

## Observational Research to Find the Rate of Caesarean Deliveries and Various Indications of the Procedure

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### Abstract

**Aim:** The aim of the present study was to find the rate of caesarean deliveries and various indications of the procedure.

**Methods:** The Department of Obstetrics and Gynecology of Patna medical College and Hospital, Patna, Bihar, India conducted this retrospective study on women who underwent LSCS over a period of 11 Months. Out of the 935 deliveries, 500 were delivered by cesarean section. All the mothers who underwent LSCS in this hospital in the designated period were included in this study.

**Results:** The LSCS prevalence was 53.47% in our institution. We have assessed the common indications of LSCS performed in this study population. In our study group, the range of age varies from 18 to 43 years with an average of  $27.37 \pm 4.21$  years, 30% of the women aged between 18-25 years, majority, i.e., 60% belongs to the age group of 26-35 years and only 10% observed in the higher age group. 5% of the LSCS occurred at <32 weeks of gestation and 25% between 32-36 weeks. The majority of the LSCS were delivered between 37-40 weeks (70%) of gestation. Mode of conception was spontaneous for 97%, and 3% received infertility treatments. Out of the 500 LSCS performed, 45% were emergency cases and 55% were elective. LSCS was mostly done for 'previous LSCS' indication (210 cases, 42%), followed by failure of induction of labor (120 cases, 24%). Fetal distress was an indication in 40 cases (8%), Breech presentation in 30 cases (6%), PPROM in 25 (5%), CPD in 20 (4%). Other indications such as preeclampsia, placenta previa, unfavorable cervix, multiple gestation, abruptio placenta, LSCS on demand etc., was less than 3%.

**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:** Caesarean Section, Indications, Rate.

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### Introduction

One of the commonest surgery performed worldwide is caesarean section (CS). The surgery should only be performed when there is a valid reason to do so. The World Health Organization (WHO) has identified an ideal caesarean section (CS) rate for a nation of around 10-15%. [1] In recent

times the proportion of delivery conducted by caesarean section has increased and has reached the epidemic proportion in some parts of the world. It has been suggested that factors, such as social, cultural, unequal accessibility to health services and clinical practice patterns might have been

major contributors to the wide variation in caesarean section rates across different countries. [2,3] The increasing trend of CS rates may indicate a trend towards a costlier medical delivery systems and lowered threshold of abnormality detection among the health care providers. [4] Studies have shown that there is no evidence of benefit for the health of mothers and babies in populations with values of CS rate above 15%. [5,6] In fact, caesarean deliveries are associated with increased risk of maternal and perinatal morbidity as compared to vaginal deliveries even in low risk cases. [7]

Lower segment cesarean section (LSCS) is the most done procedure in obstetrics and is an important aspect of emergency obstetric care. Cesarean section can be a lifesaving intervention for mother and baby when clearly indicated or when a vaginal birth is contraindicated. Unnecessary cesarean sections pose a risk to mother and child and affect the morbidity and mortality adversely and the women's future reproductive function. It also raises the costs of delivery and maternal care. [8] The rapid rise in CS has become a grievous public health issue. Most institutions, both national and international (including WHO) state that the rates of LSCS should be between 10-15% [9] but practically, the rates are much higher. The rates have found to be increasing since the routine use of electronic fetal monitoring, better anesthesia, better operative techniques, and better neonatal facilities. The economic factor and the fear of litigation also plays an important part in the decision making for LSCS.

LSCS has been instrumental in reducing maternal and neonatal morbidity and mortality if done for proper indications. CS rate of more than 10% does not show any reductions in maternal and newborn mortality rates. [10,11] Unfortunately, it has also led to several complications like bladder and bowel injury, morbidly

adherent placenta, scar rupture, etc., in subsequent pregnancies. Recent decades have shown an increase in the CS rates. [12] CS does not show any benefits for women or infants in cases where it is not indicated. Moreover, it is associated with risks apart from the present delivery and affects the subsequent pregnancies. [13] CS may be provided after evaluating each case medically by healthcare workers. [9] In 2014, WHO concluded that LSCS rates > 10% is not associated with lower maternal and neonatal mortality and morbidity than LSCS rates <10%. [14] Therefore, the international health care community has considered the ideal rate for LSCS between 10-15% and no less than 5%. Like any surgery, CS is also associated with several risks that affect the woman's health, her baby, and future pregnancies. It has also increased the risk of morbidity related to CS, including abdominal pain, hysterectomy, ureteric and bladder injury, neonatal respiratory morbidity, fetal death, placenta accreta/placenta percreta, scar rupture in future pregnancies, etc.

The aim of the present study was to find the rate of caesarean deliveries and various indications of the procedure.

### Materials and Methods

The Department of Obstetrics and Gynecology of Patna medical College and Hospital, Patna, Bihar, India conducted this retrospective study on women who underwent LSCS over a period of 11 Months. Out of the 935 deliveries, 500 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), 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 was used to present all quantitative variables, and frequency and percentage were used for qualitative variables. A pie chart was used

to present CS timing. All data were entered in Microsoft Excel and analyzed using SPSS version 20.00.

## Results

**Table 1: Baseline characteristics of the study population**

Variables		Frequency	Percentage
Age	Range	18-43	
	Mean±SD	27.37±4.21	
	18-25	150	30
	26-35	300	60
	36-45	50	10
Parity	Primi	225	45
	Multigravida	275	55
Gestational Age	<32 Weeks	25	5
	32-36 weeks	125	25
	37-40 weeks	350	70
Mode of conception	Spontaneous	485	97
	Treated Infertility	15	3
CS Timing	Elective	275	55
	Emergency	225	45

A total of 935 deliveries were performed in the study duration of 1 year, of which 500 cases underwent cesarean section. The LSCS prevalence was 53.47% in our institution. We have assessed the common indications of LSCS performed in this study population. In our study group, the range of age varies from 18 to 43 years with an average of 27.37±4.21 years, 30% of the women aged between 18-25 years, majority, i.e., 60% belongs to the age group of 26-35 years and only 10% observed in the higher age group. Out of

the 500 cases, parity was distributed almost equally in this study group, i.e., 45% were primigravidae, and 55% were multigravida. 5% of the LSCS occurred at <32 weeks of gestation and 25% between 32-36 weeks. The majority of the LSCS were delivered between 37-40 weeks (70%) of gestation. Mode of conception was spontaneous for 97%, and 3% received infertility treatments. Out of the 500 LSCS performed, 45% were emergency cases and 55% were elective.

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

Indications		Frequency	Percentage
Previous LSCS	Normal	200	40
	With scar dehiscence	10	2
Failed Induction		120	24
Fetal distress		40	8
Breech presentation		30	6
PROM		15	3
CPD		20	4
IUGR		20	4
PPROM		25	5
Preeclampsia		10	2
Placenta Previa		5	1

Unfavourable cervix	5	1
Multiple gestation	5	1
Abruptio Placenta	5	1
LSCS on demand	5	1
Preterm labour	4	0.8
Transverse Lie	3	0.6
Anaemia	3	0.6

LSCS was mostly done for 'previous LSCS' indication (210 cases, 42%), followed by failure of induction of labor (120 cases, 24%). Fetal distress was an indication in 40 cases (8%), Breech presentation in 30 cases (6%), PPRM in

25 (5%), CPD in 20 (4%). Other indications such as preeclampsia, placenta previa, unfavorable cervix, multiple gestation, abruptio placenta, LSCS on demand etc., was less than 3%.

**Table 3: Distribution of operational findings**

Operational findings		Frequency	Percentage
Lower segment	Well formed	450	90
	Thin	30	6
	Not formed	20	4
Adhesions	Yes	20	4
	No	480	96
Scar dehiscence	Yes	5	1
	No	495	99
Scar Rupture (No)		500	100
Scar extension (No)		500	100

It was found that the lower segment was well formed in 90%, was thin in 6% and not formed in 4% of the study population. Adhesions were observed in 4% and scar dehiscence was present in 1% of cases. Scar rupture and scar extension were not present in this study group.

### Discussion

Cesarean section (CS) is a surgical procedure performed to deliver fetus through abdominal route. CS is one of the oldest operation in surgery. [15] The objective of CS in ancient world was for post mortem delivery but in modern medicine it has saved many mothers and babies. Increasing rate of cesarean section worldwide is an alarming concern for public health and obstetrician due to increase in financial burden and risk to health of the mother in comparison to vaginal delivery. [16] This increase rate in developed country is due to early diagnosis

of fetal distress by continuous use of electronic fetal monitoring and malpresentation, however the cause of increase rate of CS in developing countries. [17,18]

The reasons for the increase in the caesarean rates are multifaceted. Detection of foetal distress especially with the use of continuous electronic foetal monitoring may be an important reason. Liberal use of caesarean in high risk cases like breech presentation, previous caesarean delivery, growth retarded foetus etc along with avoidance of difficult manipulative or instrumental vaginal deliveries may be some other reasons. Our institution which is a tertiary centre gets a large number of complicated pregnancies as well as referred patients in critical stage which makes it difficult to keep the CS rates low.

Souza et al. showed a prevalence rate of 25.7% globally in their study conducted

over a period of 1 year. [8] Simultaneously, the LSCS prevalence rate was 31.8% in the study conducted by Jawa et al. over a period of 6 months. [19] 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. [20] But CS without indication was very less in India than other countries in the study done by Souza et al. [8] The study from Chennai, which was conducted over a period of 2 years, showed a CS rate of 47% in the private sector. [21] The Cesarean section, when compared showed that the rate was more in the private sector (54%) than in the public sector (24%). [22] 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. [19,23]

CS rate in our institution as per the audit is 53.47%. Analyzing the common indications for LSCS in our institute, the most common indication was previous LSCS (42.52%). Most clinical audits and studies done previously also showed an almost similar result. [19,23,24] 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. The second common indication found in this study was failed induction (24%), 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. [25]

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. [19] This study shows that emergency LSCS was performed in 44% of the study population which includes both inhouse 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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