Research Article

The Recommended Time Interval of Decision to Incision in Caesarean Section is not Achieved in Daily Practice

Interval Waktu Keputusan sampai Insisi yang Direkomendasikan pada Seksio Sesarea Emergensi tidak Tercapai pada Praktik Sehari-hari

Novia[1], Ahmad K Syamsuri[1], Firmansyah Basir[1], Rose Mafiana[2], Irsan Saleh[3]

[1]Department of Obstetrics and Gynecology
[2]Department of Anesthesiology and Intensive Theraphy
[3]Medical and Health Research Unit
Faculty of Medicine University of Sriwijaya/
Dr. Mohammad Hoesin General Hospital
Palembang

Abstract

Objective: To determine the mean time for decision-to-incision interval for emergency caesarean section, the contributing factors for delay and the outcome at Department of Obstetrics and Gynecology Dr. Moh. Hoesin Hospital, Palembang.

Methods: The study was conducted on 555 patients who met our study inclusion criteria at our maternity unit. There was 1748 deliveries in six months and the rate of caesarean section was approximately 37.9% (6.1% elective). An emergency caesarean section was defined as non-elective or non-scheduled cases.

Result: In this study, there was 355 emergency caesarean sections, and the mean time from decision-to-incision was 83.9±41.6 minutes. The time interval reached 30 minutes in only 8 women (2.2%). Most cases have time interval 61-90 minutes (41.1%). The main sources of delay were patient's preparations, transfer of women to the operating theatre, operating theatre preparations and the start of anesthesia administration. The most common indication for emergency caesarean sections were dystocia, bleeding from placenta previa or placental abruption, premature rupture of membrane and fetal distress. There were significant differences in the proportion of babies born with 1 minute Apgar score <7.5 minute Apgar score <7 and admssion to special care. There were no significant differences in the proportion of women who were admitted to special care and the length of postpartum stay.

Conclusion: The current recommendations for the interval between decision-to-incision is achieved in routine practice. Reasons for delay were interval for patient preparation and operating room preparation. Failure to meet the recommendation does not seem to increase neonatal and maternal morbidity.

[Indones J Obstet Gynecol 2103; 37-1: 12-6]

Keywords: emergency caesarean section, outcomes, reasons for delay, time decision-to-incision

Abstrak

***Tujuan**: Untuk mengetahui rerata interval waktu keputusan sampai insisi pada seksio sesarea emergensi, faktor-faktor yang mempengaruhi dan luaran ibu dan janin yang dihasilkan di Bagian Obstetri dan Ginekologi RSUP Dr. Mohammad Hoesin Palembang.*

***Metode**: Penelitian ini dilakukan terhadap 555 pasien yang memenuhi kriteria inklusi yang datang ke rumah sakit. Terdapat sejumlah 1748 persalinan dalam kurun waktu 6 bulan (Januari-Juni 2012) dengan angka persalinan secara seksio sesarea sebanyak 37,9% (elektif 6,1%). Seksio sesarea emergensi didefinisikan sebagai semua seksio sesarea yang tidak terjadwal sebelumnya. Pada penelitian ini digunakan daftar tilik yang berisi pertanyaan terstruktur.*

***Hasil**: Pada penelitian dengan 355 kasus seksio sesarea emergensi yang kami lakukan didapatkan rerata interval waktu keputusan sampai insisi adalah 83,9±41,6 menit. Interval waktu yang mencapai 30 menit sebanyak 8 pasien. Kebanyakan kasus (41,1%) memerlukan waktu 61-90 menit. Sumber utama keterlambatan adalah waktu yang dibutuhkan untuk persiapan pasien, transfer pasien ke kamar operasi, persiapan kamar operasi dan persiapan anestesi. Indikasi utama seksio sesarea emergensi yang dilakukan adalah distosia, perdarahan plasenta previa dan solusio plasenta, pecah ketuban sebelum waktunya dan gawat janin. Rerata interval waktu keputusan sampai insisi adalah 83,9 menit. Tidak didapatkan perbedaan proporsi janin yang lahir dengan skor Apgar 1 dan 5 menit <7 dan kejadian rawat NICU antara kelompok interval waktu <30 menit dan ≥30 menit. Tidak didapatkan perbedaan yang bermakna pada lama rawat ibu dan kejadian rawat ICU.*

***Kesimpulan**: Rekomendasi 30 menit untuk interval waktu keputusan sampai insisi pada seksio sesarea emergensi tidak tercapai pada praktik sehari-hari. Alasan keterlambatan adalah lamanya persiapan pasien dan persiapan kamar operasi. Kegagalan mencapai interval waktu yang ideal ini tidak meningkatkan morbiditas ibu dan bayi secara bermakna.*

[Maj Obstet Ginekol Indones 2013; 37-1: 12-6]

***Kata Kunci**: alasan keterlambatan, interval waktu keputusan sampai insisi, luaran, seksio sesarea emergensi*

Correspondence: Novia, Jln. Letnan Yasin No. 2802 Rt. 45 Rw. 16 20 Ilir III, Ilir timur I, Palembang.
Telephone 081271781610 Email: noviaguntur@gmail.com

INTRODUCTION

In cases where there are known risks for labour and delivery, caesarean section are usually prescheduled. But most of the time, caesarean section were performed when complications arise during labor. When an emergency caesarean section is performed, it is widely advocated that the interval between the decision-to-incision should be less

than 30 minutes. The recommendation states that a unit should be able to be ready to perform a caesarean section within 30 minutes.[1-5]

The clinical justification for this arbitrary time standard does not come from trials or even from observational studies in humans. With an anoxic situation, 30 minutes is often too long, and without a real emergent situation, interval longer than 30 minutes may not be harmful. In fact, studies have revealed worse outcomes in patients with the shortest of time intervals and that longer delivery intervals did not correlate with an adverse neonatal outcome. Many labor and delivery units did not provide patients a 30-minute decision to incision intervals and that this non-compliance did not have a negative effect on neonatal outcome.[6-10]

METHODS

Dr. Moh. Hoesin hospital is a top referral hospital in South Sumatera region, Indonesia. It has almost 3000 deliveries per year and a caesarean rate of approximately 37.6%. A survey off all emergency caesarean sections occurring over six months was carried out. The delivery suite was fully staffed with midwives, obstetricians, residents and in the operating theatre there were trained anesthetist. The operating theatre was separate from midwife station and from emergency room.

An emergency caesarean section was defined as one which required prompt delivery to reduce the risk to the pregnant women or her infant. The decision-to-incision interval was the time between the decision to perform the caesarean section. The decision to perform the caesarean section was always made by the consultant obstetrician, who may or not be in the hospital. During these six months, information was extracted from the case note of the women whose decision-to-incision intervals was longer than the standard of 30 minutes, in order to identify reasons for delay.

RESULTS

During the 6-month study period, 1748 mother gave birth and 662 caesarean sections were performed (37.9%). Among them, 555 cases were emergency caesarean sections. Several medical records were not complete and therefore excluded. We analyzed 355 cases in this study. Eight (2.3%) caesarean section were performed within the standard of 30 minutes, while the rest 347 caesarean sections did not achieve the 30-minutes standard. Thirty two percent (n=114) of women delivered within 60 minutes and 73.2% (n=260) within 90 minutes.

Table 1. Subjects Characteristics

Characteristics	n	%
Age		
≤35 years	292	82.3
>35 years	63	17.7
Parity		
Nullipara	181	51
Multipara	174	49
Education		
≤9 years	246	69.3
>9 years	109	30.7
Address		
Urban area	260	73.3
Rural area	95	26.8
Referral status		
Referral	245	69
Non-Referral	110	31
Labor Status		
Inlabor	273	76.9
Not Inlabor	82	23.1
Operator		
Consultant	50	14.1
Resident	305	85.9
Anaesthetic		
Regional	342	96.4
General	13	4.6
Incision type		
Mediana	101	28.5
Transversal	254	71.5
Time of Decision		
07.00 - 14.00	96	27
14.00 - 07.00	259	73
Previous CS		
Yes	41	11.5
No	314	88.5

Perceived urgency was classified as grade 1 for 21.4% (n=76), grade 2 for 21.1% (n=75) and grade 3 for 57.5% (n=204). The most primary indications for emergency caesarean sections were dystocia 48% (n=169), fetal distress 19% (n=68), bleeding from placenta previa and abruptio placenta 9% (n=32), eclampsia and preeclampsia 17% (n=61).

Table 2. Mean, Maximum and Minimum Interval for Emergency Caesarean Sections

Steps	n %	Mean ± SD	Minimum	Maximum
Patient's Preparations		23.7±10.3	8	85
0 - 15 minutes	130 (36.6)			
> 15 minutes	225 (63.4)			
Transfer to The Operating Theatre		11.0±3.1	8	30
0 - 10 minutes	294 (82.8)			
> 10 minutes	61 (17.2)			
Operating Theatre Preparations		24.5±31.3	2	240
0 - 30 minutes	256 (72.1)			
> 30 minutes	99 (27.9)			
Anaesthetic procedure		17.9±6.4	5	65
0 - 15 minutes	206 (58)			
> 15 minutes	149 (42)			
Decision-to-Incision Interval time		83.9±41.6	30	313
≤ 30 minutes	8 (2.3)			
> 30 minutes	347 (97.7)			

Table 3. Multivariate Analysis of Factors Related Decision-to-Incision on Emergency CS

Variable	B	P	95% CI
Patient's Preparation	1.273*	0.000	0.915-1.098
Transfer to The Operating Theatre	0.984	0.000	0.986-1.560
Operating Theatre Preparations	1.198	0.000	0.952-1.015
Anaesthetic Procedure	1.006	0.000	1.043-1.354

B=Coefficient Power
**strongest*

Table 4. Association between Decision-to-Incision Interval and Neonatal-Maternal Outcomes

Neonatal Outcome	D-I Interval ≤30 minutes	D-I Interval >30 minutes	p-value
Neonatal			
Apgar score <7 at 1 minute	3	32	0.035
Apgar score <7 at 5 minutes	3	13	0.004
Admission to NICU	3	33	0.038
Maternal			
Length of Postpartum Care >4 days	3	177	0.346
Admission to ICU	0	6	0.871

Fisher's Exact Test

Of the babies born by emergency caesarean, 9.9% (n=35) had a five minute Apgar score of <7. Most (n=22) were reported to be in grade 1 urgency, 11 were in grade 2 and 11 were in grade 3 urgency. Of the women who had an emergency caesarean section, 50.7% (n=180) stayed 4 days or less postpartum and 49.3% (n=175) stay for more than 4 days. Of the women who had emergency caesarean sections, 1.7% (n=6) were admitted to the intensive care unit. We found no statistically significant difference in admission to intensive care in women delivered ≤30 minutes or >30 minutes.

DISCUSSION

A caesarean section is a complex multidisciplinary procedure. The American College of Obstetricians and Gynecologist, The Royal College of Obstetricians and Gynecologist, *Pelayanan Obstetri Neonatal Komprehensif* (PONEK) have recommended that caesarean section should be ready to be performed within 30-minutes.[2,8]

This opinion places a great responsibility on the shoulder of clinicians faced with delivering babies in an emergency. It also provides a large body of evidence to be quoted as suggesting negligent care should a baby be born in suboptimal condition when there has been a delay of more than 30 minu-tes.[11-15]

Many tasks are needed to perform an emergency caesarean section. The procedur needs at least seven professionals-an anaesthetist and a skilled assistant, an obstetricians and an assistant, a theatre nurse to assist with the operation, a midwife and a paediatrician to take the baby. The staff have to be assembled before the necessary complex tasks can be undertaken.[10]

Our results shows that the 30-minutes deadline is difficult to achieve in current practice. Indeed, in many emergency and urgent cases, the decision-to-incision interval exceeds 30 minutes. These results are similar to those observed in previous study. Schauberger et al reported that 37.3% emergency caesarean sections were started more than 30 minutes after the decision was taken. MacKenzie et al reported that less than 50% of the infants were delivered within 30 minutes interval. In a study by Quinn et al, more than one third of deliveries were performed over 30 minutes.[14-16]

Our study highlights the importance of reducing the decision-to-incision interval. Tuffnel et al stated that approximately 15% of caesarean section in which the decision-to-incision interval exceed 50 minutes can be explained by delays in getting the women into the operating room. Hillemanns et al described a mean interval of decision-to-delivery of 12 minutes, but in this study caesarean sections were done in the labor room itself.[6,17-20]

Several study have shown than delays are longer in cases of spinal or epidural analgesia. Tufnell et al showed that most (40%) caesarean section that exceeded 50 minutes are related to anaesthetic problems. The obstetrician should be able to communicate the degree of urgency of the caesarean section to the anaesthetist.[7,17]

Our results show that one and five minutes Apgar scores were significantly worse in group of emergency caesarean section achieved within 30-minutes than in those that took longer, confirming previous findings. This does not means the decision-to-incision should not be reduced, we believe that the subgroup of deliveries occurring in less than thirty minutes corresponds to the most compromised babies and therefore shows worse neonatal outcome. Yet, this raises the question of whether a decision-to-incision interval of 30 minutes is appropriate. We suggest that the decision-to-incision interval should be adjusted according to the type of caesarean section.

This study stresses that the obstetrician, the anaesthetist, the paediatrician and the midwife should work together using the same protocols, with the aim of improving communication and saving time. Every effort should be made to reduce the decision-to-incision interval. Emergency caesarean sections exercises and audits to evaluate this interval should be promoted.

REFERENCES

1. Boehm FH. Decision to incision: time to reconsider. Am J Obstet Gynecol. 2012; 97-8
2. Wiknjosastro G. Paket pelatihan pelayanan obstetri dan neonatal emergensi komprehensif (PONEK): Asuhan obstetri esensial. Jakarta: JNPKKR; 2008
3. Schauberger CW, Chauhan SP. Emergency caesarean section and the 30-minutes rule: definions. Am J Perinatol. 2009; 26: 221-6
4. Nageotte MP, Vander Wal B. Achievement of the 30-minutes standard in obstetrics-can it be done? Am J Obstet Gynecol. 2012; 104-7
5. Kayani SI, Walkinshaw SA, Preston C. Pregnancy outcome in severe placental abruption. BJOG. 2003; 110: 679-83
6. Hillemanns P, Hasbargen U, Strauss A, Schulze A, Hepp H. Maternal and neonatal morbidity of emergency caesarean sections with a decision-to-delivery interval under 30 minutes: evidence from 10 years. Arch Gynecol Obstet. 2003; 268: 136-141
7. Tufnell DJ, Wilkinson K, Beresford N. Interval between decision and delivery caesarean section-are current standard achievable? Observational case series. BMJ. 2001; 322: 1330-3
8. National Collaborating centre for Women's and Children's Health. Clinical guideline: caesarean section. 2004
9. Lurie S, Glezerman M. The history of caesarean technique. Am J Obstet Gynecol. 2003; 189: 1803-6
10. Amankwah Y, Walker M. A prospective study of the efficiency of the "code 333" process at the Ottawa hospital. JOGC. 2011

11. Tan WC, Tan LK, Tan HK. Audit of "crash" emergency caesarean section due to cord prolapsed in terms of response time and perinatal outcome. Ann Acad Med Singapore. 2003; 32: 638-41
12. Spencer MK, MacLennan AH. How long does it take to deliver a baby by emergency caesarean section? Aust N Z J Obstet Gynaecol. 2001; 41: 7-11
13. Afolibi BB, Lesi F, Merah N. Regional vs general anaesthesia for caesarean section (review). The Cochrane collaboration. Cohrane library. Wiley publisher. 2007; Issue 4
14. Sayegh I, Dupuis O, Clement HJ, Rudigoz RC. Evaluating the decision-to-delivery interval in emergency caesarean sections. Eur J Obstet Gynecol Reprod Biol. 2004; 116: 28-33
15. Schauberger CW, Rooney BL, Beguin EA, Schaper AM, Spindler J. Evaluating the 30 minutes interval in emergency caesarean sections. J Am Coll Surg. 1994; 179: 151-5
16. Nielsen PE, Goldman MB, Mann N, Shapiro DE, Marcus RG, Pratt SD. Effects of team work training on adverse outcomes and process of care in labor and delivery: a randomized controlled trial. Obstet Gynecol. 2007; 109: 48-55
17. Mooney SE, Ogrinc G, Steadman W. Improving emergency caesarean delivery response times at a rural community hospital. Qual Saf Health Care. 2007; 16: 60-66
18. Chauhan SP, Roach H, Naef RW, Magann EF, Morrison JC, Martin JN. Caesarean section for suspected fetal distress. Does the decision-incision time make a difference? J Reprod Med. 1997; 42; 347-52
19. Bloom SL, Leveno KJ, Spong CY, Gilbert S, Hauth JC, Landon MB. Decision-to-incision times and maternal and infant outcomes. Obstet Gynecol. 2006; 108: 6-11