Analysis of caesarean sections using rob sons ten group classification system in a tertiary care hospital.

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Abstract

Background: Cesarean section is a key intervention to decrease maternal and neonatal morbidity and mortality. It is also one of the best indicators of the quality of maternal health services. The caesarean section rate has been increasing in the last few years. Robson's Ten Group Classification is being widely used to classify caesarean sections and analyze the steps taken to reduce the caesarean section rate in each group**.**

Materials and Methods: This was an observational study carried out at the Department of Obstetrics and Gynecology, at Government Lalla Ded Hospital from April 2022 to September 2022. All term and pre term pregnancies, who were terminated because of various reasons were included in the study.

Results: The Caesarean section rate in our study was 48.99%. In our Study, Group 5 (Previous caesarean section with cephalic presentation) was the major contributor of caesarean sections.

Conclusion: The main concern nowadays is increasing caesarean section rates and the associated increase in morbidity. The increased caesarean section rates can be controlled by limiting the number of primary caesarean sections, which in turn can be done by proper antenatal care and counselling of the first-time mothers.

Keyword: Gynecology, caesarean, mortality

Introduction

The caesarean section rate has been increasing in the last few years all over the world. The rate was around 5% in the early 1940s and remained stationary for about 10–15 years. It increased to 10–15% in the early 1970s and remained so for the next 10–15 years. However, recently, the rate has dramatically gone high up to 30–40%(1). In 1985 the World Health Organization (WHO) stated a cesarean section (CS) rate higher than 10–15% is not justified for any region (2). High cesarean birth rates are an issue of international public health concern. Increasing caesarean section rates are associated with both short term and long-term complications, both surgical as well as an aesthetic. Post operative pain, need for blood transfusions, wound complications are the common among the many immediate complications while intra-abdominal adhesions, morbid adherent placenta and risk of bowel and bladder injury are the important long-term complications. Late age of marriage, high incidence of elderly primigravidas, small family norm, reluctance of

patients to bear labor pains, concern for fetal safety are some of the factors for increased caesarean section rates.

The Robson classification was first described by the obstetrician Michael Robson in 2001, and are defined based on the category of the pregnancy, the woman's previous obstetrics record, course of the lab our and delivery and the gestational age at delivery (3). In 2015, WHO proposed the use of the Robson classification (also known as the 10-group classification) as a global standard for assessing, monitoring and comparing caesarean section rates both within healthcare facilities and between them. A recent systematic review of 27 different classification [4] suggested that the Ten-Group Robson classification of caesarean sections [5] might

allow us to look at CS rates in specific groups to help identify possible reasons for this variation. Women who give birth are categorised into 10 groups based on their basic obstetric characteristic's parity, previous CS, gestational age, mode of onset of lab our, fetal presentation, and number of fetuses. These groups are structured in such a way that they are mutually exclusive and totally inclusive.

The Ten-Group Robson classification has been praised for its simplicity, robustness, reproducibility, and flexibility [6] and has been recommended for both the monitoring rates over time as well as between facilities by both WHO in 2014 and FIGO in 2016 [7,8].

Table 1: Rob sons ten group delivery classification system

Group 1	Nulliparous, single cephalic, ≥ 37 weeks, in spontaneous labor
Group 2	Nulliparous, single cephalic, ≥ 37 weeks, induced or CS before labor
2a-,	Nulliparous, singleton, cephalic, ≥ 37 weeks' gestation, induced labor.
2b-	Nulliparous, singleton, cephalic, ≥ 37 weeks' gestation, cesarean section before labor.
Group 3	Multiparous (excluding previous cesarean section), singleton, cephalic, ≥ 37 weeks' gestation, in spontaneous labor
Group 4	Multiparous without a previous uterine scar, with singleton, cephalic pregnancy, ≥ 37 weeks' gestation, induced or cesarean section before labor.
4a	Multiparous without a previous uterine scar, with singleton, cephalic pregnancy, ≥ 37 weeks' gestation, induced labor.
4b	Multiparous without a previous uterine scar, with singleton, cephalic pregnancy, ≥ 37 weeks' gestation, caesarean section before labor.
Group 5	Previous cesarean section, singleton, cephalic, ≥ 37 weeks' gestation.
Group 6	All nulliparous with a single breech.
Group 7	All multiparous with a single breech (including previous cesarean section).
Group 8	All multiple pregnancies (including previous cesarean section).
Group 9	All women with a single pregnancy in transverse or oblique lie (including those with previous cesarean section).
Group 10	All singleton, cephalic, < 37 weeks' gestation pregnancies (including previous cesarean section).

Table 2: countries with highest caesarean section rates

Region	Rate of caesarean section
Dominican Republic	56.4%
Brazil	55.6%
Egypt	51.8%
Turkey	50.4%
Iran	47.9%
China	47%

Global caesarean section rate given by who   21% (9)

Caesarean section rate in India   21.5% (NFHS)

Materials and methods

This was an observational study carried out at the Department of Obstetrics and Gynecology, at Government Lalla Ded Hospital, Government Medical College, Srinagar a tertiary care hospital which caters to a large population and is also a referral center for high-risk cases from all surrounding regions of Kashmir. The duration of the present study was from April 2022 to September 2022. The objectives of this study were to classify our population into the 10 Robson's groups, to identify which among these groups has the highest cesarean section rates, and to formulate plans for reducing these rates

All term and pre term pregnancies, who were terminated because of various reasons were included in the study. The records of the patients who underwent caesarean sections in the study duration were collected and analysed. The indications of caesarean sections, timing of caesarean sections and the intra operative findings were studied. The main aim of this study was to study the most common indications for caesarean section in our Centre and also to figure out measures to curtail the increasing caesarean section rates.

Observations and results

In our study, 12211 pregnancies were terminated in the study duration. Of the total number, 5983 underwent caesarean sections while 6228 (5923+ 305) patients had vaginal deliveries giving a caesarean section rate of 48.99%. Caesarean section rate in our Centre is higher as compared to national average, but considering that it is the only tertiary care center catering to high-risk cases of whole of Kashmir, this rate is acceptable.

Table 3: Rate of caesarean section in our study

Type of confinements	Number of confinements
Total admissions	12211
Vaginal deliveries	5923
Caesarean sections	5983
Instrumental deliveries	305
Rate of caesarean section	48.99%

Table 4: Subject Characteristics.

Age (years)	No. of patients
Less than 19	38
20-24	1072
25-29	1907
30-34	2152
>-35	814

Pregnancy frequency	No. of patients
1	2762
2	1689
3	980
4	446
>-5	106

Gestational age (weeks)	No. of patients
<28	101
28- 36	245
>37	5637

H/O C. section	No. of patients
0	3314
1	1715
2	954

Table 5: Rate of caesarean sections in each Robson group in our study

	No. Of cases	No. Of deliveries	Rate in each group (%)	Relative contribution of each Group (%)
Group 1	1065	2217	48.04	8.72
Group 2	1151	1805	63.76	9.42
Group 3	126	1807	6.97	1.03
Group 4	149	1668	8.93	1.22
Group 5	2376	2654	89.52	19.48
Group 6	280	287	97.56	2.29
Group 7	207	361	57.34	1.69
Group 8	158	254	62.20	1.29
Group 9	125	144	86.80	1.02
Group 10	346	1014	34.12	2.83
TOTAL	5983	12211		48.99

The most common indications of caesarean section in our study were Acute fetal distress, Previous caesarean sections with refusal of trial of Scar and Non progression of labour.

In our Study, Group 5 (Previous caesarean section with cephalic presentation) contributed to 19.48% of the total 48.99%, showing that previous caesarean sections were a major contributor to the increased caesarean section rates. The caesarean section rate in this group is 89.52%. The main reasons for the increased rate in this group are multiple; refusal of trial of scar, presence of co morbid conditions like pre-eclampsia, Gestational diabetes, anemia and short inter pregnancy interval. These patients are usually directly taken up for repeat caesarean section in order to decrease feto maternal morbidity and mortality.

The second group contributing to 9.42% of caesarean sections is Group 2 with a caesarean section rate of 63.76%. This group comprises of primigravidaes, either taken electively or induced for various reasons. These women are induced for post datism, oligohydramnios, or some of the medical indications like pre-eclampsia, gestational diabetes mellitus. The indications for caesarean section in this group were either failure of induction, failure of progression of labour, decelerations in fetal heart rate or presence of meconium-stained liquor. Few primigravidae are taken up for elective caesareans, those being either with grossly inadequate pelvis or those who have conceived after IVF (In vitro Fertilization).

An important step in bringing the caesarean section rate down is by proper patient selection for induction of labour. Limiting IOL for which there is no clear indication, especially those with an unfavorable cervix, would have a significant effect on the CS rate and would eventually decrease the number of patients with previous caesarean sections in future. The most important indication for induction of labour is post datism. In our Centre, we start induction at 40 completed weeks. By waiting one more week and doing inductions at 41 completed weeks, we can significantly reduce the caesarean section rate in group 2.

The second issue is to address one of the two commonest indications for a primary CS; failure to progress and fetal heart rate concern. Increasing maternal age, maternal and fetal weight, common obstetric interventions such as

induction, epidural analgesia, and oxytocin use may have altered what would be normal progress of labour. A large study on singleton, cephalic term pregnancies in spontaneous labour concluded that active labour with cervical dilatation of 0.5 to 1 cm per hour only begins after 6 cm dilatation and it may take longer than currently expected normal time frame for many women to reach 6 cm cervical dilatation (10). It is possible that some women may be having a CS for failure to progress when they have not even begun to be in active labour (11).

The third group contributing to 8.72% of caesarean sections is Group 1 with a caesarean section rate of 48.04%. This group consists of term primigravidaes admitted with spontaneous labour. The indications for caesarean sections in this group were more or less the same as in Group 2.

Discussion

Cesarean section is a key intervention to decrease maternal and neonatal morbidity and mortality. It is also one of the best indicators of the quality of maternal health services [12]. Despite its proven benefits, it has associated complications such as infection, bleeding, anesthetic accidents and even death. Future pregnancies can also be complicated by spontaneous preterm birth, uterine rupture, and abnormal placentation. These risks are higher for women in resource-limited settings with poor access to comprehensive obstetric care [13, 14]. Thus, to optimize outcomes, facilities should initiate a detailed and rigorous assessment of their practice vis-à-vis the case mix of obstetric population they serve. The Robson ten group classification system enables institution-specific monitoring and auditing and can be a powerful tool to inform practice across different settings [13, 15].

In this study, we implemented the RTGCS and assessed the proportion of each group in the obstetric population, the contribution of CS in each group to the overall CS rate and the CS rate within each group. The caesarean section rate in our study was 48.99%. It is higher than the global average given by WHO of 21% and the national average of 21.5%. The high caesarean section rate in our study can be explained by the fact that ours is a tertiary care Centre with most of the referrals coming to our Centre. The caesarean section rate in the study by Prasad Deshmukh (2021) was 44.24% (16) while in the study by Abubaker (2018) was 34.3% (17). These caesarean section rates are comparable tp our study as the rates have gone up throughout the globe.

In our study Group 5 was contributed to 19.48% of the total caesarean rate of 48.99% with a caesarean section rate of 89.52. The same was found in Prasad study where group 5 contributed 16.54% with a caesarean section rate of 88. 94% (12). While in The Abubaker series, Group 10 was the major contributor contributing to 19.1 % of 34.7% (13). The next contributor of caesarean sections was Group 1 with a caesarean section rate of 48.04%.

Conclusion

The main concern nowadays is increasing caesarean section rates and the associated increase in morbidity. The increased caesarean section rates can be controlled by limiting the number of primary caesarean sections, which in turn can be done by proper antenatal care and counselling of the first-time mothers. The benefits of vaginal delivery, both for the mother and the baby should be properly explained to the pregnant females. Secondly, if properly selected and monitored, a significant proportion of patients with one lower segment scar can have a trial of scar and sub sequently, a vaginal delivery. Encouraging instrumental vaginal delivery, whenever not contraindicated, also will bring down CS rates. For this, adequate training has to be imparted during residency days.

Finally, there is a small subgroup of women, who should be delivered by exclusive CS. These are women conceived by Artificial Reproductive Technology. In them, most of the women demand CS and the choice of women has to be respected by treating obstetricians, in the present era of medicolegal issues, since the outcome of labor can't be predicted with certainty.

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