

A Retrospective Chart Review Study Title of Project: Analysis of Caesarean Sections Using Robson 10-Group Classification System at the Georgetown Public Hospital Corporation, Georgetown, Guyana, South America

Ademola Biala¹, Geremias Rangel², Letitia Samuel³, Dr. Latoya Young⁴,
Celeste Semple⁵

^{1,2}Senior Registrar, Obstetrics and Gynecology Department, Georgetown Public Hospital Corporation, Georgetown, Guyana

^{3,4}Medical Registrar, Obstetrics and Gynecology Department, Georgetown Public Hospital Corporation, Georgetown, Guyana

⁵Final Year Resident, Department of Obstetrics and Gynecology Residency Program, Georgetown Public Hospital Corporation, Georgetown, Guyana

Corresponding Author: Ademola Biala

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ABSTRACT

Background: The WHO recommends a cesarean delivery rate (CDR) of less than 15%. The CDR at GPHC increased from 17.8% in 2010 to a peak of 26.1% in 2019, nearly twice the WHO recommendation. The purpose of this study is to analyze trends of and the CDR using Robson 10-group classification system (R-TGCS) at a tertiary facility in Guyana (Georgetown Public Hospital Corporation).

Methods: This study is a facility based, one-year retrospective chart review of patients who had cesarean deliveries (CDs) between January 1st, 2019 and December 31st, 2019. Pertinent information including maternal age, gestational age at delivery, gravidity and parity and indication for CD, were collected. The overall CDR was calculated and information on each patient was used to allot the patients into one of the ten R-TGCS. The dependent variable was Robson classification group.

Results: The total number of CDs for the period was 1641 out of 6277 deliveries above 28 weeks gestational age. Demographically, the most common age range of the cohort was 20-34 years, accounting for 73.8% of the cohort. The mean duration of hospitalization after CD was 3.5 (± 3) days. The mean gestational age at

delivery was 38 (± 2.2) weeks. The most common indications for CD were non reassuring fetal heart tracings (32.2%), previous CD pre-labor (17.9%) and previous CS in labor (9.3%). The most common R-TGCS groups

Conclusion: The study showed that groups 5 (multipara with scarred uterus/previous CD), 1 (nullipara in labor) and 3 (multipara without scarred uterus/previous CD) were the major contributors to the overall CDR, with group 5 alone contributing one-quarter to the CDR.

Keywords: Robson's Ten-Group Classification, Cesarean delivery.

BACKGROUND & OBJECTIVES

Cesarean section (CS), also known as Cesarean Delivery (CD), is the most common surgical obstetric intervention worldwide, with approximately 22.9 million CDs performed worldwide every year.^{1,5} The cesarean delivery rate (CDR/CSR) has been increasing. Globally, the CDR increased from 12.1% in 2000 to 31.7% in 2019.^{1,5} Specifically in Latin America and the Caribbean, the CDR increased from 32.3% to 44.3% between 2000 and 2015.⁵

Locally, at the only Tier 5 hospital in Guyana (Georgetown Public Hospital Cooperation/GPHC), the CDR (in percentage) from 2010-2019 were 17.8, 21.3, 14.4, 13.8, 15.7, 18.3, 24.5, 23, 20.4 and 26.1 respectively, with 2019 being the peak year.

Determining the acceptable CDR for a given population is a herculean task for several reasons, for example varying obstetric indications, availability of surgical expertise, cultural beliefs and financial burden to provide the service or take advantage of the service, if available. The WHO guidelines and US Health initiative 2000 advised that the CDRs should not exceed 15 %.⁶ Tackling global differences in CDRs has given rise to discussions on standardization and classification of CD indications, with a view to determining trends and where possible, proffer possible solutions or interventions to mitigate against escalating CDRs.

In 2001, an obstetrician by the name Dr Michael Robson, introduced Robson Ten Group Classification System (R-TGCS) to analyze, classify and allow more accurate comparison of CDRs between different settings ([APPENDIX A](#)). "The system classifies all women into one of 10 categories that are mutually exclusive and, as a set, totally comprehensive. The categories are based on 5 basic obstetric characteristics that are routinely collected in all maternities (parity, number of fetuses, previous caesarean section, onset of labour, gestational age, and fetal presentation)."

The R-TGCS helps to identify group(s) of obstetric indications with high CDRs, thus providing data for long term tracking and international comparison of this increase in CD trend¹¹. In 2014, the World Health Organization (WHO) endorsed the use of the Robson classification as the global standard for assessing, monitoring and comparing CDRs within and between health care facilities¹¹⁻¹².

According to the WHO, the use of the Robson classification will aid in standardization of CD by indications and

assessment of the strategies aimed to decrease CDRs, with a view to improving clinical practices and quality of care in various health care facilities².

METHODOLOGY

The study is a facility based, one-year retrospective chart review of patients who had CDs for the year January 1st, 2019 – December 31st, 2019. Data was collected from the medical charts of all women who had delivered after 28 weeks gestation (the age of fetal viability in Guyana), regardless of the mode of delivery, within the above-mentioned time period at the GPHC. Pertinent information including maternal age, gestational age at delivery, gravidity, parity and indication for CD, were collected and recorded in SPSS spreadsheets. The overall CDR was calculated as the total number of c-sections divided by all live births.

Information on each patient was used to allot the patients into one of the ten R-TGCS. A locked computer was used to store all information to protect patient privacy. In addition, all information about each patient was encoded and password protected. This study was approved by the Institutional Review Board (IRB) of the Ministry of Public Health of Guyana and by the research committee at the GPHC.

RESULTS

The total number of deliveries (above 28 weeks' gestation) at the GPHC during the study period was 6277. The total number of CDs was 1641 and the total number of vaginal deliveries (VDs) was 4636. The overall CDR in this study period was 26.1%.

The most common age range of the cohort was (20-34), accounting for 73.8% (n=1211). The mean gestational age at CD was 38 (± 2.2) weeks. The mean duration of hospitalization after CD was 3.5 (± 3) days.

Indications for CD in GPHC (Table 2) include maternal indications (previous uterine rupture, failed induction of labor, previous CD, hypertensive disorders of

pregnancy, obstructed labor); fetal indications (multifetal gestation, cord prolapse, non-reassuring fetal heart tracing, malpresentation, suspected fetal macrosomia) and non-obstetric indications (maternal request, vaginal condylomata). The most common indications were non reassuring fetal heart tracings (32.2%), previous CS pre-labor (17.9%) and previous CS in labor (9.3%). As a result, patients

with previous CDs combined to account for 27.3% of CDs for the study period. Patients that had first (primary) CD account for 55% (n=903) of the cohort for the study period. Fetal malpresentation (non-cephalic- groups 6, 7 and 9 combined) accounted for 6.7 % of all CDs, while singleton, cephalic, preterm deliveries (group 10) accounted for 12.3% of all the CDs.

Type of cesarean section	Frequency	Percent
Elective	445	27.1
Emergency	1196	72.9
Total	1641	100

Indications	frequency	Percent	Cumulative Percent
	1	.1	.1
OBSTRUCTED LABOUR	41	2.5	2.6
FAILED IOL	42	2.6	5.1
MULTIFETAL GESTATION	49	3.0	8.1
NON OBSTERIC CAUSE (Maternal request, vaginal condylomata)	31	1.9	10.0
CORD PROLAPSE	7	.4	10.4
RETROVIRAL DISEASE	35	2.1	12.6
CARDIAC DISEASE	5	.3	12.9
ANTEPARTUM HEMORRHAGE	36	2.2	15.1
MALPRESENTATION	122	7.4	22.5
UTERINE RUPTURE	9	.5	23.0
NON REASSURING FETAL STATUS	693	42.2	65.3
PREVIOUS CS	293	17.9	83.1
SUSPECTED FETAL MACROMIA	73	4.4	87.6
PREV CS IN LABOUR	152	9.3	96.8
HYPERTENSIVE DISORDERS	52	3.2	100.0
Total	1641	100.0	

Each of Robson's 10 groups were represented in this population. The burden of CDs at GPHC weighed heavily on indications from Robson's Group 5 accounting for 25.4% (n=417), followed by

Group 1- 18.2% (n=298) and group 3- 16.1% (n=274). The groups that were the least contributors to the CDR were groups 6 and 7, accounting for 3% (n=50) and 2.7% (n=44) respectively (Table 3).

	Robson Classification	Frequency	Percent
1	Nulliparous, singleton, cephalic, ≥ 37 weeks' gestation, in spontaneous labour	298	18.2
2	Nulliparous, singleton, cephalic, ≥ 37 weeks' gestation, induced labour or caesarean section before labour	142	8.7
3	Multiparous (excluding previous caesarean section), singleton, cephalic, ≥ 37 weeks' gestation, in spontaneous labour	274	16.7
4	Multip women w/o a previous uterine scar with singleton cephalic pregnancy ≥ 37 weeks GA induced or CS before labour	139	8.5
5	Previous caesarean section, singleton, cephalic, ≥ 37 weeks' gestation	417	25.4
6	All nulliparous with a single breech	50	3.0
7	All multiparous with a single breech (including previous caesarean section)	44	2.7
8	All multiple pregnancies (including previous caesarean section)	58	3.5
9	All women with a single pregnancy in transverse or oblique lie (including those with previous caesarean section)	17	1.0
10	All singleton, cephalic, < 37 weeks' gestation pregnancies (including previous caesarean section)	202	12.3
	Total	1641	100

INTERPRETATION & CONCLUSION

In 2019, the CDR at GPHC was 26.1%, which is close to twice the 15% WHO recommendation.

The study showed that groups 5 (multipara with scarred uterus/previous CD), 1 (nullipara in labor) and 3 (multipara without scarred uterus/previous CD) were the major contributors to the overall CSR, with group 5 alone contributing one-quarter to the CDR. Extrapolating from this data subset, there is >25% probability of a CD resulting in another CD at the GPHC, with 27.3% CDR for patients attended to, in labor or otherwise, with 1 or more previous CDs. This amplifies the importance of preventing a primary CD (where possible), to reduce unavoidable fractions of future/repeat CDs. The study also showed that one-third (42.2%) of the CDs were performed for non-reassuring fetal heart status.

Strength of study

Strengths of this study include its originality, as it is the first to characterize CD by the Robson classification in GPHC. This single facility study can be replicated in other facilities/regions/jurisdictions with a view to strengthening, expanding and standardizing reproductive health care policies and provisions in Guyana.

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Conflict of Interest: None

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APPENDIX A

Robson' 10-Group Classification

1. Nulliparous, singleton, cephalic, ≥ 37 weeks' gestation, in spontaneous labour.
2. Nulliparous, singleton, cephalic, ≥ 37 weeks' gestation, induced labour or caesarean section before labour.
3. Multiparous (excluding previous caesarean section), singleton, cephalic, ≥ 37 weeks' gestation, in spontaneous labour.
4. Multiparous without a previous uterine scar, with singleton, cephalic pregnancy, ≥ 37 weeks' gestation, induced or caesarean section before labour.
5. Previous caesarean section, singleton, cephalic, ≥ 37 weeks' gestation.
6. All nulliparous with a single breech.
7. All multiparous with a single breech (including previous caesarean section).
8. All multiple pregnancies (including previous caesarean section).
9. All women with a single pregnancy in transverse or oblique lie (including those with previous caesarean section).
10. All singleton, cephalic, < 37 weeks' gestation pregnancies (including previous caesarean section)
