

A Study and Analysis of Cesarean Sections by Robson's Ten Group Classification System

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ABSTRACT

Background: The hitherto rising rate of cesarean sections is affecting women's obstetric careers by its inherent operative complications and on the other hand, the fetal complications arising from morbid trials of labor has its own medicolegal repercussions. In this scenario, Robson's Ten Group Classification System (TGCS) provides a comprehensive and conclusive system for classifying indications of cesarean sections and helps to curb down rates of cesarean sections.

Methodology: The present study was conducted by retrospective data collection in a tertiary care center from January 2019 to December 2019. The study center is a major teaching hospital in Mumbai, which is also a referral center for all peripheral hospitals as well.

Result: The rate of cesarean sections in our institute is 44.24%. The rate of cesarean sections (CS) is undoubtedly high. This is attributable to high-risk women coming into labor, and the condition in which these women come warrants the doctor to proceed for CS directly for maternal and fetal salvage.

Conclusion: The major focus to bring down CS rates should be to reduce primary CS rates by encouraging good and ethical trials of labor. Encouraging instrumental vaginal delivery, whenever not contraindicated, also will bring down CS rates.

Clinical significance: This study helps us understand the lost art of vaginal delivery and rising rates of poorly indicated cesarean sections and the type of indications for which cesarean sections are performed. It helps us introspect and improvise our clinical judgment on this topic.

Keywords: Cesarean section, Instrumental delivery, Robson's criteria, Trial of labor.

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INTRODUCTION

The cesarean section rate has been increasing in the last few years all over the world. The rate was around 5% in the early 1940s and remained stationary for about 10–15 years. It increased to 10–15% in the early 1970s and remained so for the next 10–15 years. However, recently, the rate has dramatically gone high up to 30–40%.¹

High cesarean birth rates are an issue of international public health concern.¹ Worries over such increases have led the World Health Organization to advise that cesarean section (CS) rates should not be more than 15%,² with some evidence that CS rates above 15% are not associated with additional reduction in maternal and neonatal mortality and morbidity.³

This is worrisome from the obstetric point of view, since it gives a scar on the uterus, thus making the next pregnancy potentially high risk and also its inherent complications. Also, this predisposes the women to dreadful complications like morbidly adherent placenta and rupture of uterus in subsequent pregnancies, provided proper antenatal care has not been offered.

Dr. Michael Robson from Ireland has devised a classification system for classifying indications of cesarean sections. This was later modified for use by the Canadian Society of Obstetrics and Gynaecology for their use. The modification of systems included women having CS after spontaneous onset of labor, after induction of labor, and before labor.

The ten group Robson classification has been praised for its simplicity, robustness, reproducibility, and flexibility and has been recommended for both the monitoring rates over time as well as between facilities by both WHO and FIGO in 2016. The objectives of this study were to classify our population into the 10 Robson's groups, to identify which among these groups has

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the highest cesarean section rates, and to formulate plans for reducing these rates.

The challenge is to keep CS rates low while maintaining safe outcomes for the mother and infant. This requires continuous auditing of CS. Three different classifications – based on primary clinical indications, the degree of urgency or absolute need for cesarean delivery, and Robson classification – have been reported as a framework for auditing CS.⁴ A systematic review comparing different classifications concluded that the Robson classification is optimal for monitoring CS and the WHO recommended the Robson classification as a global standard tool for monitoring CS. The Robson classification also called the Ten Group Classification System (TGCS) as seen in Table 1, classifies CS into 10 mutually exclusive and exhaustive groups based on the category of the pregnancy, the previous obstetric record of the woman, the course of labor and delivery, and the gestational age of the pregnancy.

Table 1: Robson's Ten Group Classification System

Group number	Indication for cesarean section
1	Nullipara, singleton cephalic, ≥ 37 weeks, spontaneous labor
2	Nullipara, singleton cephalic, ≥ 37 weeks A: Induced B: Cesarean section before labor
3	Multipara, singleton cephalic, ≥ 37 weeks, spontaneous labor
4	Multipara, singleton cephalic, ≥ 37 weeks A: Induced B: Cesarean section before labor
5	Previous cesarean section, singleton cephalic, ≥ 37 weeks A: Spontaneous labor B: Induced labor C: Cesarean section before labor
6	All nulliparous breeches A: Spontaneous labor B: Induced labor C: Cesarean section before labor
7	All multiparous breeches (including previous cesarean section) A: Spontaneous labor B: Induced labor C: Cesarean section before labor
8	All multiple pregnancies (including previous cesarean section) A: Spontaneous labor B: Induced labor C: Cesarean section before labor
9	All abnormal lies (including previous cesarean section but excluding breech) A: Spontaneous labor B: Induced labor C: Cesarean section before labor
10	All singleton cephalic, ≤ 36 weeks (including previous cesarean section) A: Spontaneous labor B: Induced labor C: Cesarean section before labor

Limitations of Robson's TGCS are as follows:

- This classification does not allow the analysis of cesarean delivery on maternal request (CDMR) and indicated cesarean section for specific conditions (e.g., placenta previa).
- This classification does not account for pre-existing medical, surgical, or fetal disease; indications for and methods used for induction of labor, and degrees of prematurity, all of which may influence the rate of cesarean section.

MATERIALS AND METHODS

This was an observational study conducted at the Department of Obstetrics and Gynecology, at our tertiary care hospital, which is one of the major teaching hospitals in western India and caters to large population and is also a referral center for referring high-risk

Table 2: Rate of cesarean section in various studies globally

Region	Rate of cesarean section
USA	40–42%
UK	32–35%
Australia	35–36%
Iran	40–42%
WHO	15–20%
Our study	44.24%

Table 3: Rate of cesarean section in our study

Type of confinements	Number of confinements
Total confinements	9042
Vaginal deliveries	4910
Cesarean sections	4001
Instrumental deliveries	131
Rate of cesarean section (%)	44.24%

cases from all surrounding regions. The duration of the present study was from January 2021 to December 2021.

Inclusion Criteria

- All registered or unregistered pregnant women in latent or active labor.
- All women who need induction of labor for any obstetric or medical conditions.
- All pregnant women who require direct primary CS, for specific conditions like placenta previa.

Exclusion Criteria

Women coming to the hospital and offered conservative management are excluded from this study.

Data of all women included in this study over the period mentioned above is collected retrospectively and analyzed as per modified Robson's criteria. Waiver of informed consent was obtained from the Institutional Ethics Committee since the study was of retrospective data collection.

OBSERVATIONS AND RESULTS

For the last 30 years, there has been a public concern about increasing CS rates.⁵ The increase has been a global phenomenon, the timing and rate of the increase have differed from one country to another, and marked differences in rates persist.⁶

As seen in Table 2, the CS rate reported in Australia ranges from 35 to 36%.^{7,8} This CS rate is higher than Norway's (13.9%),⁹ similar to Asian countries (37.3%),¹⁰ but lower than that reported in the USA (40–42%).¹¹ Another study from Iran reported an increase from 40 to 42%,¹² while this study gave the rate of 44.24%, which is quite reasonable compared to other reports but still way above the WHO criteria. In comparison with other international studies, the current study results were quite reassuring. Similar results have been documented earlier in the literature.^{13–15}

While analyzing the CS rate, the number of CS performed should be simple to determine, but the indications will be more difficult to standardize. There should be one main indication rather than a list of indications, using an agreed standard hierarchical system. The ten group classification has made possible

Table 4: Rate of cesarean sections in each of Robson's TGCS group in our study

Robson's TGCS group	Number of CS (A)	Number of deliveries (B)	Rate of each group (A/B × 100)	Relative contribution of each group to overall CS rate (A/total confinement × 100)
1	723	1646	43.92	7.99
2	872	1917	45.48	9.64
3	41	923	4.44	0.45
4	86	1084	7.93	0.95
5	1496	1682	88.94	16.54
6	250	269	92.93	2.76
7	116	274	42.33	1.28
8	113	198	57.07	1.24
9	97	120	80.83	1.07
10	207	798	25.93	2.28
Total	4001	9042	–	44.24%

comparisons of CS over time in one unit and between different units in different countries.⁵

The rate of cesarean sections in our institute is 44.24% as seen in Table 3. The rate of CS is undoubtedly high. This is attributable to high-risk women coming into labor, and the condition in which these women come warrants the doctor to proceed for CS directly for maternal and fetal salvage. Many of them are brought in prolonged and obstructed labor. Some cases with impending or actual scar rupture need immediate operative intervention. Also being a tertiary referral center, women brought to this center are those who could not be delivered at peripheral small centers owing to lack of resources and obstetric expertise.

As evident from Table 4, the maximum rate of CS is seen in Robson's group no. 5, which is contributing to a total of 16.54% out of 44.2%. This group comprises of women with previous CS. In our institute, most of the women coming with previous CS are referred from peripheral hospitals, who are having some or other comorbid conditions, like anemia, preeclampsia, or uncontrolled diabetes. Hence, the scar is anticipated to be weak. To add to this misery, many of them hail from low socioeconomic strata, who are poorly educated, malnourished, and have short interconceptional periods. So, the scar has higher chances of dehiscence and may give way during labor. To avoid these aftermaths, most of the time women coming with previous CS are directly taken up for repeat CS, unless the parameters are feasible for the trial of labor.

The second most common indication of CS in above-mentioned Table 4 is primigravida with failure of induction or failure of descent of presenting part or decelerations in fetal heart rate with or without meconium-stained amniotic fluid. These women are induced for postdatism, oligohydramnios, or some of the medical indications. Few primigravida is taken up for elective primary CS, depending on their pelvic assessment done by the obstetrician. These are women having gestational diabetes or contracted pelvis or conceived by artificial reproductive technology. In this patient group, morbid trial of labor is avoided, since the outcome of the pregnancy has to be a healthy mother and healthy baby, and morbid vaginal delivery with the poor fetal outcome cannot be considered as a yardstick of good obstetric practice.

The third most common indication is primigravida with breech presentation. This group is not offered trial of labor, since the pelvis

has not been tested before and there are chances of obstructing the after-coming head. Hence, only women with active labor and small baby size are given trial of labor.

CONCLUSION

The major focus to bring down CS rates should be to reduce primary CS rates by encouraging good and ethical trials of labor. For this, adolescent health care is important, so that women enter the phase of pregnancy in a healthy state of her mind and body. Later antenatal care holds equal importance in order to avoid the onset of medical disorders and early intervention in these medical disorders such as anemia and PIH, which are very commonly seen in pregnancy would be taken care of. Encouraging instrumental vaginal delivery, whenever not contraindicated, also will bring down CS rates. For this, adequate training has to be imparted during residency days.

Finally, there is a small subgroup of women, who should be delivered by exclusive CS. These are women conceived by Artificial Reproductive Technology. In them, most of the women demand CS and the choice of women has to be respected by treating obstetricians, in the present era of medicolegal issues, since the outcome of labor can't be predicted with certainty.

Few exclusive indications of CS are not included in Robson's criteria like placenta previa or certain fetal indications like severe oligohydramnios and IUGR with terminal Doppler changes. For these indications, good antenatal care will help bring down these problems. More analytical studies are needed locally to evaluate each group in further detail.

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