Section: Obstetrics and Gynaecology

Original Research Article

ANALYSIS OF CAESAREAN SECTION USING ROBSON TEN GROUP CLASSIFICATION SYSTEM IN TERTIARY CARE CENTRE - PROSPECTIVE OBSERVATIONAL STUDY

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ABSTRACT

Background: The aim of the study is to analyze the caesarean section in Government Dharmapuri Medical College and hospital using Robson ten group classification systems and to identify the main contributors of each subgroup to the overall CS. **Objectives:** To analyze the caesarean section using robson ten group classification. To identify the main contributors of each subgroup to overall CS. **Materials and Methods**: All women delivered by cesarean section are taken up for study. Duration May 2023 to October 2023. All relevant obstetric information parity, mode of previous deliveries, previous cesarean sections and indications, gestational age, onset of labour, spontaneous or induced. **Results:** This study was conducted in 2942 women in Government Dharmapuri medical college among them 1598 (54.3%) delivered by caesarean Section. The majority of study population were in 21-30 years (71.5%). Most common groups were group 5 (33.4%) followed by group 2 (19.8%) and group 1. Most common indications of caesarean section are scar tenderness, failed induction and fetal distress (18.6%). **Conclusion:** The overall cesarean section (CS) rate should be reduced by identifying contributing factors. Efforts should focus on lowering the primary CS rate and encouraging vaginal birth after cesarean (VBAC) for women with adequate inter-pregnancy intervals. Primary CS rates can be reduced through ethical trials of labor. Adolescent health, antenatal care, and early intervention for pregnancy-related medical conditions are crucial. Additionally, instrumental delivery should be considered as an alternative to cesarean.

INTRODUCTION

A growing number of women around the world are undergoing Caesarean sections (CS). The fact that caesarian sections surgery is the most common abdominal surgery operation performed all around the world explains why it is so prevalent globally. It is recommended by the World Health Organization (WHO) that the Caesarean rate should be between 5% and 15%. A rate that is higher than 15% indicates that surgical delivery is being used in an unnecessary and inappropriate manner. On the other hand, a rate that is lower than 5% may be associated with the population's lack of access to medical technology.[3] Some of the causes that have contributed to the increased utilization of CS include the enhancement of surgical and anesthetic procedures, the reduction of postoperative problems, and the feeling of better safety during the surgery. The rate of Caesarean sections has increased over the years, even though there is no medical basis for it and with no regard for the potential dangers that it may pose to mothers and children who are born with Caesarean sections. There are several negative effects that may have an impact on the mother, some of which include the possibility of maternal death, a rise in the number of hospital remissions, and an increase in the likelihood of placenta previa occurring in subsequent pregnancies. When it comes to kids born via Caesarean sections, the only adverse result that has been thoroughly documented is respiratory distress syndrome. Additionally, children who are born through Caesarean sections are more likely to suffer from chronic disorders than children who are born without Caesarean sections.[4-5]

Although Caesarean sections continue to be the most profitable method for medical professionals and hospitals, it is more convenient for the woman

to schedule the surgery day rather than wait for the unpredictable beginning of labor. However, in a normal pregnancy, Caesarean section has a death rate that is eight times greater than vaginal birth, in addition to a morbidity rate that is eight to twelve times higher. Since the beginning of the last decade, there has been a concerning rise in the frequency of CS all over the world. Prior to 2010, the prevalence of Caesarean sections was estimated to be 17.6%. According to the World Health Organization (WHO), the prevalence of cardiovascular disease is estimated to be 36% in the United States of America, 23% in Europe, 9% in Asia, and 4% in Africa. Fear of vaginal delivery, preservation of coital function, relief from the discomfort of labor, and the desire to have a tubal ligation are some of the reasons why the woman has chosen to undergo Caesarean section.[6-7]

One in every five pregnant women in India underwent a C-section, even if they did not require it for medical reasons, according to a recent countrywide survey that was typical of the entire country. The prevalence rates of caesarian sections in India have been reported to be above the threshold set by the WHO, which is 15%, which poses a significant threat to the public's health. In private facilities, the rate of CS delivery is 47.4%, while in public facilities, the rate is only 14.3%. According to the findings of one study, the number of unnecessary Caesarean deliveries would have been 1.83 million if private sector facilities in India had met the WHO's 15% Caesarean delivery rate norm. This would have resulted in potential cost savings of $320.60 million.[8-9]

A nationwide study has reported that The southern states of India, such as Telangana, have reported a prevalence of 60.7%,while Tamil Nadu, has a prevalence of 44.9%, Andhra Pradesh, which has a prevalence of 42.4%, Kerala, which has a prevalence of 38.9%, and Karnataka, which has aprevalence of 31.5%, as well as the northern states, such as Punjab, which has a 39.5% prevalence, and Jammu and Kashmir, which has a 41.7% prevalence.[10]

Studies from south India have shown that increase in institutional deliveries may be an important reason for inclination of caesarean deliveries. They have also implicated Social like higher mother's education, urban residence, and upper socio-economic status as potential contributing factors for choosing to have caesarian sections. The other medical factors implicated were increased maternal age, high birth order, complicated pregnancy (breech, twins, elderly primi) also greatly influenced the decision for caesarian sections. Access to quality health care services, education regarding complications through counselling can be used reduce the incidence of caesarian sections.

As a global standard instrument for assessing, monitoring, and comparing the CS rates within and between health care facilities, nations, and timely variations, the World Health Organization (WHO) suggested Robson's ten group classification system (RTGCS) in April of 2015. The Robson ten group classification system is a comprehensive perinatal classification that categorizes every woman who is admitted for delivery based on five parameters: the gestational age, the number of gestations, the commencement of labor, the presentation, and the number of births. An audit of Caesarean section deliveries in institutions that makes use of the RTGCS is an important tool that may be used to determine which groups of women are the primary contributors to the general increase in the rate of Caesarean sections.

MATERIALS AND METHODS

The purpose of this research is to determine the percentage of women who undergo Caesarean sections at our institution and to conduct an analysis using the Robson ten group classification method and formulate plans to reduce caesarian sections.

Inclusion Criteria

- All the women delivered during the study period Government Dharmapuri Medical College
- All registered and unregistered women
- All women who need induction of labour for any medical or obstetric medical conditions
- All women who required direct LSCS for specific conditions

Exclusion Criteria

- Patients not willing for the study

RESULTS

The study was done in the Department of Obstetrics and Gynecology in Dharmapuri Medical College. Based on the inclusion and the exclusion criteria the study participants were recruited. The final sample size obtained was 2942. The results were discussed under following headings:

- Mode of Deliveries among the study participants
- Prevalence of Caesarean section
- Age distribution
- Para status
- Previous history of CS
- Number of fetus
- Gestational age
- Onset of labour
- Fetal presentation
- Robson classification

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Table 1: Distribution of mode of deliveries among the study participants

ModeofDeliveries	Number(N)	Percentages (%)
Spontaneous Vaginal Delivery	**1000**	**34**
Caesareansections	**1598**	**54.3**
AssistedVaginal Delivery	**344**	**11.7**
Total	**2942**	**100**

Among the study participants the majority were delivered through Caesarean sections 1598(54.3%) followed by Vaginal delivery 1000(34%).344 (11.7%) of the study participants had instrumental delivery. [Table 1]

Table 2: Prevalence of Caesarean section

Prevalence	Number(N)	Percentages (%)
Yes	1598	54.3
No	1344	45.7
Total	2942	100

In our study the prevalence of caesarean section was found to be 1598(54.3%). [Table2]

Table 3: Age distribution of the study participants

Age	Number(N)	Percentages (%)
≤ 20 years	240	15
21-30 years	1143	71.5
31-40 years	215	13.5
Total	1598	100

The majority of the study participants were in 21-30 years 1143(71.5%). T h e second common age group was found to be ≤ 240 (15%). [Table 3]

Table 4: Robson classified groups (Relative size in each group)

Groups	Ten group classification	Number(N)	Percentages (%)
1	Nulliparous, singleton cephalic, ≥37 weeks, spontaneous labor	298	18.6
2	Nulliparous, singleton cephalic, ≥37 weeks, induced labor or Caesarean section before labor	316	19.7
3	Multiparous without previous Caesarean section, singleton, cephalic, ≥37 weeks, spontaneous labor	159	9.9
4	Multiparous without previous Caesarean section, singleton, cephalic, ≥37 weeks, induced labor or Caesarean section before labor	105	6.6
5	Multiparous with prior Caesarean section, singleton, cephalic, ≥37 weeks	534	33.4
6	All nulliparous breeches	27	1.7
7	All multiparous breeches (including previous Caesarean section)	13	0.8
8	All multiparous pregnancies (including previous Caesarean section)	24	1.5
9	All pregnancies with transverse or oblique lie (including those previous Caesarean section)	6	0.4
10	Singleton, cephalic, ≤36 weeks (including previous Caesarean section)	116	7.3
Total		1598	100

Among the total study participants, Group 5 was 534(33.4%) followed by Group 2 316(19.7%). Group 9 was less in our study 6 (0.4%). [Table4]

Table 5: Study participants less than 36 weeks of gestation

Group10	Number(N)	Percentages(%)
Singleton,cephalic,≤36weeks (including previous Caesarean section)	116	7.3

116(7.3%) of the study participants have singleton fetus in cephalic position. [Table5]

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Table 6:CS rates among women group according to Robson's ten group classification system

Groups	Categories	Number of CS (N=1598)	Number of women in each group (n)	Percentage (%)	Absolute contribution (N=2942)	Relative Contribution (n=1598)
1	Nulliparous, singleton cephalic, ≥37 weeks, spontaneous labour	298	444	67.12	10.1	18.6
2	Nulliparous, singleton cephalic, ≥37 weeks, induced labour orcaesareansectionbefore labour	316	649	48.7	10.7	19.8
3	Multiparous without previous Caesarean section, singleton, cephalic, ≥37weeks, spontaneouslabour	159	552	28.8	5.4	9.9
4	Multiparouswithout previousCaesareansection, singleton, cephalic, ≥37 weeks, induced labour or Caesareansection before labour	105	347	30.3	3.6	6.6
5	Multiparous with prior Caesareansection, singleton,cephalic,≥37 weeks	534	534	100.0	18.2	33.4
6	Allnulliparousbreeches	27	27	100.0	0.9	1.7
7	Allmultiparousbreeches (includingprevious Caesarean section)	13	21	61.9	0.4	0.8
8	All multiparous pregnancies (including previous Caesarean section)	24	30	80.0	0.8	1.5
9	All pregnancies with transverse or oblique lie (includingthose previousCaesarean section)	6	6	100.0	0.2	0.4
10	Singleton, cephalic,≤36 weeks(including previous Caesarean section)	116	332	34.9	3.9	7.3

Of the above results all the patients in Group 6 and Group 7 underwent Caesarean section (100%). Similarly, in Group 9 all the abnormal presentations were delivered through Caesarean section (100%). This was followed by Group 5 where 100% of the study participants underwent caesarean section. Thus, the major contribution was Group 5 in the overall caesarean section rate, and it is 33.4% which is followed by Group 2 which is 19.7%. [Table 6]

The most common indication was failed induction. The second common indication was found to be Scar tenderness.

DISCUSSION

The Caesarean section rate has been increasing nowadays and it is of our main concern. This increase in rate has been seen globally both in developed and developing countries. This is because we couldn't understand the trend and the cause which is underlying. Thus, we don't have a internationally accepted classification system to monitor the Caesarean section rate and compare it in a consistent and action oriented manner. A systematic review which is done in the year stated that the Robson's Ten group classification will be in its best position to fulfill the local needs and the international needs. Dr Robson in his classification proposed the rates based on his experience. The CS rate endorsed by the World Health Organization was found to be ≤ 15 to outweigh the benefits and the risks of CS. The rising trends may be due to less expertise for doing instrumental deliveries, fear of labour pains and its thresholds by the patients, labour inductions without any indications, malpractices etc. It is important to compare the CS rate with the past rate to find out the areas of improvement and with the aim to decrease the CS rate further.

The study was done in the Department of Obstetrics and Gynecology in Dharmapuri Medical College. Based on the inclusion and the exclusion criteria the study participants were recruited. The final sample size obtained was 2942.

The results were discussed under following headings: Among the study participants the majority were delivered through Caesarean sections 1598 (54.3%). 1000(34%) study participants had spontaneous vaginal delivery.344 (11.7%) of the study participants had assisted vaginal delivery.

Prevalence of Caesareans sections:

In our study the prevalence of caesarean section was found to be 1598(54.3%). In Dhodapkar SB et al study the CS rate was found to be 32.6% which is lesser than our results.40% was observed in Patel RV et al study and 25.7% observed in Katke RD et al study. Abdel Aleem H et al in his study done in Egypt has also showed higher rate of 32%-

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38%.These differences are due to the fact that all these studies were done in different regions and hospitals in India.

Age Distribution

Majority of the study participants were in 21-30 years 1143(71.5%). The second common age group was found to be ≤ 20 years 240 (15%). In RashidaParveen et al study majority of the study participants were in 20-35 years of age 152(91%) which is similar to our results. Less than 20 years were found only in 10(6%) of the study participants.

Relative contribution to CS:

Group 5(33.4%), Group 2(19.7%) and Group 1(18.6%) contributed more to our study. Similar results were also seen in Khan MA et al study where Group 5 and Group 2 is most common. Whereas in contrast to our study RashidaParveen et al showed Group 10(50.9%), Group 5 (14.4%) and Group 1(11.4%). Similarly in Dhodapkar SB et al study Group 1 (33.3%), Group 5 (19.7%) and Group 2(14.6%) were more prevalent in his study. All these studies show us the trend in their own institutions. Each study shows that which groups contributes more to the overall CS rate. Tan JKH et al who did the study in the Singapore stated that Group 5, Group 2 and Group 10 are the most common group contributing more towards the overall CS. It was found in many studies that Group 5 and Group 10 contributes majorly whereas in our study it is Group 5 followed by Group 2.

Group 1 should be larger than Group 2 and it accounts for 35-40% of the labor. Whereas in our study Group 2 was larger than Group 1. Whereas in Dhodapkar SB et al study Group 1 was larger than Group 2.30-40% of the labor is contributed by Group 3 and Group 4. Group 3 should be larger than Group 4.In our study Group 3 is larger than Group 4.Similar results were also observed in Dhodapkar SB et alGroup 5 should be <10% of women. Whereas in our study 33.4% are from Group 5. Similar results were observed in Dhodapkar SB et al where 14.6% is Group 5. Group 6 and 7 should account for 3-4% of women.In our study 2.5% is contributed all together and group 6 twice than group 7.Similar results was observed in Dhodapkar SB et al .Group 8 should be within 1.5%-2%.Similar results was seen in our study .Group 8 constitute 1.5%.Dhodapkar SB et al showed 1.83%

Group 9 should be within 0.2-0.6% of women with CS rate 100%. In our study group 9 constitutes of 0.4%.Similar results was also seen in Dhodapkar SB et al study. Group 10 should be 5% approximately, whereas in our study it was found to be 7.3%.Similar results was also seen in Dhodapkar SB et als study .This may be due to the fact that our hospital is the referral centers and facilities for delivering preterm babies.

CS rate:

In our study CS rate of group 1 should be less than 10%. In our study group 1 has (18.6%) CS These results were similar to Shrishath A et al(19.6%) was observed. This was less than studies done by Kansara Vijay et alstudy (20.11%), Dhodapkar SB et al (23.5%), TahiraKazmi (70) (13%) were observed. All these showed higher percentages. Group 3 should contribute 2.5-3%. In our study Group 3 CS rate was found to be 9.9%. This was more than studies done by Dhodapkar SB et al (5.9%), Kansara Vijay et al (5.4%)and Shrishath A et al (4.8%)..

Group 4 should contribute less than 20%. Similar results were seen in our study 6.6%. Shrisath A et al (6.6%)showed similar results but it was less than Dhodapkar SB et al (12.2%) study. In our study the CS rate for Group 5 was 100%. Thus, it was more than expected rate of 50-60%. Similar results were seen in Shrisath A et al (87.2%), Dhodapkar SB et al (89.6%)and Kansara Vijay (98.3%.

Thus, in our study Group 5 contributed 33.4%. This was in line with the results of Abel et al (30%).and Wanjari SA et alstudy 32.8%. Dhodapkar SB et al showed 40.1%, Shrisath et al 54.5% and Kansara Vijay 46.1%.

CONCLUSION

Summary

The study was done in the Department of Obstetrics and Gynecology in Dharmapuri Medical College. Based on the inclusion and the exclusion criteria the study participants were recruited. The final sample size obtained was 2942. The findings of the study were as follows:

- Among the study participants majority were delivered through Caesarean sections 1598(54.3%)
- 1000 (34%) study participants had vaginal delivery
- 344 (11.7%) of the study participants had Assisted Vaginal delivery.
- In our study the prevalence of caesarean section was found to be 1598(54.3%)
- Majority of the study participants were in 21-30 years 1143(71.5%)
- The second common age group was found to be ≤ 20 (15%)
- In our study 298(18.6%) of the women are nulliparous, >37 weeks' pregnant women having singleton fetus and in spontaneous labor.
- In our study nulliparous women, w h o are induced and were in 37 weeks of gestation were 316 (19.8%)
- Around 159 (9.9%) women in our study was found to be multiparous women without previous Caesarean section with singleton above 37 weeks of gestation.
- In our study 105(6.6%) are multiparous women without previous Caesarean section history and have crossed 37 weeks of gestation
- In our study 534(33.4%) are multiparous women with history of previous Caesarean section and crossed 37 weeks of gestation.

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- Around 27(1.7%) of the study participants are nulliparous women with breech presentation.
- In our study 13(0.8%) of the study participants are multiparous women with breeches.
- In our study 24(1.5%) are multiparous pregnancies
- In our study 6(0.4%) of the study participants have Transverse or oblique lie
- 116(7.3%) of the study participants have singleton fetus in cephalic position less than 37 weeks of gestation
- Among the total study participants,Group 5 was more 534(33.4%)
- roup 2 316 (19.8%) was the second most common
- Group 9 was less in our study 6(0.4%)
- All the patients in Group 6 and Group 7 underwent Caesarean section (100%).
- Similarly in Group 9 all the abnormal presentations were delivered through Caesarean section (100%).
- In Group 5 where 100% of the study participants underwent caesarean section.
- The major contribution was Group 5 in the overall caesarean section rate, and it is 33.4%
- Group 2, which is 19.8% is the second major contributor in the overall caesarean section.
- Most common indication among Group 1 & Group 3 is Fetal Distress.
- Most Common indication among Group 2 & Group 4 is failed induction.
- Emergency LSCS is 382 (71.5%) when compared to elective LSCS 152(28.5%) among group 5. Most common indication is Scar tenderness.
- Similarly, among Group 6, 7 & 9 emergency LSCS 33(71.7%) when compared
- to elective LSCS 13 (28.3 %).
- Most common indication in Group 8 women is Previous LSCS.
- Most common indication for induction among group 5 severe pre-eclampsia followed by pre-eclampsia 31 (26.7%) & oligohydramnios 18 (15.5%).
- Most common indication among group 10 is previous LSCS.

Limitations

The relatively small sample size is the main limitation. The study must be done in multicenter to generalize the results

Conclusion

Our study concludes stating that the overall CS rate should be reduced by finding out the factors contribution it. Thus, we should focus on reducing the primary CS rate and encourage the previous LSCS patients with adequate years for VBAC. Primary CS can be reduced by ethical and good trials of labour. Adolescent period health and antenatal care holds a major role in this. Early diagnosis and intervention of medical disorders which is seen during pregnancy period. To bring down CS rate instrumental delivery can also be used as an alternative.

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