International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Kumar R et al. Int J Reprod Contracept Obstet Gynecol. 2023 Mar;12(3):665-670
www.ijrcog.org
pISSN 2320-1770 | eISSN 2320-1789

DOI: https://dx.doi.org/10.18203/2320-1770.ijrcog20230535

Original Research Article

Clinical study of primary caesarean section among multigravida in a tertiary care hospital

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Received: 10 January 2023
Revised: 06 February 2023
Accepted: 07 February 2023

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ABSTRACT

Background: Primary caesarean section in multigravida refers to first time caesarean section in multiparous women who have had previous one or more vaginal delivery. The study focused on the frequency, indication, intra operative and postoperative complications, maternal and fetal outcome of primary caesarean section in multiparous women with previous vaginal deliveries.
Methods: It was a prospective study of all the cases of primary caesarean section in multigravida admitted at LLRM Medical College Meerut, Uttar Pradesh over period of 1 year from January 2021 to December 2021.
Results: Total number of deliveries during the study period of 1 year was 5670 and total no of caesarean section was 2432 with a caesarean rate of 42.89%. Out of 2432 caesarean section 488 (20.10%) were done in primigravida and 253 (10.40%) in multigravida. In present study most common indication for caesarean section was malpresentation 68 (26.86%) followed by severe oligohydramnios in 47 (18.57%). Most common maternal complication was pyrexia in 24 (9.48%). Most common morbidity were due to preterm 65 (22.13%) neonates followed by RDS in 22 (8.69%) neonates.
Conclusions: Though responsible for least number of overall caesarean section, multiparous subjects undergoing primary caesarean section is high risk pregnancy with possibility of adverse obstetric outcome in significant number of subjects and hence multiparous women deserve the same attention during pregnancy and labour as primigravida and women with repeat caesarean section.

Keywords: Indications, Maternal outcome, Multigravida, Neonatal outcome, Primary caesarean section

INTRODUCTION

Caesarean section is the delivery of the fetus, membrane, and placenta through abdominal and uterine incision after fetal viability.[1] Caesarean section is the commonest operative delivery technique in the world.

The rate of caesarean section is different across countries even between urban and rural areas, due to different socio-economic statuses, and opportunities to access public and private health care services.[2]

According to American College of Obstetricians and Gynecologist (ACOG) report, caesarean delivery significantly increased woman's risk vulnerability of pregnancy related morbidity and mortality which accounts to 35.9 deaths per 100,000 live deliveries as compared to women with vaginal delivery 9.2 deaths per 100,000 live births.[3]

Despite caesarean section, a life-saving medical intervention and procedures to decrease adverse birth outcome, controlling different postoperative, neonatal and maternal complications are challenging in terms of patient safety, long duration of hospital stay, cost and psychological trauma. Maternal outcomes of caesarean section included: postpartum fever, surgical site infection, puerperal sepsis, maternal mortality whereas neonatal sepsis, early neonatal death, stillbirth, perinatal asphyxia,

low Apgar score, and prematurity were the most common complication of the newborn.[4]

Caesarean section can be performed before labour, during the first and second stage of labour.[5] Caesarean section when indicated is a lifesaving procedure but when performed without appropriate indications can add risk to both the mother and baby. However, over the past 15 years it has been noted that the incidence of caesarean section has doubled all over the world, which has become a serious public health issue as morbidity and mortality from a non-indicated caesarean section, is more than from a vaginal delivery. This increase in caesarean rate also adds to the financial stress of the family and the country economically.

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 caesarean birth. A rising trend of caesarean section has been noted with the advancement of technological gadgets for fetal monitoring like USG reporting of severe oligohydramnios. Doppler studies like absent or reversal of diastolic flow, better operative techniques and anesthesia over the years, availability of blood products for transfusion and better neonatal facilities which can support a preterm baby. Many factors have also been cited for the increase in caesarean rate, which include delayed child bearing, multiple gestation, maternal request and physician's fear of litigation.[6]

A decrease in the rates of operative vaginal delivery has been observed with a corresponding increase in caesarean deliveries during second stage of labour.[7]

Delivery by caesarean section is most frequently performed in nulliparous for fetal distress, dystocia with suspected cephalopelvic disproportion. The indications for primary caesarean section in a multigravida are fetal distress, malpresentation which is favoured by a pendulous abdomen and lordosis of lumbar spine which is usual for the head not to engage in the pelvis until the onset of labour.[8] Cephalopelvic disproportion is also a common indication in multigravida since the fetus increases in size with multiparity. The most common indication for caesarean section in second stage of labour is obstructed labour due to cephalopelvic disproportion.

The rate of caesarean section is expressed as a percentage calculated by dividing the number of caesarean deliveries over the number of childbirths in a specific time period in a specific geographic area.[9]

Aim and objectives

To study the incidence of primary caesarean section in multigravida, common indications for caesarean, intra operative and postoperative complication, maternal morbidity and mortality following operation and perinatal outcome following caesarean section in multigravida patients.

METHODS

It was a prospective study of all the cases of primary caesarean section in multigravida admitted at LLRM Medical College, Meerut, Uttar Pradesh over a period of 1 year from January, 2021 to December, 2021. All the statistical analyses were done by SPSS 16.0 version software (Chicago, inc. USA). Descriptive statistics were presented as mean, standard deviation and percentage. To compare frequencies, Chi square test was used. Normality was tested by kolmogorov Smimov test. Statistical significance was accepted at $p<0.05$.

In sample size, all the patients undergoing caesarean section in our teaching hospital who meet the inclusion criteria and those giving consent were included. Information of the patients was collected in a pre-designed proforma about demographic profile, obstetrics history, physical examination, and indication for caesarean section, maternal and fetal outcome.

The following statistical formula was used:

Sample Size=$[z^2*p(1-p)]/ e^2/1+[z^2*p(1-p)]/e^2*N]$

N=population size, z=Z-score, e=margin of error, p=standard of deviation

Inclusion criteria

All multigravida patients undergoing primary caesarean section with gestational age >28 weeks confirmed by dates clinical examination and or USG were included in this study. They would have a previous vaginal delivery of viable neonate.

Exclusion criteria

Primigravida, previous LSCS, gestational age<28 weeks.

RESULTS

A prospective study was done in department of obstetrics and gynecology at LLRM Medical college, Meerut (UP) during the period of 1 year from January, 2021 to December, 2021. A total of 253 subjects of primary caesarean section on multigravida were selected for the study with inclusion and exclusion criteria.

Table 1: Incidence of primary caesarean section in multigravida pregnant women cases (N).

	Cases	Percentage
Total no. of deliveries	5670	
Total no. of caesarean section	2432	42.89
Total no. of primary caesarean in multigravida women	253	10.40

Table 1 is showing total number of deliveries is 5670, out of which 3238 delivered vaginally and 2432 underwent a caesarean section.

Total number of deliveries during the study period of 1 year was 5670 and the total number of caesarean section was 2432 with a caesarean section rate of 42.89% (Table 1). Himabindu et al found a comparable caesarean section rate of 40% in her study.[10] The high caesarean section rate in our institution was because LLRM Medical College, Meerut (UP) is a tertiary referral center having a wide catchment area. Out of 2432 caesarean section 488 (20.10%) were done in primigravida and 253 (10.40%) in multigravida.

Among 253 study subjects 196 patients (77.48%) were unbooked. This fact reveals poor level of antenatal booking of the patients in India particularly in UP. This may be because of low level of female literacy and lack of public awareness regarding the need for antenatal checkup. Our results are comparable with the study done by Desai et al (72.09%) and Himabindu et al (71%).[10,11] Out of 253 patients, most of the patients (58.1%) belong to age group of 26-30 years followed by 27.7% to the age group 31-35 years. This is because in India legal age of marriage for the girls is 18 years.[12] Sethi et al also reported in his study that maximum number of women undergoing primary caesarean section were from the age group of 25-29 years (41%).[13]

Table 2: Distribution of study population according to obstetric history.

Obstetric history	No. (n=253)	%
Gravida		
G2	92	36.4
G3	79	31.2
G4	47	18.6
G5	35	13.8
Parity		
P0	6	2.4
P1	101	39.9
P2	81	32.0
P3	42	16.6
>P3	23	9.1
Live births		
L0	30	11.9
L1	93	36.8
L2	74	29.2
L3	39	15.4
>L3	17	6.7

Distribution of patients according to parity shows that most of the patients (36.4%) were gravida-2 followed by gravida-3 (31.2%) (Table 2). It reflects that in the last few years' family size has been shifted from 5-6 children per couple to 2-3 children per couple. Grand multiparity has been significantly reduced in the past few years. Sethi et al also reported the similar results 35% gravida-2, 30% of gravida-3 parity status.[13]

Table 2 is showing distribution of study population according to gravidity, parity and live births.

Most of the patients (60.86%) belong to gestational period of 37-40 weeks followed by (22.13%) period of <37 weeks.

Out of total 253 patients, 14.2% (36) had severe anemia, 87 (34.4%) of patients had moderate anemia. 100 (39.5%) of patients had mild anemia. The prevalence of anemia in antenatal patients in India is 50.3%.

Most of the patients 243 (96.05%) underwent emergency caesarean section and only 10 (3.95%) had elective caesarean section. Study done by Sethi et al in 100 patients showed almost similar results showing 91% emergency operative and only 9% were electively operated.[13]

Table 3: Indication for caesarean section.

Indication	Cases (n=253)	Percentage
Severe oligohydramnios	47	18.57
Mal presentations	68	26.86
Breech	31	12.25
Transverse lie	34	13.43
Brow presentation	03	1.18
Premature rupture of membranes (PROM)	25	9.88
Fetal distress	33	13.04
Ante partum hemorrhage	19	7.50
Placenta previa		
Abruptio placenta		
Failed induction	13	5.13
CPD	13	5.13
Multiple pregnancy	16	6.32
Severe pre-eclampsia	10	3.95
Obstructed labour	07	2.76

Table 3 shows the various causes of caesarean section.

In present study, most common indication for caesarean section was malpresentations 68 (26.86%) followed by severe oligohydramnios in 47 (18.57%), fetal distress in 33 (13.04%), PROM in 25 (9.88%), APH in 19 (7.50%), failed induction in 13 cases (5.13%), multiple pregnancy in 16 (6.32%) severe preeclampsia in 10 (3.95%), obstructed labour and cepahalopelvic disproportion in 20 (7.89%) each (Table 3). Rao et al also reported Abnormal presentations (32.5%), APH (19.5%), fetal distress (17%), obstructed labour (18.5%) in her study.[12] Desai et al also reported fetal distress (25.58%), APH (22.09%), CPD (19.77%) and abnormal presentations (17.44%) as the most common indications for caesarean sections in his study.[11] Himabindu et al also reported fetal distress (24.7%) as the most common indication for caesarean section in his study he also showed that most common

abnormal presentation was breech for which caesarean section was done.[10]

Table 4: Analysis of study population according to type of caesarean section.

Parameters		No. 253 (%)
Type of caesarean section	Elective	10 (3.95)
	Emergency	243 (96.05)

Table 4 shows that majority patients underwent emergency caesarean section i.e. 243(96.05%), while elective caesarean was done in 10 cases (3.95%).

Out of 253 patients, 106 (41.89%) patients had different complications. Most common maternal complication was pyrexia in 24 (9.48%) patients followed by wound discharge in 18 (7.11%) patients, UTI in 12 (4.74%), fever with wound discharge in 14 (5.53%) patients and PPH in 8 (3.16%) patients (Table 5). Rao et al have shown almost similar results in his study.[12] In the present study, there was no maternal mortality observed. This may be because of availability of better antibiotics, blood and blood product transfusion facilities, safe methods of anesthesia, timely intervention, better surgical techniques and operative skill of obstetrician.

Table 5: Analysis of maternal morbidity.

Maternal morbidity		Case N (253)	%
Intra-operative complications	Extension of uterine incision	10	3.95
	Bladder injury	2	0.79
	Hemorrhage	12	4.74
	Morbid adherent placenta	6	2.37
Postoperative complications	Fever	24	9.48
	Wound discharge	18	7.11
	Postpartum hemorrhage	8	3.16
	UTI	12	4.74
	Fever with wound discharge	14	5.53

Table 5 is showing various causes of maternal morbidity viz. intraoperative and postoperative complications.

Postoperative morbidity was statistically significantly higher in unbooked patients, referred patients, emergency LSCS, low socioeconomic status, anemia, obesity, lower level of education. Baby weight was 2.6-3.0 kg in 93 (36.75%) cases and 113 (44.66%) baby were below 2.5 kg, out of which 8 (3.16%) babies were very low birth weight. 32 (12.64%) babies had weight 3.1-3.5 kg. Only 15 (5.92%) babies were above 3.5 kg. Lower baby weight in our study could be a reflection of poor maternal nutrition and antenatal care.

Table 6: Analysis of neonatal outcome.

Parameters	N=253 (%)	%
APGAR score (at 5 minutes)	≥7	183 (72.33)
	<7	70 (27.66)
Fetal outcome	Live birth	239 (94.46)
	Still birth	14 (5.53)

Table 6 is showing neonatal outcome in terms of APGAR score and mortality.

Morbidity was present in 117 neonates. Most common morbidity were due to preterm in 56 (22.13%) neonates followed by RDS in 22 (8.69%) neonates, sepsis in 4 (1.58%) and MAS in 6 (2.37 %) neonates, birth asphyxia in 3 babies (1.18%) (Table 7). Sethi analysed perinatal morbidity and reported birth asphyxia in 4%, sepsis and pyrexia in 4%, meconium aspiration syndrome in 3%, convulsion in 3% and RDS in 3% babies. Results are comparable in both study.[13]

Table 7: Analysis of neonatal morbidity.

Neonatal morbidity	No. of babies (253)	%
Preterm care	56	22.13
Respiratory distress	26	10.27
Meconium aspiration syndrome	6	2.37
Sepsis	4	1.58
Low birth weight	10	3.95
Very low birth weight	5	1.97
Birth asphyxia	3	1.18
Total	117	46.24

Table 7 is showing neonatal morbidity requiring NICU admissions. Majority were admitted in NICU in view of preterm care.

The incidence of perinatal mortality in present study was 5.54%. Neonatal mortality is more in case of unbooked cases. It is because of lack of antenatal care, poor maternal nutrition, unattended care, and maternal morbidities and prolonged trial at home. Common indication of caesarean section which led to neonatal mortality were placenta previa (most of the neonates were premature) and obstructed labour.

DISCUSSION

A prospective study was done in department of obstetrics and gynecology at LLRM Medical College, Meerut (UP) during the period of 1 year from January, 2021 to December, 2021. A total of 253 subjects of primary caesarean section on multigravida were selected for the study with inclusion and exclusion criteria. Total number of deliveries during the study period of 1 year was 5670 and the total number of caesarean section was 2432 with a caesarean section rate of 42.89 %. Himabindu et al found a comparable caesarean section rate of 40% in her study.[10]

The high caesarean section rate in our institution was because LLRM Medical College, Meerut (UP) is a tertiary referral center having a wide catchment area. Out of 2432 caesarean section 488 (20.10%) were done in primigravida and 253 (10.40%) in multigravida. Among 253 study subjects 196 patients (77.48%) were unbooked. This may be because of low level of female literacy and lack of public awareness regarding the need for antenatal checkup. Our results are comparable with the study done by Desai et al (72.09%) and Himabindu et al (71%).[10,11]

Out of 253 patients, most of the patients (58.1%) belong to age group of 26-30 years followed by 27.7% to the age group 31-35 years. Sethi et al also reported in his study that maximum number of women undergoing primary caesarean section were from the age group of 25-29 years (41%).[13]

Distribution of patients according to parity shows that most of the patients (36.4%) were gravida-2 followed by gravida-3 (31.2%). It reflects that in the last few years' family size has been shifted from 5-6 children per couple to 2-3 children per couple. Grand multiparity has been significantly reduced in the past few years. Sethi et al also reported the similar results 35% gravida-2, 30% of gravida-3 parity status.[13]

Most of the patients (60.86%) belong to gestational period of 37-40 weeks followed by (22.13%) period of <37 weeks. Rowaily et al reported in his study on primary caesarean section in multigravida found that most the patients (78.8%) belong to gestational age of 37-42 weeks followed by 18.2% patients in gestational age of 80% patients. Most of the patients 243 (96.05%) underwent Emergency caesarean section and only 10 (3.95%) had elective caesarean section.[14] Study done by Sethi et al in 100 patients showed almost similar results showing 91% emergency operative and only 9% were electively operated.[13]

In present study, most common indication for caesarean section was malpresentations 68 (26.86%) followed by severe oligohydramnios in 47 (18.57%), fetal distress in 33 (13.04%), PROM in 25 (9.88%), APH in 19 (7.50%), failed induction in 13 cases (5.13%), multiple pregnancy in 16 (6.32%) severe preeclampsia in 10 (3.95%), obstructed labour and cepahalopelvic disproportion in 20 (7.89%) each. Rao et al also reported abnormal presentations (32.5%), APH (19.5%), fetal distress (17%), obstructed labour (18.5%) in her study.[12] Desai et al also reported fetal distress (25.58%), APH (22.09%), CPD (19.77%) and abnormal presentations (17.44%) as the most common indications for caesarean sections in his study.[11] Himabindu et al also reported fetal distress (24.7%) as the most common indication for caesarean section in his study he also showed that most common abnormal presentation was breech for which caesarean section was done.[10]

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Baby weight was 2.6-3.0 kg in 93 (36.75%) cases and 113 (44.66%) baby were below 2.5 kg, out of which 8 (3.16%) babies were very low birth weight. 32 (12.64%) babies had weight 3.1-3.5 kg. Only 15 (5.92%) babies were above 3.5 kg. Rowaily et al in his study done on 4307 patients reported that most of the babies (61.7%) born were having weight of 2500-3500 grams which is considered to be a normal body weight followed by 21.6% babies who had body weight of >3500 grams. Morbidity was present in 117 neonates.[14] Most common morbidity were due to preterm in 56 (22.13%) neonates followed by RDS in 22 (8.69%) neonates, sepsis in 4 (1.58%) and MAS in 6 (2.37%) neonates, birth asphyxia in 3 babies (1.18%). Sethi analysed perinatal morbidity and reported birth asphyxia in 4%, sepsis and pyrexia in 4%, meconium aspiration syndrome in 3%, convulsion in 3% and RDS in 3% babies. Results are comparable in both study.[13] The incidence of perinatal mortality in present study was 5.54%. Neonatal mortality is more in case of unbooked cases. It is because of lack of antenatal care, poor maternal nutrition, unattended care, and maternal morbidities and prolonged trial at home. Common indication of caesarean section which led to neonatal mortality were placenta previa (most of the neonates were premature) and obstructed labour.

There were few limitations in the study i.e. the possible existence of recording errors in medical records, the study has been done in a hospital, so results could not be applied to whole Indian population and since the study was done during COVID pandemic, hence the results may vary if compared with general population.

CONCLUSION

From the above discussion it is reemphasized that LSCS in multigravida is more often in neglected women having low attention of family. The fact that once a woman delivers vaginally during her first or second pregnancy the family as well as the patient herself are reluctant and less attentive to regular antenatal checkup which leads to increased incidence of anemia, poor nutrition, lack of early diagnosis of malpresentation, placenta previa.

Though responsible for least number of overall caesarean section, multiparous subjects undergoing primary caesarean section is high risk pregnancy with possibility of adverse obstetric outcome in significant number of subjects and hence multiparous women deserve the same attention during pregnancy and labour as primigravida and women with repeat caesarean section.

Recommendations

Strengthening of antenatal care services and involvement of ASHA workers to increase antenatal checkup and public awareness in multigravida women, so as to decrease maternal and neonatal morbidity. Early diagnosis and timely referral is necessary whenever multiparous women present with antepartum complications. Strengthening of preterm baby units and neonatal intensive care unit is necessary to improve neonatal outcome.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Kumar R, Chaudhary R, Dhama V, Singh S. Clinical study of primary cesarean section among multigravida in a tertiary care hospital. Int J Reprod Contracept Obstet Gynecol 2023;12:665-70.