

Analysis of Caesarean Section according to Robson's Ten Group Classification System at a Tertiary Care Center Rajkot

Khyati S Tailor^{1*}, Kamal D Goswami²

¹Senior Resident, Department of Obstetrics and Gynecology, Pandet Deendayal Upadhyay Medical College, Rajkot, Gujarat, India

²Professor, Department of Obstetrics and Gynecology, Pandet Deendayal Upadhyay Medical College, Rajkot, Gujarat, India

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Corresponding Author: Dr. Khyati S Tailor

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Abstract:

Background: During the 20th century, in parallel with this decreasing maternal mortality, there has been an increase in the incidence of Caesarean section. Also, the rates of Caesarean section performed with no clear medical or obstetrical indication are rising dramatically. Despite the low maternal mortality associated with Caesarean section, the available studies indicate a crude risk ratio of approximately 10 for maternal mortality with Caesarean section compared with vaginal delivery. In 2011, a systematic review and critical appraisal of available classifications for caesarean concluded that women-based classifications in general and Robson's 10-group classification in particular, would be in the best position to fulfil current international and local needs. The review recommended that efforts to develop an internationally applicable classification should be most appropriately placed in building upon this classification. Dr Michel Robson proposes a system that classifies women into 10 groups based on their obstetric characteristics (parity, previous caesarean, gestational age, onset of labour, foetal presentation and number of foetuses) without needing the indication for caesarean.

Method: This study was carried out in the department of obstetrics and gynaecology at PDU medical college and hospital Rajkot, Gujarat from September 2019 to March 2020.

Result: The study was conducted on 1000 cases, the prevalence rate of Caesarean section in the study population of PDU medical college Rajkot was found to be 27.4% during our study period. All women with one or more previous caesareans (group V) had the maximum number of caesarean section 109 (39.78%), closely followed by nulliparous women with spontaneous onset of labour at >37 weeks (group I) 54 (19.70%) and nulliparous women more than 37 weeks who were induced (group IIA) 45(16.04%).

Conclusion: All hospital and health authorities can use this standardized classification system as part of quality improvement initiative to monitor caesarean sections rates. This classification system identifies relevant areas of interventions and resources to reduce rates of Caesarean sections.

Keywords: Caesarean sections, Robson's 10-group Classification.

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Introduction

Caesarean section rates have been increasing worldwide over the past few decades, with most countries and regions. The World Health Organization recommended rate of 15% of all deliveries. [1]. NFHS-4 found that caesarean section rate in India was 17.2% higher than the WHO recommended limit (1 January 2021) [2].

Historically the indication for caesarean have been clinical factors such as maternal and obstetrical complication previous caesarean, dystocia, fetal distress and malpresentation [3,4]. Recent temporal trends in maternal characteristics that might help in explaining the rising caesarean section rate include increasing maternal age and higher rate of obesity, hypertension, diabetes and multiple gestations. [5]

Many other factors that have contributed to the increasing rate of Caesarean include improved surgical technique provider and patient demand and pressure on caregivers to practice "defensive medicine" [6-8] The increasing rate of caesarean section is a matter of international public health concern as it increase the caesarean related maternal morbidity and fetal as well as the cost of health care as compared to normal delivery.

Concern has been expressed with the growing rate of caesarean section which has been referred as a "GLOBAL EPIDEMIC". We need standardization of the classification system to allow reflection and research at the local and national level to guide the future care. [9-12]. Michael Robson MD has

developed such a classification system in 2001 known as 10 group Robson classification of caesarean section. The 10 group Robson classification of caesarean section has been appreciated by WHO in 2014 and FIGO in 2016. [13-14] The Robson Ten group classification system divides woman in the ten groups based on the category of pregnancy, previous obstetric record course of labor and delivery and gestational age. [15] According to WHO, Robson classification will add in the optimization of caesarean section use, assessment of strategies aim to decrease the caesarean section rate and thus improve the clinical practices and quality of care in various health care facilities. WHO expects that the use of the Robson Classification will help health care facilities to: 1)

Identify and analyse the groups of women which contribute most and least to overall caesarean rates. 2) Compare practice in these groups of women with other units who have more desirable results and consider changes in practice. 3) Assess the effectiveness of strategies or interventions targeted at optimizing the use of caesarean. 4) Assess the quality of care and of clinical management practices by analysing outcomes by groups of women. 5) Assess the quality of the data collected and raise staff awareness about the importance of this data and interpretation of data. The Robson classification is for "all woman" who delivers at a specific setting and only for the woman who deliver by caesarean section.

Table 1: The 10 Group of Robsons Classification with Common Subdivision

Groups	Clinical Characterise
1	Nulliparous, singleton, cephalic ≥ 37 week spontaneous labour
2	Nulliparous, singleton, cephalic ≥ 37 week induced labour or caesarean section before labour
2a	Labour induced
2b	Pre labour caesarean
3	Multiparous, singleton, cephalic ≥ 37 week spontaneous labour
4	Multiparous singleton, cephalic ≥ 37 week induced labor or caesarean section before labour
4a	Labour induced
4b	Pre labour caesarean
5	Multiparous with prior cesarean section single tone ≥ 37 week
5a	With one previous caesarean section
5b	With two or more previous cesarean section
6	All nulliparous breech
7	All multiparous breech (including previous cesarean section)
8	All multiple pregnancies (including previous cesarean section)
9	All pregnancies with a transverse lie or oblique lie (including those previous cesarean section)
10	Single, cephalic ≤ 36 week (including those previous cesarean section)

The Robsons Classification Report Table: In order to make the most of the information provided by the Robson classification in local settings and to allow comparisons between settings, the data is best reported in a standardized way.

Table 2:

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
Group name and/or number and definition	Total number of caesarean in each group	Total number of woman delivered in each	Relative group size to overall facility population for 10 groups, in percentage	Caesarean rate in each group	Absolute group contribution to overall caesarean rate	Relative contribution of each of the 10 group to overall caesarean rate

Aim and objectives of the study

- 1) To know the rate of caesarean section rate in our hospital.
- 2) To analyze the caesarean section based on Robson classification.
- 3) To determine the contributions and significance of each groups on all overall number of caesarean section.

Material and Methods

Place of Study: P.D.U medical collage civil hospital Rajkot

Sample Size: 1000

Study Duration: 1. 5 YEAR Sep 2019 to March 2021

Place of Study: P.D.U Medical College & Civil Hospital, Rajkot

Type of Study: observational study

Procedure of Study: All the patient admitted in obstetrics department of civil hospital Rajkot during study period of 1 .5 years who underwent caesarean section and who meets our inclusion criteria are included in study standard case record performa filed.

All details of patient like basic demographic data regarding name, age, residence, diagnosis on admission, booked or unbooked, referred or not are recorded. After initial diagnosis, details regarding the gestational age, onset of labour, indication of caesarean section, Robson group all are noted.

General physical examination including vital signs, obstetric examination, Maternal outcome and neonatal outcome all are evaluated .Result of procedure with respect to intraoperative and postoperative complication, hospital stay, blood transfusion, perinatal mortality and morbidity all are noted

Source of Data: cases of normal deliveries and caesarean sections performed at P.D.U medical collage Rajkot.

Study Population: pregnant mother delivered during study period.

Inclusion criteria: All deliveries (normal+ caesarean section) performed during study period at obstetrics and gynecology department PDU medical collage Rajkot will be included.

Exclusion criteria: Hysterectomy or cesarean hysterectomy performed before 28 week.

Patients will be selected based on inclusion and exclusion criteria and will be classified as per Robson's criteria and data will be analyzed using appropriate statistical tests.

Result and Discussion

Table 3: Caesarean section rate and comparison with other study

Present study (n=1000)	Priyanka D Jogia et al [1] 2018(n=650)	Nandita Mitra et al [1] 2015(n=40,086)
27.4%	28%	25.17%

The caesarean section rate during study period was 27.4% in our institute which was higher than WHO recommended caesarean rates (not be more than 15%). As our center is a tertiary care center, many patients having high risk factors are being referred at our institute. Our hospital caters entire Saurashtra

region hence patients having severe comorbid conditions are being referred to our institute. Caesarean section rate in Priyanka D Jogia study was 28% which is similar to our study and caesarean section rate in Nandita Mitra study of 25.17% which was lower than our study.

Table 4: Relationship of total deliveries with maternal parity

Parity	Cases (n =1000)	Number and percentage of caesarean sections (in relation to total deliveries)
Nulliparous	473	133 (28.11%)
Multiparous	527	67 (12.1%)

According to our study, caesarean section rate is higher in nulliparous woman and lower in multiparous woman. The reason of this higher rate is due to higher rate of induction failure in nulliparous woman, decrease the rate of trail in primigravida breech delivery, non-reassuring fetal heart testing. Common cause of caesarean section in multiparous woman is mostly previous caesarean section.

Table 5: Relationship of total deliveries and onset of labor:

Onset of labor	Total number of deliveries	Number of caesarean section and percentage
Spontaneous	705	128 (18.15%)
Induced	185	36 (19.45%)
Pre labour	110	110 (100%)

In our study, 705 patients had spontaneous labor, out of which 128 patients underwent caesarean section i.e. 18.15%. Common causes of caesarean section in this group were mainly fetal distress, meconium-stained liquor, cord prolapse, non-progress of labor (deflexed head, abnormal position). Total 185

induction of labor were done, from which 36 patients underwent caesarean section due to failure of induction. Total 110 caesareans were pre-labor caesarean sections. In our institute, most common indication for pre-labor caesarean was previous caesarean section.

Table 6: Caesarean section rate among the various Robson's group and comparison with others studies:

Robson's groups	Present study				Nandita Maitra [1] et al 2015			
	No of woman (total n=1000)	No. of CS	%	Relative contribution to all over CS rate	No of woman (n=40086)	No of CS	%	Relative contribution to all over CS rate
1	337	54	16.02	19.70	14925	3797	25.44	37.62
2	110	45	40.90	16.04	903	427	47.28	4.23
3	232	10	4.31	3.6	13107	1542	11.62	15.0
4	85	06	7.05	2.1	472	164	34.74	1.62
5	115	109	94.78	39.78	2656	1722	64.83	17.06
6	20	15	75.03	5.4	866	589	68.01	5.83
7	13	03	23	1.09	701	348	49.64	3.44
8	08	02	25	0.7	323	119	36.84	1.17
9	10	10	100	3.6	101	101	100	0.1
10	70	20	28.57	7.2	6032	1302	21.58	12.90

Above table shows the distribution of caesarean section in Robson's TEN group classification. All women with one or more previous caesareans (group V) had the maximum number of caesarean section 109 (39.78%), closely followed by nulliparous women with spontaneous onset of labour at >37 weeks (group I) 54 (19.70%) and nulliparous women more than 37 weeks who were induced (group IIA) 45(16.04%). This distribution is similar as seen in Nandita Mitra study.

Limitations

The major drawback of Robson's TEN group classification is that it does not take into account the neonatal morbidity or any maternal high risk factors like a history of infertility, recurrent pregnancy losses or medical disorders like preeclampsia, GDM and others.

Conclusion

The interpretation of caesarean section data can be done in a standardized manner by the Robson's TEN group classification system. In our study, the largest contributor to total caesarean section was I, V and III (19.70%, 39.78% and 16.4%).

The most common indication in women with previous caesarean section was refusal of TOLAC (trial of labour after caesarean section). These women and their families need to be educated about the success of TOLAC in selected cases. The higher caesarean section rate is because of non-reassuring foetal heart rate pattern. Repeated training of residents on labour management, instrumental deliveries and CTG interpretation needs to be done

along with sensitization of all staff to reinforce normal delivery in patients.

Caesarean section done for breech presentation can be reduced by training residents in the art of breech delivery and external cephalic versions in the antenatal period. Patients need to be sensitized about the advantages of normal deliveries, need for antenatal exercise.

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