

A Study to Evaluate the Rate of Caesarean Deliveries, Various Indications of the Procedure as well as the Associated Maternal Morbidity and Mortality

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Abstract

Aim: To evaluate the prevalence of cesarean section in a tertiary care hospital.

Methods: A retrospective study on women who underwent LSCS over a period of 1 year. Department of Obstetrics and Gynecology, Katihar Medical College and Hospital, Katihar, Bihar, India. Out of the 489 deliveries, 200 were delivered by cesarean section. Variables including age, parity, gestational age, CS timing (elective or emergency), and indications for LSCS were collected from their case records and entered in the proforma.

Results: A total of 489 deliveries were performed in the study duration of 1 year, of which 200 cases underwent cesarean section. The LSCS prevalence was 40.89% in our institution. We have assessed the common indications of LSCS performed in this study population. The majority of the LSCS were delivered between 37-40 weeks (69.5%) of gestation. Mode of conception was spontaneous for 96.5%, and 3.5% received infertility treatments the distribution of various indications for LSCS in the study population. LSCS was mostly done for 'previous LSCS' indication (87 cases, 43.5%), followed by failure of induction of labor (45 cases, 22.5%). Fetal distress was an indication in 18 cases (9%), Breech presentation in 13 cases (6.5%), PPRM in 11 (5.5%), CPD in 10(5%). Diabetes mellitus was found in 10% of the total LSCS population and pregnancy induced hypertension (PIH) in 4%. It was found that the lower segment was well formed in 90.5%, was thin in 5% and not formed in 4.5% of the study population. Adhesions were observed in 3% and scar dehiscence was present in 1% of cases.

Conclusion: Although LSCS indications seen in our institute are the same in most institutions worldwide, efforts should be made to focus on reducing the primary LSCS rates thereby reducing the most common indication of previous LSCS in subsequent pregnancies.

Keywords: LSCS., PIH, LSCS

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Introduction:

Caesarean section is one of the most widely performed surgical procedures in obstetrics worldwide. It was mainly evolved as a lifesaving procedure for mother and foetus during the difficult delivery.[1] There is progressive increase in caesarean deliveries across the world; in developed as well developing countries. This increase in C-Section Rate has become a major public health issue, because, It is a burden on health system and imposes strain on families.[2]

It had been observed that caesarean deliveries are associated with increased risk of maternal and Perinatal morbidity as compared to vaginal deliveries even in low risk cases.[3] The rapid increase in caesarean birth rates from 1996 to 2011 without clear evidence of concomitant decreases in maternal or neonatal morbidity or mortality raises significant concern that caesarean delivery is overused.[4] The indications of caesarean sections vary among institutions as there is no standard classification system exists for indications of C-Section.[5,6] A major challenge is that definitions are not standardized, and indications can be multiple or related.[7] The most common indications for primary caesarean delivery include, in order of frequency, labor dystocia, abnormal or indeterminate foetal heart rate tracing, foetal malpresentation, multiple gestation, and suspected foetal macrosomia.[4] In order to understand the degree to which caesarean deliveries may be preventable, it is important to know why caesareans performed. This study is aimed to find the rate of caesarean deliveries, various indications of the procedure and their relative contribution to the total CSR as well associated maternal morbidity and mortality. This is a step to find out indications of LSCS which may help us to reduce the incidence rate in the institute in future.

Materials and Methods

A retrospective study on women who underwent LSCS over a period of 1 year Department of Obstetrics and Gynecology, Katihar Medical College and Hospital, Katihar, Bihar, India . Out of the 489 deliveries, 200 were delivered by cesarean section. All the mothers who underwent LSCS in this hospital in the designated period were included in this study. The study excluded all those women whose documentation was incomplete or absent. Variables including age, parity, gestational age, CS timing (elective or emergency), and indications for LSCS were collected from their case records and entered in the proforma. Data were analyzed using descriptive statistics. Mean and the standard deviation were used to present all quantitative variables, and frequency and percentage were used for qualitative variables. All data were entered in Microsoft Excel and analyzed using SPSS version 22.0

Results

A total of 489 deliveries were performed in the study duration of 1 year, of which 200 cases underwent cesarean section. The LSCS prevalence was 40.89% in our institution. We have assessed the common indications of LSCS performed in this study population.

Table 1: In our study group, the range of age varies from 18 to 40 years with an average of 28.37 ± 3.81 years, 30.5% of the women aged below 25 years, majority, i.e., 65% belongs to the age group of 25-35 years and only 4.5% observed in the higher age group. Out of the 200 cases, parity was distributed almost equally in this study group, i.e., 45.5% were primigravidae, and 54.5% were multigravida. 6% of the LSCS occurred at <32 weeks of gestation and 24.5% between 32-36 weeks. The majority of the LSCS were delivered

between 37-40 weeks (69.5%) of gestation. Mode of conception was spontaneous for 96.5%, and 3.5% received infertility treatments.

Table 2 shows the distribution of various indications for LSCS in the study population. LSCS was mostly done for 'previous LSCS' indication (87 cases, 43.5%), followed by failure of induction of labor (45 cases, 22.5%). Fetal distress was an indication in 18 cases (9%), Breech presentation in 13 cases (6.5%), PPRM in 11 (5.5%), CPD in 10 (5%). Other indications such as preeclampsia, placenta previa, unfavorable cervix, multiple gestations, abruptio placenta, LSCS on demand etc., were less than 3%.

Diabetes mellitus was found in 10% of the total LSCS population and pregnancy induced hypertension (PIH) in 4%. Among the 87 patients who had 'previous LSCS' as indication for present LSCS, other comorbidities such diabetes and PIH were found in 6% and 4% respectively.

Table 3 showed the findings during the procedure among the study population. It was found that the lower segment was well formed in 90.5%, was thin in 5% and not formed in 4.5% of the study population. Adhesions were observed in 3% and scar dehiscence was present in 1% of cases. Scar rupture and scar extension were not present in this study group.

Table 1: Baseline characteristics of the study population

| Variables | | Number of patients | Percentage |
|--------------------|---------------------|--------------------|------------|
| Age | Range | 18-40 | |
| | Mean±SD | 28.37±3.81 | |
| | Below 25 | 61 | 30.5 |
| | 25-35 | 130 | 65 |
| | Above 35 | 9 | 4.5 |
| Parity | Primi | 91 | 45.5 |
| | Multigravida | 109 | 54.5 |
| Gestational Age | <32 Weeks | 12 | 6 |
| | 32-36 weeks | 49 | 24.5 |
| | 37-40 weeks | 139 | 69.5 |
| Mode of conception | Spontaneous | 193 | 96.5 |
| | Treated Infertility | 7 | 3.5 |

Table 2: Distribution of indications for cesarean section among the study population

| Indications | | Number | Percentage |
|---------------------|----------------------|--------|------------|
| Previous LSCS | Normal | 81 | 40.5 |
| | With scar dehiscence | 6 | 3 |
| Failed Induction | | 45 | 22.5 |
| Fetal distress | | 18 | 9 |
| Breech presentation | | 13 | 6.5 |
| PROM | | 6 | 3 |
| CPD | | 10 | 5 |
| IUGR | | 9 | 4.5 |
| PPROM | | 11 | 5.5 |
| Preeclampsia | | 6 | 3 |
| Placenta Previa | | 4 | 2 |

| | | |
|---------------------|---|-----|
| Unfavourable cervix | 4 | 2 |
| Multiple gestation | 3 | 1.5 |
| Abruptio Placenta | 3 | 1.5 |
| LSCS on demand | 2 | 1 |
| Preterm labour | 1 | 0.5 |
| Transverse Lie | 1 | 0.5 |
| Anaemia | 1 | 0.5 |

PROM: Premature rupture of membranes; CPD: Cephalopelvic disproportion; IUGR: Intrauterine growth restriction; PPRM: Preterm premature rupture of membranes

Table 3: Distribution of operational findings

| Operational findings | | Number | Percentage |
|----------------------|-------------|--------|------------|
| Lower segment | Well formed | 181 | 90.5 |
| | Thin | 10 | 5 |
| | Not formed | 9 | 4.5 |
| Adhesions | Yes | 6 | 3 |
| | No | 194 | 97 |
| Scar dehiscence | Yes | 2 | 1 |
| | No | 198 | 99 |
| Scar Rupture (No) | | 200 | 100 |
| Scar extension (No) | | 200 | 100 |

Discussion

The Cesarean section prevalence rate varies globally from 1% in Sub-Saharan Africa, 30% in the USA, to 45% in Brazil.[8] This audit showed a prevalence rate of 40.89% in the institution. This is far above the accepted range of 10-15%.[9] Souza et al. showed a prevalence rate of 25.7% globally in their study conducted over a period of 1 year.[10] Simultaneously, the LSCS prevalence rate was 31.8% in the study conducted by Jawa et al. over a period of 6 months.[11] The overall Cesarean rate in India was found to be around 17%, and the rate of LSCS was found to be increasing from 8.5% to 17.2% over a period of 10 years from 2005 to 2015.[12] But CS without indication was very less in India than other countries in the study done by Souza et al.10 The study from Chennai, which was conducted over a period of 2 years, showed a CS rate of 47% in the private sector.[13] The Cesarean section, when compared showed that the rate was more in the private sector

(54%) than in the public sector (24%).[14] Analysis of the age group in this audit showed that most of the LSCS was performed in the age group of maximum fertility and this corresponds to other similar study.[11,15]

CS rate in our institution as per the audit is 40.89%. Analyzing the common indications for LSCS in our institute, the most common indication was previous LSCS (43.5%). Most clinical audits and studies done previously also showed an almost similar result.[11,15,16] Although previous LSCS without any obstetric complication is not an indication that supports a repeat LSCS, changes in the maternal and physician profile would have contributed to this increased rate. Maternal anxiety regarding the newborn infant, the obstetrician's sense of security for both the mother and the neonate seems to be responsible for repeated Cesarean sections. Medical complications like diabetes mellitus and PIH were also found in patients who had 'previous LSCS' as indication. Diabetes

mellitus was found in 10% and PIH was found in 4% of the previous LSCS population. This only further increased the rate of repeat cesarean sections.

The second common indication found in this study was failed induction (22.5%), especially in primigravida. This increase in primary LSCS increases future LSCS rate. Avoiding unnecessary inductions can reduce the rate of primary LSCS. So, it entrusts every obstetrician to strictly adhere to the standard protocol for induction of labor.

The other indications for LSCS found in this study are Fetal distress was an indication in 18 cases (9%), Breech presentation in 13 cases (6.5%), PPRM in 11 (5.5%), CPD in 10(5%). Other indications such as preeclampsia, placenta previa, unfavorable cervix, multiple gestation, abruptio placenta, LSCS on demand etc., was less than 3%. Diabetes mellitus was found in 10% of the total LSCS population and pregnancy induced hypertension (PIH) in 4%. These medical complications overlapping with one or more indications would have resulted in LSCS thus increasing the prevalence rate in this institution. Jawa A et al. had shown that elective LSCS was done in 25.4% of the study population, and emergency LSCS was done in 74.6% cases.¹¹ This study shows that emergency LSCS was performed in 44% of the study population which includes both in house patients as well as referrals from periphery. We had referred cases from periphery due to various complications as our institute is a tertiary care center. This is another reason for the increase in the institutional CS rate.

The demand for LSCS as an indication was found only in 1% of the study population in this audit. This was mainly due to the fear of vaginal delivery or labor pain, fetal risk, and avoidance of injury to pelvic floor and convenience. Obesity, advanced lifestyle with changes like unhealthy food habits with

resultant obesity and sedentary lifestyle, lack of exercise during pregnancy, etc., also would have contributed to the increasing trend in LSCS. The audit did not include neonatal and maternal outcome as the primary aim of the study was to conduct an audit on indications of LSCS. Moreover, most of the patients had one or more overlapping indications which was different in each case. Hence an association of indications with LSCS could not be performed. An audit involving more patients considering neonatal and maternal outcome would have given a better outcome.

Conclusion

Although LSCS indications seen in our institute are the same in most institutions worldwide, efforts should be made to focus on reducing the primary LSCS rates thereby reducing the most common indication of previous LSCS in subsequent pregnancies.

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