ORIGINAL ARTICLE:

Classifying cesarean section using Robson Classification: An Indonesian tertiary hospital survey

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ABSTRACT

Objectives: Cesarean delivery rates have increased remarkably and cause a major public health concern. This study aims to evaluate the feasibility of using the Robson Ten Group Classification System (TGCS) for cesarean delivery (CD) indications at institutional level.
Materials and Methods: Database of all women delivering at Cipto Mangunkusumo Hospital, Jakarta, Indonesia were analayzed. The CD rates overall and in each Robson group were calculated, as was the contribution of each group to the overall CD rate. In addition, the CD indications in each group were analyzed.
Results: Approximately almost half (48.04%) of women delivered by CS in our study. Groups 10 was the largest groups representing 27.82% of the obstetric population. The second and third largest were group 3 and 1, which represents 18.00% and 17.34%, respectively. The highest relatively contribution of CS rate were group 10, 1, and 3 with the percentage of 28.24%, 17.59%, and 15.19%; contributively.
Conclusion: The TGCS can be applied at institutional level. It helps in planning strategies for specific subgroups of women to reduce CS rate and improve outcomes.

Keywords: Robson Ten Group Classification System; cesarean delivery

ABSTRAK

Tujuan: Angka kelahiran sesar telah meningkat sangat dan menyebabkan masalah kesehatan masyarakat yang utama. Penelitian ini bertujuan untuk mengevaluasi kelayakan menggunakan Sistem Klasifikasi Kelompok Robson Sepuluh (TGCS) untuk indikasi sesar (CD) indikasi di tingkat kelembagaan.
Bahan dan Metode: Basis data semua wanita yang melahirkan di Rumah Sakit Cipto Mangunkusumo, Jakarta, Indonesia dianalisis. Tingkat CD keseluruhan dan di masing-masing kelompok Robson dihitung, seperti kontribusi masing-masing kelompok terhadap tingkat CD keseluruhan. Selain itu, indikasi CD di setiap kelompok dianalisis.
Hasil: Sekitar setengah (48,04%) wanita dilahirkan oleh CS dalam penelitian kami. Kelompok 10 adalah kelompok terbesar yang mewakili 27,82% dari populasi kebidanan. Yang kedua dan ketiga terbesar adalah kelompok 3 dan 1, yang masing-masing mewakili 18,00% dan 17,34%. Kontribusi tingkat CS relatif tertinggi adalah kelompok 10, 1, dan 3 dengan persentase 28,24%, 17,59%, dan 15,19%; secara kontribusi.
Kesimpulan: TGCS dapat diterapkan di tingkat institusi. Ini membantu dalam merencanakan strategi untuk subkelompok perempuan tertentu untuk mengurangi tingkat CS dan meningkatkan hasil.

Kata kunci: Robson Ten Group Classification System, cesarean delivery

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INTRODUCTION

Cesarean delivery rates have increased remarkably and cause a major public health concern.1-3 Approximately 18.5 million cesarean sections (CSs) are performed yearly worldwide.4 Asia global survey found the overall rate of CS from 9 countries was 27.3%.5 While in Latin America, the rate among 8 developing countries was 35.4%.6 The World Health Organisation (WHO) has suggested a rate around 15% as being appropriate. In 2008, WHO found that Indonesia had 6.8% of CS rate.4 Proportion of cesarean deliveries relative to all births is considered as one of the United Nations' (UN) process indicators of the quality of obstetrics emergency care.7 However, the data in tertiary hospital has never been published before.

Started in Januari 2014, Indonesian government has declared a new universal coverage for healthcare system. Uncontrolled CS rate probably acts as a barrier to universal coverage with necessary health services. 'Excess' CS makes the burden for the hospital itself because the hospital claim of CS is usually lower than the Indonesia Case Based Group (INA-CBG's) payment. Apart from that, it can have negative implications for health equity within the countries.4

The 10-group classification has been proposed for internationally accepted CS classification system.8 It has been introduced in a number of institutions and incorporated into their audit process.9 Therefore, audit, analysis, and comparison of CS rates across different setting could be effectively facilitated.8 Effective medical audit of labor management can reduce cesarean section rates.10 Therefore, this study aims to evaluate the feasibility of using the Robson Ten Group Classification System (TGCS) for cesarean delivery (CD) indications at institutional level.

MATERIALS AND METHODS

This cross-sectional study design was conducted among women delivering in Cipto Mangunkusumo Hospital, as a tertiary referral hospital in Jakarta, Indonesia. We did the total sampling to obtain data from medical records of patient delivering during 2013. Individual informed consent was not sought as data were collected at the institutional level from medical records without identifying the individual women.

All necessary information needed to categorize patient in Robson Classification were collected prior to author's knowledge of the 10-group classification. Patient data regarding parity, previous Cesarean section, preterm

status, presentation, delivery induction, single or multiple status and type of delivery were inserted into Microsoft Excel and processed using formula. Data were processed using SPSS IBM 20.0. We present the percentage of obstetrics population and cesarean section rate from each population in Robson Classfication.

RESULTS AND DISCUSSION

During 2013, there were 2,612 deliveries in our hopsital. Six deliveries were not recorded completely; therefore, they could not be included into our analysis. We analyzed 2,606 data. The characteristics of subjects were shown in table 1. The maternal age was around 20-39 years old and most of them were referred from primary health care (35.64%). Almost all of them did not ever underperform the CS (92.57%) and they came with the cephalic presentation (87.06%).

Table 1. The Characteristics of Subjects in Cipto Mangunkusumo during 2013

Characteristics	N (%)
Maternal age (years old)	
10-19	220 (8.42)
20-29	1,109 (42.46)
30-39	1,075 (41.16)
40-49	157 (6.01)
≥50	6 (0.23)
N/A	2 (0.08)
Referral type	
Primary health care	931 (35.64)
Private hospital	258 (9.88)
Public hospital	319 (12.21)
Private clinic	659 (25.23)
Without reference	282 (10.80)
Others	13 (0.50)
N/A	107 (4.10)
Parity	
Nulliparity	1,166 (44.64)
Primiparity	710 (27.18)
Multiparity	736 (28.18)
History of cesarean section	
Yes	25 (9.57)
No	2,340 (89.59)
Preterm labor	
Yes	963 (36.87)
No	1,627 (62.29)
Number of fetus	
Single	2,418 (92.57)
Multiple	171 (6.55)
N/A	1 (0.04)
Presentation	
Cephalic	2,274 (87.06)
Breech	191 (7.31)
Transverse/ oblique	125 (4.79)
Procedure	
Spontaneous	1,341 (51.34)
Cesarean section	1,248 (47.78)
N/A	1 (0.04)

Table 2. Standard 10-group (Robson) Classification in Cipto Mangunkusumo Hospital during 2013

No	Obstetric Population	Relative size of the group (n, %)	CS rate (n, %)	Absolute contribution to CS rate (%)	Relative contribution to CS rate (%)
1.	Nulliparous with single cephalic pregnancy, ≥37 weeks of gestation in spontaneous labor	452 (17.34)	220 (48.67)	8.44	17.57
2.	Nulliparous with single cephalic pregnancy, ≥37 weeks of gestation who either had labor induced or were delivered by CS before labor	180 (6.91)	51 (28.33)	1.96	4.07
3.	Multiparous without a previous uterine scar, with single cephalic pregnancy, ≥37 weeks of gestation in spontaneous labor	469 (18.00)	190 (40.51)	7.29	15.18
4.	Multiparous without a previous uterine scar, with single cephalic pregnancy, ≥37 weeks of gestation who either had labor induced or were delivered by CS before labor	187 (7.18)	47 (25.13)	1.80	3.75
5.	All multiparous with at least one previous uterine scar, with single cephalic pregnancy, ≥37 weeks of gestation	148 (5.68)	106 (71.62)	4. 07	8.47
6	All nulliparous women with a single breech pregnancy	60 (2.30)	40 (66.67)	1.53	3.19
7	All multiparous women with a single breech pregnancy including women with previous uterine scars	107 (4.11)	48 (44.86)	1.84	3.83
8	All women with multiple pregnancies including women with previous uterine scars	171 (6.56)	108 (63.16)	4.14	8.63
9	All women with a single pregnancy with a transverse or oblique lie, including women with previous uterine scars	100 (3.84)	89 (89. 00)	3.41	7.11
10	All women with a single cephalic pregnancy <37 weeks of gestation, including women with previous scars	725 (27.82)	353 (48.69)	13.55	28.19
	Total	2606 (100)	1252 (48.04)	48.04	100.00

The overall 10-group classification presented in table 2. It described the number of deliveries, the number of CS, and the proportion of deliveries by CS. From each group, the absolute and relative contribution of each group to the overall CS rate could be calculated. Approximately half (48.06%) of women delivered by CS in our study.
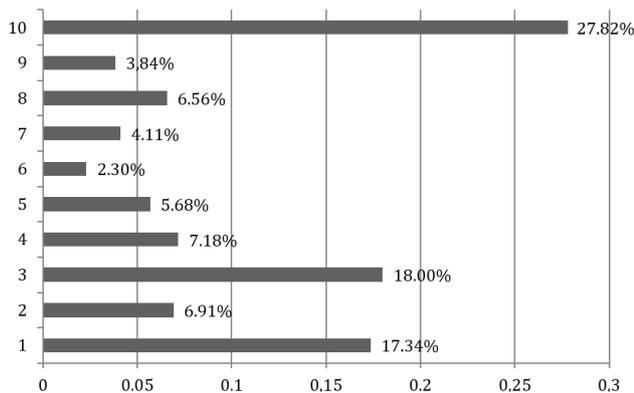
Figure 1. Obstetric Population by Robson Classification

Of the table, group 10 (all women with a single cephalic pregnancy <37 weeks of gestation, including women with previous scars) was the largest group representing 28.19% of the obstetric population. The second and third largest were group 1 and 3, which represented

17.57% and 15.18%; respectively. Figure 2 depicted the CS rate based on Robson classification. The third highest rate of CS in Robson classification were 28.19% (group 10), 17.57% (group 1), and 15.18 % (group 3).
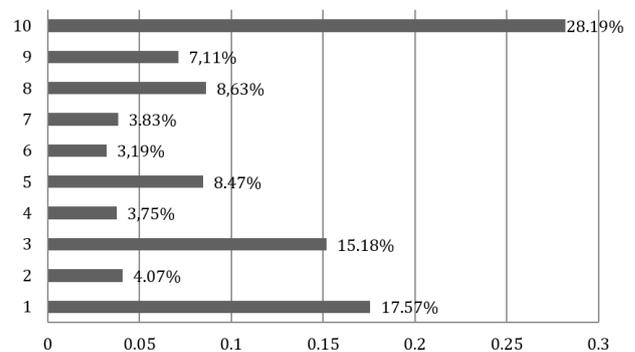
Figure. 2 Cesarean Section by Robson Classification

This study did not include the number of variables associated with higher CS, such as body mass index, birth weight, socioeconomic, and educational level. Apart from that, this study was conducted before implementing the national health coverage in Indonesia so that several indications for CS were categorized as "woman's request" or "due to social factors"; however, this indicator was not recorded in our study. Although this 10-group Robson classification system had been

used widely among countries worldwide, this is the first time used in Indonesia. Our study was conducted in tertiary health center in Indonesia by recruiting more than 2000 cases a year so that it could show the description of CS indication. A systematic review by Maria RT, et al.8 clarified that Robson is conceptually easy, clearly defined categories, mutually exclusive, little chance for misunderstanding or misclassification, and allow prospective identification of categories.

The 10-group classification system for CS was based on our maternal database. Of the data shown above, we could state that almost half of deliveries in Cipto Mangunkusumo were performed by CS. This rate was obviously higher compared with other single institution hospital studies (48.04%). In Assiut Univeristy Hospital, Egypt, the CS rate was 38% in 2011.11 In a Swedish hospital, the CS rate ranging from 13.4-17.4% during 1994-1999.12 SEA-ORCHID study group stated that based on data in 2005, the overall CS rate among South East Asia countries was 27% which was higher than WHO recommendation at 5-15%. It could be higher because most of hospitals audited in this study were the referral centers so that the cases entering these hospitals were the complicated one. Some of the variation in the CS rates among hospitals may be related to differing maternal characteristics.13 According to our study in Robson classification, the highest proportion referring to Cipto Mangunkusumo hospital was on the group 10, namely single cephalic pregnancy with preterm gestational age, including previous scars. It could be stated that the prevalence of preterm deliveries was around 27.82%. Actually, this rate was also higher than the average rate in Indonesia which was around 14.2%.14 Cipto Mangunkusumo hospital was the highest referral center in Jakarta also Indonesia; thus, all complicated cases were referred here causing the higher rate of preterm deliveries.

The second and third highest cases entering our hospital was group 3 (18.00%), namely multiparous without uterine scar in term of gestation with single cephalic pregnancy and group 1 (17.34%) including single cephalic pregnancy in nulliparous with term of gestation on going spontaneous labor. It makes sense that those groups are usually the two largest groups in most obstetric pregnancy. Actually, group 1 should be under responsible of midwifes or primary health center and group 3 can often deliver without needing any significant obstetric intervention.15 However, a lot of cases from these two groups came to the tertiary health center which indicated that the referral system in Indonesia did not worked properly. Study in Latin America showed that group 1 and 3 were the largest groups representing the obstetric population and they

said that group 3 had very low risk to do the CS as obstetric indication in general. Therefore, the rising of CS rate in this group indicated that CS has been done without medical reason or women are in wrong classification regarding to the history. Meanwhile, for group 1, women are less likely to have medical indication for CS, except dystocia or fetal distress. This group can be an indicator of the CS rate in same women in the future pregnancy. In their study, they described 23.2% of CS in group 1.6 It was contrast markedly with our study (48.67% of cases in group 1) as the sixth highest of CS rate among groups. Apart from that, group 1 and 3 contributed as the second and third highest (17.57% and 15.18%) relatively to CS rate among 10-group Robson classification system. Even, the CS rate among group 1 was only 6.7% in the National Maternity Hospital in Dublin in 200616 and 14.8% in New Jersey in 2004.17

Actually, in Indonesia, the commonest indication for CS was malpresentation, followed by previous CS and cephalopelvic disproportion.13 It was in appropriate to our study whereas the group 9, a single pregnancy with a transverse or oblique lie, had the highest overall contribution to CS rate (89. 00%) and also group 6 (a single breech pregnancy) as the third highest contribution to CS rate (66.67%). Due to size of population, it was not shown high in relative contribution to CS rate.

Group 5, women with a previous CS and a single fetus in normal cephalic pregnancy at term, became one of the most concern contributing to overall CS rate. In our study, it made the second highest CS rate (71.62%), very different from Latin America population as the highest contribution in CS rate (27%). Actually, reducing CS in this group is quite difficult because the history of CS increases the likelihood of CS in the next pregnancy although the success rate of Trial of Labor after CS (TOLAC) ranges between 50% and 85%.18 Therefore, we should suggest delivering vaginally for the first pregnancy.

Through this classification, we can do the effective medical audit based on medical records so that we can map out the plan to lower the CS rate in Indonesia. We would recommend to hold the future study in all tertiary hospitals in Indonesia to get the database and plan of action to lower the CS rate.

CONCLUSION

The TGCS can be applied at institutional level. It helps in planning strategies for specific subgroups of women

to reduce CS rate and improve outcomes.

CONFLICT OF INTEREST

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