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ROBSON'S CLASSIFICATION OF CAESAREAN SECTION CONDUCTED AT A TERTIARY CARE WOMEN'S HOSPITAL

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Abstract

Background: Despite the World Health Organization's recommendation and caution the cesarean section rates are continuously rising across the world. This despite the evidence indicating that this increase in c-section rate is not leading to a decline in the maternal and child mortality rates. The objective of this study was to classify and categories all the primary c-section conducted among multi-parous women delivering at a tertiary care hospital.

Material and Methods: An observational, cross-sectional, single centre study was conducted at the Sultania Zanana Hospital affiliated to Gandhi Medical College, Bhopal. The total duration of the study was one year from April 2013 to March 2014. The study population comprised of the multi-parous women coming or referred to SHZ. The primary source of the data for this study where the patient's interview, treatment records and operation theatre delivery register.

Results: During the period between April 2013 to March 2014, a total of 10,271 deliveries were conducted at SZH; of these 7,570 were normal vaginal deliveries and 3,151 were c-section. The prevalence of primary cesarean section in multipara in the present study is 5.6 %. Most (62.0%) women were categorized as belonging to the III group while only 2.1% of women were categorized in the VIII group.

Discussion: A large number of primary c-section among primiparous women can be prevented. In comparison to primiparous women, the prevalence of primary c-section was less among multiparous women.

Introduction

The term cesarean section (CS) refers to the procedure of delivering the newborn through an incision made on the anterior abdominal wall and intact uterus after the period of viability.[1] It has enormous potential for the preservation of life, probably greater than many other routinely done surgical procedures.[1] The reduction in maternal mortality after modification and advancement in the technique of cesarean section has made it a reasonable alternative for the delivery especially for those at risk of birth asphyxia or trauma.[2] The striking increase in the rate of caesarean section in many developed countries contrasts sharply with the very low rates reported in several developing countries. The World Health Organization (WHO) stated that there is no justification to have a caesarean section rate higher than 10%.[3] Later, WHO subsequently revised it to 15%, after taking into consideration the higher incidence of cephalopelvic disproportion (CPD) and human immunodeficiency virus (HIV) in developing countries.[3] There is some evidence which suggests that CS rates above 15% are not associated with an additional reduction in maternal and neonatal mortality and morbidity.[4] A recent study from India has shown the caesarean rates in the public, charitable and private sectors were 20 %, 38% and 47% respectively.[5]

The indications for performing cesarean section have changed a lot in recent years and keep changing every few years. Several clinical and non- clinical factors have a substantial impact on the rates of cesarean section.[6-8] Women of higher socioeconomic status have a higher rate of cesarean section than do women of lower socioeconomic status.[6] Further, higher cesarean rates are observed in teaching and private hospitals.[7] The age and parity of the women also influence the cesarean section rates, being more common among young and elderly primigravida and grand multipara.[8] Delivery via primary cesarean section is an important target for reduction because they lead to an increased risk for a repeat cesarean delivery in the same women.[8] Elective cesarean deliveries can include medically and obstetrically indicated procedures that generally occur before labour. Elective cesarean deliveries can also include procedures for which there is no clear medical or obstetric indication. There is a growing concern that there is a rising rate of the latter. Maternal choice elective primary cesarean deliveries generate both clinical and ethical controversy and concern.

The process of medical audit and feedback is an effective method in reducing caesarean section rates.[9,10] Various classification systems have been proposed for this purpose. These include indication-based systems, urgency-based systems, women-based systems, and other systems that address questions such as where, how, and by whom the caesarean sections were performed.[11] Whilst much useful information can be obtained using these systems, they are limited by the inclusion of groups that are not totally inclusive or mutually exclusive, and most critically, by poor reproducibility.[11] More recently, the Robson Ten Group Classification System (TGCS) has been described.[12] This system divides all obstetric deliveries into one of ten groups so that the caesarean section rate can be calculated for each subgroup of women.[12] The groups are clearly defined, totally inclusive, mutually exclusive, and have the advantage of being prospectively identifiable.[12] It is based on four key obstetric concepts, the combinations of which have been combined to create ten clinically relevant groups of women.[12] Using these four obstetric concepts, women can be placed into one of Robson's ten clinically distinct groups. Caesarean section rates can then be determined, not only as a whole but also within each group, thereby providing insight into the precise makeup of the overall caesarean section rate. Comparisons can be made within one unit, as well as between different units, and where necessary, changes in the management of pregnancy and labour can be implemented, targeting specific groups of women. Thus, the objective of this observational, cross-sectional, single centre study was to classify and categorise the primary caesarean section operation performed at *Sultania Zanana Hospital, Bhopal* on multipara women according to the Robson Ten Group Classification System.

Material and Methods

Study Setting: The present study was conducted in the department of Obstetrics and Gynecology, Gandhi Medical College Bhopal. The *Sultania Zanana* Hospital (SZH) is a tertiary care hospital dedicated to the reproductive needs of the women and caters to the need of the women living in Bhopal as well as surrounding districts.

Study Design: This is an observational, cross-sectional, single centre study of all caesarean section operation conducted at the Sultania Zanana Hospital affiliated to Gandhi Medical College, Bhopal.

Study Duration: The total duration of the study was one year from April 2013 to March 2014.

Study population: The study population comprised of the multi-parous women coming or referred to SHZ. This includes the patients reporting directly to the labour room in various stages of labour as well as those who were admitted in the wards and taken up for elective lower segment caesarean section. Following are the inclusion and exclusion criteria for the study participants:

Inclusion Criteria:

1. Women of all age group.
2. Multiparous women who never had caesarean section during previous pregnancies.

Exclusion criteria:

1. Primigravida
2. Women who had caesarean section during any previous pregnancy.
3. Women having secondary abdominal pregnancy

Data Source:

The primary source of the data for this study where the patient's interview, treatment records and operation theatre delivery register. From these sources following information was collected:

1. Demographic findings (name, age, residence, income etc).
2. Clinical findings.
3. Obstetric findings.
4. Period of gestation.
5. Haemoglobin level.
6. Temperature
7. Weight of women
8. Sex of the baby
9. APGAR score

The information extracted from these sources were reviewed to categorize each study participant into Robson`s Ten Group Classification System (table 1). This system categorises each caesarian section into a total of ten mutually exclusive categories based on the following four obstetrics concepts [12]:

1. Category of pregnancy,
2. The previous record of pregnancy,
3. The course of labour & delivery,
4. Gestational age of the pregnancy.

Ethical Approval: The current study was approved by the Ethical Committee on Human Research, Gandhi Medical College, Bhopal.

Results:

During the period between April 2013 to March 2014, a total of 10,271 deliveries were conducted at SZH; of these 7,570 were normal vaginal deliveries and 3,151 were c-section. Of the total 3,151 c-section, only 602 (19.1%) operations were primary c-section conducted on multiparous women rest 2,549 (80.9%) were wither conducted on primiparous women or were repeat c-section in multi-parous women. The prevalence of primary

cesarean section in multipara in the present study was 5.6 %.

Table 1: ROBSON`S TEN GROUP CLASSIFICATION SYSTEM[12]

1.	Nulliparous women with a single cephalic pregnancy, at greater than or equal to 37 weeks gestation in spontaneous labour
2.	Nulliparous women with a single cephalic pregnancy, at greater than or equal to 37 weeks gestation who either had labour induced or delivered by caesarean section before labour
3.	Multiparous women, without a previous uterine scar, with a single cephalic pregnancy at greater than or equal to 37 weeks in spontaneous labour
4.	Multiparous women, without a previous uterine scar, with a single cephalic pregnancy at greater than or equal to 37 weeks gestation who either had labour induced or were delivered by caesarean section
5.	All multiparous women, with at least one previous uterine scar and a single cephalic pregnancy at greater than or equal to 37 weeks gestation
6.	All nulliparous women with a single breech pregnancy
7.	All multiparous women with a single breech pregnancy including women with previous uterine scars
8.	All women with multiple pregnancies, including women with previous uterine scars
9.	All women with a single pregnancy with a transverse or oblique lie, including women with previous uterine scars
10	All women with a single cephalic pregnancy at less than or equal to 36 weeks gestation, including women with previous scars

Table 2 shows the socio-demographic characteristics of the women who fulfilled the inclusion criteria for the study. Most of the women were between 20-29 years of age whereas younger and more elderly multipara roughly constituted about 2% of the population. Further, as can be inferred from table 2, most women belong to urban areas, were not highly educated and belonged to the middle- and lower-income class.

Table 2: Demographic characteristics of the study participants (n= 602)

Variable	n	%
Age		
< 20	8	1.3
20 – 29	427	71.0
30 – 39	162	27.0
>39	5	0.8
Parity		
2	391	65.0
3	126	21.0
4	42	7.0
5	24	4.0
6 and more	19	3.0
Per capita income		
<3000	142	23.6
3000 – 5000	403	66.9
>5000	57	9.5
Residence		
Rural	153	25.4
Urban	449	74.6
Education		
Illiterate	91	15.11%
Primary	184	30.56%
Middle school	118	19.6%
Higher secondary	166	27.6%
Graduate and above	43	7.1%

Table 3: shows the details of all the c-section as per the Robson's classification. As can be seen, most women were categorized as belonging to the III group while only 2.1% of women were categorized in the VIII group.

Table 3: Month-wise distribution of Primary Caesarean Section in Multiparous Women as per Robson`S Ten Group Classification System.

MONTH	III	IV	VII	VIII	IX	X	TOTAL CS	%
APR	13	5	3	0	3	3	**27**	**4.5**
MAY	31	4	1	0	2	4	**42**	**7.0**
JUN	29	5	4	1	2	3	**44**	**7.2**
JULY	16	2	3	0	2	0	**23**	**3.8**
AUG	27	1	2	1	4	1	**36**	**6.0**
SEP	26	0	4	3	2	1	**36**	**6.0**
OCT	39	9	6	0	11	4	**69**	**11.5**
NOV	39	9	6	1	4	4	**63**	**10.5**
DEC	42	7	5	3	11	6	**74**	**12.4**
JAN	39	13	7	2	1	3	**65**	**10.8**
FEB	33	8	6	1	9	4	**61**	**10.1**
MAR	34	11	9	1	3	4	**62**	**10.3**
TOTAL	**368**	**74**	**56**	**13**	**54**	**37**	**602**	**100.0**
%	61.1%	12.3%	9.3%	2.1%	9%	6.1%	**100.0**	

Discussion:

Cesarean section is not the panacea for all obstetric problems, but it is an excellent solution when applied judiciously. However, nowadays, the caesarean section is frequently and arbitrarily performed for fetal distress and prolonged labour without due respect to correct diagnosis and unbiased decision. A trial for a vaginal birth after a previous caesarean section (VBAC) is considered safer than a routine caesarean section. It is evident that whereas the caesarean section is doctor friendly, VBAC is not. It usually takes 20-30 minutes to perform a caesarean section while conducting a vaginal birth may need 12 hours or more heavily taxing on the obstetrician's time and patience. In private health care services, caesarean section is one of the most common major surgical procedures. Doctors and hospitals earn much more money from a caesarean section than from a vaginal delivery. High caesarean section rates financially benefit doctors, hospitals, and industries.

Mackenzie et al observed that maternal request was one of the main indications for caesarean section (23%) in 1996.[13] The introduction of this concept raises several questions. Inadequately informed women choose the caesarean section to avoid painful natural childbirth. Most of them like to maintain the vaginal tone of teenagers.[13] But this is more likely a benefit to the sexual partner than the woman herself. In India, the family sometimes demands that the baby be born on an auspicious date and time, obviously by caesarean section, as dictated by horoscopic/astrological calculations.[14] This happens to be a popular indication of caesarean section in China. However, the caesarean section on demand threatens national resources and is an expensive and dangerous luxury. Moreover, FIGO states that performing CS for nonmedical reasons is ethically not justified.[15] Defensive obstetrics is

another common reason for high rates of caesarean section. It has been observed that 82% of physicians performed the caesarean section to avoid negligence claims.[16,17] Defensive obstetrics violates the fundamental principle of medical practice and it does not always work. During the years that defensive obstetrics has grown in numbers, there has been no slowdown in litigation.[18]

Even elective caesarean section carries serious risks for mother and child.[19-21] A fourfold increase in maternal mortality rate associated with caesarean section was observed even after controlling for medical and obstetric complications, maternal age, and preterm delivery.[19] Hawkins et al found that 82% of anaesthesia-related maternal deaths occurred in women undergoing caesarean section and general anaesthesia was most prevalent among them.[20] Major complications were almost double in emergency caesarean section compared to those in elective caesarean section.[21] Abdominal delivery is also a significant risk factor for emergent postpartum hysterectomy, mainly for the adherent placenta, uterine atony, uterine rupture, fibroids, sepsis, and extension of uterine scar.[21]

Babies are also vulnerable to unnecessary risks from rising caesarean section rates.[22-24] The first danger to the baby is the 1% to 9% chance that the surgeon's knife will accidentally lacerate the fetus (6% in a nonvertex presentation).[22] A caesarean section per se is a potential risk factor for RDS in preterm infants and other forms of respiratory distress in mature infants.[23] Another distinct hazard is iatrogenic prematurity.[24]

Recurrent caesarean section, scar rupture, hysterectomy, and maternal and fetal deaths are some of the future important risks.[25] The previous caesarean section increases the risk of multiple placental abnormalities like placental abruption, placenta previa, and adherent placentation in subsequent pregnancies.[25] As the incidence of caesarean section continues to rise worldwide, the problem of placenta previa and placenta accreta is likely to become more common.[26]

Sultania Zanana Hospital attached to Gandhi Medical College, Bhopal accounted for 10721 deliveries from April 2013 to Mar 2014. The overall cesarean section rate is 29.3% during the study period. The prevalence of primary cesarean section in multipara in the present study is 5.6 % which is higher than Jacob and Bharghav study (2.06%).[27] Saluja et al (2014) found Percentage of LSCS in their institution is 24.64%.[28] Among these, 3.82% were LSCS done in multipara with no caesarean in previous pregnancies.[28] The major contribution to these cesarean sections comes from Group 3 (61.1%). The frequency of primary caesarean section in multiparous women in our hospital is 19% of the total caesarean section while Erika et al (2013)[29] found the total number of cases of primary C.S. in multipara was 29.05%.

Majority of patients (71%) in the study were from the age group 20-29 years which is comparable to the findings of Sethi P et al (67%).[30] This may be due to the trends of early marriage and lack of education resulting in high fertility in early ages. Highest no of patients (86%) are present in parity 2 and 3 class which is higher from the study of Sethi P et al (65%).[30]

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