respiratory distress, perinatal mortality and aspiration of liquor. Both variables were changed to categorical and coded as yes/no. SPSS version 16 was used for data analysis.

Results: A total of 150 individuals were evaluated in this study which were equally divided in to group A and B. Both groups contained 75 participants. Group A underwent emergency and group B underwent elective caesarean section. Prolonged hospital stay was the most common maternal complication in emergency group 18 (24.0%) as compared to elective group 7 (9.3%). Similarly postpartum hemorrhage, wound infection, uterine tears were high in emergency group. Blood transfusions were needed in 14 (18.7%) emergency patients vs. just 4 (5.3%) elective patients. One maternal fatality was observed in the emergency group, but none in the elective group. In the emergency group, the most common undesirable neonatal outcome was a low Apgar score, NICU hospitalization, respiratory distress, perinatal death was most common as compared to elective patients.

Conclusion: Our study concluded that maternal and neonatal adverse outcomes were more common in emergency cesarean section as compared to elective cesarean Section.

Keywords: maternal and neonatal adverse outcomes, elective cesarean Section, emergency cesarean section

INTRODUCTION

A cesarean section (CS) is a type of surgical procedure of terminating a pregnancy that involves making an incision in the abdomen and uterine wall to deliver living or dead babies. Over the past few decades, it has been regarded as safe procedure that improves delivery results. Globally, CS rates have climbed from 7 percent in 1990 to 21 percent in 2021, and are expected to rise further in the coming decade.¹⁻² CS rate has significantly climbed from 3% in 1990-1991 to 22% in 2017-2018 in Pakistan.³ Elective cesarean section (EmCS) is performed in cases of fetal distress, labor failure due to cephalopelvic disproportion or other factors, and maternal problems.⁴ EICS is a planned treatment for reasons such as maternal age, valuable pregnancy, aberrant fetal presentation, multiple kids, predicted poor maternal or fetal abnormalities, and history of previous cesarean section.⁵ EmCS is associated with longer recovery times and postoperative problems than EICS, according to many studies.⁶ EmCS has a 1.7 times higher risk of problems compared to EICS, excluding prenatal difficulties and medical diseases.⁷ While the types of complications, such as postpartum hemorrhage and post-operative infections, were found to be the same for EICS and EmCS, the severity of these complications was identified differently for both groups. For example, postpartum hemorrhage was reported to be 40% in EmCS compared to 6% in EICS. Postpartum infections were found at 30% in EmCS and 8% in EICS.⁸ Cesarean delivery rates, according to worldwide estimates, have risen significantly in recent decades. While elective cesarean sections are scheduled

operations conducted before to the commencement of labor, emergency cesarean sections are performed owing to emergent maternal or fetal symptoms during labor. Emergency operations are typically linked with greater surgical complexity, infection risk, bleeding, anesthesia-related problems, and poor newborn outcomes.⁹ Obstetric planning can be improved and preventable problems can be decreased by comparing elective versus emergency cesarean deliveries. Therefore this study was carried out to find out the maternal and neonatal outcomes in elective versus emergency cesarean section.

MATERIAL AND METHODS

The current prospective comparative study was carried out at the department of Gynaecology Department, Khalifa Gulnawaz Teaching Hospital Bannu from January 2023 to June 2023 following permission from the ethical committee of the hospital. Pregnant women who had one previous cesarean delivery, gestational age ≥ 37 weeks, delivery by repeat cesarean section and with singleton pregnancy were included in this study. While women with incomplete medical records, more than one previous cesarean section were excluded from the study. Individuals were told about the study and provided a signed consent before enrolment. The study participants were divided in to group A (Emergency caesarean section) and group B (elective caesarean section). Both groups of participants had had one previous cesarean. Group A included women who selected trial of labor after cesarean (TOLAC) who needed an emergency cesarean section owing to fetal distress or labor progression issues. The study excluded individuals who delivered normally. Group B included women who selected elective repeat cesarean section

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after a previous cesarean delivery. They did not engage in any labor. The sample size was determined using G*Power version 31 to compare the two independent variables.¹⁰ With a 95% confidence level, 80% study power, and an equal allocation ratio (1:1), and expected compliance rates of 15 percent in the elective cesarean section group and 35% in the emergency cesarean section group, a minimum sample size of 75 participants per group was calculated and a total of 150 individuals were enrolled. During prenatal care, patients were frequently monitored and counseled about the risks and complications of TOLAC, as well as the likelihood of vaginal delivery success. In both cases (emergency and elective) the Pfannenstiel incision was used. The study evaluated maternal and newborn outcomes both during and after surgery. Possible outcomes included, postpartum hemorrhage (PPH), uterine rips, extended hospital stay, blood transfusions, thrombosis, bladder damage and wound infection. Neonatal outcomes included NICU admissions, poor Apgar score, respiratory distress, perinatal mortality and aspiration of liquor. Prolonged hospital stays were defined as those lasting more than two days. A low Apgar score was defined as less than 7 at 5 minutes post-birth. Both variables were changed to categorical and coded as yes/no. SPSS version 16 was used for data analysis.

RESULTS

A total of 150 individuals were evaluated in this study which were equally divided in to group A and B. Both groups contained 75 participants. Group A underwent emergency and group B underwent elective caesarean section. The most common age in both the groups was Age ≥ 35 years. The emergency group had 48 (64.0%) women over 35 years old, whereas the elective group had 45 (60.0%). obesity was higher in women who underwent emergency procedures. Obesity was seen in 30 (40.0%) emergency cases and 21 (28.0%) elective individuals. Multiparity was observed in 52 (69.3%) and 49 (65.3%) of elective and emergency patients, respectively. Similarly diabetes was diagnosed in 16 (21.3%) emergency individuals and 12 (16.0%) elective participants. Fetal weights greater than 4 kg were recorded in 15 (20.0%) emergency cases vs 10 (13.3%) elective instances. These variables may impact labor progression & the likelihood of an emergency surgical birth as presented in table 1. Prolonged hospital stay was the most common maternal complication in emergency group 18 (24.0%) as compared to elective group 7 (9.3%). Postpartum hemorrhage was observed in 13 (17.3%) emergency cases vs 5 (6.7%) elective instances. Blood transfusions were needed in 14 (18.7%) emergency patients vs. just 4 (5.3%) elective patients. Wound infection was also much more prevalent in the emergency group, being seen in 11 (14.7%) individuals, compared to two (2.7%) elective subjects. Uterine tears occurred in ten (13.3%) emergency cases and three (4.0%) elective cases. Bladder damage and thrombotic problems were less prevalent but still more common in the emergency group. One maternal fatality was observed in the emergency group, but none in the elective group as shown in table 2. In the emergency group, the most common undesirable neonatal outcome was a low Apgar score. It was seen in 11 (14.7%) infants vs. just 2 (2.7%) neonates within the elective group. Nine (12.0%) neonates delivered by emergency cesarean section needed NICU hospitalization,

Table 1. Clinical and demographic features of the study population

Characteristic	Emergency n=75	%	Elective n=75	%
Age in years				
Age ≥ 35 years	48	64.0	45	60.0
Age <35 years	27	36.0	30	40.0
Body mass index				
BMI >30 kg/m ²	30	40.0	21	28.0
BMI ≤ 30 kg/m ²	45	60.0	54	72.0
Diabetes mellitus	16	21.3	12	16.0
Multi parity	52	69.3	49	65.3
Fetal weight >4 kg	15	20.0	10	13.3

Table 2. Maternal outcomes after Elective Repeat Cesarean Section and emergency

Maternal outcome	Emergency n=75	%	Elective n=75	%
Uterine tear	10	13.3	3	4.0
Postpartum hemorrhage	13	17.3	5	6.7
Blood transfusion	14	18.7	4	5.3
Bladder injury	3	4.0	1	1.3
Wound infection	11	14.7	2	2.7
Thrombotic complication	3	4.0	1	1.3
Maternal death	1	1.3	0	0.0
Prolonged hospital stay	18	24.0	7	9.3

Table 3. Neonatal outcomes in both groups

Neonatal outcome	Emergency n=75	%	Elective n=75	%
Respiratory distress	6	8.0	3	4.0
Aspiration of liquor	5	6.7	1	1.3
Low Apgar score	11	14.7	2	2.7
NICU admission	9	12.0	3	4.0
Perinatal mortality	3	4.0	1	1.3

whereas three (4.0%) neonates delivered by elective cesarean section did not. Respiratory distress was reported in six (8.0%) emergency births and three (4.0%) elective deliveries. Perinatal death was substantially greater in the emergency group, occurred in 3 (4.0%) instances, compared to 1 (1.3%) in the elective group. Aspiration of liquor was seen in 5 (6.7%) emergency cases, in contrast to one (1.3%) elective case as shown in table 3.

DISCUSSION

Pregnancy and parturition play significant roles in women's life cycles. A well-performed cesarean section can benefit both the mother and the newborn. However, when performed incorrectly, the risks may outweigh the benefits of a cesarean section. Cesarean delivery is a common obstetric technique that can save a mother's or fetus' life when vaginal birth is risky. it is a well-known obstetric surgical technique that reduces mother and fetal morbidity and death. Despite being categorized as a major abdominal surgery, its global occurrence has grown significantly in recent decades. The global cesarean section rate surpassed 21% in 2021.¹¹ Tertiary referral centers have much higher rates because they see more high-risk pregnancies & obstetric crises.¹² Elective and emergency cesarean sections differ in clinical setting, timing, and postoperative circumstances. Elective operations occur in a planned context, while emergency procedures occur in response to a developing maternal or fetal condition, leading to higher maternal and newborn morbidity rates.¹³ This study was carried out to find out the maternal and neonatal outcomes in elective versus emergency cesarean section. In our study the most common age in both the groups was Age ≥ 35 years. The emergency group had 48 (64.0%) women over 35 years old, whereas the elective group had 45 (60.0%). obesity was higher in women who underwent emergency procedures. similar type of demographic features were seen in the study conducted by Naureen et al which support our study.¹⁴ In our study, postpartum hemorrhage was higher in emergency cases (17.3%) compared to elective cases (6.7%). This is consistent with the findings of Sajjad et al., who found an increased risk of hemorrhage in emergency cases compared to elective operations.¹⁵ A meta-analysis by Lee and Park (20) found that emergency cesarean sections have a considerably higher risk of maternal morbidity than scheduled operations.¹⁶ Prolonged hospital stay was the most common maternal complication in emergency group as compared to elective group. Blood transfusions were needed in 14 (18.7%) emergency patients vs. just 4 (5.3%) elective patients. Wound infection was also much more prevalent in the emergency group, being seen in 11 (14.7%) individuals, compared to two (2.7%) elective subjects. Uterine tears occurred in ten (13.3%) emergency cases and three

(4.0%) elective cases. Bladder damage and thrombotic problems were less prevalent but still more common in the emergency group. These findings are similar to the study conducted by Benzouina et al they reported that emergency cesarean sections had higher frequency of neonatal complications as compared to elective procedure.¹⁷

Respiratory distress was reported in six (8.0%) emergency births and three (4.0%) elective deliveries in our study. these findings are similar to the study carried out by Hansen et al in which Respiratory complications were most common in emergency cases.¹⁸ In the emergency group, there was a low Apgar score. It was seen in 11 (14.7%) infants vs. just 2 (2.7%) neonates within the elective group. Nine (12.0%) neonates delivered by emergency cesarean section needed NICU hospitalization, whereas three (4.0%) neonates delivered by elective cesarean section did not. Respiratory distress was reported in six (8.0%) emergency births and three (4.0%) elective deliveries. Perinatal death was substantially greater in the emergency group, occurred in 3 (4.0%) instances, compared to 1 (1.3%) in the elective group. Aspiration of liquor was seen in 5 (6.7%) emergency cases, in contrast to one (1.3%) elective case. these findings are similar to the study conducted by Naureen et al.¹⁴ Edipoglu and Celik found that emergency cesarean deliveries resulted in worse newborn outcomes.¹⁹ The study found that patients undergoing emergency cesarean section were more likely to experience uterine tears, post-partum hemorrhage, blood rashes, and post-partum wound complications, indicating significant differences between the groups.

Limitations of the study: Despite its merits, the study has limitations. Although confounding factors such as maternal age, BMI, parity, diabetes status, and fetal weight were corrected, they were not fully addressed, potentially leading to bias in the calculated relationships. The study conducted in a single healthcare institution may have limited external validity due to local clinical procedures and patient characteristics.

CONCLUSION

Our study concluded that maternal and neonatal adverse outcomes were more common in emergency cesarean section as compared to elective cesarean section. These findings underscore the critical role of meticulous antenatal surveillance in the early detection of high-risk pregnancies and in facilitating timely a well-structured delivery planning.

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