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Original Research Article

Analysis of caesarean section rate according to Robson's criteria in tertiary care centre

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ABSTRACT

Background: Caesarean Section (C.S.) delivery rate is steadily increasing worldwide, including India. It is difficult to determine the optimum categorisation of C.S. Robson system is most widely accepted classification worldwide. The objective of the present study is to analyze the incidence of deliveries and caesarean section rate according to Robson's criteria at SRMS-IMS, Bareilly, Uttar Pradesh.
Methods: The record of total women admitted in labour unit from June 2017 to May 2018 were analyzed based on their age, parity, gestation age, mode of delivery and group they belong according to Robson's classification.
Results: Among 2560 women who delivered during the study period, 1030(40.23%) had caesarean section. Out of the total caesarean section 55.15% had primary caesarean section while repeat section were done in 44.85%. The most frequent indication for primary caesarean were fetal compromise and failure to progress while for repeat caesarean scar tenderness was the frequent indication. Robson's group V had maximum caesarean section rate followed by group I. Breech presentation contributed to 11.55% to overall caesarean sections.
Conclusions: In present study group V, I, II were found to be major contributors to overall caesarean section rates. Modifiable factor for reducing caesarean rate would be to improve successful induction of labour which would decrease primary caesarean rate hence the chance of repeat section.

Keywords: Caesarean Section, Robson's ten group classification

INTRODUCTION

The Caesarean section (C.S.) rate has been rising over last five decade but during last two decade there has been a dramatic rise worldwide, which now exceeds 30% in some regions.[1] The reason for the increase in caesarean birth are variable including use of electronic fetal monitoring during labour, increasing number of pregnancy following infertility treatment including multifetal pregnancies, elderly gravida, increasing number of post caesarean pregnancies and changing obstetric trend regarding vaginal breech or operative deliveries and medicolegal concern.[2]

There is a need for an internationally accepted classification system for caesarean section and among various available classification system, the 'Robson' system has been widely used.[3]

This system was proposed by Dr. Michael Robson in 2001 allows analysis of C.S. rate according to following characteristics of pregnancy.[3]

- Number of foetuses (Single or multiple pregnancy).
- Parity (Nulliparous or multiparous-including post caesarean pregnancy).

- Fetal presentation (Cephalic, breech or other malpresentation).
- Onset of labour (Spontaneous, induced or caesarean before labour).
- Gestation age (Term or preterm birth).

The present study was conducted to find out the frequency and indication of C.S. in our setup and to analyse them according to Robson's ten group classification and lastly to analyse the most frequent indication of primary or repeat caesarean section in our setting.

METHODS

This is a retrospective record review of total deliveries occurring in Obstetric department of SRMS-IMS, Bareilly over 12 months period from June 2017 to May 2018.

Delivery data was collected from medical record department of the hospital and was recorded along the variables of age, parity, gestation age, mode of labour (spontaneous or induced), mode of delivery and indication of Caesarean Section.

The result was tabulated according to the modified Robson's criteria.[4]

Group description

1. Nullipara, singleton, cephalic, ≥37weeks, spontaneous labour
2. Nullipara, singleton, cephalic, ≥37weeks
   - Induced labour
   - Caesarean section before labour
3. Multipara, singleton, cephalic, ≥37weeks, spontaneous labour
4. Multipara, singleton, cephalic, ≥37weeks
   - Induced labour
   - Caesarean section before labour
5. Previous caesarean section, singleton, cephalic, ≥37weeks
   - Spontaneous labour
   - Induced labour
   - Caesarean section before labour
6. All nullipara breeches
   - Spontaneous labour
   - Induced labour
   - Caesarean section before labour
7. All multiparous breeches (including previous caesarean section)
   - Spontaneous labour
   - Induced labour
   - Caesarean section before labour
8. All multiple pregnancies (including previous caesarean section)
   - Spontaneous labour
   - Induced labour
   - Caesarean section before labour
9. All abnormal lies (including previous caesarean section but excluding breech)
   - Spontaneous labour
   - Induced labour
   - Caesarean section before labour
10. All singleton, cephalic, <37weeks (including previous caesarean section)
    - Spontaneous labour
    - Induced labour
    - Caesarean section before labour

RESULTS

A total of 2560 women delivered during the study period. Majority of women, 2191 (85.6%) were in age group 21-35 years while 305 women belong to age ≤20 years. Maximum number of women delivering were gravida 2-4 (50.6%) followed by nullipara (45.4%).

Table 1: Demographic variables.

	Variables	n	%
Age (Years)	≤20	305	11.9
	21-35	2191	85.6
	≥35	64	2.5
Parity	G_1-G_2A_1	1163	45.4
	G_2-G_4	1294	50.6
	≥G_4	103	4.0
Gestation age (Weeks)	<37	472	18.4
	37-42	2051	80.1
	>42	37	1.5

Only 1.4% women were post term while 2051 (80.1%) were term pregnancies.

Among the total deliveries Robson's group, I had maximum deliveries i.e. 619(24.2%) followed by 497(19.4%) in group III. 397 women were term post caesarean pregnancies (15.5%).

Group X i.e. preterm with cephalic presentation included 366(14.3%) women and most of them were late preterm (34-37 weeks). The total caesarean section rate in Present study was much higher being a tertiary care centre draining rural population i.e. 40.23%.

Out of total 1030 caesarean deliveries 568 (55.15%) and 462 (44.85%) were primary and repeat caesarean section respectively.

The most frequent indication of primary caesarean section was compromised fetus (29.9%) followed by failure of labour to progress (28.2%) while in repeat section scar tenderness was the most frequent indication (27.1%) followed by previous two or more sections (19.9%). Among 470 women who were induced 119 delivered by caesarean section.

Most frequent indication was failure to progress (47.9%) followed by fetal distress (44.5%). Out of total 1030 caesarean section elective caesarean were performed in 195 women, 19.5% were done with indication of two or more repeat caesarean section while 18.5% were done who were not willing for TOLAC. Only 37 cases of post caesarean pregnancy had VBAC.

Table 2: Relative size of group according to Robson's classification and their contribution to overall deliveries and caesarean rate.

Robson's category		Cases (n)(VD+CS)	Total CS (x)	% Contribution of each group (n/N)	% Ceaseran CS rate in each group (x/n)	% Contribution to total CS (x/X)	% Contribution to overall deliveries (x/N)
I		619	186	24.2	30.05	18.06	7.27
II	A	293	96	11.5	32.76	9.32	3.75
	B	19	19	0.7	100	1.84	0.74
III		497	64	19.4	12.88	6.21	2.5
IV	A	124	13	4.8	10.48	1.26	0.51
	B	11	11	0.4	100	1.07	0.43
V	A	272	237	10.6	87.13	23.01	9.26
	B	5	3	0.2	60	0.29	0.12
	C	120	120	4.7	100	11.65	4.69
VI	A	60	51	2.3	85	4.95	1.99
	B	5	1	0.2	20	0.09	0.04
	C	10	10	0.4	100	0.97	0.39
VII	A	67	45	2.7	67.16	4.36	1.76
	B	2	0	0.1	0	0	0
	C	12	12	0.5	100	0.77	0.47
VIII	a	49	22	1.9	46.81	2.14	0.86
	b	4	2	0.2	50	0.19	0.08
	c	5	5	0.2	100	0.49	0.19
IX	a	18	17	0.7	94.44	1.65	0.66
	b	0	0	0	0	0	0
	c	2	2	0.1	100	0.19	0.08
X	a	313	94	12.2	30.03	9.13	3.67
	b	37	4	1.4	10.81	0.39	0.16
	c	16	16	0.6	100	1.55	0.63
Total		N=2560	X=1030			100%	40.25%

N=total deliveries (vaginal+caesarean); n=deliveries in each group (vaginal+caesarean); x=CS in each group; X=total CS; Total CS rate= (1030/2560) x100=40.2%

Table 3: Incidences of primary and repeat caesarean section.

No. of caesarean section	N	%
Primary (x)	568	55.15
Secondary (y)	462	44.85
Total=x	1030	100%

%=n/N [N=total deliveries(vaginal+caesarean)]

DISCUSSION

There has been lot of concern about increasing caesarean section rates in last few years and this increase is a global phenomenon both in developed and developing countries1.WHO has proposed the Robson's ten group classification system as a global standard for assessing, monitoring and comparing ceasarean section rate within and between health care facilities in 2015 based on two multicountry survey.[5,6]

In Present study the overall caesarean section rate was 40.23%. Similar high rate was observed in study by Patel RV et al around 40% and 32.6% by Dhodapkar SB et al.[2,7] In Present study maximum caesarean sections fall in Group V (singleton, cephalic, post caesarean pregnancy, ≥37weeks) 34.95% which is comparable to study done by Ray A et al.[8]

Group V women who had spontaneous onset of labour had successful VBAC. Incidence of VBAC in Present study was only 3.4% (35 out of 272 posts caesarean

pregnancy) and 2 out of 5 post caesarean pregnancy who were induced delivered vaginally.

Most cases of repeat caesarean (44.85%) in Present study was due to scar tenderness (27.06%) followed by previous ≥2 C.S. (19.91%). Failure to progress and unwillingness for TOLAC were 9.52% and 8.44% respectively. Elective caesarean section was done in 195 women.

Table 4: Indications of primary and repeat caesarean section.

Indications	Primary (x)		Secondary (y)	
	a	%	b	%
Obstructed labour	15	2.64	1	0.22
APH/Placenta previa	44	7.75	12	2.59
CPD	17	2.99	13	2.81
Compromised fetus	170	29.93	32	6.93
Failure to progress	160	28.17	44	9.52
Malpresentation	16	2.85	3	0.65
Breech	85	14.95	24	5.19
Severe pe/eclampsia	21	3.69	9	1.95
Prev. ≥2 caesarean	-	-	92	19.91
Scar tenderness	-	-	125	27.06
Unfavourable cervix	4	0.70	33	7.14
Not willing for tolac	-	-	39	8.44
Antepartum complication	15	2.64	28	6.06
Multiple pregnancy	21	3.69	7	1.52
Total	568	100%	462	100%

%=a/x (x=total no. of primary caesarean); b/y (y=total no. of secondary caesarean); secondary caesarean=prev. caesarean for any indication.

Group I comprise of largest number of women i.e. 24.2% of total deliveries. The caesarean section rate in this group was 18.06%, our result was consistent with the study conducted by Dhodapkar SB et al (23.5%), Shirsath A et al (19.6%) and Kansara V et al (20.11%).[2,9,10]

Group II contributed 9.32% cases in overall caesarean section and 32.76% of women in this group had caesarean section. Most of them were induced either for postdated pregnancy or associated maternal or fetal risk factors.

The major indications of primary caesarean section (55.15%) was either compromised fetus (29.93%) or failure to progress (28.17%). Compromised fetus includes all cases with severe IUGR, abnormal Doppler or non-reassuring CTG or MSL.

Table 5: Induction and indication of caesarean section.

Indication of caesarean	n	%
CPD	1	0.84
Fetal compromised	53	44.54
Failure to progress	57	47.89
Preeclampsia/eclampsia	3	2.52
Scar tenderness	3	2.52
Maternal complication	1	0.84
Multiple pregnancy	1	0.84
Total	119	100%

Total induction=470; total caesarean following induction=119; % caesarean post induction=25.32%

Failure to progress includes all cases of failed induction i.e. inability to achieve active phase of labour corresponding to cervical dilatation of ≥4cm within 24 hours of onset of induction, failure to progress i.e. no cervical dilatation during active phase of labour for the last 2 hours or no descent during 2nd stage for at least 1 hour despite adequate uterine contraction.[11]

Table 6: Indications of elective caesarean section.

Indication	N	%
Previous ≥2 Lscs	38	19.5
Not willing for Tolac	36	18.5
Unfavourable cervix	24	12.3
Maternal complication	23	11.8
Breech	20	10.3
Compromised fetus (IUGR, abnonmal doppler)	20	10.3
Others	34	17.4

Similarly, to primary caesarean failure to progress and compromised fetus were common indication of caesarean in 25.3%(119 out of 470) women who were induced with rate of 47.89% and 44.54%, respectively. Limiting induction of labour for which there is no clear indication, especially those with unfavorable cervix, would have significant effect on caesarean section rate.[12] Tura AK also compared the major indication of caesarean section within Robson's group, maximum cases of primary caesarean was due to fetal compromised followed by failure to progress and 65.7% post caesarean had repeat C.S.[12] These findings were comparable with Present study.

Group IX comprised of smallest group (0.78%) and contributes to 1.84% of total caesarean section. Total incidence of breech presentation (primi or multi) in Present study were 156 (6.09%), out of which 119 (76.28%) had caesarean section contributing 11.55% of overall caesarean, whereas 100% caesarean rate was observed in study conducted by Sneha et al regardless of parity.[2] High incidence of caesarean section in breech presentation is attributed to reluctance to carry out ECV

and fear of unforeseen delay in delivery of after coming head of breech.[14]

Group X (singleton, cephalic ,37weeks) in Present study constituted 14.29% of total deliveries which is indifference to study conducted by Dhodapkar SB who reported 7.3% incidence.[7] Most of them were late preterm ≥ 34weeks, 12.2% had spontaneous labour while 1.4% were induced.

CONCLUSION

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