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Original Research Article

Trend of caesarean section at two Government Medical College in Madhya Pradesh, India over one year of time period: a retrospective comparative study

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ABSTRACT

Background: There is a massive public interest and debate on both the cause and appropriateness of increasingly employing a surgical procedure to short circuit or entirely bypass labour and delivery. The indications of caesarean sections vary among institutions as there is no standard classification system exists for indications of C-Section. Present study analysed pattern of caesarean section at two tertiary centre in Madhya Pradesh, India.
Methods: A structured proforma was filled up for every case and results were recorded on excel sheet. All the cases included in study were further divided in group 1 (deliveries conducted in year 2014-2015 at Govt. Medical College Indore, M.P.), group 2 (deliveries conducted at Govt. Medical College Rewa at same time. Comparative analysis between study group1 and group 2 was done using Pearson Chi square test.
Results: In group 1 there were 10525 deliveries out of which 3705 were delivered by caesarean section (35.2%), in group 2 there were 8674 deliveries out of which 1182 were delivered by caesarean section (13.6%). This difference in caesarean section at both medical college may be due to the more no. of referrals from the periphery to the medical college Indore and having more no of private institutions and district hospital which cater the normal delivery.
Conclusions: There is a reliable and reproducible framework is required for audit and analysis of Caesarean section trends in specific obstetric subgroups to permit comparisons of practice between different institutions and over time in the same institution.

Keywords: Caesarean section, Caesarean section rate, Retrospective comparative study

INTRODUCTION

High caesarean section rate has been recognized as a major health problem in many countries. There is a massive public interest and debate on both the cause and appropriateness of increasingly employing a surgical procedure to short circuit or entirely bypass labour and delivery.[1] Although, caesarean delivery greatly improves obstetric outcomes when clinically indicated, excessively high caesarean delivery rates have raised concern about the health and economic consequences of this practice.[2] CS rates vary worldwide with rates ranging from 21.5%1 in Britain to 29.1%2 in USA with some Latin American countries going as high as 40%.[3] Similar trends have also been documented in India, according to ICMR study conducted in 30 teaching hospitals in India; there is an increase in CS rates from 21.8% in 1993-1994 to 25.4% in 1998-1999.[4] according to WHO, though there is no ideal CS rate, CS rates above 10-15% does not confer additional health benefits in terms of foetal and maternal morbidity and mortality.[5] The increasing trend of CS rates may indicate a trend towards a more costly medical

delivery systems and lowered threshold of abnormality detection among the health care providers.[6] In India During last decade Janani Suraksha Program and maternal ambulances services have brought many significant changes in maternal and perinatal outcomes in India, one of which is significantly increased number of institutional deliveries, this may have brought a difference in pattern of caesarean sections as well, analysis of which has not been incorporated in much of the studies.

The indications of caesarean sections vary among institutions as there is no standard classification system exists for indications of C-Section.[7,8] A major challenge is that definitions are not standardized and indications can be multiple or related.[9] In order to understand the degree to which caesarean deliveries may be preventable, it is important to know why caesareans are performed. This study is aimed to find the rate of caesarean deliveries, various indications of the procedure and their relative contribution to the total Caesarean section rate (CSR) at two different medical college in M.P. at same time.

METHODS

This study was a hospital-based retrospective study, conducted in a tertiary government health care set up specializing in Obstetrics and Gynaecology in Gov. Indore Medical College, Madhya Pradesh, India. All the patients who underwent Caesarean Section in the year of 2014-2015 were included in the study. Data on all live births were collected. In cases of caesarean sections their indications were recorded along with other demographic profile like age, residence-urban/rural. Whether procedure was done as an emergency or it was a planned surgery. Previous obstetrics history and present obstetric parameters like antenatal care, gestational age, lie and presentation, no. of foetuses etc. were also recorded in the format and later entered in the Microsoft excel sheet and Data were compared with caesarean deliveries conduct in Rewa Medical college in the year of 2014-2015

So, All the cases included in study were further divided in group 1 and group 2 as following:

- Group 1: all the caesarean deliveries done in year 2014-2015 in Govt. Indore Medical College, M.P.
- Group 2: All the caesarean deliveries done in year 2014-2015 in Govt. Rewa Medical College, M.P.

Inclusion criteria

All the cases of caesarean delivery during study time were included.

Exclusion criteria

Clinically diagnosed cases of ruptured uterus and proven on laparotomy.

Statistical analysis

Comparative analysis between study group 1 and group 2 was done using Pearson Chi square test. Differences with p values of less or equal to 0.05 was considered statistically significant.

RESULTS

As shown in table 1, in group 1, total number of deliveries during the study period was 10525, out of which 3705 (35.20%) was caesarean deliveries. In group 2 total number of deliveries during study period was 8674, out of which 1182 (13.62%) were caesarean deliveries. There is significant no. of total number of deliveries ($p<0.001$) a caesarean section rate ($p<0.001$) in group 1 as compare to group 2.

Table 1: Incidence of total deliveries and caesarean section.

Group	Total deliveries	Total caesarean	Percentage
1	10525	3705	35.20%
2	8674	1182	13.62%

As evident from Table 2, in group 1, out of 3705; 35 (0.95%) cases were less than 18 year of age, while in group 2 out of 1182; 2 (0.16%) cases were less than 18 year of age. There is no significant change in distribution of cases in age group of 18-35 year and >35 year.

Table 2: Distribution of cases according to age.

Group	<18 yrs		18-35 yrs		>35 yrs		Total
	No.	%	No.	%	No.	%	
1	35	0.95	3570	96.35	100	2.69	3705
2	02	0.16	1168	98.8	12	1.01	1182

Table 3 compares parity between two groups, in group1, among 3705 patients, 1265 (34.14%) were nulliparous while 2440 (64%) were multiparous. In group2, among 1182 patients 596 (50.40%) were nulliparous while 586

(49.5%) were multiparous. There is significant change in parity between group 1 and group 2.

Table 3: Distribution of cases according to parity.

Group	Nullipara		Multipara		Total
	No	%	No	%	
1	1789	48.28	1916	51.71	3705
2	596	50.40	586	49.5	1182

Table 4: Distribution of cases according to residence.

Group	Rural		Urban		Total
	No	%	No	%	
1	1286	34.71	2419	65.28	3705
2	933	78.9	249	21.06	1182

It is evident from Table 4 that in group 1, among 3705 patients, 1286 (34.71%) belonged to rural area while 2419 (65.28%) were from urban area. In group2, among 1182 patients, 933 (78.9%) belonged to rural population while only 249 (21.06%) were from urban population. There is significant change in distribution ($p<0.001$) between the group1 and group2, regarding females coming from rural area.

Table 5: Distribution of cases according to booking status.

Group	Booked		Unbooked		Total
	No	%	No	%	
1	1559	42.07	2146	57.92	3705
2	516	43.65	666	56.2	1182

As evident from Table 5 In group1, out of 3705 patients 1659 (42.07%) were booked, 2046(57.92%) were unbooked. In group 2, among 1182 patients 516 (43.65%) were booked, 302 (25.5%) were partially booked, 364 (30.7%) were unbooked. There is significant difference in booking status between group1 and group 2But in both the group no of unbooked patients are more.

Table 6: Distribution of cases according to type of caesarean.

Group	Primary		Repeat		Total
	No	%	No	%	
1	2528	68.23	1177	31.76	3705
2	802	69.85	380	32.15	1182

Above Table 6 suggests that in group1, primary caesarean sections done were 2528(68.23%) cases and repeat caesarean sections were 1177 (31.76%) cases. In group2 out of 1182 cases, 802 (69.85%) were primary caesarean and 380 (32.15%) were repeat caesarean section. There is no significant difference in rate of repeat caesarean sections in both the groups.

Table 7: Distribution of cases according to indication of operation.

Indication of operation	Group1		Group2	
	No	%	No	%
Fetal distress+MSL	691	18.65	329	27.85
Previous section	1177	31.76	380	32.15
CPD	328	8.85	163	13.79
PROM	114	3.08	54	4.57
PIH+Preeclampsia	114	3.08	99	8.38
Breech	240	6.47	98	8.29
Placenta previa+abruptio	116	3.13	44	3.72
POP+DTA	48	1.29	11	0.93
Obstructed labour	52	1.40	42	3.55
Failed induction	310	8.36	126	10.65
Transverse lie	66	1.78	81	6.85
Face + brow	13	0.35	7	0.59
Cord prolapse	29	0.78	12	1.015
Multiple pregnancy	30	0.81	25	2.19
Compound presentation	55	1.48	3	0.25
Eclampsia	52	1.40	8	0.68
NPOL	258	6.97	70	5.92
Oligohydramnios+IUGR	159	4.29	72	6.1

As it is evident from Table 7 that in both the groups previous section was the most common indication followed by fetal distress, CPD and failed induction. In group 1 further most common indications were non progress of labour, breech, oligohydramnios and IUGR. While in group2 pre-eclampsia, breech, transverse lie, oligohydramnios and IUGR and non progress of labour.

DISCUSSION

The present study is a retrospective hospital record based study, carried out at the department of obstetrics and gynaecology at Mahatma Gandhi Memorial Medical College and associated Maharaja Yashwant Rao Hospital, Indore M.P. to assess pattern of caesarean section and further this study was compared with pattern of caesarean section in Shyam Shah Medical College and associated Gandhi Memorial Hospital Rewa.

Socio demographic characteristics of study population

Age

Maximum number of caesarean sections in group1 and group 2 were in age group of 18 to 35 years of age which was 96% and 98% respectively, which is comparable with the Naidu P et al study done in South coastal India.[10-14] It also reflects the maximum fertile period of women"s life and common child bearing age group.

Parity

The maximum numbers of caesarean cases were observed in primiparous women in group2 (50.4%) r which are

comparable to study done by Kumar A at Shimla, and Soin et al.[12,13]

While in group1 maximun no of cases observed in multiparous women (51.7%). In a study by Unnikrishnan B et al, 47.8% cases were primiparous and 46.6% were multiparous which is comparable to present study group2

Residence

In group1 urban population is main contributor (65%) while In the group2 rural population is main contributor (79%), this may due to Rewa Medical College is at periphery and covers more of Rural population.

Booking status

Maximum number of cases in both group belonged to partially unbooked status (57.9%, 56.2% respectively) which is comparable with study done by Subedi S where 98% cases were unbooked or partially booked.[15] In a study done by Haider G et al done in Hyderabad Sindh, 56% cases were unbooked, Hafeeze M et al reported 61.38% unbooked cases while in study done by Unnikrishnan B et al, 87.5% case were booked which could be reflection of overall better health indicators in South Indian States in our country.[14,16,17]

Type and incidence of caesarean section

In present study majority of the caesarean sections in group 1 (68.5%) were emergency compared with only 31.5% of elective Caesarean delivery, in group 2 (71.6%) were emergency and 28.4% were elective, Mutihir et al reported similar findings.[18] This high rate of emergency Caesarean section could be attributed to the fact that these are tertiary health facilities which serve as referral centers where complicated labors could be managed more effectively. In most cases, the lifesaving CS remains the only choice.[19] Another possibility is the dearth of expertise at secondary health facilities in these regions. Therefore, experts that could manage complicated labour are only available at the tertiary health facilities.

During the study period in group 1 there were 10525 deliveries out of which 3705 were delivered by caesarean section (35.2%), in group 2 there were 8674 deliveries out of which 1182 were delivered by caesarean section (13.6%). There is significant more in incidence of caesarean section in group 1 as compared to group 1. This rise in caesarean section rate is comparable with B Unnikrishnan et al (23.27%), Shanti Set al (19.9%), Sobande A et al (21.1%), while Gulfareen H et al found 64.7% caesarean rate in their study done in Hyderabad, Sindh Pakistan in a tertiary care hospital.[14,15,19,20]

This difference in caesarean section at both medical college may be due to the more no of referrals from the periphery to the Medical College Indore And having more no of private institutions and district hospital which cater the normal delivery as compare to Rewa medical college. most of the population in Rewa comes to medical college for delivery as district hospital there is not well functioning and very few private hospital.

Indication of caesarean section

The most common indication for which caesarean section performed in our study was repeat caesarean section, in group 1was 31.76% and in group 2 it was 32.2%. Lubna Ali from Karachi Pakistan reported repeat caesarean section the commonest indication for caesarean section. Similar trends have been found in Northern Greece (30.9%) by Mersaovdi et al.[21,22] B Unnikrishnan et al.[14] So the decision for primary caesarean section is important unless there is a clear, compelling and well supported justification for caesarean section, a carefully supervised justified trial of labour is necessary.[23,24] This can be further minimized by routine practice of a trial of labour of Vaginal Birth After Caesarean (VBAC). In the UK, the rate of VBAC is high at 33%.[14] Trial of scar in singleton pregnancies can be given to reduce the rate of repeated caesarean section as the risk of uterine rupture is low 0.3%.[26]

Successful vaginal birth after caesarean (VBAC) in grand multiparous does not lead to increased maternal complication.[27] One study by McMahon et al noted that higher rates of maternal and foetal morbidity exist with VBAC as compared to elective caesarean.[28] However, the study by Gonen found that VBAC with a well defined protocol was found to safe for the mother and infant as a planned caesarean delivery and can be encouraged.[29] Doctors, in general, should be encouraged to take time to provide adequate counselling to the patients about the short comings and advantages of VBAC and help them make informed decisions about opting for CS or vaginal delivery.

In present study, second most common indication for performing caesarean section in both group was foetal distress accounted for 18.65% in group1 and 27.85% in group2. this is comparable to B Unnikrishnan et al [14] and R Subhashini et al. [30] The accurate method for establishment of foetal distress is to perform foetal scalp blood pH estimation which is considered the gold standard for the assessment of foetal well-being; but is not performed in our setup. Cardiotocographic (CTG) monitoring is known to overestimate the foetal distress.[31] Many gestational and antepartum factors and uteroplacental vascular disease, fetal sepsis, reduced fetal reserves, reduced uterine perfusion and cord compression can be involved singularly or in combination to influence the fetal response in a CTG.[32] Methods of screening and diagnosing the condition thus have limitations.[33]

Third most common indication for which caesarean section performed in our study was Cephalopelvic disproportion (CPD) in both group1 and group 2 (8.85% and 13.79% respectively). This is comparable to Gupta M

et al.[35] Further for the repeat Cesarean, there is an increase in the number of cases with CPD.[34]

The fourth most common indication for which caesarean section done in both group was Failed medical induction,8.36% and 10.65% in group1 and group2 respectively. this is comparable to study done by Arulkumaran et al (16.5%) Unnikrishnan B et al (8.8%).[12,14] Dunne C et al found that elective induction leads to more unplanned caesarean section in nulliparous women and to increased postpartum complication for both nulliparous and multiparous women.[36]

Other important indications for which caesarean performed in both groups were Non progress of labour (6.9%,5.9%), Breech presentation (6.5%, 8.3%), oligohydramnios and IUGR (4.3%, 6.1%) and preeclampsia (3.1%,8.38%), this is comparable to Jawa A et al, Gupta M et al.[34,37]

Judicious use of oxytocics in cases of failure to progress will help reduce the rate of CS resulting from cases of failure of vaginal delivery to progress. Maintenance of a partogram is also found to be beneficial.[38] Breech presentation accounted for a significant percentage of the non absolute indications for CS. External Cephalic Version (ECV) has been suggested as an intervention to reduce high CS rates at 37 weeks' gestation. However, ECV has its drawbacks; it requires skill and might not be successful.

During the last two decades there have been an increased number of caesarean sections carried out 'on demand' i.e. at the patient's request and not on any justifiable obstetric reason. Though, such an indication was not documented in our study but low threshold of caesarean section in certain cases cannot be ruled out.

CONCLUSION

Greatest emphasis attached to foetal welfare in today's small family norm has changed the delivery practices in favour of C-Section. There is no empirical evidence for an optimum percentage. What matters most is that all women who need caesarean sections receive them (WHO Statement 2010). There is need to develop protocols that could potentially reduce the caesarean rates. If this is to happen, however, a reliable and reproducible framework is required for audit and analysis of CS trends in specific obstetric subgroups to permit comparisons of practice between different institutions and over time in the same institution. If Ten Group Classification System(TGCS) used in our country, we can compare our own rates with National and international caesarean rates, this will also help in not only identifying the priority areas for the changes in clinical practice but also reducing the caesarean rate. Safe reduction of the rate of primary caesarean deliveries will require different approaches for each indication. Individualization of the indication and careful evaluation, following standardized guidelines, practice of evidenced-based obstetrics and audits in the institution, can help us limit Caesarean section rate.

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