

Research Article

Elective versus Emergency Cesarean Sections: Mother and Fetal Outcome**Luaran Ibu dan Bayi pada Operasi Sesar Elektif dan Emergensi****Christofer J.H Ladja, IMS Murah Manoe, Andi M. Tahir, St. Maisuri T. Chalid**

Department of Obstetrics and Gynecology
Faculty Medicine Universitas Hasanudin
Dr. WAhidin Sudiro Husodo General Hospital
Makassar

Abstract

Objective: To compare the outcomes of mothers and newborns in emergency cesarean section and elective cesarean section.

Methods: A prospective cohort study included 120 pregnant women consists of 60 women who performed an emergency cesarean section and 60 women who underwent elective cesarean section. Age, education level, occupation, income, history of comorbidities, history of abortion or miscarriage, antenatal care history, decision-making time until surgery is performed along with other components required, duration of operation, outcome of mother and fetal were obtained through interviews and questionnaires. Data were analyzed regarding fetal outcome and cesarean sections indications.

Results: The maternal and fetal outcome between emergency and elective cesarean section were not significantly different regarding on hospital stay, dehiscence, NICU admission, Apgar score and newborn status (dead or alive). Blood transfusion is the main difference significant indication for maternal outcome between emergency and elective procedure ($p < 0.05$). The total duration of procedure < 60 or > 60 minutes and maternal-fetal outcome not significantly different between two type of procedures.

Conclusions: Emergency cesarean section at preterm gestational age with an operating time ≤ 60 minutes leads to greater transfusion blood requirements compared with elective cesarean section.

Keywords: emergency cesarean section, elective cesarean section, mother-infant outcome.

Abstrak

Tujuan: Membandingkan luaran ibu dan bayi baru lahir di seksio sesarea emergensi dan elektif.

Metode: Penelitian kohort prospektif melibatkan 120 perempuan hamil terdiri atas 60 perempuan yang melakukan operasi seksio sesarea emergensi dan 60 perempuan melakukan operasi elektif. Usia, tingkat pendidikan, pekerjaan, pendapatan, riwayat komorbiditas, riwayat aborsi atau keguguran, riwayat asuhan antenatal, waktu pengambilan keputusan sampai operasi dilakukan bersamaan dengan komponen lain yang diperlukan, lamanya operasi, luaran ibu dan bayi diperoleh melalui wawancara dan kuesioner. Data yang dianalisis mengenai luaran ibu dan bayinya.

Hasil: Luaran ibu dan bayi antara seksio sesarea emergensi dan elektif tidak berbeda bermakna dalam hal lama rawat inap, dehisensi, admisi, skor Apgar dan status bayi baru lahir (meninggal atau hidup). Transfusi darah adalah indikasi penting utama yang berbeda untuk luaran ibu antara prosedur emergensi dan elektif ($p < 0,05$). Durasi total prosedur < 60 atau > 60 menit dan luaran ibu tidak berbeda secara signifikan antara kedua jenis seksio sesarea.

Kesimpulan: Tindakan seksio sesarea emergensi pada usia gestasi prematur dengan waktu operasi ≤ 60 menit menyebabkan kebutuhan transfusi darah lebih besar dibandingkan seksio sesarea elektif.

Kata kunci: luaran ibu-bayi, seksio sesarea elektif, seksio sesarea emergensi.

Correspondence author. Christofer J.H. Ladja. Department of Obstetrics and Gynecology. Faculty of Medicine Universitas Hasanuddin. Dr. Wahidin Sudiro Husodo General Hospital. Makassar.christoferladja@gmail.com

INTRODUCTION

Cesarean section is a type of obstetric procedure deliver the fetus through surgery on the abdominal wall and the uterus. This procedure performed as an alternative method if normal delivery cannot be performed for treating the mother and newborn.¹ The rate of cesarean section increases 20% but different in every countries. This increase is thought to be due to improved surgery techniques and facilities, more aseptic surgery, improved anaesthesia techniques, postoperative cesarean delivery and shorter duration of care.^{2,3} The increasing rate associated with the increased in morbidity and costs in addition to improving fetal outcome.⁴⁻⁶

Cesarean section also contributes to the mortality rate of about 5.8 per 100,000 deliveries as well as a higher rate of caesarean section morbidity accounting for 27.3 per 1,000 deliveries, compared to a normal delivery 9 per 1,000 deliveries.⁷ Previous research by Ghazi found that maternal mortality in the caesarean section was 40-80/100,000; 25 times greater than normal delivery. Postoperative cesarean section pain is about 15% and about 90% is caused by infection (endometritis, urinary tract infection and sepsis due to injury). Approximately 25% of complications of cesarean section occur in emergency procedures compared to 5% in elective procedures.⁸

The standard for response time does not exceed 30 minutes.⁹ American College of Obstetrics and Gynecology also recommends a maximum interval of 30 minutes to decide to conduct emergency surgery and 15 minutes for a very urgent cesarean section.¹⁰ Extracting the fetus within the suggested interval time significantly improved the Apgar score and pH. However, there is no strong evidence to suggest that response time more than 30 minutes or less is associated with improving mother or fetal outcomes.¹¹ In addition, emergency caesarean section does not have a general classification of its urgency level and the recommended time response is not always adhered to due to limited facilities and medical team. This study aims to compare the outcomes of mothers and newborns in emergency cesarean section and elective cesarean section.

METHODS

A prospective cohort study was conducted on pregnant women with an indication of an emergency or elective cesarean section at mother and child hospital in Makassar. Age, education level, occupation, income, history of comorbidities, history of abortion or miscarriage, antenatal care history, decision-making time until surgery is performed along with other components required, duration of operation, outcome of mother and fetal were obtained through interviews and questionnaires. Written informed consent obtained from all pregnant women and the Health Research Ethics Committee of Faculty of Medicine Universitas Hasanuddin, Makassar approved the study. All analyses were performed using the statistical analyzed software. A p-value <.05 was considered statistically significant.

RESULTS

The present study included 120 pregnant women consists of 60 women who underwent emergency cesarean section and 60 women who underwent elective cesarean section. The baseline women characteristics (Table 1) show the age of gestation, decision delivery interval <8 minutes and duration of procedure <60 minutes were significantly different between emergency and elective cesarean section. There was no difference in age, parity, IC time, consultation time and the decision to anaesthesia between the two groups of procedure ($p>0.05$). The maternal and fetal outcome between emergency and elective cesarean section were not significantly different regarding on hospital stay, dehiscence, NICU admission, Apgar score and newborn status (death or alive) (Table 2). Blood transfusion is the main difference in significant indication for maternal outcome between emergency and elective procedure. The total duration of procedure <60 or >60 minutes and maternal-fetal outcome not significantly different between the two types of procedures (Table 3).

Table 1. Patients Characteristics

Characteristics	Emergency		Elective		RR	95%CI	P-value
	n	%	n	%			
Age (yo)							
<25 and >35	28	46.7	22	36.7	1.273	0.829-1.954	0.26
25-35	32	53.3	38	63.3			
Age of gestation (weeks)							
28-36	19	31.7	8	13.3	2.375	1.128-5.000	0.01
37-42	41	68.3	52	86.7			
Parity							
Primiparous	35	58.3	30	50	1.167	0.383-1.625	0.36
Multiparous	25	41.7	30	50			
IC time (minutes)							
>10	7	11.7	5	8.3	1.400	0.471-4.166	0.54
≤10	53	88.3	55	91.7			
Counselling time (minutes)							
> 30	34	56.7	45	75	0.756	0.582-0.985	0.30
≤ 30	26	43.3	15	25			
Decision to anesthesia time (minutes)							
> 8	16	26.7	20	33.3	0.800	0.461-1.389	0.42
≤ 8	44	73.3	40	66.7			
Decision delivery interval (minutes)							
> 8	41	68.3	52	86.7	0.788	0.646-0.962	0.01
≤ 8	19	31.7	8	13.3			
Decision delivery interval (minutes)							
> 30	56	93.3	58	96.7	0.96	0.88-1.04	0.40
≤ 30	4	6.7	2	3.3			
Total duration of caesarean section (minutes)							
> 60	14	23.3	6	10	2.33	0.96-5,66	0.05
≤ 60	46	76.7	54	90			

Table 2. Maternal and Fetal Outcomes

Outcomes	Emergency		Elective		RR	95%CI	P-value
	n	%	n	%			
Maternal							
Hospital stay (days)							
> 3	5	8.3	3	5	1.667	0.42-6.66	0,71**
≤ 3	55	91.7	57	95			
Blood transfusion							
Yes	11	18.3	2	3.3	5.50	1.27-23.76	0.01*
No	49	81.7	58	96.7			
Dehiscence							
Yes	4	6.7	4	6.7	1.000	0.26-3.81	1.00**
No	56	93.3	56	93.3			
Fetal							
Hospital stay (days)							
> 3	8	13.3	2	3.3	4.000	0.88-18.06	0.05*
≤ 3	52	86.7	58	96.7			
NICU admission							
Yes	8	13.3	3	5	2.667	0.743-9.569	0.11*
No	52	86.7	57	95			
Apgar score							
< 7	17	28.3	11	18.3	1.545	0.792-3.016	0.19*
≥ 7	43	71.7	49	81.7			
Outcomes							
Death	2	3.3	0	0	0.967	0.922-1.013	0.49**
Live	58	96.7	60	100			

*Chi-square test, ** Fischer-exact test

Table 3. Total Duration of Caesarean Section and Maternal-fetal Outcome

Outcomes	> 60 minutes		≤ 60 minutes		RR	95%CI	P-value
	n	%	n	%			
Maternal							
Hospital stay (days)							
> 3	2	10.0	6	6.0	1.66	0.36-7.67	0.61
≤ 3	18	90.0	94	94.0			
Blood transfusion							
Yes	3	15.0	10	10.0	1.50	0.45-4.96	0.51
No	17	85.0	90	90.0			
Dehiscence							
Yes	1	5.0	7	7.0	0.71	0.93-5.49	1.00
No	19	95.0	93	93.0			
Fetal							
Hospital stay (days)							
> 3	4	20.0	6	6.0	3.33	1.34-10.74	0.06
≤ 3	16	80.0	94	94.0			
NICU admission							
Yes	2	10.0	9	9.0	1.11	0.25-4.76	1.00
No	18	90.0	91	91.0			
Apgar score							
< 7	6	30.0	22	22.0	1.36	0.64-2.92	0.56
≥ 7	14	70.0	78	78.0			
Outcomes							
Death	0	0	2	2.0	1.02	0.99-1.04	1.00
Live	20	100	98	98.0			

* Fischer-exact test

DISCUSSION

Elective cesarean section highly proportion performed in age between 25 and 35, age of gestation 37-42 weeks and multiparous women. A study show 38.95% of cases of emergency cesarean section performed on primigravida mothers with younger age (27.8 ± 6.07 years)¹² whereas other studies show a slightly higher rate between 42% and 55.48%, respectively.^{13,14} A study show 19.7% of primigravida performed elective cesarean section and 70.8% performed emergency section compared with 80.3% elective procedure and 29.2% emergency procedure in multigravida.² Another study show emergency and elective cesarean section performed slightly higher in primigravida compared with multigravida.¹⁵

The maternal and fetal outcome between emergency and elective cesarean section were not significantly different regarding hospital stay, dehiscence, NICU admission, Apgar score and newborn status (death or alive). However, our results show elective cesarean section had a higher proportion of improved outcome regarding maternal-fetal outcome indicators. Various factors contribute to maternal-fetal outcome to the elective or emergency section. A study shows emergency section associated with

younger mothers, maternal illiteracy, primiparity, insufficient prenatal care, a referral from other institution for pregnancy complications or delivery, cesarean section performed under general anesthesia, lower birth weight, neonatal morbidity and early mortality, and admission in the neonatal intensive care unit.¹² Another findings of our study were blood transfusion higher in the emergency compare with the elective section. Previous studies show conflicting result regarding blood transfusion during the procedure. A study show blood transfusion performed in 34% of cases of emergency section whereas 16% cases in elective section.¹⁵

The present study show total duration of cesarean section for less than 60 has better maternal-fetal outcome compared with more than 60 minutes procedure. A study in Nigeria shows no significant correlation between the response time of 30 minutes and perinatal outcome.¹⁶ However, a study show a longer duration of procedure than previous studies that is 75 minutes. This study found that response time was influenced by the decision to anaesthesia time, anaesthesia to delivery of baby, prolonged labour and hypertension disorders.¹⁷ Study conducted in India found response time 30 minutes for a cesarean section could be achieved in 30% of cases of emergency cesarean section. The major

cause of cesarean section delay in this study was a long waiting list of emergency cesarean section in the operation theatre. Another cause is the excessive procedure in the labour room results in delay in preparing the women for operation, counselling, informed consent and shifting the women in the pre-operative area.¹⁸

CONCLUSION

In conclusion, an emergency cesarean section at preterm gestational age with an operating time ≤ 60 minutes leads to greater transfusion blood requirements compared with an elective cesarean section.

REFERENCES

1. Suwal A, Shrivastava VR, Giri A. Maternal and fetal outcome in elective versus emergency cesarean section. *JNMA*. 2013;52(192):563-6.
2. Daniel S, Viswanathan M, Simi BN, Nazeema A. Study of maternal outcome of emergency and elective caesarean section in a semi-rural tertiary hospital. *Natl J Med Res*. 2014;4(1):14-8.
3. Gutema H, Shimye A. Caesarean section and associated factors at Mizan Aman General Hospital Southwest Ethiopia. *J Gynecol Obstet*. 2014;2(3):37-41.
4. Villar J, Valladares E, Wojdyla D, Zavaleta N, Carroli G, Velazco A, et al. Caesarean delivery rates and pregnancy outcomes: 2005 WHO global survey on maternal and perinatal health in Latin America. *Lancet*. 2006;367(9525):1819-29.
5. Villar J, Carroli G, Zavaleta N, Donner A, Wojdyla D, Faundes A, et al. Maternal and neonatal individual risks and benefits associated with cesarean delivery: multicentre prospective study. *BMJ*. 2007;335(7628):1025.
6. Henderson J, McCandlish R, Kumiega L, Petrou S. Systematic review of economic aspects of alternative modes of delivery. *BJOG*. 2001;108(2):149-57.
7. Al Rowaily MA, Alsalem FA, Abolfotouh MA. Cesarean section in a high-parity community in Saudi Arabia: clinical indications and obstetric outcomes. *BMC Pregnancy Childbirth*. 2014;14:92.
8. Ghazi A, Karim F, Hussain AM, Ali T, Jabbar S. Original article maternal morbidity in emergency versus elective caesarean section at tertiary care hospital. *J Ayub Med Coll Abbottabad*. 2012;24(1):10-3.
9. Departemen Kesehatan RI. Direktorat Jenderal Bina Pelayanan Medik. Pedoman Penyelenggaraan PONEK 24 Jam di Rumah Sakit. Buku Pedoman PONEK 24 Jam di Rumah Sakit. 2008.
10. Committee on Professional Standards: Standards for Obstetric-Gynecologic Services, ed.7. Washington, Am Coll Obstet Gynecol. 1989.
11. Homer CSE, Catling-Paull C. safe timing of emergency caesarean sections: a review. NSW Health and the Sax Institute. Sydney. 2010.
12. Benzouina S, Boubkraoui M, Mrabet M, Naima Chahid N, Aicha Kharbach A, et al. Fetal outcome in emergency versus elective cesarean sections at Souissi Maternity Hospital, Rabat, Morocco. *Pan African Med J*. 2016; 23:197.
13. Kambo I, Bedi N, Dhillon BS, Saxena NC. A critical appraisal of cesarean section rates at teaching hospitals in India. *Int J Gynecol Obstet*. 2002;79(2):151-8.
14. Adhikari S, Dasgupta M, Sanghamita M. Management of obstructed labor: a retrospective study. *Obstet Gynecol Ind*. 2005;55(1):48-51.
15. Sowmya M, Indranil Dutta², Vijayalakshmi S. A comparative study of outcome of caesarean delivery in rural obstetric referrals with elective caesarean delivery. *Int J Recent Trends Sci Technol*. 2014;12(3):534-8.
16. Onah HE, Ibeziako N, Umezulike AC, Effetie ER, Ogbuokiri CM. Decision – delivery interval and perinatal outcome in emergency caesarean sections. *J Obstet Gynecol*. 2005;25(4):342-6.
17. Hirani BA, Mchome BL, Mazuguni NS, Mahande MJ. The decision delivery interval in emergency caesarean section and its associated maternal and fetal outcomes at a referral hospital in northern Tanzania: a cross-sectional study. *BMC Pregnancy Childbirth*. 2017;17(1):411.
18. Mishra N, Gupta R, Singh N. Decision delivery interval in emergency and urgent caesarean sections: need to reconsider the recommendations? *J Obstet Gynecol Ind*. 2018;68(1):20-6.