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Original Research Article

Robson classification: beyond caesarean rates

Shruti Bhavi Patil, Rajitha D.*

Department of Obstetrics and Gynaecology, Gadag Institute of Medical Sciences, Gadag, Karnataka, India

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***Correspondence:**

Dr. Rajitha D.,

E-mail: rajithad987@gmail.com

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ABSTRACT

Background: Caesarean rates are increasing globally. Unnecessary caesarean sections are a public health concern and are associated with both short term and long-term risks. Robson's ten group classification is the accepted classification for caesarean section and implementing it is an effective measure in understanding which group should be focussed to reduce the caesarean section rates. The classification can be used as a framework for assessing perinatal and maternal outcome.

Methods: All the deliveries with gestational age more than 28 weeks at Gadag Institute of medical sciences, Karnataka, during April 2022 were included. Obstetric characteristics like parity, gestational age, previous caesarean sections, onset of labour, lie, presentation, mode of delivery, indications for caesarean section and foetal and maternal complications were recorded.

Results: The caesarean rate was 57.9%. Groups 5, 1 and 2 were the major contributors. Previous LSCS was the most common indication 46%. In groups 1 to 4 foetal distress was the most common indication. The overall proportion of unfavourable foetal outcome among all deliveries was 17.7% caesarean deliveries (20.1%), vaginal deliveries 14.5%. The proportion of unfavourable maternal outcome was 1.6%; 8 women delivered by CS (2.5%) and 1 woman by vaginal delivery (0.4%).

Conclusions: Caesarean section should be used appropriately and increase in caesarean section does not ensure favourable maternal or perinatal outcome.

Keywords: Caesarean section, Outcome, Robson's classification

INTRODUCTION

Scientific progress, social, cultural and legal changes in particular have led to a fundamental difference in attitudes towards caesarean section among patients and obstetricians.¹ As with any surgery, caesarean sections are associated with short and long-term risks which can extend many years beyond the current delivery and can affect the health of the woman, her child, and future pregnancies.² Despite the indications and the risks, the overall caesarean rates are increasing globally but there are wide disparities among countries and also among regions within countries.³ Overuse of CS, unsafe provision of CS and unmet need of CS are major concerns and optimizing CS rate is

necessary.⁴ CS rates should no longer be thought of being too high or too low but rather the appropriateness of the indications.⁵

In order to propose and implement effective measures to reduce or increase CS rates where necessary, it is first essential to identify which groups of women are undergoing CS and investigate the underlying reasons for trends in different settings. A standardized and internationally accepted classification system is needed to monitor and compare CS rates.⁶ WHO proposed the use of the Robson Classification as a global standard for assessing, monitoring and comparing caesarean section rates and to establish a common point for comparing

maternal and perinatal data within healthcare facilities over time, and between facilities.⁷ The Robson ten-group classification system allows analysis of CS rates according to basic characteristics of pregnancy.⁸ In this study Robson classification is used for assessing caesarean rates, indications, fetal and maternal outcome.

METHODS

The study was a cross-sectional study in Gadag institute of medical sciences which is a tertiary care hospital in Karnataka during the month of April 2022. All antenatal women with more than 28 weeks of gestation admitted in the labour units of the institution were included in the study. Data was collected regarding parity, gestational age, onset of labour-spontaneous or induced, lie, presentation, multiple pregnancies, mode of delivery as well as the previous deliveries. All these variables were used to classify the women according to Robson ten group Classification system. Indications of caesarean section, foetal and maternal outcome were also assessed based on Robson classification. Ethical approval was obtained from institutional ethical committee. The variables were entered in Microsoft excel, SPSS software version 25 was used and results were expressed as percentages and proportions.

RESULTS

There were 559 deliveries in the month of April in the institution with 57.9% caesarean sections. Among the 324

CS antepartum CS was 61.7% and 38.2% intrapartum CS (Table 1).

Table 1: Obstetric variables used in Robson's classification.

	Frequency	Percentage (%)
Parity		
Nullipara	273	48.8
Multipara	286	51.2
Previous caesarean section		
Yes (one or more)	142	25.4
No	417	74.5
Gestational age		
< 37 weeks	39	7
> 37 weeks	520	93
Presentation		
Cephalic	540	96.6
Breech	13	2.3
Transverse lie	4	0.14
Onset of labor		
Pre-labor CS	200	9.3
Induced	52	35.7
Spontaneous	307	54.9
No of foetus		
Singleton	556	99.4
Multiple	3	0.6

Table 2: Robson's classification report table.

Group	Group description	No. of CS	Total women in group	Group size (%)	Group CS rate (%)	Absolute contribution to overall CS rate (%)	Relative contribution to overall CS rate (%)
1	Nullipara, singleton, cephalic >37 weeks, spontaneous labour	62	150	26.8	41.3	11.1	19.1
2	Nulliparous, single cephalic, ≥37 weeks, induced/prelabour CS	81	92	16.5	88.0	14.5	25.0
3	Multiparous, single cephalic (excluding previous CS), ≥37 weeks in spontaneous labour.	8	105	18.8	7.6	1.4	2.5
4	Multiparous, single cephalic (excluding previous CS), ≥37 weeks induced/prelabour CS	10	22	3.9	45.5	1.8	3.1
5	Previous caesarean section, single cephalic, ≥37 wks	136	139	24.9	97.8	24.3	42.0
6	Nulliparous with single breech	6	7	1.3	85.7	1.1	1.9
7	Multiparous with single breech (include previous CS)	2	2	0.4	100.0	0.4	0.6
8	Multiple pregnancy (including previous CS)	2	3	0.5	66.7	0.4	0.6
9	Single pregnancy, transverse or oblique lie (including previous CS)	4	4	0.7	100.0	0.7	1.2
10	Singleton, cephalic, <37 weeks (including previous CS)	13	35	6.3	37.1	2.3	4.0
		324	559	100	58.0	58.0	100

Maximum women belonged to group 1 (26.8%) followed by group 5 (24.9%) but groups 7 and 9 had 100% CS followed by group 5 with 97.8% CS. Group 5 was the

major contributor to CS-42% followed by group 2 and group 1. Groups 6, 7, 8 and 9 contributed less than 2% as in the Robson classification report table (Table 2).

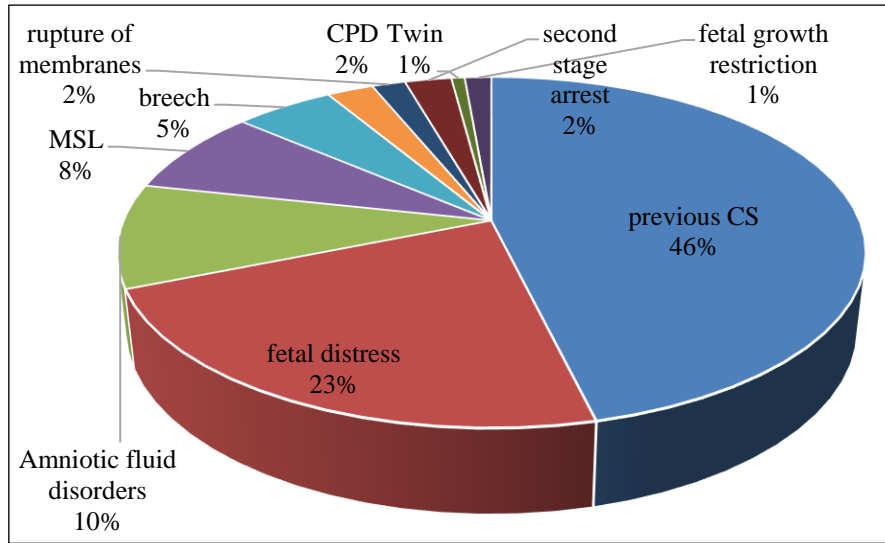


Figure 1: Indications for caesarean sections.

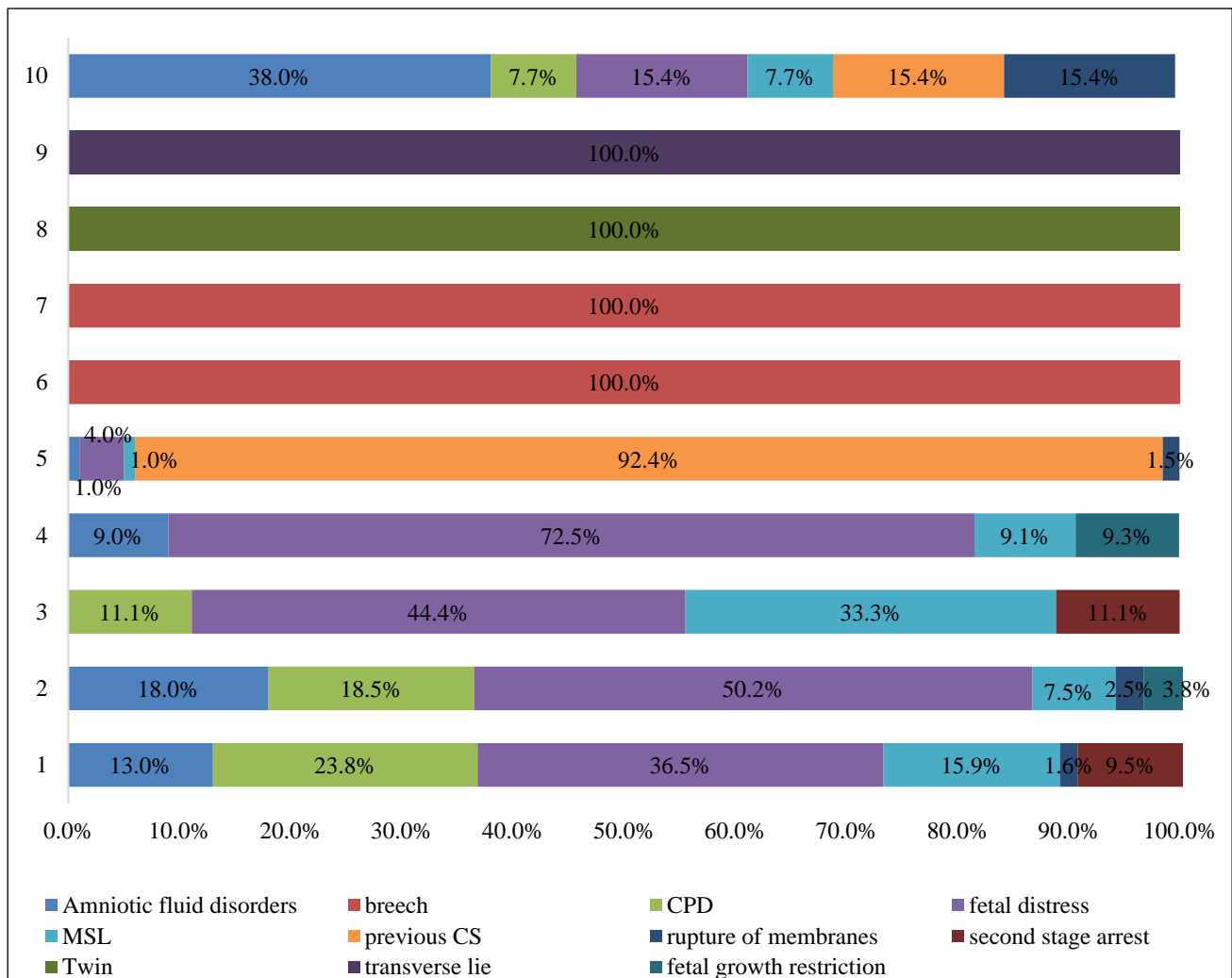


Figure 2: Indications for caesarean sections according to Robson's groups.

Table 3: Robson's classification and unfavourable foetal outcome.

Robson's group	No. of CS	No. of adverse foetal outcome among CS	Proportion of adverse foetal outcome among CS (%)	No. of vaginal deliveries	No. of adverse foetal outcome among vaginal delivery	Proportion of adverse foetal outcome among vaginal delivery (%)	Proportion of adverse foetal outcome among all deliveries (%)	Absolute contribution (%)	Relative contribution (%)
1	62	15	24.2	88	7	8.0	14.7	3.9	22.2
2	81	16	19.8	11	2	18.2	19.6	3.2	18.2
3	8	4	50.0	97	9	9.3	12.4	2.3	13.1
4	10	2	20.0	12	0	0.0	9.1	0.4	2.0
5	136	17	12.5	3	0	0.0	12.2	3.0	17.2
6	6	3	50.0	1	1	100.0	57.1	0.7	4.0
7	2	0	0.0	0	0	0.0	0.0	0.0	0.0
8	2	2	100.0	1	1	100.0	100.0	0.5	3.0
9	4	1	25.0	0	0	0.0	25.0	0.2	1.0
10	13	5	38.5	22	14	63.6	54.3	3.4	19.2
Total	324	65	20.1	235	34	14.5	17.7	17.7	100.0

Table 4: Robson's classification and unfavourable maternal outcome.

Robsons group	No. of CS	No. of adverse foetal outcome among CS	Proportion of adverse foetal outcome among CS (%)	No. of vaginal deliveries	No. of adverse foetal outcome among vaginal delivery	Proportion of adverse foetal outcome among vaginal delivery (%)	Proportion of adverse foetal outcome among all deliveries (%)	Absolute contribution (%)	Relative contribution (%)
1	62	2	3.2	88	1	1.1	2.0	0.5	33.3
2	81	3	3.7	11	0	0	3.3	0.5	33.3
3	8	0	0	97	0	0	0.0	0.0	0
4	10	0	0	12	0	0	0.0	0.0	0
5	136	3	2.2	3	0	0	2.2	0.5	33.3
6	6	0	0	1	0	0	0.0	0.0	0
7	2	0	0	0	0	0	0.0	0.0	0
8	2	0	0	1	0	0	0.0	0.0	0
9	4	0	0	0	0	0	0.0	0.0	0
10	13	0	0	22	0	0	0.0	0.0	0
Total	324	8	2.5	235	1	0.4	1.6	1.6	100.0

Previous LSCS was the most common indication 46% followed by foetal distress 23% as in Figure 1. The indications for caesarean section according to various groups are as in Figure 2. In groups 1 to 4 foetal distress was the most common indication contributing to 72.5% in group 4 and 50% in group 2. Meconium-stained liquor and CPD were the next common indications in groups 1 to 4 followed by second stage arrest. In group 5 previous CS was the most common indication 92.4% and in group 10 previous CS contributed to 15.4%. The most common indication in group 10 was amniotic fluid disorder 38%. In groups 6 and 7 Breech was the only indication whereas in

group 8 the only indication was twin pregnancy and in group 9 the only indication was transverse lie.

Unfavourable foetal outcome includes stillbirth, Apgar score less than 7, admission in NICU and neonatal death. There were 65 fetuses with unfavourable outcome among caesarean deliveries (20.1%), whereas in vaginal deliveries the proportion was less 14.5% (34/235). The overall proportion of unfavourable foetal outcome among all deliveries was 17.7%. Among CS group 8 had 100% unfavourable foetal outcome followed by group 6 and group 3 with 50% each. Among vaginal deliveries group 8 and group 6 had 100% unfavourable outcome while groups

4, 5 had no unfavourable outcome. Though group 8 had 100% unfavourable foetal outcome the absolute and relative contribution was less 0.5% and 3% respectively. The major contributors of unfavourable foetal outcome were group 1, group 10 and group 2 (Table 3).

Unfavourable maternal outcome included PPH, infection or presence of any other complications delaying discharge beyond seven days after delivery. There were 9 women with unfavourable outcome among 559 deliveries (1.6%), 8 women delivered by CS (2.5%) and 1 woman by vaginal delivery (0.4%). Only women belonging to groups 1, 2 and 5 had unfavourable outcomes as in Table 4.

DISCUSSION

The caesarean section rate in the present study was 58% which was much higher than studies at different parts of Karnataka; Kolar (30.8%), Bellary (42%), and Belgavi (44%).⁹⁻¹¹ The rate was higher compared to different states 32.6% by Dhodapkar et al, Pondicherry, 40% Sah et al, Uttar Pradesh, 43% by Konar et al, West Bengal, 58% by Shenoy et al, Kerala and 64% by Wahne et al at, Maharashtra.¹²⁻¹⁶ The major contributors to CS were similar to study by Deshmukh et al at Maharashtra and at Bellary where groups 5, 1 and 2 were the highest.^{17,10}

Analysis of indications revealed that foetal distress was the commonest in groups 1 to 4 which was similar to study at Belgavi while the study by Murugesan et al past dates and oligohydramnios were the commonest.^{11,18} In group 5 the commonest indication was previous CS and in group 10 amniotic fluid disorders was commonest which was in line with several studies.^{11,18} Unfavourable foetal and maternal outcome was much higher in caesarean sections and group 8 had 100% unfavourable fetal outcome in both vaginal and caesarean deliveries. Half women in group 6 with CS and all women with vaginal delivery had unfavourable outcome. In the study by Tognon et al there was not much difference between proportion of unfavourable outcome in CS and vaginal delivery and groups 10 and 6 had highest proportion among CS.¹⁹ Unfavourable maternal outcome was much higher more than 85% in the study by Mangesha et al whereas in the present study the proportion was 1.7% (2.5% in Cs and 0.4% in vaginal delivery).²⁰

This study has some limitations. There is a lack of clear definitions for indications of caesarean sections leading to lack of uniformity and improper comparisons. The major pitfall of Robson's 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, gestational diabetes.

CONCLUSION

In the study caesarean rate was high and major representation was by group 5 indicating high CS rate in the past. Trial of labour after CS should be encouraged to

reduce CS rate in this group. Groups 1 and 2 should be focused as an increase in CS in these group leads to increase in group 5 in future. As foetal distress was the most common indication clear definition of foetal distress as an indication for performing CS should be practiced. Training of all staff with protocols and group decision on performing CS might help avoid unnecessary CS. Group 3 had high unfavourable foetal outcome in caesarean deliveries 50% vs 9% in vaginal deliveries pointing that caesarean deliveries did not guarantee better quality of care and was not accompanied by better neonatal outcome. Unfavourable maternal outcome was less 2.5% in CS and 0.4% in vaginal delivery and only in group 1, 2 and 5. These groups had the most representation and heralds a need for increased maternal care.

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