International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Patel MV et al. Int J Reprod Contracept Obstet Gynecol. 2023 Jan;12(1):181-184
www.ijrcog.org
pISSN 2320-1770 | eISSN 2320-1789

DOI: https://dx.doi.org/10.18203/2320-1770.ijrcog20223491

Original Research Article

A study of caesarean section rate by using Robson's ten group classification system at tertiary care hospital, Ahmedabad, India

Maurvi V. Patel*, Bhoomi D. Jivani, Swati N. Patel

Department of Obstetrics and Gynecology, GMERS Medical College and Hospital, Sola, Ahmedabad, Gujarat, India

Received: 03 November 2022
Revised: 02 December 2022
Accepted: 03 December 2022

***Correspondence:**
Dr. Maurvi V. Patel,
E-mail: maurviptl16@gmail.com

ABSTRACT

Background: Caesarean delivery rate is rising continuously worldwide and is matter of concern. The Robson's Ten-group classification system allows critical analysis of caesarean deliveries thereby helps to optimise caesarean section rates.
Methods: This study was conducted at GMERS medical college and hospital, Sola, Ahmedabad, Gujarat, India. All patients who delivered between November 2021 and May 2022, were included in the study and were classified in 10 groups according to modified Robson's classification system. The CS rate and contribution to the overall CS rate was calculated within each group.
Results: Total number of deliveries was 836, out of them 242 was CS. The CS rate was 28.94%. The main contribution to overall caesarean rate was 39.67% by group 5, followed by 17.77% by group 1, 10.33% by group 2. CS rates among various group ranges from 100% among women with abnormal lie (group 9) to 88% in nulliparous breech (group 6), 84.95% in previous CS (group 5), 40.62% in multiparous breech (group 7) and least 3.57% in multipara spontaneous labour (group 3).
Conclusions: The Robson groups 1, 2, 5 and 6 were found to be the major contributors to the overall CS rate. These groups may be targeted for effective interventions to reduce the CS rate. Reduction of primary caesarean delivery, promoting vaginal birth after CS, and careful assessment of cases before induction of labour in nulliparous women, are likely to be a few effective strategies.

Keywords: Caesarean section, Caesarean section rate, Robson ten group classification system

INTRODUCTION

Globally, the caesarean delivery rate is rising continuously, making caesarean one of the most common surgical procedures.[1] One in five pregnant women undergoes caesarean delivery.[1] According to the latest data from the National family health survey 2015-16 (NFHS-4), caesarean sections have doubled over the last decade across India. There is 16.7% rise in caesarean sections annually in India.[2] The world health organization (WHO) stated, there is no justification for any region to have a caesarean section (CS) rate higher than 10-15%.[3] The rate of caesarean sections below 5% seems to be associated with gaps in obstetric care leading to poor health outcomes for mothers and child, whereas rates over 15% don't seem to improve either maternal or infant health.[4] Caesarean section rate is one of the most frequently used indicators of healthcare quality at the national and international levels for clinical governance.[5] Unindicated caesarean sections generate higher expenditure at individual and national levels and also have the potential to divert human and financial resources

from higher priority intervention. High caesarean birth rates are an issue of international public health concern.[6] Most caesarean sections are classified according to the reason for the surgery.[7,8] It is then difficult to compare CS rates with others because the same terms are not usually used. In 2001 Dr. Michael Robson, of the National maternity hospital, Dublin, proposed the new ten group classification system (TGCS).[9] This classification system categorizes women into 10 mutually exclusive groups, considering the following criteria: obstetric history (parity and previous Caesarean section), onset of labour (spontaneous, induced or caesarean section before onset of labour), foetal presentation or lie (cephalic, breech, or transverse), number of foetus , and gestational age (preterm or term).[10] The world health organization (WHO) and the International federation of gynecology and obstetrics (FIGO) recommend the Robson ten group classification system as a standard for monitoring and comparing CS rates between heath care facilities.[11,12]

Aim and objectives

Objectives of this study were to classify our population into the 10 Robson's groups, to identify which among these groups have the highest Caesarean section rates and to formulate plans of reducing these rates.

METHODS

This was a prospective observational study conducted in GMERS medical college and hospital, Sola, Ahmedabad, Gujarat, India; for a period of 6 months from November 2021 to May 2022

Inclusion and exclusion criteria

All women, who gave birth in this tertiary care centre during the specified period were included in the study. Cases of hysterotomies and rupture uterus both scarred and unscarred were excluded from the study. All the relevant information were obtained under four obstetric concepts on which the Robson classification (Table 1) is based, namely previous obstetric history (nulliparous; multiparous without previous CS; multiparous with previous CS), category of pregnancy (single-cephalic, breech, transverse or oblique; multiple), course of labour and delivery (spontaneous; induced; CS before labour-elective or emergency) and gestational age (in completed weeks at time of delivery).[13] All women were classified in 10 groups according to Robson's classification using maternal characteristics and obstetric history (Table 1). For each group, authors calculated and analyzed the caesarean section rate within the group and its contribution to overall CS rate. Statistical analysis was done using the MS Excel.

RESULTS

Out of 836 women 242 underwent caesarean section, so caesarean rate in present study was 28.94% (Table 2). The main contribution to overall caesarean rate was 39.67% by group 5, followed by 17.77% by group 1, 10.33% by group 2. CS rates among various group ranges from 100% among women with abnormal lie (group 9) to 88% in nulliparous breech (group 6), 84.95% in previous CS (group 5), 40.62% in multiparous breech (group 7) and least 3.57% in multipara spontaneous labour (group 3).Out of 836, 22 women (2.63%) were of <20 years in age, 179 women (21.41%) were of age between 20 to 24 years, 417 women (49.89%) were of age between 25 to 29 years, 170 women (20.33%) were of age between 30 to 34 years, and 48 women (5.74%) were of age >35 years. 244 women (29.19%) were employed during pregnancy. 347 women (41.51%) resided in urban areas and others in rural.

Table 1: Robson's ten group classification system.

Group	Clinical characteristics
1	Nulliparous, singleton, cephalic, ≥37 weeks, spontaneous labour
2	Nulliparous, singleton, cephalic, ≥37 weeks, induced labour or cesarean section before labour
3	Multiparous without previous cesarean section, singleton, cephalic, ≥37 weeks, spontaneous labour
4	Multiparous without previous cesarean section, singleton, cephalic, ≥37 weeks, induced labour or cesarean section before labour
5	Multiparous with prior cesarean section, singleton, cephalic, ≥37 weeks
6	All nulliparous breeches
7	All multiparous breeches (including previous cesarean section)
8	All multiple pregnancies (including previous cesarean section)
9	All pregnancies with oblique or transverse lie (including those previous cesarean section)
10	All single, cephalic, ≤37 weeks (including previous cesarean section)

DISCUSSION

The first group of TGCS is a large group, and therefore, accounts for a sizeable percentage of the overall CS rate. 17.77% of CS were done in nulliparous women in spontaneous labour at term, which was comparable with Dar et al (11.79%) and Shenoy et al (15.60%).[14,15] Almost over half of these women underwent CS for fetal distress and MSL. Women in group 2 constituted 10.33% of overall CS rate in present institution where labour was induced or CS before onset of labour. The common indications for induction were postdate, i.e., beyond the expected date of delivery, premature rupture of membranes (PROM), hypertensive disorders and oligohydramnios. Group 3 contributed to 3.31% of present overall CS rate. This rate is similar to study by Dar MA et al (3.55%).[14]

The Group 4 contributed to 2.48% of present overall CS rate.

Table 2: CS Rate by Robson's classification groups.

Group	No. of CS (A)	No. of delivery (B)	CS rate in each group (%) (A/B)x100	Relative size of each group (%) (B/N_2)x100	Contribution of each group to CS (%) (A/N_1)x100
1	43	218	19.72	26.08	17.77
2	25	83	30.12	9.93	10.33
3	8	224	3.57	26.79	3.31
4	6	36	16.67	4.3	2.48
5	96	113	84.95	13.52	39.67
6	22	25	88	2.99	9.09
7	13	32	40.62	3.83	5.37
8	4	12	33.33	1.44	1.65
9	5	5	100	0.59	2.07
10	20	88	22.72	10.53	8.26
Total	242 (=N_1)	836 (=N_2)		100	100

Table 3: Comparison of contribution of each group to CS with other studies.

Robson criteria	Present study (%)	Dar et al.[14] (%)	Shenoy et al.[15] (%)
Group 1	17.77	11.79	15.60
Group 2	10.33	21.64	24.33
Group 3	3.31	3.55	0.26
Group 4	2.48	7.16	2.64
Group 5	39.67	38.72	27.24
Group 6	9.09	4.73	3.70
Group 7	5.37	3.48	1.32
Group 8	1.65	1.09	4.23
Group 9	2.07	1.16	1.85
Group 10	8.26	6.67	18.78
Total	**100**	**100**	**100**

The common indications were postdate, PROM and hypertensive disorders. Other study such as Shenoy et al have stated similar contribution from this group, 2.64% to their overall CS rate.[15] Group 5 with previous CS pregnancy at term, was the largest contributor with 39.67% of the overall CS rate. 84.96% of women of group 5 were delivered by CS whereas 15.04% patients delivered by VBAC (vaginal birth after CS). Even though vaginal birth after one CS has been advocated as a safe option, the number of women who attempt trial of labour after CS (TOLAC) have declined over recent years due to fear of uterine rupture, poor neonatal outcome as well as the fear of litigations amongst the care givers, in case anything goes wrong. Increasing CS rate among women with breech presentation is a common phenomenon due to high risk of perinatal morbidity and mortality. Groups 6 and 7 consist of women with breech presentation and show a high CS rate. Group 6 contributes to 9.09% of overall CS rate. Among group 6, 88% women delivered by CS whereas 12% women delivered vaginally. Group 7 contributes to 5.37% of overall CS rate. In group 7, 40.62% women delivered by CS and rest of women delivered by vaginally. Group 6 (85.71%) is comparable with study done by Dar et al.[14] Even though this group is relatively small, authors should be more proactive in offering external cephalic version to all eligible women with breech presentation and consider offering vaginal breech delivery to suitable women. Group 8 had contributed 4 CS (1.65% of overall CS rate) for multifoetal gestations and 33.33% of multifetal pregnancies were delivered by CS. It is comparable with the study done by Dar et al (29.08%).[14]

There were 5 CS (2.07% of overall CS rate) for malpresentation in group 9. All 5 women were delivered by CS (100%). It is comparable to study by Dar et al (100%).[14] Group 10 (single, cephalic, <37-week GA) contributed to 8.26% of overall CS rate which was comparable to contribution of Group 10 in Dar et al (6.67%).[14] Preterm PROM, hypertensive disorders, abnormal Doppler, IUGR, severe oligohydramnios and gestational diabetes mellitus were the main contributors to this group.

Limitations

Limitation in current study is that were not considering neonatal outcome and remote complications associated with caesarean sections, shorter study duration.

CONCLUSION

The use of Robson ten group classification system is recommended for medical audit in all maternity suits. These days we observe from various studies that the proportion of women who had history of CS are increasing in most countries across the world wide. It would be prudent to explore measures to decrease primary CS for women in groups 1, 2, 3 and 4. This will, in time, affect the overall CS rates in group 5. Where facilities exist, TOLAC should be offered to women with previous CS after proper patient selection and counselling. This is the only way to reduce CS rates in group 5.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Betrán AP, Ye J, Moller AB. The increasing trend in caesarean section rates: global, regional and national estimates: 1990-2014. PloS One. 2016;11:e0148343.
2. Choudhury CR. Caesarean births: the Indian scenario. J Pop Assoc Am. 2008;3:1-8.
3. World health organization. Appropriate technology for birth. Lancet. 1985;326(8452):436-7.
4. United Nations Children's Fund. Available at: https://www.unicef.org/protection/unfpa-unicef-global-programme-end-child-marriage. Accessed on 20 November 2021.
5. Robson MS. Classification of caesarean sections. Fetal Matern Med Rev. 2001;12:23-39.
6. Roosenmalen RVJ, Does VCD. Caesarean birth rate worldwide. A search for determinants. Trop Geogr Med. 1995;47(1):19-22.
7. Thomas J. The National sentinel caesarean section audit report. Available at: http://orca.cf.ac.uk/93112/1/nscs_audit.pdf. Accessed on 20 November 2021.
8. Turcot L, Marcoux S, Fraser WD. Multivariate analysis of risk factors for operative delivery in nulliparous women. Canadian early amniotomy study group. Am J Obst Gynae. 1997;176:395-402.
9. Betran AP, Gulmezoglu AM, Robson M, Merialdi M, Souza JP, Wojdyla D, et al. WHO global survey on maternal and perinatal health in Latin America: classifying caesarean sections. Reprod Health. 2009;6:18.
10. Robson MS. Can we reduce the caesarean section rate? Best Pract Res Clin Obstet Gynaecol. 2001;15:179-94.
11. WHO statement on caesarean section rates. Available at: http://apps.who.int/iris/bitstream/handle/10665/161442/WHO_RHR_15.02_eng.pdf?sequence=1. Accessed on 20 November 2021.
12. Figo WG, Care OM. Best practice advice on the 10-Group Classification System for cesarean deliveries. Int J Gynaecol Obstet. 2016;135(2):232.
13. Brennan DJ, Robson MS, Murphy M, O'Herlihy C. Comparative analysis of international caesarean delivery rates using 10-group classification identifies significant variation in spontaneous labor. Am J Obstet Gynecol. 2009;201(3):308.e1-8.
14. Dar MA, Lone SA, Rashid R. Analysis of caesarean section rates by Robson's classification. J Evid Based Med Health. 2021;8(20):1460-5
15. Shenoy HT, Shenoy ST, Anaswara T, Remash K. Analysis of caesarean delivery using Robson ten group classification system at a tertiary care teaching institute in Kerala, India. Int J Reprod Contracept Obstet Gynecol. 2019;8:1990-8.

Cite this article as: Patel MV, Jivani BD, Patel SN. A study of caesarean section rate by using Robson's ten group classification system at tertiary care hospital, Ahmedabad, India. Int J Reprod Contracept Obstet Gynecol 2023;12:181-4.