



ANALYSIS OF CESAREAN SECTION BY MODIFIED ROBSON'S CRITERIA AT A TERTIARY CARE CENTRE (A RETRO PROSPECTIVE OBSERVATIONAL STUDY)

Obstetrics & Gynaecology

Namrata Tiwari	Assistant Professor, Department of Obstetrics and Gynaecology, Seth GS and KEM Medical College, Mumbai, Maharashtra, India
Ishwari Deshpande	Senior Resident, Department of Obstetrics and Gynaecology, Seth GS and KEM Medical College, Mumbai, Maharashtra, India
Pratyasha Bijaya Swain*	Senior Resident, Department of Obstetrics and Gynaecology, Seth GS and KEM Medical College, Mumbai, Maharashtra, India *Corresponding Author

ABSTRACT

Background: This retrospective study was aimed to assess the relative contribution of each of the ten groups of Modified Robson's classification to overall 3292 cesarean section cases at a tertiary healthcare center. **Methods:** A retrospective hospital-based study was planned for 3292 mothers who underwent a cesarean section in the year 2022 at a tertiary care center in Mumbai, India, and classified according to modified Robson's criteria and the contribution of each category was determined. **Results:** The incidence rate of the cesarean section in the current study was found to be 52.87%. The incidence of a cesarean section after induced labor was 34.11% and cesarean section before labor was 7.02%. Nulliparity and induced labor were the factors associated with the incidence of cesarean section in the current study. **Conclusion:** Robson's Ten Group Classification System (TGCS) is a valuable tool for monitoring and auditing hospital cesarean sections. It was found to be feasible and a useful tool for identifying the obstetric groups of women contributing to increased cesarean section rates, even in low-resource settings. On the other hand, Robson's classification does not include any information regarding indications for CS or pre-existing high-risk factors in the mother or the fetus, all of which may influence CS rates.

KEYWORDS

Caesarean Section, Robsons, Lower segment cesarean section, Robson's Ten Group Classification System

INTRODUCTION

In 1985, the World Health Organization (WHO) stated: "There is no justification for any region to have a cesarean section (CS) rate higher than 10–15%." Cesarean section rates continue to increase worldwide, particularly in middle and high-income countries and have become a major and controversial public health concern.^[1]

In 2011, a systematic review and critical appraisal of available classifications for CS concluded that women-based classifications in general, and Robson's 10-group classification, in particular, would be in the best position to fulfill current international and local needs.^[1]

The review recommended that efforts to develop an internationally applicable classification should be most appropriately focused on building upon this classification. Robson proposes a system that classifies women into 10 groups based on their obstetric characteristics (parity, previous CS, gestational age, onset of labor, fetal presentation, and number of fetuses) without needing the indication for CS. Since this system can be applied prospectively and its categories are totally inclusive and mutually exclusive, every woman who is admitted for delivery can be immediately classified based on these few basic characteristics, which are usually routinely collected by obstetric care providers worldwide. If used continuously, some studies suggest that this classification system can provide a critical assessment of care at delivery and be used to change practice.^[2]

This retrospective study was done to assess the relative contribution of each of the ten groups of Modified Robson's classification to overall 3292 cesarean section cases at a tertiary healthcare center.

METHODS

This retrospective observational study was conducted in the Department of Obstetrics and Gynaecology at a tertiary care hospital in Mumbai, India over 18 months. The total number of deliveries in the year 2022 in the hospital was 6226 out of which 3292 were cesarean sections and hence the sample size was calculated. Incomplete record forms or case papers with inadequate details were excluded from the study.

Procedure

The study was commenced after obtaining approval from the Institutional Ethics Committee and due permission from the concerned head of the Department of Obstetrics and Gynaecology. All patients who were delivered from Jan 2022 to Dec 2022 by cesarean section were included. The data was collected from the hospital records of

patients who underwent cesarean section. Consent was taken from the patients who were followed up prospectively to observe outcomes and retrospective data was collected from hospital records. Relevant Obstetric data including demographic details were collected and women were classified according to the system. Data was collected on the case record forms which included information on parity, mode of previous deliveries, previous CS, gestational age, the onset of labour, and spontaneous or induced labor. For each group, the contribution to overall cesarean section and primary cesarean section rates were calculated and analyzed. All the data was entered and analyzed in the Microsoft excel sheet.

Modified Robson's Ten-group Classification System-

- 1: Nullipara, singleton, cephalic, ≥ 37 weeks, spontaneous labour
- 2A: Nullipara, singleton, cephalic, ≥ 37 weeks- Induced labour
- 2B: Nullipara, singleton, cephalic, ≥ 37 weeks- Delivered by cesarean section before labour
- 3: Multipara without previous uterine scar with single cephalic ≥ 37 weeks in spontaneous labour
- 4A: Multipara without previous uterine scar with single cephalic ≥ 37 weeks-Induced
- 4B: Multipara without previous uterine scar with single cephalic ≥ 37 weeks-caesarean section before labour
- 5A: All multipara with one previous uterine scar and single cephalic pregnancy ≥ 37 weeks- Spontaneous labour
- 5B: All multipara with one previous uterine scar and single cephalic pregnancy ≥ 37 weeks- Induced
- 5C: All multipara with one previous uterine scar and single cephalic pregnancy ≥ 37 weeks- Caesarean section before labour
- 6A: All nullipara with singleton, breech pregnancy- Spontaneous labour
- 6B: All nullipara with singleton, breech pregnancy- Induced labour
- 6C: All nullipara with singleton, breech pregnancy- Caesarean section before labour
- 7A: Multipara, singleton, breech pregnancy including women including previous caesarean section- Spontaneous labour
- 7B: Multipara, singleton, breech pregnancy including women including previous caesarean section-Induced labour
- 7C: Multipara, singleton, breech pregnancy including women including previous caesarean section-Caesarean section before labour
- 8A: Multiple pregnancy including women-Spontaneous labour
- 8B: Multiple pregnancy -Induced labour
- 8C: Multiple pregnancy -Caesarean section before labour
- 9A: Women with singleton pregnancy with abnormal lie including women with previous caesarean section- Spontaneous labour

- 9B: Women with singleton pregnancy with abnormal lie including women with previous caesarean section- Induced labour
- 9C: Women with singleton pregnancy with abnormal lie including women with previous caesarean section- Caesarean section before labour
- 10A: Women with single cephalic pregnancy ≤ 36 weeks gestation including previous caesarean section Spontaneous labour
- 10B: Women with single cephalic pregnancy ≤ 36 weeks gestation including previous caesarean section- Induced labour
- 10C: Women with single cephalic pregnancy ≤ 36 weeks gestation including previous caesarean section- Caesarean section before labour

RESULTS

In this study, we observed that 2A was the commonest type (27.64%), followed by 5A (22.396%), type 1 (15.22%), and type 3 (6.53%). The distribution of other types is shown in the following table.

Table 1: Overall proportion of Robson types

MODIFIED ROBSONS CRITERIA	Number	Percentage
2A	911	27.64
5A	737	22.39
1	501	15.22
3	215	6.53
10A	162	4.92
4A	143	4.28
5C	140	4.25
6A	119	3.61
8A	102	3.10
7A	73	2.22
10B	62	1.88
2B	43	1.31
9A	25	0.76
4B	14	0.43
7C	14	0.43
5B	12	0.36
10C	10	0.30
6C	6	0.18
9C	2	0.06
8C	1	0.03

We observed that the majority of the subjects were gravida 1 (46.87%), followed by 29.92% were gravida 2, and 16.52% were gravida 3.

Table 2: Gravida and Parity Status

GRAVIDA STATUS	Number	Percentage
Gravida 1	1543	46.87
Gravida 2	985	29.92
Gravida 3	544	16.52
Gravida 4	145	4.40
Gravida 5	57	1.73
Gravida 6	12	0.36
Gravida 7	4	0.12
Gravida 8	2	0.06
Total	3292	100

DISCUSSION

The total number of confinements during the year 2022 in our study is 6226 out of which 3292 were caesarean sections. So, the **incidence rate** of the cesarean section was found to be 52.87% in the current study.

Our hospital is the tertiary referral care center for high-risk conditions in pregnancy in a metropolitan city, which explains the high cesarean section rate. Higher rates of cesarean section reflect the center-based section rate and not the population section rate.

A study conducted by **Heera Shenoy et al**^[3] in a teaching institute in India on analysis of cesarean section using Robson Ten classification found 378 (57.70%) caesarean section deliveries amongst 655 deliveries. Robson Group 2 was the largest followed by Robson Group 1.

Prameela et al^[4] in their retrospective study done between January 1, 2014, and December 31, 2014, collected data that was compared with the previous year's data. This data was then applied to Robson's TGCS for the year 2014 and compared with that of 2013. The number of cesarean sections in 2014 was 3,793 and in 2013 it was 3,917. The cesarean section rate in 2014 was 29.33% while in 2013 it was 25.8%. The cesarean section rate has come down to half in group 1 and to one-fourth in group 3 in 2014.

In this study, we assessed the Gravida status of the study subjects. We observed that a majority of the subjects were gravida 1 (46.87%), followed by 65 29.92% were gravida 2, and 16.52% were gravida 3.

A study conducted by **Rajshree Katke et al**^[5] on cesarean section audit in a tertiary care center from 2013 to 2014 found that among 1884 deliveries, 657 (35.62%) were primigravida.

Sah S et al^[6] in their study observed that a maximum number of women delivering were gravida 2-4 (50.6%) followed by nullipara (45.4%).

Parveen R et al^[7] in their study observed that 117 (70.7%) were multigravida.

CONCLUSION

In our present study, the rate of cesarean section in the current study was found to be 52.87%. To conclude – The Modified Robson's criteria were found to be a feasible and useful tool for identifying the obstetric groups of women contributing to increased cesarean section rates.

The main advantages of Modified Robson's classification are its simplicity, robustness, reproducibility, and flexibility. It is clinically relevant and suitable even for low-resource settings, and it helps to achieve meaningful and relevant comparisons of cesarean section rates.

Reducing primary cesarean section by induction of labor in indicated cases, partograph monitoring of labor, and application of VBAC (Vaginal birth after cesarean section) to reduce repeat cesarean section is necessary to decrease morbidity and mortality related to cesarean section.

TGCS aids in the development of consistent policies and strategies aimed at specific subgroups of women to optimize the cesarean section rate.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee at Seth GS and KEM Medical College, Mumbai.

REFERENCES

1. World Health Organization Human Reproduction Programme, 10 April 2015. (2015). WHO Statement on caesarean section rates: World Health Organization Human Reproduction Programme, 10 April 2015. *Reproductive Health Matters*, 23(45), 149–150. <https://doi.org/10.1016/j.rhm.2015.07.007>
2. Robson, M., Hartigan, L., & Murphy, M. (2013). Methods of achieving and maintaining an appropriate caesarean section rate. *Best Practice & Research. Clinical Obstetrics & Gynaecology*, 27(2), 297–308. <https://doi.org/10.1016/j.bpobgyn.2012.09.004>
3. Hs, T., & Shenoy, S. T. (2019). Analysis of caesarean delivery using Robson ten group classification system at a tertiary care teaching institute in Kerala, India. *Int J Reprod Contraception*, 8. <https://doi.org/10.18203/2320-1770.ijrcog20191956>
4. Prameela, R. C., Farha, A., Bhanumathi, P. M., & Prajwal, S. (2015). Analysis of caesarean section rate in a tertiary hospital according to Robson's ten group classification system. *IOSR J Dent Med Sci*, 14(2), 46–49.
5. Katke, R., Zarariya, A., & Desai, P. (2014). LSCS audit in a tertiary care center in Mumbai: to study indications and risk factors in LSCS and its effect on early perinatal morbidity and mortality rate. *Int J Reprod Contraception*, 3. <https://doi.org/10.5455/2320-1770.ijrcog20141217>
6. Sah, S., & Goel, G. (2018). Fetal Analysis of caesarean section rate according to Robson's criteria in tertiary care centre. *Int J Reprod Contracept Obstet*, 7, 3060–3064.
7. Parveen, R., Khakwani, M., Naz, A., & Bhatti, R. (2021). Analysis of Cesarean Sections using Robson's Ten Group Classification System. *Pakistan Journal of Medical Sciences Quarterly*, 37(2). <https://doi.org/10.12669/pjms.37.2.3823>