Original Article

Perinatal Outcome of Women who Delivered within 30 Minutes of Taking Decision Versus After 30 Minutes of Taking Decision of an Emergency Cesarean Section

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Abstract

Objectives: To determine perinatal outcome of neonates delivered by ECS and compare with regards to decision time duration of emergency cesarean section (ECS) of ≤ 30 versus > 30 minutes.

Methodology: This comparative study was done at the department of gynecology and obstetrics at Liaquat University Hospital Jamshoro from March 2017 to February 2018. Women with age of 18 to 45 years, normal healthy pregnant women with age of 18 to 45 years and gestational ages of 37 to 41 weeks who underwent emergency C-sections due to fetal distress (FHR <100 b/m or the presence of meconium-stained liquor) were included. Of 202 cases 95 underwent <30 minutes of the decision to delivery interval and 107 underwent >30 minutes of the decision to delivery interval of (ECS). Perinatal outcome was assessed in terms of NICU admission and stillbirth. After data collection by study proforma, the SPSS version 26 was used for the analysis.

Results: The overall mean age of the participants was 27.6931±4.85 years. In total, 93.6% of patients were given spinal anesthesia, while 6.4% were given general anesthesia. Out of 73 NICU admitted patients 38 were of <30 minutes group and 35 were of >30 minutes group (p-0.282). Among 20 sill birth cases, 11 neonates were of <30 minutes group and 9 were of >30 minutes group (p-0.452). With respect to the stratification, the neonatal outcomes were statistically insignificant according to the parity, booking status, and types of anesthesia given, p-values were quite insignificant.

Conclusions: No significant difference in perinatal outcome was observed with in < 30 minutes and > 30 minutes of the decision to delivery interval of emergency cesarean section because in this study majority of women were underwent C-section >30 minutes. This may due to most caesarean sections for take longer than 30 minutes. These delays occur due to in getting the patient to theatre, achieving effective anesthesia and delay in blood donors for blood transfusion.

Keywords: Emergency Cesarean section, decision delivery Interval, perinatal outcome

Cite this article as: Shoukat R, Momon F, Rajpar S, Shaikh M. Perinatal Outcome of Women who Delivered within 30 Minutes of Taking Decision Versus After 30 Minutes of Taking Decision of an Emergency Cesarean Section J Soc Obstet Gynaecol Pak. 2022; 12(3):291-294.

Introduction

A Caesarean section (CS) is a surgical procedure where incisions are made on both the abdomen and the uterus to deliver the baby, placenta, and fetal membranes after the fetus is viable.[1] It is commonly performed when there is a significant risk to the safety or health of either the baby or mother during a natural delivery, and it is also performed upon the request of the mother. If the mother or fetus is in an immediate life-threatening condition, the operation is considered an emergency cesarean section.[1,2] Emergency caesarean deliveries occur as a result of unforeseen complications that arise during childbirth. These types of deliveries are associated with greater health risks for both the mother and the baby compared to planned C-sections or vaginal births.[3,4] The decision delivery interval has been evaluated in relation to perinatal out come only in cord prolapsed cases in recent Pakistani literature.[5] Whereas the delays are found commonly responsible for a high perinatal mortality in poor resource settings.[6-7] There have been many studies to evaluate this Standard of Obstetric

Authorship Contribution: [1,2]Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work, [2]Final approval of the version to be published, [3,4]Drafting the work or revising it critically for important intellectual content, participated in the acquisition

Funding Source: none
Conflict of Interest: none

Received: Feb 18, 2022
Accepted: Aug 26, 2022

practice advocated by American College of Obstetrics. Based on a literature review, it appears that numerous hospitals face difficulties in adhering to this particular guideline, and even smaller, remote healthcare facilities are not exempt from these challenges.[8-9] Limited resources are a characteristic of small facilities, and the most critical issue is that these resources may not be readily accessible. A rising trend of emergency caesarean has been increased up to 11% and Apgar score less than 7 in 5 minutes are 1.7% and admission in neonatal intensive care unit are 9.8% and still birth increase up to 4.3%and seizures occurred in 1% of all of these infants.[10,11,12] It is reported that the time taken for decision of emergency C section delivery of baby directly determines the perinatal outcome and mortality. The American College of Obstetrics & Gynecology and the Royal College of Obstetrics and gynecology recommend a maximum delay of 30 minutes for performing emergency C-section and baby birth. Currently, such trend of emergency C-section practice has not been frequently performed even in tertiary care hospitals of Pakistan with exception of some cases of cord prolapsed. The present study may helpful to provide local data on emergency C-section and perinatal outcome in term of time duration, if really there exists any major differences, this may help to improve perinatal outcome and mortality in our local community.

Methodology

This comparative study was done at department of Gynecology and Obstetrics in Liaquat University Hospital Jamshoro from March 2017 to February 2018. Normal, healthy pregnant women with age of 18 to 45 years and gestational age of 37 to 41 weeks who underwent emergency C-sections due to fetal distress (FHR <100 b/m or presence of meconium-stained liquor) were included. Women with gestational diabetes, gestational hypertension, Pre-eclampsia or eclampsia, IUD, diagnosed with congenital abnormal babies, women with systemic medical disorders like hypertension, diabetes a cardiovascular disease were excluded. Of the 202 cases, 95 had a decision to delivery interval of 30 minutes or less, and 107 had a decision to delivery interval of more than 30 minutes (ECS). Obstetric and anesthetic consultants were completely involved until the procedure. The Data was collected prospectively on all women delivering by emergency caesarean section during the study period. Throughout the study period, the delivery unit was staffed with an obstetric registrar, a senior house officer, and an anaesthetic registrar, with the presence of an obstetric consultant each morning from Monday to Saturday. In addition, an anesthetist consultant and medical officer were present on all days from Monday to Saturday. The obstetric unit guidelines stipulated that the on-call consultant should be informed of all planned C-sections, unless the situation was considered too critical, in which case the notification would be made after the operation. The involvement of both obstetric and anaesthetic consultants was recommended in cases where complications were anticipated. Clinical staff working in the delivery suite were specifically advised regarding noting down the times of events like the decision of a surgical procedure, notification to theater staff, notification to anesthesiologists, patients' arrival, induction of anesthesia, incision time, and baby out time. Perinatal outcome was measured by NICU admission and stillbirth. After data collection by study proforma, SPSS version 26 was used for the analysis.

Results

Overall, the mean age of the participants was 27.6931± 4.85 years, the mean gestational age was 37.60±2.18 weeks, and the operative time was 90.22 min. Out of all, 115(56.9%) patients were booked, while 87(43.1%) patients were unbooked. 189 patients (93.6%) had received spinal anesthesia, while 13 (6.4%) had received general anesthesia. According to the neonatal outcome, 73(36.1%) neonates were admitted to the NICU, while 20(9.9%) babies were born stillbirth. Most of the cases underwent spinal anesthesia in both groups

Table I: Neonatal outcome and types of the anesthesia according to both study groups (n=202)

Variables		Duration of emergency C-section		p-value
		<30 minutes	>30 minutes	
Anesthesia	**Spinal anesthesia**	87	102	0.279
		91.6%	95.3%	
	General anesthesia	8	5	
		8.4%	4.7%	
	Total	95	107	
		100.0%	100.0%	
NICU admission	**Yes**	38	35	0.282
		40.0%	32.7%	
	No	57	72	
		60.0%	67.3%	
	Total	95	107	
		100.0%	100.0%	
Still birth	**Yes**	11	9	0.452
		11.6%	8.4%	
	No	84	98	
		88.4%	91.6%	
	Total	95	107	
		100.0%	100.0%	

and only 13 patients underwent general anesthesia particularly as 8 patients of <30 minutes group and 5 patients in >30 minutes group, while figs were statistically insignificant (p-279). Out of 73 NICU admitted patients 38 were of <30 minutes group and 35 were of >30 minutes group (p-0.282). Among overall 20 sill birth cases, 11 neonates were of <30 minutes group and 9 were of >30 minutes group (p-0.452). Table I

With respect to the stratification, the neonatal outcomes were statistically insignificant according to the parity, booking status, and types of anesthesia given; the p-values were quite insignificant. Table. Ii & III

Table II. NICU admission with respect to parity, booking status and anesthesia (n=202)

Variables		Duration of emergency cesarean section	NICU admission		P Value
			Yes	No	
Gravidity	Primi gravida	<30 Minutes	11	14	0.728
		>30 Minutes	11	17	
	Multi gravida	<30 Minutes	27	43	0.293
		>30 Minutes	24	55	
Booking stats	Booked	<30 Minutes	21	35	0.439
		>30 Minutes	18	41	
	Un-booked	<30 Minutes	17	22	0.510
		>30 Minutes	17	31	
Types of anesthesia	Spinal	<30 Minutes	17	22	0.286
		>30 Minutes	17	31	
	General	<30 Minutes	4	4	1.000
		>30 Minutes	3	2	

Table III: Still birth with respect to parity, booking status and anesthesia (N=202)

Variables		Duration of emergency cesarean section	Still birth		P Value
			Yes	No	
Gravidity	Primi gravida	<30 Minutes	2	23	0.923
		>30 Minutes	2	26	
	Multi gravida	<30 Minutes	9	61	0.443
		>30 Minutes	7	72	
Booking stats	Booked	<30 Minutes	1	55	1.000
		>30 Minutes	1	58	
	Un-booked	<30 Minutes	10	29	0.425
		>30 Minutes	8	40	
Types of anesthesia	Spinal	<30 Minutes	7	80	0.787
		>30 Minutes	7	95	
	General	<30 Minutes	4	4	1.000
		>30 Minutes	2	3	

Discussion

Perinatal outcome refers to the health status of both the mother and the newborn after delivery. In an emergency where a Cesarean section (C-section) is needed, the timing of the decision to perform the surgery can have a significant impact on the perinatal outcome. Specifically, the perinatal outcome of women who undergo an emergency C-section within 30 minutes of the decision being made versus those who undergo the surgery after 30 minutes of the decision being made has been studied. The decision to perform an emergency C-section is usually made when there is a risk to the health and safety of the mother and/or the baby. When this decision is made, it is important to act quickly to reduce the risks associated with the emergency. Studies have shown that when an emergency C-section is performed within 30 minutes of the decision being made, there is a significant improvement in perinatal outcomes compared to those who undergo the surgery after 30 minutes of the decision being made.

In this study, the prenatal outcome in terms of NICU admission and stillbirth was statistically insignificant among women who delivered within 30 minutes of taking decision versus after 30 minutes taking decision (p=>0.05). These findings were supported by Degu Ayele A et al[13] as they reported that there were no significant negative effects on the fetus when the time between making a decision and delivering the baby exceeded 30 minutes. In the comparison of this study Dorjey Y et al[14] observed that there were far fewer Category-I emergency cesarean sections performed within the recommended delivery decision interval (DDI) of 30 minutes, mainly because of delays in transferring the patient and administering anesthesia by the anesthetists. However, when deliveries were conducted within 30 minutes of DDI, the perinatal outcomes were favorable.[14] In the line of this series Hughes NJ et al[15] reported that there was no evidence of a heightened risk of negative perinatal outcomes when the delivery decision interval (DDI) for Category 1 cesarean sections was extended. However, according to their study there wasn't possible to perform Category 1 cesarean sections within the recommended 30-minute DDI, it wasn't possible to compare outcomes with cases that achieved the recommended DDI.[15] Our findings were supported by Gupta S et al[16] study, as there was no meaningful correlation found between the delivery decision interval (DDI) and the incidence of neonatal complications. However, Kitaw TM et al[15] found inconsistent findings, as they observed that there was a statistically significant correlation between composite adverse perinatal outcomes and the extended time between making a decision and delivering the baby. However, Temesgen

MM et al[18] also reported that the mean duration of the decision to delivery interval exceeded the recommended time, but there was no impact on the outcomes for both the fetus and the mother. In the comparison of our findings Chukwudi OE et al[19] in their study showed that there was no link between the delivery decision interval (DDI) and perinatal outcome, suggesting that the recommended DDI of 30 minutes or less may not be feasible for all emergency cesarean sections, especially in developing countries with infrastructure-related difficulties.[19] However our findings were also closed to the study by Mak SL et al[20]. The finding that there was no significant difference in perinatal outcome between cases with a decision to delivery interval of less than 30 minutes and those with an interval of more than 30 minutes suggests that extending the delivery decision interval beyond the recommended 30-minute timeframe may not result in worse outcomes for the baby. This finding is important because it challenges the assumption that the recommended timeframe is universally applicable and underscores the need to consider other factors, such as infrastructure challenges and patient needs, when determining the appropriate DDI for emergency cesarean sections. However, further research may be needed to confirm this finding and determine any potential limitations or caveats.

Conclusion

No significant difference in perinatal outcome was observed with in < 30 minutes and > 30 minutes of the decision to delivery interval of emergency cesarean section because in this study majority of women were underwent C section >30 minutes. This may due to most caesarean sections for take longer than 30 minutes. These delays occur due to in getting the patient to theatre, achieving effective anaesthesia and delay in blood donors for blood transfusion. We should upgrade our operative system and should developed special operation theaters along with good experienced anesthetics for emergency C section. Although it may be challenging to achieve in practice, a delivery decision interval of 30 minutes is a valuable benchmark for assessing emergency cesarean section performance. In cases of fetal distress, emergency cesarean section should be carried out as promptly as possible and ideally within 30 minutes.

References

1. Bidon C, Desgranges FP, Riegel AC, Allaouchiche B, Chassard D, Bouvet L. Retrospective cohort study of decision-to-delivery interval and neonatal outcomes according to the type of anaesthesia for code-red emergency caesarean sections in a tertiary care obstetric unit in France. Anaesthesia Critical Care & Pain Medicine. 2019 Dec 1;38(6):623-30.
2. Rashid N, Nalliah S. Understanding the decision delivery interval in caesarean births. IeJSME 2007;1(2):61-68
3. Miani C, Ludwig A, Breckenkamp J, Sauzet O, Doyle IM, Höller-Holtrichter C, Spallek J, Razum O. Socioeconomic and migration status as predictors of emergency caesarean section: a birth cohort study. BMC Pregnancy and Childbirth. 2020 Dec;20(1):1-7.
4. Mehrnush M, Imani B, Shirdel Z, Rabie S. Comparing early postoperative maternal complications in elective and emergency cesarean sections. Journal of Midwifery and Reproductive Health. 2020 Jul 1;8(3):2368-75..
5 Huissoud C, Dupont C, Touzet S, Dupont GCL. Decision-to-Delivery interval for emergency caesarean in the Aurora perinatal network. Eur J Obstet Gynecol Reprod Biol 2010; 149(2):159-64.
6 Amankwah Y, Caughey S, Walker M. A Prospective Study of the Efficiency of the “Code 333” Process at the Ottawa Hospital. J Obstet Gynecol Canada 2011; 33(3):244-51.
7 Nasrallah FK, Harirah HM, Vadhera R, Jain V, Franklin LR, Hankins GD. The 30 minute decision-to- Incision interval for Emergency cesarean delivery. Am J Perinatol 2004; 21(2):63-8.
8 Tuffnel DJ, WilkinsonK, Beresford N. Interval between decision and delivery by caesarean Section are current standard achievable. BMJ 2001; 322(7298):1330-3.
9 Chauhan PS, Magann EF, Scot JR, Scardo JA, Hendrix NW, Martin JN, et al. Emergency cesarean delivery for non-Reassuring fetal heart rate tracing. J Rep Med 2003; 48(12):957-81.
10 Kalogiannidis I, Petousis S, Margioula-Siarkou C, Masoura S, Dagklis T, Traianos A, et al. Epidemiological Characteristics and Trends of Caesarean Delivery in a University Hospital in Northern Greece. West Afr J Med 2011; 30(4): 250–4.
11 KolåsT, Saugstad OD, Daltveit AK, Nilsen ST, Oian P. Planned cesarean versus planned vaginal delivery at term: comparison of newborn infant outcomes. Am J Obstet Gynecol 2006; 195(6):1538-43.
12 Gardosi J, Madurasinghe V, Williams M, Malik A, Francis A. Maternal and fetal risk factors for stillbirth: population based study. BMJ 2013; 346:108.
13. Degu Ayele A, Getnet Kassa B, Nibret Mihretie G, Yenealem Beyene F. Decision to delivery interval, fetal outcomes and its factors among emergency caesarean section deliveries at south gondar zone hospitals, Northwest Ethiopia: Retrospective cross-sectional study, 2020. International Journal of Women's Health. 2021 Apr 28:395-403.
14. Bhatia K, Columb M, Bewlay A, Tageldin N, Knapp C, Qamar Y, Dooley A, Kamath P, Hulgur M, collaborators. Decision-to-delivery interval and neonatal outcomes for category-1 caesarean sections during the COVID-19 pandemic. Anaesthesia. 2021 Aug;76(8):1051-9.
15. Hughes NJ, Namagembe I, Nakimuli A, Sekikubo M, Moffett A, Patient CJ, Aiken CE. Decision-to-delivery interval of emergency cesarean section in Uganda: a retrospective cohort study. BMC pregnancy and childbirth. 2020 Dec;20:1-0.
16. Gupta S, Naithani U, Madhanmohan C, Singh A, Reddy P, Gupta A. Evaluation of decision-to-delivery interval in emergency cesarean section: a 1-year prospective audit in a tertiary care hospital. Journal of anaesthesiology, clinical pharmacology. 2017 Jan;33(1):64.
17. Kitaw TM, Tsegaw Taye B, Tadese M, Getaneh T. Effect of decision to delivery interval on perinatal outcomes during emergency cesarean deliveries in Ethiopia: A prospective cohort study. PloS one. 2021 Nov 8;16(11):e0258742.
18. Temesgen MM, Gebregzi AH, Kasahun HG, Ahmed SA, Woldegerima YB. Evaluation of decision to delivery time interval and its effect on feto-maternal outcomes and associated factors in category-1 emergency caesarean section deliveries: prospective cohort study. BMC Pregnancy and Childbirth. 2020 Dec;20(1):1-1.
19. Chukwudi OE, Okonkwo CA. Decision-delivery interval and perinatal outcome of emergency caesarean sections at a tertiary institution. Pakistan journal of medical sciences. 2014 Sep;30(5):946.
20. Mak SL, Fhkcog FO. Maternal and fetal outcomes in extremely urgent caesarean delivery in relation to the decision-to-delivery interval. J Gynaecol Obstet Midwifery. 2015;15(1):16-22.