Original Research Article

Assessing cesarean section trends in a tertiary care teaching hospital using robson's ten group classification

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Abstract

Background: Rising caesarean section rates are a matter of great concern for all.In order to understand the reasons and take measures to reduce this WHO has suggested that all health care facilities should do periodical audit of their institutional caesarean sections using the Robson's ten group classification. This classification helps to identify which group of patients and indications are contributing maximum to the caesarean sections in the institute and what measures can be taken to reduce the rate in each group.**Aim**: When we study each group and its contribution to cesarean section rates we can formulate guidelines to reduce the rates.**Methods:** This is a retrospective cross sectional study conducted for a period of 1 year at a tertiary care medical college hospital in Chhattisgarh.All women who delivered here in between December 2019 to November 2020 were included in study these were classified into 10 groups according to Robsons 10 group classification and caesarean delivery rates were calculated in each category and analysed. Contribution of each group to overall caesarean section rate and caesarean percentage in each group was calculated.**Results:** Out of total of 1586 women who delivered during the study period 972 women had undergone caesarean section with an overall C section rate of 61.2 %.in our hospital. Group 5 contributed to highest C-sections followed by group 2 and 1.Together these 3 groups contributed to 75% of CS rates. Groups 6,7 and 9 did not contribute much to overall C-sections but CS rates in this group of patients is above 90% reaching close to 100% in group 6. **Conclusion:** Robson 10 group classification provides for an easy, simple way of collecting and comparing information about C section rates in an institution. detailed analysis of each groups can help to detect causes of increased CS rates in each group at our institution .measures to reduce CS rates can be reducing primary C-sections,increasing VBAC in previous section cases, judicious use of ECV, partogram,EFM and modification in criteria for non-progress of labor,Fetal distress can all contribute to reduce CS rates.

Keywords: caesarean section,partogram,labor, Robson 10 group classification.

Introduction

Increase in cesarean section rates globally has been a matter of concern over last few decades for WHO[1].WHO advises that cesarean section rates should be below 15%[2]. It states that increases in cesarean section rates above 15% has no benefit in terms of reduction in maternaland neonatal mortality and morbidity[3]. Robson's classification for cesarean section has been introduced to understand the individual factors and groups specific to an institute that contribute to overall C S rates and how this rate can be lowered by specific policies and protocols at that institute[4-6].In 2015 WHO issued at official statement regarding cesarean section rates and promoting use of Robson's classification as a tool for optimize cesarean section rate at a health care faculty[7]. These 10 groups are mutually exclusive at same time they include all category of patients. This classification is simple, robust, reproducible and flexible[8].It can be used to monitor the cesarean section rates over time as well as between facilities and has been recommended by WHO as well as FIGO in 2016[9,10].When we study each group and its contribution to cesarean section rates we can formulate guidelines to reduce the rates.In our study we classified our obstetric population into 10 Robson's groups to identify which group's contribution is maximum to our overall cesarean section rates and if we can formulate policy guidelines to reduce these rates.

Material and methods

This was a prospective cross sectional observational study conducted for a period of 1 year from Jan 2020- Dec 2020 at Shri Shankaracharya institute of medical sciences Bhilai Chhattisgarh;a tertiary care medical college and hospital catering to both rural as well as urban population of Chhattisgarh. All women who delivered during this period whether booked or unbooked were included in the study, total no of women who delivered every month was counted overall and cesarean section rate calculated these were then classified according to Robinson's 10 groups .Cesarean section rate in each group calculated and analyzed.

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Table 1:Original Robson's classification

1.	Nulliparous,single cephalic,>37 weeks in spontaneous labor
2.	Nulliparous,single cephalic,>37 weeks,induced or CS before labor
3.	Multiparous (excluding previous CS),single cephalic,>37 weeks in spontaneous labor
4.	Multiparous (excluding previous CS), single cephalic >37 weeks, induced or CS before labor
5.	Previous CS ,single cephalic,>37 weeks
6.	All nulliparous breeches
7.	All multiparous breeches(including previous CS)
8.	All multiparous pregnancies(including previous CS)
9.	All abnormal lies (including previous CS)
10.	All single cephalic,<36 weeks (including previous CS)

Results

The total number of women who delivered over the period was 1586. Total no. of cesarean section was 972 C-section at over hospital was 61.2 %. The contribution to overall caesarean section rate in descending order group 5(previous CS, single, cephalic>37 weeks) had maximum contribution of 43% followed by group 2(nulliparous, single cephalic >37 weeks induced or CS before labor) with 18.8%. Group 1 (nulliparous, single, cephalic>37 weeks in spontaneous labor) contributed 16.3%. Hence group 5, 2 and 1 it contributed to approx. 75% of overall caesarean sections. followed by group 10 (all single cephalic <36 weeks including Prev CS)that contributed 7.09% and group 6(all nulliparous breeches) and 4(all multiparous excluding previous caesarean,single cephalic >37 weeks induced or CS before labor) and 3(multiparous excluding previous section , single, cephalic>37 weeks in spontaneous labor)which contributed 3.6%, 3.3% and 3.29% respectively.Remaining groups 7 (all multiparous breeches including previous CS),8(all multiple pregnancies including previous CS) and 9 (all abnormal lies including previous CS)contributed 1.95%,1.85% and 1.54% respectively. The greatest representation in our patient population was by group 1 followed by group 2 and 3 .group 7, 8 and 9 had the least representation. Among the entire group that had highest CS rates was group 6 with 100% CS rate followed by group 5 with 94% and group 9 with 93% CS rate.The contribution of each group to total delivery rate was calculated and also to cesarean section rate.

Table 2: Ranking of Robson's class according to representation in each group.

Rank	Classification Group	Relative size in each group
1	5	27.9%
2	1	27.1%
3	2	16.5%
4	3	10.3%
5	10	8.95%
6	4	2.96%
7	6	2.2 %
8	8	1.57 %
9	7	1.38 %
10	9	1.00 %

Table 2: Ranking of group contributions to overall cesarean section rate

Rank	Classification Group	Relative size in each group $(\frac{B}{Total\ no.of\ Del.}$ X 100)
1.	5	43 %
2.	2	18.8 %
3.	1	16.3 %
4.	10	7.09 %
5.	6	3.6 %
6.	4	3.3 %
7.	3	3.29 %
8.	7	1.95 %
9.	8	1.85 %
10.	9	1.54 %

Table 3: Ranking Robson class according to cesarean section rate in each group

Rank	Percentage CSR	Classification Group
1.	100 %	6
2.	94.3 %	5
3.	93 %	9
4.	86 %	7
5.	72 %	8
6.	70.2 %	4
7.	69.5 %	2
8.	48.5 %	10
9.	36.8 %	1
10.	19.5 %	3

Table 4:Anaylsis of data

Robson's Group	No. of cesarean section (A)	No. of Total del. (B)	Rate of cesarean section in group ($\frac{A}{B}$ x 100)	Relative size of group ($\frac{B}{Total\ no.\ debt}$x100)	Contribution of group in overall cesarean section rate ($\frac{A}{Total\ no.of\ C.S.}$x100)
1.	159	431	36.8 %	27.1 %	16.3 %
2.	183	263	69.5 %	16.5 %	18.8 %
3.	32	164	19.5 %	10.3 %	3.29 %
4.	33	47	70.2 %	2.96 %	3.30 %
5.	419	444	94.3 %	27.9 %	43.1 %
6.	35	35	100 %	2.2 %	3.6 %
7.	19	22	86 %	1.38 %	1.95 %
8.	18	25	72 %	1.57 %	1.85 %
9.	15	16	93 %	1.00 %	1.54 %
10.	69	142	48.5 %	8.95 %	7.09 %
Total	972	1586	61.2 %		

Discussion

Before introduction of Robson's classification cesarean section rate was classified and audited according to indication/ reason for surgery[11,12]. The terms used are different at different institutes and place. No uniformity was there in descriptions and hence could not be compared between various centers.In 2001 Dr. Michael Robson of the national maternity hospital, Dublin proposed the new 10 group classification system. The TGCS is used worldwide and WHO applied Robson 10 group classifications to multi-country dataset[13].It facilitates comparative analysis of cesarean section between hospital centers nationally, internationally and globally[14-16]. In our study the overall cesarean section rate is 61.2 % which is well above the WHO rate of 15% at a given population.WHO proposes that at a population level CS rates higher than 15 % is not associated with reduction in maternal and perinatal mortality rates. Our higher rate reflects the rate at a tertiary level hospital and not a given population section rate as ours is a tertiary lend hospital where majority of patients are referred from primary and tertiary centers fo C. Section and high risk patients are referred for better care hence the higher C-sections rates at our institutes could be explained by high referrals at last minute due to non-availability of blood bank, ICU and NICU facilities at primary booking centers also due to availability of Ayushman Bharat Govt. health scheme at our centre for C-sections only and not for normal delivery is also a major factor.Group 5 (prev. C-sections) has highest contribution to C-sections rates in our study. This is also the case in most of centers globally as mentioned in lancet article when all three HDI category countries were compared and group 5 was found to have highest contribution in overall C-Section rates. In our study 2nd greatest contribution was from group 2 contrary to lancet study where group 1 was greatest contributor after 5 irrespective of HDI status at the country.This difference could be explained by local policies and protocols for IOL[17-19].In our study where group 2 is primi Induced or C-Section done before Labor onset thus if local.Protocol has strict policy regarding IOL limiting IOL for very clear indications only esp. when CS isunfavorable would have significant impact on C- Section rate[20,21].2nd point to address is the common indications for a primary C section because if we can reduce the rates of primary c- sections we will reduce incidence of Prev C-Section cases in our obstetric population in our study group 5 had biggest representation in overall obstetric population about 30% this can be reduced if indication for primary sections are strictly reviewed.Two common indications for primary C. Section failure to progress and fetal distress, other indications are precious pregnancy, advanced maternal age, postdated,CPD due to over enthusiastic use of inductions and Augmentations normal progress of labor is altered. In our study of primary C- Sections more sections were done in group 2 than group 1.

In a recent study on singlet on, cephalic term pregnancies in spontaneous labor it was found that it may take longer than currently expected normal time frame for many women to reach 6 cm cervical dilatation only after this the normal rate of 0.5 cm to 1 cm per hour of dilatation begins.Most C- sections done for failure to progress may be done even before women reaches active labor. We should renew on a daily basis all emergency Caesareans section done in previous 24 hours to evaluate this as an indication reducing this will definitely impact primary C-section rates[22,23].Use of partogram and proper interpretation of fetal heart rate changes in labor monitored by EFM can also reduce primary CS rates.Increasing C – section rates among women with breech presentation is common since publication of term breechtrial. Group 6 and 7 consist of women with breech presentation and has shown high C- section rates close to 100% in group 6 and >80% in group 7.Since the publication of team breech trial in spite of all the criticism most centres are reluctant in offering vaginal birth to primigravid with breech[24-29].Thus by analysing each group separately and looking at their individual contribution in overall C – section rate we can focus on the groups where possibility of reduction in C section rates is there and institutional policies can be formulated for same according to each group[30].

Conclusion

Robson 10 group classification provides for an easy, simple way of collecting and comparing information about C section rates in an institution .detailed analysis at each group can help to detect causes of increased C- SECTION rates in each group at our institution. Efforts to reduce overall C – section rate should definitely focus on reducing primary C- section rate (group 1and2) and also on increasing VBAC (group 5) reducing primary C- Section rates, judicious use of VBAC, ECV, Partopram, EFM, modification of criteria for non-progress of labor, non-reassuring FHR pattern on EFM , all these can contribute effectively in reducing C- Section rates without compromising maternal and Fetal safety in an institute .Offering ECV to all eligible women with breech and considering vaginal breech delivery to suitable women can reduce c- Section rates in this group of women.

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