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A RETROSPECTIVE STUDY ON EVALUATION OF CAESAREAN SECTION RATE USING THE ROBSON'S 10 GROUP CLASSIFICATION IN SARDAR PATEL MEDICAL COLLEGE, BIKANER

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Abstract

Introduction: Despite the lack of scientific evidence indicating any substantial maternal and perinatal benefits from increasing caesarean section rates, most of the studies are showing that higher rates could be linked to negative consequences in maternal and child health, still caesarean rates continues to increase worldwide, particularly in middle and high income countries, and have become a major and controversial public health concern. Therefore, we conducted this study to analyse the LSCS rate in the institute, to classify the indications of LSCS as per RTGCS and to find out strategy to decrease the prevalence of lower segment caesarean section.

Material & Methods: This is a retrospective hospital based study at tertiary care centre. Data collection of one thousand pregnant females who delivered by caesarean section from the period of January 2018 onwards was assessed for the study. There are six parameters as per Robson's classification to classify all pregnant females for caesarean section. Entire information was entered in Microsoft excel sheet and analysis were done to decrease caesarean section rate.

Results: In the present study, a total of 1000 pregnant women delivered by caesarean section was taken from January 2018 onwards. The total number of deliveries during this study period was 2919 and the overall caesarean section rate was 34.25%. Most of the patients belonged to Robson's group 1,2&5 which contributed to 65.6% to total.

Conclusion: The overall CSR in the study is 34.25% which is high as compared to international studies, contribution of repeat CS is high. It is important that efforts to reduce the overall CS rate should focus on reducing the primary CS rate. More analytical studies based on Robson's 10-group classification system are needed locally, to evaluate the indications of CS within each group.

Keywords: Robson's Classification, LSCS, Primary Gravida

Introduction

Introduction of caesarean section (lower segment caesarean section) into the field of obstetrics has been associated with an improvement in maternal and perinatal health outcomes, but in many developed countries, there has been concern regarding the higher rates of caesarean section[1]. Caesarean section also has its own risks for maternal as well as infant morbidity and for subsequent pregnancies[2,3]. These risks will outweigh the potential benefits associated with lowering the threshold at which the procedure becomes indicated at some point[4].

In the year 1985 World health organisation (WHO) stated that "there is no justification for any region to have a caesarean section rate higher than 10-15%[5]". The population based Caesarean Section (CS) rate should range between 10–15%[5] to positively impact maternal and neonatal health outcomes[6].

Lower segment caesarean section (LSCS) is the most commonly performed obstetric operation worldwide and also in India[7]. In the past few decades the caesarean section rates have increased to more than 30%[8], and this is a serious concern.

WHO proposed ''Ten-group classification system'' (TGCS) or Robson's classification[9] system categorizes all women into ten groups, considering the following criteria: parity (with / without previous caesarean section), onset of labour (spontaneous / induced / pre-labour caesarean section), gestational age, fetus presentation, and number of foetuses[9]. All women under this classification are classified into one group only. Based on this study we can analyze the rates of caesarean in our institution in modern day obstetrics and can collect information in a standardized, uniform & reproducible way that is critical for this institution as we seek to optimize the use of caesarean section, assess and improve the quality of care.

Quantification and classification of each caesarean section into one of the groups of Robson's Ten Group Classification System was done and the major and minor contributing groups were studied.

Material & Methods

This is a retrospective hospital based study at tertiary care centre. This study was conducted in the Department of Obstetrics and Gynaecology in SP Medical College & AGH, Bikaner, Rajasthan Data collection of one thousand pregnant females who had delivered by caesarean section from the period of January 2018 onwards was assessed for the study. Case files and records of each caesarean delivery were collected from the record rooms of the hospital. Details of each case was taken in form of demographic details, socioeconomic, referral status, antenatal visits, medical history, and any complications of intranatal period and indication for lower segment caesarean section (LSCS), if elective LSCS done, same may be noted. Collected data of all caesarean sections was distributed among one of the ten groups of Robson's classification. The purpose of classifying women into different groups is to identify women where effective strategies like change in labour management protocols, may help to optimize caesarean section rate. All this information was tabulated as per the proforma (APPENDIX-1).

There are six parameters as per Robson's classification to classify all pregnant females for caesarean section.

1. Singleton or Multiple pregnancies
2. Nulliparous or Multiparous
3. Period of gestational age
4. Presentation of foetus(vertex / breech / transverse / oblique)
5. Previous caesarean section history
6. Onset of labour (spontaneous / induced)

Appendix-1

Robson's Groups serial no.	Robson's 10-group classification
1	Nulliparous, single cephalic, > or equal to 37 weeks in spontaneous labour
2	Nulliparous, single cephalic, > or equal to 37 weeks induced or CS before labour
3	Multiparous without a previous uterine scar, single cephalic, > or equal to 37 weeks in spontaneous labour
4	Multiparous without a previous uterine scar, single cephalic, > or equal to 37 weeks, induced or CS before labour
5	Multiparous with at least a previous uterine scar, single cephalic, > or equal to 37 weeks
6	All Nulliparous breech pregnancies
7	Multiparous women, single breech pregnancy including women with previous uterine scars
8	Multiple pregnancies including women with previous uterine scars
9	Singleton pregnancy with a transverse or oblique lie, including women with previous uterine scars
10	Singleton cephalic, < or equal to 36 weeks, including women with previous scars

Data Analysis

Collected data was assessed to quantify and classify all caesarean section into different groups of Robson's classification. Caesarean rates were calculated as the ratio of caesarean deliveries to total deliveries. An overall evaluation of caesarean section rate and prevalance of individual group of Robson's classification was studied. A major contributing group of caesarean section was also assessed. If any patient has any complication during caesarean section or obstetric hysterectomy, same was noted. Entire information was entered in Microsoft excel sheet and analysis were done to decrease caesarean section rate.

Results

In present study, 25 cases had their period of gestation <37 weeks and out of them 4 and 21 cases belonged to Robson's group 8 (multiple pregnancies, including women with previous uterine scars) and 10 (singleton cephalic, < or equal to 36 weeks, including women with previous scars) respectively, 926 cases had their period of gestation between 37-40 weeks, while total 49 cases had their gestational age >40 weeks.

In present study, induced delivery was present in 482 cases and out of them 206 cases belonged to group 2 (Nulliparous, single cephalic, > or equal to 37 weeks induced or CS before labour), 92 cases belonged to group 4 (multiple pregnancies, without a previous uterine scar, single cephalic, > or equal to 37 weeks, induced or CS before labour), 9 cases belonged to group 7 (Multiparous with single breech including with previous uterine scars), 9 cases belonged to group 8 (multiple pregnancies including previous uterine scars) while 8 and 2 cases belonged to group 9 (singleton pregnancy with transverse or oblique lie, including women with previous uterine scars) and group 10 (singleton cephalic, < or equal to 36 weeks, including women with previous scars) respectively.

Spontaneous onset of labour was present in 518 cases and out of them maximum was in group 1 (Nulliparous, single cephalic, > or equal to 37 weeks in spontaneous labour).

According to presentation, out of total 103 breech presentation, 56, 42 and 10 cases belonged to group 6 (All Nulliparous breech pregnancies), group 7 (Multiparous women, single breech pregnancy including previous uterine scars) and group 8 (Multiple pregnancies including previous uterine scars), out of total 861 cephalic presentation cases maximum was in group 1 (Nulliparous, single cephalic, > or equal to 37 weeks in spontaneous labour), Oblique presentation was present in 9 cases, shoulder presentation was present in 18 cases and transverse was present in 13 cases and they all belonged to group 9 (singleton pregnancy with a transverse or oblique lie, including previous uterine scars).

In present study, 11 babies had their birth <2 kg and 493 babies had their birth weight between 2.51-3.0 kg and, 271 babies had their birth weight between 3.01-3.50 kg, while 54 babies had their birth weight >3.5kg respectively.

In the present study we observed that major contributing groups are group 5 (Multiparous with atleast a previous uterine scar, single cephalic, > or equal to 37 weeks), group 2 (Nulliparous, single cephalic, > or equal to 37 weeks induced or CS before labour) and group 1 (Nulliparous, single cephalic, > or equal to 37 weeks in spontaneous labour) contributing to 65.6% of all caesarean sections and according to size of patients, these were the major contributors and the least contributing groups were group 8 (Multiple pregnancies including previous uterine scars), group 9 (singleton pregnancy with a transverse or oblique lie, including women with previous uterine scars) and group 10 (singleton cephalic, < or equal to 36 weeks, including women with previous scars) .

Maximum primary gravida with breech presentation (group 6) were delivered by caesarean section which is a major contributor in caesarean section rate. As per relative size of group, major contributing group was group 1(Nulliparous, single cephalic, > or equal to 37 weeks in spontaneous labour) and least contributing group was 9 (singleton pregnancy with a transverse or oblique lie, including previous uterine scars).

Table 1: Distribution of cases according to caesarean section group in relation to period of gestation

LSCS Group	Period of Gestation (weeks)						Total	
	<37		37-40		>40			
	No.	%	No.	%	No.	%	No.	%
1	0	-	124	13.4	5	10.2	129	12.9
0	0	-	191	20.7	15	30.6	206	20.6
3	0	-	61	6.6	5	10.2	66	6.6
4	0	-	84	9.1	8	16.3	92	9.2
5	0	-	309	33.4	12	24.5	321	32.1
6	0	-	53	5.7	3	6.1	56	5.6
7	0	-	42	4.5	0	-	42	4.2
8	4	14.8	22	2.4	1	2.0	27	2.7
9	0	-	40	4.3	0	-	40	4.0
10	21	77.8	0	-	0	-	21	2.1
Total	25		926		49		1000	

Table 2: Distribution of cases according to caesarean section group in relation to onset of labour

Robson's Group	Onset of Labour				Total	
	Induced		Spontaneous			
	No.	%	No.	%	No.	%
Group 1	0	-	129	18.9	129	12.9
Group 2	206	63.2	0	-	206	20.0
Group 3	0	-	66	9.7	66	6.6
Group 4	92	28.2	0	-	92	9.2
Group 5	0	-	321	47.1	321	32.1
Group 6	0	-	56	8.2	56	5.6
Group 7	9	2.5	3	5.1	42	4.2
Group 8	9	2.5	18	2.8	27	2.7
Group 9	8	2.2	32	5.0	40	4.0
Group 10	2	0.6	19	3.0	21	2.1
Total	482		518		1000	

Table 3: Distribution of cases according to caesarean section group in relation to presentation

Robson's Group	Breech		Cephalic		Oblique		Shoulder		Transverse		Total	
	No.	%	No.	%	No	%	No.	%	No.	%	No.	%
Group 1	0	-	129	15.0	0	-	0	-	0	-	129	12.9
Group 2	0	-	206	23.9	0	-	0	-	0	-	206	20.6
Group 3	0	-	66	7.7	0	-	0	-	0	-	66	6.6
Group 4	0	-	92	10.7	0	-	0	-	0	-	92	9.2
Group 5	0	-	321	37.3	0	-	0	-	0	-	321	32.1
Group 6	56	51.9	0	-	0	-	0	-	0	-	56	5.6
Group 7	42	40.8	0	-	0	-	0	-	0	-	42	4.2
Group 8	10	9.7	1	2.0	0	-	0	-	0	-	27	2.7
Group 9	0	-	0	-	9	100	18	100	13	100	40	40.0
Group 10	0	-	21	2.4	0	-	0	-	0	-	21	2.1
Total	103		861		9		18		13		100	

Table 4: Total deliveries under Robsons TGCS and contribution of each group in the CS rate

Robsons category	Number of patients (n =)	Number of vaginal deliveries	Number of caesarean deliveries	CS Rate(% of number of women in each group)	Relative size of group	% contribution in total CS
Group 1	553	424	129	23.32%	18.94%	12.9%
Group 2	516	310	206	40%	17.64%	20.6%
Group 3	543	477	66	12.16%	18.60%	6.6%
Group 4	423	331	92	21.75%	14.49%	9.2%
Group 5	353	32	321	90.93%	12.10%	32.1%
Group 6	75	19	56	74.66%	2.56%	5.6%
Group 7	99	57	42	42.42%	3.39%	4.2%
Group 8	72	45	27	37.50%	2.47%	2.7%
Group 9	40	-	40	100%	1.37%	4%
Group 10	245	224	21	8.57%	8.39%	2.1%
Total	2919	1919	1000	34.25%		

Discussion

Caesarean section is one of the most widely performed surgical procedures in obstetrics in worldwide. There has been an increase in rate of cesarean section over last five decades. It has increased from a rate of 5% in 1940s and 1950s to 15% in 1970 and 1980s. However there has been a dramatic increase in the cesarean section rate globally, even beyond 30% in some areas. It is mainly evolved as a lifesaving procedure for mother and foetus during the difficult delivery. Cesarean section (CS) has been one of the most debated topics in maternity care as the rates of CS are increasing globally.

In our study, a total of 1000 pregnant women delivered by caesarean section was taken from January 2018 onwards and the total number of deliveries during the study period was observed. We comprehend from our study, that 1919 women had Vaginal Delivery and 1000 women had Caesarean Delivery and the overall Caesarean section rate was 34.25% and total deliveries in this period was 2919.

The C section rate in our study (34.25%) was higher than WHO criteria of 15% C-Section rate, Australia (28%), Tasmania (33%), USA (27%) C-section rate. Asian countries had C section rate of 27.3%. The C section rates are reported as 20-25% in United Kingdom, 40% in China. In

India the C section rate increased from 20 to 30% over the last 20 years and in some facilities, it is up to 35-40%.

The C section rate in our study is almost similar to C section rate by Yadav et al[10] (39.2%) but higher than Dhodapkar et al[11] (32.6%), Jawa et al[12] (31.8%) .

The largest contribution to C section rate in our study was by Group 5 that is 90.93% of overall C section rate and Group 5 also accounted for 12.13% of total deliveries. The major contributing groups which underwent CS were group 5, followed by group 2,1 and 4 and the CS rate was 90.93%,40%,23.32%, and 21.75% respectively. The largest contributing groups for number of patients were groups in decreasing order group 1(n=553), 2(n=515),3(n=513),4(n=423), and 5(n=384). The smallest group respectively were group 8(n=72) and 9(n=40). Our study was comparable with Yadav et al[10], Bhatt et al[13], and was not comparable with Jawa et al[12] and may be because of patient overload from urban areas coming to tertiary centre whereas we have the overload of patients from rural areas.

In our study groups Contribution in total CS was maximum seen with group 5(32.1%), followed by group 2(20.6%), group 1(12.9%) and 4(9.2%) respectively. Least contribution was by group 8(2.7%), 9(4%), and 10(2.1%). Which is comparable with most of the Indian studies and not comparable with foreign studies may be due to the availability of different health facilities.

Group 5 is the largest contributor to overall C section rates in all the studies. In our study Group 5 contributed to 32.1% of overall C section rate whereas, Jawa et al[12] in Jaipur, Rajasthan reported 81.5% of C section rate, Yadav and Maitra[11] reported 87.4%, Bhatt et al[13] 99.4% and found to have largest contribution in all three HDI categories.

The primary pre-requisites of TOLAC is availability of electronic fetal monitoring and stringent patient monitoring by an experienced obstetrician. Both of these prerequisites cannot be fulfilled by busy labor units unless there is a supportive infrastructure.

It is rather an alarming fact to know that even preterm deliveries in group 10, are not being left behind and occupy 2.1% of total C section rate in our study. The last category is occupied by Group 8 and 9 which account for 2.7% and 4% each of overall C section rate.

Conclusion

The overall CSR in the study is 34.25% which is high as compared to international studies, contribution of repeat CS is high. It is important that efforts to reduce the overall CS rate should focus on reducing the primary CS rate. More analytical studies based on Robson's 10-group classification system are needed locally, to evaluate the indications of CS within each group.

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