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Original Research Article

Study on caesarean section rate using Robsons ten group classification system and its implications- a retrospective analysis from a medical college in the union territory of Puducherry

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ABSTRACT

Background: Caesarean section is one of the major surgeries in obstetrics and it helps in preventing various complications and difficult labour ensuring the safety of both mother and baby. The aim of the study was to analyse the rate and various indication of caesarean section in our hospital and to analyse it using RTGCS.
Methods: Retrospective data collected from hospital records in the department of obstetrics and gynecology of SVMCH, Puducherry from January 2021 till January 2024 have been taken and analysed to study the various indications of caesarean section and to classify them according to RTGCS.
Results: Out of 2022 deliveries conducted during the study period, 984 (48.6%) were caesarean section. The most common indication of CS was previous LSCS (35.6%), belongs to group- 5 of RTGCS followed by fetal distress (20.5%). Other common indications were failed induction (7.4%), breech (4.3), IVF/twin (5.8%). 6% of women underwent preterm CS (group 10 of RTGCS). Around 1% of the women underwent CS for malposition/malpresentation and maternal request.
Conclusions: In our study, the rate of caesarean section is higher compared to WHO recommendation. Caesarean section if performed when needed utmost in case of obstetrics risks and emergencies may reduce the rate of CS. Trial of labour can be considered for women with previous CS who were the major contribution for repeat CS. Proper counselling and education to the mother may help in reducing the fear and anxiety about normal vaginal delivery, thus reduces the rate of other non-obstetrics indication like maternal request.

Keywords: Fetal distress, Indications of caesarean section, Previous CS, Robsons classification

INTRODUCTION

Caesarean section is one of the most commonly performed major surgeries in obstetrics. It is recommended when vaginal delivery might cause risks to maternal and fetal well-being, thus it helps in reducing the maternal and perinatal mortality. Even though, it is one of the most important surgical procedures that can save life of both mother and baby, the rise in rate of caesarean section in the last few years has become an alarm and a major topic of interest in obstetrics world. WHO recommends that rate of caesarean section should be between 10-15% for optimal maternal and neonatal outcomes.[1] It also states that there is no additional health benefit if the rate goes above 10-15%. WHO has proposed Robson's ten group classification (RTGCS) as a global standard for analysing various indications for CS in 2015.[2] This classification is based on five obstetrics characteristics like parity, number of fetus, previous CS, onset of labour, gestational age and fetal presentation (Table 1).

Table 1: Robsons ten group classification system for caesarean section by World Health Organization.

Group	Category
1	Nulliparous, single, cephalic, >37 weeks, spontaneous labour
2	Nulliparous, single, cephalic, >37 weeks, induced labour or pre labour CS
3	Multiparous, single, cephalic, >37 weeks, spontaneous labour
4	Multiparous, single, cephalic, >37 weeks, induced labour or pre labour CS
5	Multiparous, single, cephalic, >37 weeks, with at least one previous CS
6	Nulliparous, single, breech
7	Multiparous, single, breech including previous CS
8	Multiple pregnancy including previous CS
9	Single pregnancy with transverse or oblique lie including previous CS
10	Single, cephalic, <37 weeks including previous CS

This classification helps to categorize women into various group and to analyse the group which contribute most and least in increasing the CS rate. It also helps to assess the effectiveness of available strategies and interventions, thus helps in improving the quality of care by learning better and improved clinical management practices.[3,4] Apart from many common obstetrics risks, the recent rise in the incidence is due to several other reasons like availability and easy accessibility of better healthcare services, improvised surgical techniques, increased literacy rates, and demographic and socioeconomic factors.[5-7]

In this study, we wanted to study the various indications for which caesarean sections were performed in our hospital and to analyse it using Robsons classification which can be implied to reduce the CS in the future.

METHODS

Study type

It was a retrospective study. Data were collected from hospital-based registers of all women who underwent caesarean section in our hospital.

Study place

This study took place at Sri Venkateshwaraa Medical College Hospital and Research Centre (SVMCH and RC), Ariyur, Puducherry.

Study period

The study was carried out from January 2021 till January 2024.

Selection criteria

Patients who had undergone caesarean section in our hospital during the above-mentioned time period were included. Demographic data like age of the patient, parity, gestational age at time of LSCS and indication for LSCS has been recorded.

Statistical analysis

Data obtained were analyzed using SPSS version 26.0. Descriptive statistics such as frequency, percentage, mean and standard deviation was used. Indications of CS and classification of women using RTGCS were analyzed and tabulated.

Ethical approval was not applicable as it was a retrospective study.

RESULTS

Out of 2022 deliveries conducted during the time period of January 2021 to January 2024, 984 (48.6%) were caesarean section (n=984). The mean age of the women was 27 years and the mean gestational age at which CS was performed was 38 weeks. Different age group at which each women underwent CS were studied (Figure 1). Out of these 984 women, 649 (66%) underwent emergency LSCS and 335 (34%) underwent elective LSCS (Table 2). This included 399 (40.5%) primi gravidas and 585 (59.5%) of multigravidas (Table 3).

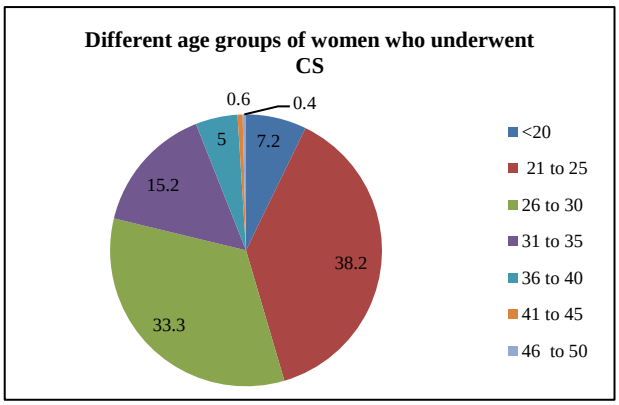

Figure 1: Different age groups of women who underwent CS (in years).

Most of the women were under age group of 21 - 25 years. 5% were elderly gravidas and less than 1% were above 40 years who underwent CS for non-obstetric indications (IVF pregnancy, maternal request)

Table 2: Distribution of LSCS according to situation.

Situation	Number of cases	Percentage
Elective LSCS	335	34
Emergency LSCS	649	66

Table 3: Distribution of LSCS among primi and multigravidas.

Parity	Number of cases	Percentage
Primi	399	40.5
Multigravidas	585	59.5

Table 4: Distribution of LSCS based on indication (n=984).

Indications	Number of cases	Percentage
Previous LSCS	350	35.6
Fetal distress	202	20.5
Failed induction	73	7.4
Non progression of labor	40	4.1
CPD	110	11.2
Breech	42	4.3
Twin gestation	22	2.2
IVF	57	5.8
Maternal request	12	1.2
Severe pre eclampsia	19	1.9
Severe oligohydramnios	28	2.8
Severe IUGR	11	1.1
APH	7	0.7
Malposition/malpresentation	11	1.1

The most common indication of CS in our hospital was previous LSCS (35.6%) that included both elective and emergency CS which is followed by fetal distress (20.5%). Other common indications were failed induction (7.4%), non-progression of labour (4.1%), cephalo-pelvic disproportion (11.2), breech (4.3), IVF (5.8%) with twin pregnancies (2.2%). 6% of women underwent preterm CS (group 10 of RTGCS) for various emergency indications like severe pre-eclampsia (1.9%), APH (0.7%), an hydramnios or severe oligohydramnios (2.8%) and severe growth restriction (1.1%). Around 1% of the women underwent CS for malposition/malpresentation and maternal request (Table 4).

Classification of women according to Robson ten group classification system of CS

Most of the women belonged to group 5 (35.5%), which consists of multiparous women with previous 1 uterine scar, followed by group 2 (31.3%) and group 4 (10%) who were nulliparous women with labour induced or pre labour CS and multiparous women with labour induced or pre labour CS respectively. 6% (n=60) of women were classified under group 10 which includes women with preterm CS for various emergency indications like anhydramnios, abruption, severe pre-eclampsia, etc. 17 (1.7%) and 21 (2.1%) women were under group 6 and group 7 which included nulliparous with breech and multiparous women with breech including previous CS. Group 1 and group 3 which included nulliparous and multiparous women with spontaneous labour were 6.2% and 4.3% respectively. Women with multiple pregnancies (group 8) were 2.2% and oblique or transverse lie (group 9) were less than 1% (Table 5).

Table 5: Distribution of LSCS based on RTGCS (n=984).

Group	Category	Number	Percentage
1	Nulliparous, single, cephalic, >37 weeks, spontaneous labour	61	6.2
2	Nulliparous, single, cephalic, >37 weeks, induced labour or pre labour CS	308	31.3
3	Multiparous, single, cephalic, >37 weeks, spontaneous labour	42	4.3
4	Multiparous, single, cephalic, >37 weeks, induced labour or pre labour CS	98	10
5	Multiparous, single, cephalic, >37 weeks, with at least one previous CS	349	35.5
6	Nulliparous, single, breech	17	1.7
7	Multiparous, single, breech including previous CS	21	2.1
8	Multiple pregnancy including previous CS	22	2.2
9	Single pregnancy with transverse or oblique lie including previous CS	6	0.6
10	Single, cephalic, <37 weeks including previous CS	60	6

DISCUSSION

The rate of caesarean section has been increased and the indication of LSCS has been changing in the past decade. The most common indication is previous LSCS followed by fetal distress which is similar to the study performed at a tertiary care hospital of Rajasthan, India.[3] Similar results were seen in few other studies done at Nawaz sharif social security hospital in Pakistan, Mymensingh medical college, Bangladesh and Bhutan, where the most common indication for LSCS was previous LSCS followed by fetal distress.[4,5,8]

Similar study performed in rural aspect of Haryana, India, shows the most common indication of cesarean section was fetal distress followed by previous LSCS.[9]

Also, in this study, when assessed with RTGCS, majority of women were under Group 5 followed by group 2 and group 4 which is similar to the study performed in a tertiary

care hospital of Manipur.[10] The increased rate of caesarean section in our hospital is mostly because mothers presented to us were those who underwent either one or multiple caesarean sections in their earlier pregnancy. As most of the medical and surgical expenses is done at free of cost in our hospital, most of the mothers with poor socio-economic background who had either one or multiple CS in their earlier pregnancies were booked with us. Most of the mothers with previous LSCS were taken up for planned repeat CS in their subsequent pregnancies considering higher risks to both mother and baby due to VBAC and uterine rupture causing increase in maternal and perinatal mortality.

The next common indication for higher rate of CS is fetal distress which may be due to frequent and continuous electronic monitoring of fetus because most of the antenatal cases booked with us are high risk pregnancies. The higher rates of CS done due to fetal asphyxia do not show significant difference in the perinatal outcome. The other obstetric risks like CPD, malpresentation, twin gestation, oligohydramnios, severe preeclampsia etc where CS were planned in prior may lead to decrease in maternal and perinatal mortality.

Even though, LSCS due to maternal request is increasing at present, the percentage of mother who underwent CS due to maternal request is very less in our hospital. This is a contrary to the western data where caesarean section performed due to maternal request was the most common indication followed by other indications like breech, fetal asphyxia etc.[9]

The rise in infertility related problems leading to higher incidence of IVF conception and elderly conception of pregnancy leads to increase in rate of elective LSCS in nulliparous women in concern to precious baby. Majority of women belonged to group 5 of Robsons classification which implies reducing CS among group 1 and group 2 will reduce the rate of CS performed during subsequent pregnancies. Regular antenatal follow ups and careful observation of both mother and fetus throughout the pregnancy can pick up obstetrics risks earlier. Appropriate monitoring and intervention of cardiotocography during labour can lead to better decision making in performing caesarean section.

The common indications for caesarean section have been studied and analysed according to RTGCS. However sufficient data was not available to identify the various other indications of caesarean section performed to yield the better strategies and recommendations in decreasing the caesarean section rates in the study population.

CONCLUSION

Proper counselling and education to mothers about their pregnancy outcomes during the antenatal visits may help in reducing the fear and anxiety about normal vaginal delivery thus may be helpful in reducing the rate of caesarean section if performed in non-obstetrics indications like maternal request. Trial of labor can be considered for women with previous CS who were the major contribution for repeat CS. Decision on performing CS in case of fetal distress, CPD and induced mothers should be considered and should be done if utmost indicated by ensuring safety and well-being of both mother and baby.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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