CESAREAN SECTION INDICATIONS USING MODIFIED ROBSON'S CRITERIA

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ABSTRACT

Cesarean section (CS) is increasingly replacing vaginal delivery, which is concerning due to associated complications. World Health Organization (WHO) recommends robust classification such as Modified Robson's criteria for decision making to minimise non indicated CS. This study was planned to see the applicability of Modified Robson's criteria in assessing causes of CS. To classify and compare indications of CS using the WHO modified Robson's criteria. The present study was a retrospective study conducted at Era's Lucknow Medical College over 24 months. Due approval was obtained from Received on : 09-01-2023 Accepted on : 01-06-2023

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ethics committee before commencing the study. All cases who underwent CS from 1st January 2018 to 31st December 2019 were analysed, data classified in accordance with the WHO Modified Robson's criteria and analysed. Parameters used for analysis included gestational age, parity, number of foetuses, history of previous CS, fetal lie and presentation, induced or spontaneous labour, indication of CS and any associated high risk factors. Of 1929 deliveries, 621(32.2%) had CS. A total 500 CS were evaluated. The major contributor to overall CS rate was Group 5 (30%), 10 (17.4%) and 1 (16.4%). Modified Robson's classification could be easily applied to our data set and helped in identification of the main groups which contributed majorly to the overall CS rate viz. previous CS, nulliparity, prematurity and induced labours. It also helped us in identifying the subgroups which require more surveillance and monitoring. It is important to focus on Group 5, 10 and 1 which constitute 63.8% of total CS being done.

KEYWORDS: Cesarean section, Cesarean Delivery, Modified Robson's criteria.

INTRODUCTION

Global cesarean statistics have shown an exponential rise which is concerning because they do not correspond to the estimated feto-maternal risks (1). Whereas till as late as 1950s, the CS rates averaged 5%, they rose to > 30% by the end of twentieth century (2). There remain widespread differences in rates between geographic regions underscoring the fact that sociocultural and economic factors might be important determining factors.

In India, CS statistics have risen from 149.33 to 234.03 per 1000 live births from 2009 to 2015. (3) Not only this, wide intra-country differences have been observed. Time trends between 2005-2006 to 2015-2016 show that there is decline in the CS rate from 15.2% to 11.9% in public health facilities compared to a rise from 27.9% to 40.9% in private health facilities (4).

World Health Organization (WHO) has called for a robust classification for decision making to minimise arbitrary and non indicated CS (5). In 2015, WHO proposed the Robson's 10-group classification as a global standard for assessing, monitoring and comparing CS rates (6). This was found useful by investigators but has still not found global favour (7). The present study was undertaken to see the applicability of Modified Robson's criteria in assessing causes of CS at our facility.

METHODOLOGY

This was a retrospective observational study conducted at ELMCH which caters primarily to semiurban population belonging to middle- and lower socio-economic class. Due approval was taken from the Institutional ethics committee before commencing the project. Case records of all deliveries in 2018 and 2019 were examined. The parameters assessed included gestational age, parity, number of foetuses, history of previous CS, fetal lie and presentation, induced or spontaneous labour, indication of CS and any associated high risk factors. Incomplete records were excluded from analysis.

Statistical Analysis

Microsoft Excel version 2013 was used for data entry. SPSS 21 (64-bit version) was used for analysis.

RESULTS

A total of 1929 deliveries were assessed with 621 CS and 1308 vaginal deliveries. The CS rate was 32.2%. Excluding the incomplete records, final analysis included 500 cases. The socio-demographic characteristics of the study population have been shown in Table 1.

The indications of CS were classified according to Modified Robson's Classification (Table 2). The maximum number of CS (30%) were done for women with previous CS, singleton, cephalic, > 37 weeks gestation (Group 5). The second largest group was Robson's group 10 with 17.4% cases (Singleton, cephalic at < 36 weeks. These preterm cases were inclusive of previous CS, spontaneous or induced labour or elective CS). The next group was Robson's group 1 with 16.4% cases (Singleton, nulliparous, cephalic equal to or more than 37 weeks gestation in spontaneous labour). Table 3 compares CS rates with parity, history of previous CS and period of gestation (POG) of the current pregnancy. All three conditions showed significant contribution to CS rates. Maximum CS were observed in nulliparous and women who had previous CS. The difference in parity between women who had a CS and vaginal delivery was statistically significant. Preterm gestation had a significant association with CS rates.

DISCUSSION

CS rate of 32.2% was observed in the present study, a rate which is much higher than the standard WHO recommendations. (6) This is in concordance with findings of NFHS-5. (8) Important reasons cited are population demographics, increasing use of electronic fetal monitoring, fear of litigation, and complicated referrals. Our hospital stands at the outskirts of the city, serving as a referral centre for nearby villages. Due to this phenomenon, obstetric patients with multiple medical problems and increasing complexity were being referred to our hospital.

Classifying CS by Modified Robson's criteria helped us study indications and comparing them with other institutes, regions and countries. Table 4 compares CS rates by Robson's classification between different studies. A common classification helps in correct audit of data for rationality of decisions, formulation of appropriate strategies for prevention, plugging-in gaps and optimisation of health care.

Observation	N (%)				
Age (years)					
≤ 20	40 (8.0)				
21-25	198 (39.6)				
26-30	169 (33.8)				
31-35	77 (15.4)				
36-40	16 (3.2)				
Mean age \pm SD	26.61 <u>+</u> 4.46 (19-40)				
BMI (Kg/m2)					
<18.5	0				
18.6-24.9	256 (51.2)				
25 - 29.9	161 (32.2)				
30 - 34.9	83 (16.6)				
35-39.9	0				
>40	0				
Mean BMI <u>+</u> SD	26.54 + 3.54 (18.4-36.94)				

Table 1: Socio-demographic characteristics of subjects

Religion					
Hindu	309 (61.8)				
Muslim	183 (36.6)				
Sikh	4 (0.8)				
Christian	3 (0.8)				
Others	1 (0.2)				
Socio-economic class (Modified Kuppuswamy Scale)					
Lower	90 (18)				
Upper lower	136 (27.2)				
Lower middle	129 (25.8)				
Upper middle	137 (27.4)				
Upper	8 (1.6)				

Cont. Table 1: Socio-demographic characteristics of subjects

Robson's	Description of Group	No. Of cases (%)
group		
1	Nulliparous, singleton, cephalic, \geq 37 weeks, spontaneous labour	82 (16.4)
2	Nulliparous, singleton, cephalic, ≥37 weeks	72 (14.4)
2A	Induced	12 (2.4)
2B	CS before labour	60 (12)
3	Multipara, singleton cephalic, ≥ 37 weeks, spontaneous labour	29 (5.8)
4	Multipara, singleton cephalic, ≥ 37 weeks	32 (6.4)
4A	Induced	2 (0.4)
4B	CS before labour	30 (6)
5	Previous CS, singleton cephalic, ≥ 37 week	150 (30)
5A	Spontaneous labour	54 (10.8)
5B	Induced labour	1(0.2)
5C	CS before labour	95 (19)
6	All nulliparous breeches	15 (3)
6A	Spontaneous labour	8 (1.6)
6B	Induced labour	0 (0)
6C	CS before labour	7 (1.4)
7	All multiparous breeches (including previous CS)	17(3.4)
7A	Spontaneous labour	9 (1.8)
7B	Induced labour	1 (0.2)
7C	CS before labour	7 (1.4)
8	All multiple pregnancies (including previous CS)	10 (2)
8A	Spontaneous labour	4 (0.8)
8B	Induced labour	0 (0)
8C	CS before labour	6 (1.2)

Table 2: Cesarean section Indications according to modified Robson's classification

9	All abnormal lies (including previous CS but excluding breech)	8 (1.6)
9A	Spontaneous labour	2 (0.4)
9B	Induced labour	0 (0)
9C	CS before labour	6 (1.2)
10	All singleton cephalic, ≤ 36 weeks (including previous CS)	87 (17.4)
10A	Spontaneous labour	24 (4.8)
10B	Induced labour	1 (0.2)
10C	CS before labour	62 (12.4)

Cont. Table 2: Cesarean section Indications according to modified Robson's classification

Robson's Group	Parity			Previous CS			POG	
	0	1	>1	0	1	>1	<37	>37
1	82	0	0	82	0	0	0	82
2	72	0	0	72	0	0	0	72
3	0	13	14	27	0	0	0	27
4	0	18	14	32	0	0	0	32
5	0	98	52	0	124	26	0	150
6	15	0	0	15	0	0	4	11
7	0	11	6	10	6	1	5	12
8	6	2	2	10	0	0	5	5
9	8	5	3	5	2	1	5	3
10	30	30	27	52	22	13	87	0
	$\chi^2 = 505.96 (df = 18);$			$\chi^2 = 396.14$ (df=18);			χ ² =435.13 (df=9);	
	p< 0.001			p< 0.001			p< 0.001	

Table 3: Comparison of CS rates with parity, previous CS and period of gestation (POG)

	Present study	Mayne	Pinto	Gilani	Vinita	Naka	Yadav	Triunfo
1	16.4	12.7	13.59	14.28	13.4	6.84	37.62	9.4
2	14.4	20.2	27.83	12.62	13.1	33.63	4.23	9.5
3	5.4	2.1	3.94	6.04	14.2	2.13	15	7.13
4	6.4	6.6	4.07	8.13	12	8.29	1.62	5.13
5	30	31.5	18.41	41.27	17.7	30.78	17.06	38.4
6	3	5.2	11.53	2.53	3.5	3.29	5.83	4.28
7	3.4	2.2	5.61	2.92	4.4	2.73	3.44	3.81
8	2	5.1	7.4	3.65	3.6	1.94	1.17	4.74
9	1.6	0.7	1.4	0.49	2.9	0.92	1.0	3.54
10	17.4	13.9	6.18	8.04	14.6	9.4	12.9	13.9

Table 4: Comparing CS rates by Robson's Classification

We found Group 5, 1 and 10 to be the highest contributors to CS rates. Similar observations have been noted by Yadav et al (9), Das et al (10) and Gilani et al (11). Since Group 5 comprises women with previous CS, the main thrust area remains prevention of CS in the first pregnancy. However, it is a universal observation that Group 1 (nulliparous women) is also a major cause of CS. We need to look into reasons why Group 1 remains at the helm.

Different reasons have been cited and induction of labour remains one of the most important reasons for failure of trial of labour in the first pregnancy as seen in studies by Mayne et al (12), Pinto et al (13) and Naka et al (14). To circumvent this, WHO has introduced changes in monitoring the progress of labour with its revolutionary 'labour care guide (LCG)'. (15) It is hoped that redefining progress of labour, with increased time being given to labouring mothers, will be a major step in decreasing CS statistics - both in the short- and long- term.

Bloomberg et al formulated nine reforms in their obstetric practice including changes in organisation structure, obstetric monitoring as well as public education.(16) The investigators demonstrated that their protocol reduced overall CS rate from 20 to 10%. Interestingly, they were successful in remarkably decreasing the incidence of CS in Group 1(primigravidae) from 10 to 3%. The data presented by Bloomberg et al needs to be critically examined by institutes and evaluated for its applicability in labour ward. We could institute similar reforms in our protocols and audit the changes in labour statistics. Reforms in structure of post-graduate training to include liberal liberal hands on experience in operative vaginal deliveries has also been suggested in order to reduce CS rates (17).

The distributive analysis of CS indications led us to understand the groups of antenatal patients that require closer attention. It is imperative to introduce reforms in our practice in order to prevent CS in a primiparous patients which would eventually translate into reduction of CS due to Group 5 as well. Preformulated labour room protocols, strict fetal and maternal monitoring following the WHO LCG, more trials of labour after CS, increased patience while observing labour and compassionate patient handling can go miles in achieving desired outcomes.

CONCLUSION

We were able to categorise causes of CS at our institute using Modified Robson's classification. The classification made comparison of causes of CS easy between different datasets. Group 5, 10 and 1 of Modified Robson's classification were major contributors to CS.

REFERENCES

- 1. Lumbiganon P, Laopaiboon M, Gulmezoglu AM et al. Method of delivery and pregnancy outcomes in Asia: the WHO global survey on maternal and perinatal health 2007-2008. Lancet. 2010; 375(9713): 490-499
- 2. National Institutes of Health state-of-the-science conference statement. CS on maternal request. Obstet Gynecol. 2006; 107: 1386-1397.
- 3. Agarwal M, Verma M, Garg A. Changing trends in CS: rate and indications. Int J Reprod Contracept Obstet Gynecol. 2016; 5(10): 3522-3524.

- 4. Bhatia M, Banerjee K, Dixit P, et al. Assessment of Variation in CS Rates Between Public and Private Health Facilities in India From 2005 to 2016. JAMANetw Open. 2020; 3(8): e2015022.
- 5. Gibbons L, Belizan JM, Lauer JA, et al. The global numbers and costs of additionally needed and unnecessary CSs performed per year: overuse as a barrier to universal coverage. World health report 2010, background paper 30. World Health Organization; 2010. Available online at: https://www.who.int/healthsystems/topics/finan cing/healthreport/30C-sectioncosts.pdf
- 6. Robson Classification: Implementation Manual. Geneva: World Health Organization; Licence: 2017.
- 7. World Health Organization. The Robson's Classification implementation manual. Sexual and Reproductive Health. Available online at: https://www.who.int/reproductivehealth/topics/maternal_perinatal/Robson's-classification-implementation/en/, (Accessed on 9th March, 2021.
- 8. International Institute for Population Sciences (IIPS) and ICF. 2021. National Family Health Survey (NFHS-5), India, 2019-21: Uttar Pradesh. Mumbai: IIPS.
- 9. Yadav RG, Maitra N. Examining CS Rates Using the Robson's Ten-group Classification. J Obstet Gynaecol India. 2016; 66(Suppl 1): 1-6.
- 10. Das V, Kumar N, Kumari V, et al. Increasing rates of CS, an upcoming public health problem: an audit of CS in a tertiary care center of North India based on Robson's classification. Int J Reprod Contracept Obstet Gynecol. 2017; 6(11): 4998-5002.
- 11. Gilani S, Mazhar SB, Zafar M, et al. The modified Robson's criteria for CS audit at Mother and Child Health Center Pakistan Institute of Medical Sciences Islamabad. J Pak Med Assoc. 2020; 70(2): 299-303.
- 12. Mayne L, Liu C, Tanaka K, et al. CS rates: applying the modified ten-group Robson's classification in an Australian tertiary hospital. J ObstetGynaecol. 2021; 25: 1-6.
- 13. Pinto P, Crispín-Milart PH, Rojo E, et al. Impact of clinical audits on CS rate in a Spanish hospital: Analysis of 6 year data according to the Robson's classification. Eur J Obstet Gynecol Reprod Biol. 2020; 254: 308-314.
- 14. Nakamura-Pereira M, do Carmo Leal M, Esteves-Pereira AP, et al. Use of Robson's classification to assess CS rate in Brazil: the role of source of payment for childbirth. Reprod Health. 2016; 13(Suppl 3): 128.

- 15. WHO labour care guide: user's manual. Geneva: World Health Organization; 2020.
- 16. Blomberg M. Avoiding the first cesarean section-results of structured organizational and cultural changes. Acta Obstet Gynecol Scand 2016; 95: 580-586.
- 17. Spong CY, Berghella V, Wenstrom KD, et al. Preventing the first cesarean delivery: summary of a joint Eunice Kennedy Shriver national institute of child health and human development, society for maternal-fetal medicine, and American college of obstetricians and gynecologists workshop. Obstet Gynecol. 2012; 120(5): 1181-1193.



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