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Research Article

A cross sectional study of rate, indications and complications of primary caesarean section

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ABSTRACT

Background: The indications for cesarean sections have been undergoing a gradual change over the last few decades. Besides the obstetric causes, several other medical, social, ethical, economic and medico legal factors play a role in this rising trend of cesarean section. Initially it was performed mainly for maternal interest but recently the health of the fetus has played a significant role in making the decision for a cesarean birth. This study was conducted to determine the rate, indications and complications of primary cesarean section in primi and multiparae.

Methods: This was a cross sectional study carried out on primary cesarean section in the Department of Obstetrics and Gynecology, P.D.U. Medical College and Hospital, Rajkot during one year period from April 1, 2014 to March 31, 2015. During this study, patients (booked or unbooked) attending the labour room, undergoing primary cesarean section in the department will be selected according to the inclusion criteria. Their intraoperative and postoperative complications would be noted and also maternal and fetal morbidities and complications if any. The study does not include women who had Gestational age of less than 28 weeks, who underwent cesarean section in previous pregnancy, previous uterine surgery or hysterotomy and who had multiple gestations.

Results: Out of 7295 deliveries performed during one year period, overall 1349 CS were performed with an incidence of 18.5%. The frequency of primary cesarean section was higher in primipara (72.4%) than multipara (27.6%) women. Emergency cesarean section (79.3%) was performed more than elective cesarean section (20.7%) in both the study group and most of them, did not taken ANC. 28.5% of the patients were unbooked and 46.6% of the patients were referred. Illiteracy was present in 31.7% cases and 62.6% cases belonged to rural areas. Anemia, malpresentations, oligohydramnios, eclampsia and preeclampsia were more common antenatal complications in primipara patients than multipara patients, while APH was more common complication in multiparity. In unbooked patients, anemia was found more commonly. Malpresentation (34.3%) was the commonest indication for cesarean sections in both the study groups. Intraoperative complications like extension of uterine incision, placenta praevia, PPH were found more in caesarean section done in emergency than electively and more in multipara patients. Maternal morbidity was seen in 18.5% of cases and more in multipara (25.4%) than primipara (15.9%). Abdominal distension, wound gap and fever were the common morbidities while no maternal mortality in the present study. 330 out of 685 babies were admitted in NICU and majority of them were for jaundice, preterm care and birth asphyxia. Perinatal mortality in the study was 6.6% and among them antepartum hemorrhage has the highest perinatal mortality rate. Prematurity was the most common cause of neonatal deaths.

Conclusions: From this study, we concluded that overall CS rate is 18.5% and rate of vaginal delivery is 82.1% of the present study from 1st April 2014 to 31st March 2015. While primary cesarean section rate is 55.8%, more in primipara as compared to multipara. The malpresentation was the major indication in primary cesarean section, in both primipara and multipara women in our community, while APH is still a major problem of the multiparity. Anemia, malpresentation, eclampsia and preeclampsia were more common antenatal complications in primipara while APH was antenatal complication in multiparity. Malpresentation (34.3%) was the commonest indication for cesarean section in both the groups.

Keywords: Primary cesarean section, Indications, Rate, Complications

INTRODUCTION

Primary Cesarean Section is defined as the cesarean section done for the first time in a patient who has delivered vaginally previously or not.¹ Cesarean delivery is one of the most commonly performed operations today. The indications for cesarean sections have been undergoing a gradual change over the last few decades. Besides the obstetric causes, several other medical, social, ethical, economic and medicolegal factors play a role in this rising trend of cesarean section. Initially it was performed mainly for maternal interest but recently the health of the fetus has played a significant role in making the decision for a cesarean birth. The 2012 US Cesarean delivery rate was 32.8%. The cesarean rate rose nearly to 60% from 1996 (20.7%) to 2009 and has been stable since then.²

Primary cesarean section rate in teaching hospitals is rising due to technological advancement like ultrasound reporting of oligohydramnios, cord around neck, Doppler studies of absent or reversal of diastolic flow, infertility treatments, abnormal CTG, on demand cesarean section from the women.⁵

The excellence of an obstetrician should be gauged not by the number of cesarean which he performs, but rather by those which he does not do.⁶ Thus lies the need for this study, as future cesarean sections pose a lot of complications in these mothers.

Aims and objectives

1. To know the rate of Primary cesarean section in Primi and Multipara.
2. To study the indications of Primary Cesarean sections in both the groups.
3. To study the intra-operative and post-operative complications.
4. To study the maternal & fetal morbidities in these patients.

METHODS

It is a cross sectional study. This study is carried out in the Department of Obstetrics and Gynecology, PDU Medical College and Hospital, Rajkot during one year period from April 1, 2014 to March 31, 2015.

During this study, patients (booked or unbooked) attending the labor room, undergoing primary cesarean section in the department will be selected according to the inclusion criteria. Patients will be examined for their age, parity, general and obstetric examinations. Their intra-operative and post-operative complications will be noted so also maternal & fetal morbidities if any.

During the study period 685 primary cesarean section data were collected. On a pre-decided proforma the age, socio economic demographic data, booking status etc.

were noted. General, systemic & obstetric examination finding noted. All relevant investigations such as Hb, Blood Group and Rh type, VDRL, HIV, HBsAg, RBS were done. Ultrasound with fetal Doppler study was done whenever required. Indication for cesarean section along with maternal and fetal outcome also noted. Maternal Complications like postpartum hemorrhage, anaemia, pre eclampsia, hydramnios, antepartum hemorrhage, intra uterine growth restriction, neonatal morbidity like meconium aspiration syndrome, asphyxia etc. were noted.

Inclusion criteria

A patient, who underwent cesarean section for the first time, may have delivered vaginally in previous pregnancy.

Exclusion criteria

1. Gestational age of less than 28 weeks
2. Underwent cesarean section in previous pregnancy, previous uterine surgery or hysterotomy.
3. Multiple gestations.

Consent

Due consent to get enclosed in the study is obtained in vernacular language. There is no element of monetary consideration, complication or denile of treatment if not opted for the study.

Statistical analysis

This is a cross sectional study undertaken to analyse 685 cases of primary cesarean sections done during the study period of 1st April 2014 to 31st March 2015. Statistical analysis done by chi square test and Students t test.

RESULTS

Table 1: Incidence of cesarean section in present study.

	No. of cases (n=7295) (%)
Total no. of cesarean section	1349 (18.5%)
Total no. of vaginal delivery	5946 (82.1%)
Total no. of delivery	7295 (100%)

There were a total of 7295 deliveries in the one year period from 1st April 2014 to 31st March 2015 in P.D.U. medical college, Rajkot with an overall CS rate 18.5% and rate of vaginal delivery is 82.1% (Table 1).

The rate of Primary cesarean section is 55.8% in the present study from April 2014 to March 2015 (Table 2).

Table 2: Rate of primary cesarean section in present study.

	No. of cases (n=1349) (%)
PCS	685(55.8%)
CS other than PCS	664(49.2%)
Total no. of CS	1349(100%)

Table 3: Distribution of cases according to age in present study.

Age group (years)	No. of cases (n=685)	Percentage (%)
≤20	124	18.1
21-25	372	54.3
26-30	147	21.4
31-35	32	4.7
≥36	10	1.5
Total	685	100

Maximum number of women undergoing primary cesarean section were in the age group of 21-25 years(54.3%) and the lowest number was in the age group of ≥36 years (1.5%). The youngest mother was 18 years old and the oldest was 43 years old (Table 3).

Table 4: Distribution of cases according to type of CS.

Type of CS	No. of cases (n=685)	Percentage (%)
Emergency	543	79.3
Elective	142	20.7
Total	685	100

Majority of cases (79.3%) underwent emergency cesarean section. Only 20.7% cases had elective cesarean section in the present study (Table 4).

Table 5: Distribution of cases according to parity.

Previous vaginal delivery	No. of cases (n=685)	Percentage (%)
0	496	72.4
1	118	17.2
2	54	7.9
3	14	2.0
4	3	0.5
Total	685	100

In this study, majority of patients were primipara (72.4%) followed by 2rdpara (17.2%). There were 4 grand multipara in the present study. Incidence decreases as parity increases because number of patients of high parity decreases (Table 5).

Anemia, malpresentations, oligohydramnios, eclampsia and preeclampsia were more common antenatal complications in primipara patients than multipara

patients while APH was more common complication in multipara patients (Table 6).

Table 6: Distribution of cases according to parity and antenatal complications.

Antenatal complications	Parity		P value
	Primipara	Multipara	
Anaemia	348 (68.2%)	162 (31.8%)	$\chi^2 = 7.85$, p = 0.00 (Significant)
APH	10(26.3%)	28(73.7%)	$\chi^2 = 42.78$, p = 0.00 (Significant)
Eclampsia and preeclampsia	70(82.4%)	15(17.6%)	$\chi^2 = 4.83$, p = 0.02 (Significant)
Malpresentation	238(98.8%)	3(1.2%)	$\chi^2 = 129.18$, p = 0.00 (Significant)
Oligohydramnios	45(83.3%)	9(16.7%)	$\chi^2 = 26.42$, p = 0.00 (Significant)

Table 7: Various indications for primary cesarean section.

Indications	No. of cases (n=685)	Percentage (%)
Malpresentation	235	34.3
Antepartum hemorrhage abruption placenta praevia		
Non-reassuring foetal status	56	8.2
Severe oligohydramnios	23	3.4
Meconium stain liquor in first stage of labour	151	22
Obstructed labour	27	3.9
Non-progression in first stage of labour	28	4.1
Deep transverse arrest	5	0.7
Cephalopelvic disproportion	6	0.9
Absent end diastolic flow	3	0.4
Failure of induction	87	12.7
Demand LSCS	1	0.2
Precious pregnancy in case of infertility	5	0.7
Cervical fibroid	1	0.2
Cervical dystocia	1	0.2
Generalized contracted pelvis	18	2.6

The spectrum of indications for primary cesarean section changes with advancing parity. As parity advances more cesarean section are done for maternal rather than fetal

indications.⁷ In some cases, more than one indication for section was recorded but for the classification only the principal indication is shown in the table.

Malpresentations (34.3%) was the most common indication of primary cesarean section in our study. Among the second most common was meconium stain liquor in first stage of labour (22%) followed by failed induction (12.7%).

Table 8: Distribution of cases according to indication of CS and parity.

Indications for primary cesarean section	Parity		P value
	Primipara	Multipara	
Malpresentation	159(67.7%)	76(32.3%)	$\chi^2 = 4.03$, $p = 0.04$ (Significant)
APH	10(26.3%)	28(73.7%)	$\chi^2 = 42.78$, $p = 0.00$ (Significant)
Non-reassuring foetal status	41(73.2%)	15(26.8%)	$\chi^2 = 0.02$, $p = 0.88$ (Not significant)
MSL in first stage of labour	116(76.8%)	35(23.2%)	$\chi^2 = 1.88$, $p = 0.16$ (Not significant)
Failure of induction	72(82.8%)	15(17.2%)	$\chi^2 = 5.43$, $p = 0.01$ (Significant)

Table 9: Intra-operative complication.

Intra-operative complication	No. of cases (n=297)	Percentage (%)
Thick meconium stained liquor	182	61.3
Placenta previa	32	10.8
Post-partum hemorrhage	17	5.7
Extension of uterine incision	12	4.0
Retroplacental clots	16	5.4
Blood stained liquor	12	4.0
Thinned out lower segment	32	10.8
Couvalaire uterus	4	1.4
Bandl's ring	6	2.0
Septate uterus	3	1.0
Multiple fibroid uterus	3	1.0
Ovarian cyst	2	0.7

Primary caesarean section in case of malpresentation and failure of induction was more common in primipara than

multipara patients while APH was more common in multipara patients than in primipara patients. There was no difference in primary caesarean section due to non-reassuring foetal status and in MSL in first stage of labour between primipara and multipara patients (Table 8).

Out of 297 cases, 182 cases had thick meconium stained liquor which was detected intra-operatively. 32 cases were of placenta praevia and 17 cases developed post-partum hemorrhage and in one case, B lynch suture was taken. 12 cases had extension of uterine incision and 32 cases had thinned out lower segment. Septate uterus was found in 3 cases whereas multiple fibroid was found in 3 cases. Out of 2 cases, 1 case had simple ovarian cyst and right ovarian cystectomy was performed and other case had bilateral enlarged ovaries suggestive of polycystic ovaries. Many patients in the study had more than one complication (Table 9).

Intraoperative complications like extension of uterine incision, atonic and traumatic PPH were found more in caesarean section done in emergency than electively.

Table 9A: Distribution of intraoperative complications according to type of CS.

Intra operative complication	Type of C.S		Parity
	Elective	Emergency	
Complication present	16(5.4%)	281(96.1%)	297
No complication	126(32.5%)	262(67.5%)	388
Total	142	543	685

$\chi^2 = 75.13$, $df = 1$, $p = 0.00$ (Significant)

Table 10: Distribution of post-operative complications according to type of CS.

Post-operative complication	Type of CS		P value
	Elective	Emergency	
Abdominal distension	5(13.2%)	33(86.8%)	$\chi^2 = 1.40$, $p = 0.23$ (Not significant)
Wound gap	7(21.2%)	26(78.8%)	$\chi^2 = 0.00$, $p = 0.94$ (Not significant)
Fever	2(7.4%)	25(92.6%)	$\chi^2 = 3.03$, $p = 0.08$ (Not significant)
UTI	4(21%)	15(79%)	$\chi^2 = 0.00$, $p = 0.97$ (Not significant)

There was no significant difference in post-operative complications whether performed during emergency or electively.

Table 11: Neonatal morbidity.

Neonatal morbidity	No. of babies (n=330) (%)
Jaundice	134(40.6%)
Birth asphyxia	110(0.3%)
Prematurity	78(23.6%)
Sepsis	47(14.2%)
Meconium aspiration syndrome	32(9.7%)
Oral thrush	15(4.5%)
Convulsions	10(3.0%)
Congenital anomaly	7(2.1%)

In our study, most cases of NICU admissions were for jaundice (134), birth asphyxia (110) and prematurity (78). 47 babies also developed sepsis. There were 32 cases of meconium aspiration syndrome and 15 cases of oral thrush. 5 congenital anomalies were detected and none of the mothers had taken antenatal care in these cases. The anomalies were meningocele, hydrocephalus, TOF, congenital dislocation of hip, polydactyly and acrodactyly. Some babies had more than one morbidity in the study.

Table 12: Causes for neonatal death.

Causes for neonatal death	No. of babies (n=28) (%)
Prematurity	19(67.9%)
Meconium aspiration syndrome	7(25%)
Sepsis	6(21.4%)
Congenital anomaly	4(14.3%)
Birth asphyxia	1(3.6%)

Table 13: Fetomaternal outcome in various groups.

Outcome	Referred (%)	Direct (%)	Admitted (%)	Total
Maternal morbidity	70(55.6%)	42(33.3%)	14 (11.1%)	126
Maternal mortality	-	-	-	-
Perinatal morbidity	164(49.7%)	139(42.1%)	27(8.2%)	330
Perinatal mortality	32(71.1%)	10(22.2%)	3(6.7%)	45

Most common cause for early neonatal death was prematurity (19 cases) followed by meconium aspiration syndrome (7 cases). Sepsis accounted for 6 cases and there were 4 neonatal deaths due to congenital anomaly.

Some babies had more than one cause of neonatal death in the study (Table 12).

Maternal morbidity was much higher in the referred group (55.6%) as compared to the direct (33.3%) admitted group (11.1%). Also, perinatal morbidity (49.7%) and mortality (71.1%) was higher in the referred group as compared to the direct and admitted group. There was no maternal mortality in present study (Table 13).

DISCUSSION

The incidence of cesarean section during one year study is 18.5%, whereas the rate of primary cesarean section is 55.8%.¹ The frequency of primary cesarean section is found to be higher in primipara 72.4%. This is in view with the various changing trends of cesarean section found over the period.² Anemia, malpresentations, oligohydramnios, eclampsia, pre eclampsia are common antenatal complications found in primipara patients in this study. Ante partum hemorrhage still found commonly in multipara patients.² The common indications observed in this study are malpresentations. A maternal indication for cesarean section was found more as compared to fetal with advanced parity. This is also suggesting the changing trends in cesarean section.⁵ Intra operative complications like traumatic & atonic PPH are found more in emergency sections. Birth asphyxia is the commonest neonatal complication in emergency cesarean section. No maternal death is recorded amongst this study group.

CONCLUSION

To conclude our study showed that overall cesarean section rate is 18.5% and rate of vaginal delivery is 82.1%. Primary cesarean section rate is 55.8% more in primi para as compared to multipara. Malpresentation is the major indication in primary cesarean section in both primi and multipara. Anaemia, malpresentation, pre eclampsia and eclampsia are common antenatal complication in primipara whereas APH is common in multipara. The highest maternal morbidity observed is abdominal distension and highest perinatal mortality is seen in women with antepartum hemorrhage. Jaundice, prematurity and birth asphyxia led to neonatal morbidities. Good intra and post-partum care is given in our institute. Hence no maternal deaths have been recorded in the study group.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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