

**ORIGINAL ARTICLE**

# Comparison of short-term maternal and neonatal outcomes between elective and emergent Cesarean section – a single center experience

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**Received:** 28 December 2023

**Revised:** 22 January 2024

**Accepted:** 22 January 2024



Check for updates

**Funding information:**

None

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**Competing interests:**

The authors have declared that no competing interests exist

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**Summary**

**Introduction/Aim:** Increased rates of Cesarean section (CS) and subsequent short-term and long-term maternal complications (MC) and neonatal complications (NC) have been reported. The aim of this study was to compare short-term MC and NC between elective and emergent CS.

**Material and Methods:** Data from medical records of pregnant women who had undergone CS at Gynecology and Obstetrics Clinic “Narodni front” were retrospectively collected. The inclusion criteria were as follows: low-risk, term monofetal pregnancies with obstetrical CS-indications and other non-life-threatening maternal conditions (ophthalmological, orthopedic, psychiatric, lower genital-tract infections). Short-term MC were the following: surgical complications, inflammatory syndrome, the need for blood transfusion, and hospital stay  $\geq 5$  days. NC were as follows: respiratory morbidity, asphyxia, sepsis, injuries/lacerations, admission to neonatal intensive-care-unit, hospital stay  $> 4$  days.

**Results:** We included 1056 singleton pregnancies. Mean age was  $32.63 \pm 5.38$  years, mainly primipara 566 (53.6%). Of all CS, 774 (73%) were performed emergently. Cephalopelvic disproportion/fetal macrosomia and other CS indications carried a significantly high risk for emergent CS (OR=3.943, 95%CI 2.036-6.591; OR=7.560, 95%CI 3.994-8.327, respectively). Regardless of the urgency of CS there were no significant differences in the frequency of MC. Neonatal sepsis was significantly higher after emergent CS ( $p=0.027$ ), with a two-times greater risk for its development (OR=2.070, 95% CI 1.072-3.997). There were no fatal maternal/neonatal outcomes and no need for additional care.

**Conclusion:** There were no notable disparities in MC and NC among the individuals who had undergone emergent and elective CS. Neonates born by means of emergent CS had a higher risk of developing neonatal sepsis. Indications for CS had a greater impact on short-term maternal and fetal outcomes than the type of CS.

**Key words:** elective Cesarean section, emergent Cesarean section, early maternal complications, early neonatal complications



## INTRODUCTION

Cesarean section (CS) as a delivery mode is present in 28% to 32% of all births in developed countries (1) and its rate is growing globally, even though efforts are being made in many countries to reduce CS rate (1). There has been an explosive increase in CS rates and thus in some countries current CS rates are higher than 40% (1). Obviously, the CS rate has been increasing, with a parallel increase in costs due to short-term and long-term maternal and neonatal complications (2).

The short-term complications for mothers who have undergone CS include high rates of infection, massive hemorrhage, complications related to surgery, including death, urinary complications during and after CS, reduced likelihood of breastfeeding, as well as complications related to anesthesia (3, 4). The most prominent long-term maternal complication of CS is a great likelihood of subsequent CS complications such as: rupture of uterus or aberrant placentation, specifically placenta previa variations (3).

While CS may offer a high level of safety, short-term neonatal complications are still present in neonates: asphyxia, infections including sepsis, respiratory morbidity, and lacerations as a consequence of surgical procedures (5). Moreover, changes in physiological adaptability could have significant long-term effects on the immune system of newborns (6, 7). The incidence of SC anesthetic complications in mothers and newborns is extremely low, affecting only 0.5% of cases, involving difficulties with intubation, adverse responses to drugs, aspiration pneumonitis, and complications related to regional anesthesia (7).

The rise in CS complication rates can be attributed to various factors, including economic pressures faced by hospitals, the influence of private health care insurance, concerns about potential lawsuits (8). Thus, it is of great importance to develop (inter)national strategies to achieve optimal utilization of healthcare services and the concept of women-centered care. The aim of this study was to compare short-term maternal and neonatal complications between elective and emergent Cesarean Section in Gynecology and Obstetrics Clinic "Narodni Front".

## MATERIALS AND METHODS

### Study design and participants

The data from medical records of women who had undergone CS at the Clinic for Gynecology and Obstetrics "Narodni front", University teaching hospital, Belgrade, Serbia, from 1<sup>st</sup> January to 31<sup>st</sup> December 2018 were retrospectively collected and analyzed.

The study included all patients who had undergone emergent and elective CS with exclusively obstetrical indications or the ones that were not an acute threat to

the mother or the fetus. The inclusion criteria were a low-risk, term pregnancy (from 37<sup>+1</sup> to 41<sup>+0</sup> gestational weeks) with the following obstetrical CS indications: breech presentation, cephalopelvic disproportion (CPD) with fetal macrosomia, previous CS. We also included patients who had undergone emergent and elective CS due to non-life-threatening maternal conditions (ophthalmological, orthopedic, psychiatric, and lower genital tract infections) that did not pose an immediate danger to the mother or the fetus. This study implemented exclusion criteria that encompassed pregnant women with multiple pregnancies, patients experiencing gestational or fetal complications, and pregnancies involving endangered fetuses during the peripartur period. We collected demographic data, CS urgency (elective or emergent), indication (obstetrical or "other"), and short-term maternal complications (surgical complications, inflammatory syndrome, blood transfusion, and hospital stay longer than five days) or neonatal complications (respiratory morbidity, asphyxia, suspected or proven sepsis, injuries and lacerations, admission to neonatal intensive care unit (NICU), and hospital stay longer than four days) data from patients' medical records.

### Ethical consideration

The procedures conducted on human participants adhered to the ethical standards set by the Ethical Committee of the Clinic for Gynecology and Obstetrics "Narodni front" (Ethical Committee number 22008/2023/024435; 5<sup>th</sup> December 2023) and the 1964 Helsinki Declaration, or equivalent ethical standards.

### Statistical analysis

The numerical data were reported as the mean accompanied by a 95% confidence interval or as the median along with the minimum and maximum values. The categorical variables were summarized using absolute numbers accompanied by their corresponding percentages. The Kolmogorov–Smirnov test was used to measure the normality of the data distribution for continuous variables. Categorical variables were subjected to appropriate analysis using the Chi-square test or Fisher's exact test. The Mann–Whitney–Wilcoxon or Kruskal–Wallis tests were utilized to analyze continuous variables that did not follow a normal distribution. Significant variables were further analyzed using univariate logistic regression to investigate the factors influencing the adverse maternal and short-term neonatal outcomes. The significance level for all analyses was established at 0.05. The statistical analysis was conducted using IBM SPSS statistical software (SPSS for Windows, release 25.0, SPSS, Chicago, IL).

**Table 1.** Maternal and neonatal clinical characteristics in relation to elective and emergent Cesarean section

		Cesarean Section				Total	p*
		Elective (N=282)		Emergent (N=774)			
		N	(%)	N	(%)	N	(%)
Age groups (years)	< 35	161	(23.1%)	537	(76.9%)	698	(100%)
	≥ 35	121	(33.8%)	237	(66.2%)	358	(100%)
Parity	Primipara	81	(14.3%)	485	(85.7%)	566	(100%)
	Multipara	201	(41.0%)	289	(59.0%)	490	(100%)
CS indications							
Breech presentation	No	249	(26.9%)	678	(73.1%)	927	(100%)
	Yes	33	(25.6%)	96	(74.4%)	129	(100%)
CPD / Macrosomia	No	259	(28.7%)	643	(71.3%)	902	(100%)
	Yes	23	(14.9%)	131	(85.1%)	154	(100%)
Previous CS	No	104	(15.4%)	570	(84.6%)	674	(100%)
	Yes	178	(46.6%)	204	(53.4%)	382	(100%)
Other CS indications	No	214	(45.0%)	262	(55.0%)	476	(100%)
	Yes	70	(12.0%)	512	(88.0%)	582	(100%)

CS - Cesarean Section; CPD - Cephalopelvic Disproportion; \* Significant differences between CS groups were analyzed by Chi-square test ( $p < 0.05$ )

**Table 2.** Association between emergent CS and clinical parameters

Method		p - value*	OR	95% CI
<i>Enter</i>	Age over 35 years	<b>0.002</b>	0.601	0.438-0.825
	Multiparous	0.135	0.661	0.384-1.138
	CPD/macrosomia	<b>&lt; 0.001</b>	3.246	1.923-5.478
	Previous CS	0.569	0.855	0.479-1.525
	Other CS indications	<b>&lt; 0.001</b>	5.521	3.700-8.238
<i>Backward</i>	Age over 35 years	<b>0.002</b>	0.602	0.439-0.826
	Multiparous	<b>0.004</b>	0.592	0.415-0.846
	CPD/macrosomia	<b>&lt; 0.001</b>	3.943	2.036-6.5.591
	Other CS indications	<b>&lt; 0.001</b>	7.560	3.994-8.327

OR, Odds Ratio; CI, Confidence Interval; CPD, Cephalopelvic Disproportion; CS, Cesarean section; \*significant at  $p < 0.05$

## RESULTS

In our study we included a total of 1056 women with singleton term pregnancies. Mean age of study participants were  $32.63 \pm 5.38$  years, with age range from 16 to 56 years. There were 698 (66.1 %) pregnant women younger than 35 years, mainly primipara 566 (53.6 %). Of all CS, 774 (73 %) were performed emergently. Clinical characteristics of all participants together with indications for CS delivery are presented in [Table 1](#).

Pregnant women who had undergone emergent CS were much more frequently presented in the group of participants younger than 35 years ( $p < 0.001$ ), primiparous ( $p < 0.001$ ) and with following indications: CPD/fetal macrosomia, previous CS along with all other CS indications stated in the methodology chapter ( $p < 0.001$ ). Logistic regression modeling was used to analyze the relationship between dependent parameters (i.e., emergent CS) with only statistically significant clinical characteristics ([Table 2](#)).

This analysis showed that age, CPD/fetal macrosomia, and all other CS indications highly correlated with urgent CS. Multiparous women, who were 35 old and

older had a reduced risk for emergent CS ( $p = 0.004$ ,  $p = 0.002$ , respectively). In contrast, CPD and fetal macrosomia, with other CS indications carried a significantly high risk for emergent CS (OR = 3.943, 95% CI 2.036 - 6.5.591; OR = 7.560, 95% CI 3.994 - 8.327).

As shown in [Table 3](#), there were no significant differences in the frequency of maternal complications following CS, regardless of the urgency of the procedure. There were no fatal maternal outcomes and no need for transportation to other institutions for additional care.

Among the investigated parameters of neonatal complications following Cesarean Section ([Table 4](#)), the occurrence of sepsis (either suspected or confirmed) was significantly higher following emergent cesarean section ( $p = 0.027$ ).

However, there were no fatal neonatal outcomes and no need for transportation to other institutions for additional care. Regression analysis ([Table 5](#)) confirmed this association ( $p = 0.03$ ), where newborns had two times higher risk for developing sepsis after emergent CS (OR = 2.070, 95% CI 1.072 - 3.997).

**Table 3.** Maternal complications in relation to the emergent Cesarean section

		Cesarean section				Total		p - value*
		Elective (N=282)		Emergent (N=774)		N	(%)	
		N	(%)	N	(%)			
Surgical Complications	No	279	(26.7%)	765	(73.3%)	1044	(100%)	0.893
	Yes	3	(25.0%)	9	(75.0%)	12	(100%)	
Inflammatory syndrome	No	263	(27.0%)	711	(73.0%)	974	(100%)	0.451
	Yes	19	(23.2%)	63	(76.8%)	82	(100%)	
Transfusion after CS	No	269	(26.9%)	730	(73.1%)	999	(100%)	0.494
	Yes	13	(22.8%)	44	(77.2%)	57	(100%)	
Hospitalization (days)	≤5	217	(27.2%)	581	(72.8%)	798	(100%)	0.528
	>5	65	(25.2%)	193	(74.8%)	258	(100%)	

CS, Cesarean Section

\* Significant differences between CS groups were analyzed by chi-square test ( $p < 0.05$ )

**Table 4.** Neonatal complications in relation to the urgency of CS

		Cesarean section				Total		p *
		Elective (N=282)		Emergent (N=774)		N	(%)	
		N	(%)	N	(%)			
Respiratory morbidity (RDS, TTN)	No	266	(26.4%)	741	(73.6%)	1007	(100%)	0.335
	Yes	16	(32.7%)	33	(67.3%)	49	(100%)	
Asphyxia	No	273	(26.6%)	754	(73.4%)	1027	(100%)	0.593
	Yes	9	(31.0%)	20	(69.0%)	29	(100%)	
Suspected or proven sepsis	No	271	(27.5%)	714	(72.5%)	985	(100%)	<b>0.027</b>
	Yes	11	(15.5%)	60	(84.5%)	71	(100%)	
Intracranial hemorrhage	No	274	(27.1%)	736	(72.9%)	1010	(100%)	0.144
	Yes	8	(17.4%)	38	(82.6%)	46	(100%)	
Neonatal injuries and lacerations	No	281	(26.9%)	763	(73.1%)	1044	(100%)	0.148
	Yes	1	(8.3%)	11	(91.7%)	12	(100%)	
Administration to NICU	No	258	(26.3%)	724	(73.7%)	982	(100%)	0.248
	Yes	24	(32.4%)	50	(67.6%)	74	(100%)	
Hospitalization (days)	≤4	201	(26.8%)	550	(73.2%)	751	(100%)	0.945
	>4	81	(26.6%)	224	(73.6%)	305	(100%)	

RDS, Respiratory Distress Syndrome; TTN, Transient Tachypnea of the Newborn; NICU, Neonatal Intensive Care Unit; \* Significant differences between CS groups were analyzed by chi-square test ( $p < 0.05$ ).

**Table 5.** The association between emergent CS and neonatal sepsis

	p* value	OR	95% CI
Emergent CS	0.03	2.070	1.072-3.997

CS, Cesarean Section; OR, Odds Ratio; CI, Confidence Interval; \*significant at  $p < 0.05$

## DISCUSSION

The results of our study showed the absence of significant differences in short-term maternal and neonatal complications between subjects who had undergone emergent and elective cesarean section, with suspected or proven neonatal sepsis being the only significantly frequent neonatal complication in neonates born with emergent cesarean section. Subjects who had had an emergent cesarean section were significantly younger and more frequently primiparas compared to subjects who had had elective cesarean section. Finally, cephalopelvic disproportion or fetal macrosomia, previous cesarean section, and non-life-threatening maternal conditions that did not pose an immediate

danger to the mother or the fetus were significantly more frequent indications for emergent cesarean section.

Several studies investigated maternal outcomes between emergent and elective cesarean sections. A systematic review and meta-analysis by Yang et al. (9) showed that both rates of maternal complication and fetal complication were significantly higher in emergent cesarean deliveries. Moreover, the same meta-analysis also observed a significantly higher infant mortality rate in the emergent cesarean section group compared to elective cesarean deliveries (9). These findings may be attributed to the extended preparation duration, improved surgical preparation of obstetricians, and the enhanced health status of pregnant women (9). The authors also concluded that the emergent cesarean section indications were typically urgent and crucial, hence impacting the likelihood of complications (9). In 2020, Darnal and Dangal conducted a cross-sectional study in Nepal to investigate the maternal and fetal outcomes of 1324 emergent versus 456 elective cesarean sections (10). The participants in this study who had undergone emergent cesarean sections were significantly younger and more

frequently primiparas compared to women who delivered with elective cesarean section (10). Benzouina et al. presented similar results in their 2016 comparative cross-sectional study in Morocco (11). Our results are in accordance with these studies. The more common occurrence of emergent cesarean section among younger mothers may suggest that the obstetrician in charge is inclined to suggest vaginal deliveries in these cases, as long as it is possible, to preserve mothers' future reproductive performance, while cesarean delivery is only considered when there is a potential risk to either the mother or the fetus. Moreover, in cases of prolonged vaginal delivery, it is essential to prevent any complications that would affect younger mothers' ability to reproduce. The study by Darnal and Dangal also showed significantly higher complication rates in the emergent cesarean section group (10). The rates of postoperative wound infection, blood transfusion, fever, and intensive care unit admission were higher in patients who had emergent cesarean sections (10). A retrospective study from 2018 by Agrawal and Agrawal in India (12) presented an overall rate of intraoperative complications following cesarean deliveries of 11.08 %. The authors concluded that complications were mainly attributed to patients who delivered by emergent cesarean section (12). Similarly, Patel et al. conducted a retrospective observational study to compare maternal and neonatal outcomes between emergent and elective cesarean deliveries (13). The authors stated that the incidence of complications was substantially higher in the emergent group, affecting both the well-being of the mother and the fetus (13). In an institution-based cross-sectional study of 382 patients who had undergone cesarean section by Negese et al (14), the most common complications were surgical site infection, anemia, and intraoperative bleeding. The results of this study showed that emergent cesarean section was statistically associated with maternal complications (14). Conversely, Al Riyami et al. conducted a retrospective cohort study in Oman to compare the outcomes between emergent and elective cesarean sections (15). There were no notable disparities in maternal and neonatal complications between emergent and elective cesarean section besides temporary low blood pressure during surgery, maternal fever after the operation, and anemia (15). Similarly, in a prospective study of 300 women, Farag et al. found no statistically significant differences in maternal postoperative complications between the subjects who had had elective and emergent cesarean sections (16). These results are in accordance with our study. In our opinion, the main reason behind the absence of significant differences in short-term maternal outcomes between the two groups was the indication for emergent cesarean section in our study. Most of the published studies on this topic included patients with hypertensive disorder, preeclampsia, and placental abruption (9). Moreover, in a previously mentioned meta-analysis by Yang and Sun, most of the included studies were conducted in developing countries (9). Firstly, our study did not include diseases or life-threatening maternal

conditions that would affect maternal outcomes after cesarean section. Furthermore, one of the explanations behind our results could be improved aseptic and antiseptic techniques and preoperative and intraoperative antibiotics usage in cases of emergent cesarean deliveries.

A study of 77,888 deliveries showed that, compared to vaginal, instrumental, and elective cesarean delivery, emergent cesarean section was associated with the highest probability of severe neonatal outcomes (17). Furthermore, the authors stated that cord prolapse, failed instrumental delivery, and small for gestational age (SGA) babies, were associated with the greatest odds of composite outcome (17). The study from 2006 by Elvedi-Gasparovic et al. showed significantly better Apgar scores in newborns delivered with elective cesarean section, while neonates delivered with emergent cesarean section had more frequent asphyxia and resuscitation (18). In a retrospective study of 6,854 deliveries, the incidence of low birth weight, stillbirths, and admission to the intensive care infant unit was higher among fetuses delivered via emergent cesarean section compared to newborns delivered with elective cesarean section (19). Benzouina et al. also found that the incidence of fetal complications was significantly elevated in the emergent cesarean group (11). Respiratory morbidity emerged as the primary contributor to fetal morbidity, with birth asphyxia being a subsequent concern, predominantly observed within the emergent group (11). The incidence of prematurity, birth asphyxia, respiratory morbidity, and admission to the NICU was found to be significantly higher in the emergent cesarean group compared to the elective cesarean group (11). De Luca et al. conducted a study that revealed that the incidence of fetal morbidity was lower in the elective cesarean group compared to the emergent cesarean group (20). However, the rates of perinatal mortality and respiratory morbidity were found to be similar in both groups (20). There is an ongoing debate about the association between cesarean section delivery and the development of respiratory morbidity in neonates. Many studies demonstrated that newborns delivered with cesarean section, either elective or emergent, were at a greater risk of developing respiratory morbidities compared to the ones born via vaginal delivery (21). A meta-analysis by Li et al. concluded that both elective and emergent cesarean sections were associated with an increased risk of neonatal respiratory distress syndrome (22). Furthermore, Indraccolo et al. found that cesarean delivery in the absence of labor presented a persistent risk of respiratory complications in newborns, regardless of their gestational age during the near-term and early-term periods (23). The authors further stated that delayed timing of planned cesarean section was associated with improved respiratory outcomes in newborns (23). Kleiner et al. conducted a study to investigate the impact of elective cesarean section on respiratory morbidity in newborns compared to emergent cesarean section (24). The researchers observed that the severity of respiratory morbidity was greater in newborns delivered

via elective cesarean section (24). The authors suggested that the physiological changes that occurred in fetal lungs during labor may play a role in this disparity (24). Evidence from a randomized controlled trial indicates that the administration of prophylactic corticosteroids before an elective cesarean section at term was likely to decrease the need for NICU admission due to respiratory morbidity (25). The efficacy of antenatal corticosteroid administration in reducing the incidence of respiratory distress syndrome or transient tachypnea of the neonate remains uncertain (26). However, it is important to note that the overall certainty of the evidence for these primary outcomes was determined to be low or very low (26). None of the indications for the emergent cesarean section in our study included diseases that were an immediate threat to the fetal well-being, nor the cases of fetal asphyxia or fetal distress. That could be the explanation for the absence of differences in neonatal complications between emergent and elective cesarean deliveries in our study.

Sepsis, a condition characterized by systemic infection, continues to be a significant contributor to both mortality and morbidity rates among neonates (27, 28). Among term infants, group B streptococcus (GBS) remains the predominant pathogen identified in cases of sepsis (27, 28). Center for Disease Control and Prevention issued a recommendation for universal antenatal screening during the period between 35 and 37 weeks of gestation, as well as intrapartum chemoprophylaxis, for all women colonized with GBS at the onset of labor or premature rupture of membranes, including those who have planned cesarean section deliveries (29). The optimal timing for the administration of intrapartum antibiotic prophylaxis is a crucial factor in ensuring its effectiveness (28). It has been observed that intrapartum prophylaxis is most efficacious when administered at least four hours before the onset of delivery (30). An international multisite prospective observational study from 2022 showed that birth and neonatal factors that corresponded with an increased likelihood of laboratory-confirmed sepsis encompassed preterm delivery, premature rupture of membranes, and cesarean section delivery when compared to spontaneous vaginal delivery (emergent cesarean delivery carrying a higher risk compared to the elective cesarean section) (31). The study also concluded that the acquisition of extended-spectrum  $\beta$ -lactamase-producing Enterobacterales, bacteria that are frequently associated with sepsis in healthcare environments, had been identified as a reported risk factor following the performance of cesarean sections (31). Cesarean sections are associated with extended hospitalization durations in comparison to spontaneous vaginal delivery, thereby potentially elevating the risk of neonatal sepsis (31). Contrastingly, in their systematic review and meta-analysis, Seyoum et al. revealed that cesarean delivery was not associated with neonatal sepsis (32). On the other hand, Adatara et al. stated that neonates delivered via elective cesarean sec-

tion were 85% less likely to have neonatal sepsis compared to those delivered with emergent cesarean section (33). In our study, the newborns delivered with emergent cesarean section had two times higher risk for developing sepsis. One of the explanations for this result could be the unavailability of GBS status in patients who had undergone emergent cesarean section, but our study did not include the patients' GBS status due to insufficient medical records data regarding this determinant.

Our study has several limitations. The first is the small number of subjects due to the study type and the single-center nature of the study. Moreover, we did not include the exact gestational age of the newborns, but since several studies highlighted the influence of gestational age on the neonatal outcome, even for term deliveries, we think that the results solely reflect the type of cesarean section on the investigated study outcomes. Finally, there is a lack of data regarding the decision to deliver in cases of emergent cesarean section. Numerous studies highlighted the essential role of this interval since it significantly affects neonatal and maternal outcomes (34-36).

This study was conducted in a university hospital. Being one of the two obstetrical tertiary institutions in Serbia, our results could reflect the nationwide trends and outcomes after cesarean deliveries. Our results could also be valuable for the design and further implementation of cesarean delivery national protocols. Finally, due to specific inclusion and exclusion criteria, our results could highlight the importance of indications, rather than the type of cesarean delivery, on short-term maternal and fetal outcomes.

## CONCLUSION

The findings of our study indicated that there were no notable disparities in the initial maternal and neonatal complications among individuals who had had emergent and elective cesarean sections. However, it is worth noting that neonates born by means of emergent cesarean section had a significantly higher incidence of suspected or confirmed neonatal sepsis compared to other complications. Our findings suggest that the indications for cesarean birth had a greater impact on short-term maternal and fetal outcomes than the type of cesarean delivery. Further studies are required to confirm these initial findings.

## Conflict of interest

None to declare.

## Ethical approval

Ethical Committee of the Clinic for Gynecology and Obstetrics "Narodni front" (Ethical Committee number 22008/2023/024435

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## POREĐENJE KRATKOROČNIH MATERNALNIH I NEONATALNIH KOMPLIKACIJA KOD ELEKTIVNOG I HITNOG CARSKOG REZA – ISKUSTVO JEDNOG CENTRA

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### Sažetak

**Uvod/Cilj:** Regstruje se povećanje stope carskog reza (CR) i posleđičnih pojava ranih i kasnih maternalnih komplikacija (MK) i neonatalnih komplikacija (NK). Cilj ove studije je da uporedi rane MK i NK nakon elektivnog i hitnog CR.

**Metode:** Retrospektivno su analizirani podaci pacijentkinja porođenih CR u ginekološko-akušerskoj klinici „Narodni front“. Kriterijumi za uključivanje su bili sledeći: niskorizične, terminske, monofetalne trudnoće sa postojećim akušerskim indikacijama i neugrožavajućim stanjima trudnica. Rane MK bile su: hirurške komplikacije, inflamacija, potreba za transfuzijom, hospitalizacija  $\geq 5$  dana. Rane NK su bile sledeće: respiratorni morbiditet, asfiksija, sepsa, povrede/laceracije, boravak u jedinici intenzivnog lečenja, hospitalizacija  $> 4$  dana.

**Rezultati:** Analizirano je 1056 jednoplodnih trudnoća. Prosečna starost je bila  $32.63 \pm 5.38$  godina, većina primipara 566 (53.6%). Od ukupnog broja CR, 774 (73%) je

bilo hitnih. Značajno veći rizik hitnog CR je zbog cefalopelvične disproporcije/makrozomije ploda i ostalih obstetričkih indikacija koje vitalno ne ugrožavaju majku (oftalmološke, ortopedske, psihijatrijske, infekcije donjeg genitalnog trakta) (OR=3,943, 95%CI 2,036-6,591; OR=7,560, 95%CI 3,994-8,327). Hitnost CR nije značajno uticala na pojavu ranih MK. Primećena je značajno veća učestalost neonatalne sepse nakon hitnog CR ( $p=0,027$ ), koji je nosio dvostruko veći rizik za pojavu navedenog ishoda (OR=2,070, 95% CI 1,072-3,997). Nije bilo fatalnih maternalnih i neonatalnih ishoda, niti potrebe za daljim zbrinjavanjem.

**Zaključak:** Nije bilo statistički značajne razlike u pojavi MK i NK u odnosu na urgentnost CR. Novorođenčad rođena hitnim CR su imala veći rizik za pojavu neonatalne sepse. Same indikacije za CR su pokazale veći uticaj na pojavu ranih MK i NK u odnosu na tip CR.

**Ključne reči:** elektivni carski rez, hitan carski rez, rane maternalne komplikacije, rane neonatalne komplikacije

**Primljen:** 28.12.2023. | **Revizija:** 22.01.2024. | **Prihvaćen:** 22.01.2024.

**Medicinska istraživanja 2024; 57(2):57-64**