



Original Research Article

# Changing trends in Cesarean delivery

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**How to cite this article:** R. Subhashini, N. Uma. Changing trends in Cesarean delivery. IAIM, 2015; 2(3): 96-102.

**Available online at** [www.iaimjournal.com](http://www.iaimjournal.com)

**Received on:** 09-02-2015

**Accepted on:** 20-02-2015

## Abstract

The study conducted in retrospective manner in 150 bedded Government Victoria Hospital; a Maternity Hospital affiliated to Andhra Medical College, Visakhapatnam, Andhra Pradesh. The rates and indications of primary and repeat Cesarean sections (CS) were analyzed among 8121 live births during the year 2014 and present Cesarean section rate was compared with 2004 and 2009 Cesarean rates. In our study, the Cesarean section rate was 25.66%. There is an increase in the CS rate over last decade from 16.14% in 2004, 20.33% in 2009 to 25.66% in 2014. The main contribution to this rise in CS is due to increase in numbers of repeat sections. CS becomes increasingly the procedure of choice in high risk pregnancies to prevent perinatal morbidity and mortality. This has become possible due to improved patient care, availability of effective antibiotics, blood transfusion services, safer anesthesia, improved surgical technique and sophisticated neonatal care services.

## Key words

Cesarean rate, Primary Cesarean section, Repeat Cesarean section, Indications.

## Introduction

Cesarean section is the most frequently performed major surgery in modern Obstetrics. Cesarean Section (CS) is an operation mainly evolved to save a maternal life during difficult child birth. Progressive increase in Cesarean delivery is a matter of concern in recent years. The Cesarean section rate is increased in all parts of the world, both in developed and developing countries and there is an increase in trend in both primary and repeat Cesarean rate. The reasons mostly related to advanced age,

fetal distress especially in detection by continuous electronic fetal monitoring, more liberal use of Cesarean section for breech, intra uterine growth retardation (I.U.G.R.), preterm labor, multiple gestation and improved safety of Cesarean section.

## Material and methods

### Aim and objectives

- To analyze the rate of primary and repeat Cesarean delivery among 8121

deliveries and to find out the relative contribution of various ante-partum indications, during the period from January 2014 to December 2014 at Government Victoria Hospital which is a 150 bedded Maternity Hospital at Visakhapatnam, Andhra Pradesh.

- To compare the Cesarean delivery rates over the last decade, the data was collected for the years 2004 and 2009.

The factors associated with Cesarean section like age, parity, maternal stature, previous obstetric outcome were studied. Present Obstetric parameters like gestational age, lie and presentation, multiple pregnancy, and birth weight were included. Placental factors like placenta previa, abruption and various medical diseases complicating pregnancy like Diabetes Mellitus including gestational diabetes mellitus (GDM), pregnancy induced hypertension (P.I.H), and hypothyroidism were studied.

The categories of indications for Cesarean section like fetal distress, multiple gestation, mal-presentation, arrest of labor i.e. arrest of dilatation or arrest of descent including failed forceps or vacuum extraction, cephalo-pelvic disproportion (CPD), maternal indications, and fetal indications were studied. The category of fetal distress included fetal distress during labor, non reassuring and abnormal cardiotocogram when not in labor and abnormal umbilical artery Doppler study.

Maternal indications like maternal conditions anteceding the pregnancy that could complicate delivery like previous uterine surgery, and medical diseases were included. Obstetric indications in current pregnancy like placenta previa, abruptio placenta, and placenta accreta, and cord prolapse were included. Fetal indications like intrauterine growth restriction, prematurity and congenital malformations in

which vaginal delivery was not possible were studied.

For repeat sections, Cesarean was performed without trial for vaginal delivery in patients with history of 2 or more previous Cesarean sections, with cephalo-pelvic disproportion and for those who presented with scar tenderness. Also, patients with previous Cesarean section were counselled about vaginal birth after Cesarean delivery. Cesarean section was electively performed for those who did not opt for vaginal birth.

## Results

A total number of 2084 Cesarean sections performed during the year 2014 at Government Victoria Hospital, Visakhapatnam, Andhra Pradesh were analyzed. Total number of deliveries during our study period was 8121. Out of these 8121 patients, 6037 had normal vaginal delivery and 2084 patients had Cesarean delivery. Incidence of Cesarean section at our Institution was 25.66% as per **Table - 1**.

**Table – 1:** Incidence of Cesarean section.

Mode of delivery	No. of cases	%
Vaginal delivery	6037	74.33
Abdominal delivery	2084	25.66
Total no. of deliveries	8121	100

There was increase in the rate of Cesarean section over a decade from 2004 to 2014 as per **Table - 2**. Repeat sections constituted 46.98% all CS as per **Table – 3**. Incidence of primary and repeat emergency/ elective Cesarean section was as per **Table - 4**. Primary emergency CS contributed to 44.48% followed by repeat elective CS (26.15%). This seems to be main reason for the rise of Cesarean section rate. There is a need to encourage trial of labor



following a Cesarean done for non-recurrent indication. Incidence of emergency/ elective CS was as per **Table – 5**.

**Table – 2:** Rate of Cesarean section over a decade from 2004 to 2014.

Year	Total no. of deliveries	No. of Cesarean sections	%
2004	7618	1230	16.14
2009	6691	1359	20.31
2014	8121	2084	25.66

**Table – 3:** Incidence of primary/repeat Cesarean sections.

Primary /Repeat	No. of cases	%
Primary sections	1105	53.02
Repeat sections	979	46.98
Total no. of CD	2084	100

**Table – 4:** Incidence of primary and repeat emergency/ elective Cesarean section.

Type of CS	No. of cases	%
Primary emergency	927	44.48
Primary elective	178	8.54
Repeat emergency	434	20.83
Repeat elective	545	26.15

**Table – 5:** Incidence of emergency/ elective CS.

Type of CS	No. of cases	%
Emergency CS	1361	65.31
Elective CS	723	34.69
Total no. of CD	2084	100

Total 65.31% CS were done by emergency procedure. Important indications for primary emergency Cesarean sections performed in the year 2014 were as per **Table – 6**.

**Table – 6:** Important indications for primary emergency Cesarean sections performed in the year 2014.

Indications	No. of cases	%
Fetal distress	297	32.03
Cephalo-pelvic disproportion associated with medical disorders complicating pregnancy like PIH, GDM, Rh negative pregnancy, Hypothyroidism, Epilepsy, Bronchial asthma, including failed induction	209	22.54
Big baby (birth weight 3.5 kg and more)	104	11.22
Mal presentations	36	3.88
Oligohydramnios	79	8.52
Preterm	32	3.45
Pelvic abnormalities	44	4.74
Precious pregnancy	45	4.85

Important indications for primary elective Cesarean sections performed in the year 2014 were as per **Table - 7**.

**Table – 7:** Important indications for primary elective Cesarean sections performed in the year 2014.

Indications	No. of cases	%
Cephalo-pelvic disproportion associated with medical disorders complicating pregnancy like PIH, GDM, Rh negative pregnancy, Hypothyroidism, Epilepsy, Bronchial asthma.	41	23.08
Cephalo-pelvic disproportion	24	13.48
Mal presentations	14	7.88
Pelvic abnormalities	15	8.40
Precious pregnancy	23	12.92

Important indications for repeat emergency Cesarean sections performed in the year 2014 were as per **Table – 8**.

**Table – 8:** Important indications for repeat emergency Cesarean sections performed in the year 2014.

Indications	No. of cases	%
Scar tenderness	57	13.13
Fetal distress	45	10.39
Cephalo-pelvic disproportion associated with medical disorders like PIH, GDM, Hypothyroidism, Rh negative pregnancy, Epilepsy	89	20.50
Mal presentations	30	6.91
Pelvic abnormalities	24	5.52

Important indications for repeat elective Cesarean sections performed in the year 2014 were as per **Table - 9**. Fetal distress was the commonest indication for primary emergency CS followed by CPD and big baby. CPD followed by pelvic abnormalities and mal-presentations were the commonest indications for primary elective CS. CPD and scar tenderness amounted to more than one third of repeat emergency CS followed by fetal distress. CPD with pelvic abnormalities and big baby contributed to 50% of elective Cesarean sections as per **Table - 10**. The majority of cases were in the age group of 21-25 years (49.38 %) as per **Table - 11**. This reflects the early marriage and early age of child bearing among India women. Total 90.97% of women belonged to low socio economic status as per **Table - 12**. Total 40.36% patients belonged to rural area as per **Table - 13**. This indicates the awareness among rural women

and shows the improved transport facilities are available through 104 services to our hospital.

**Table – 9:** Important indications for repeat elective Cesarean sections performed in the year 2014.

Indications	No. of cases	%
Cephalo-pelvic disproportion associated with medical disorders complicating pregnancy like PIH, GDM, Rh negative pregnancy, Hypothyroidism, Epilepsy, Bronchial asthma	217	39.81
Big baby (birth weight 3.5 kg and more)	52	9.54
Mal presentations	18	3.3
Past dates	21	3.85
Oligoamnios	25	4.58
IUGR with Oligoamnios	38	6.97
Intrauterine growth retardation (IUGR)	42	7.70
Pelvic abnormalities	51	9.35
Precious pregnancy	24	4.40

Total 86.09% of patients had regular antenatal checkups but 13.91% were admitted as emergencies as per **Table - 14**. Most of these cases were post Cesarean pregnancies and referred from surrounding villages as our hospital is a referral hospital.

The majority of CS was in primi gravida and second gravida as per **Table - 15**.

Total 74.32% cases were performed at term with good fetal survival chances as per **Table – 16**.

### Discussion

The World Health Organization officially withdrew its previous recommendation of a 15%

**Table - 10:** Comparison of various indications for all types of CS.

Indications	Primary sections (%)		Repeat sections (%)	
	Emergency	Elective	Emergency	Elective
CPD associated with medical disorders like PIH, GDM, Hypothyroidism, Rh negative pregnancy, Epilepsy	22.54 (2)	26.56 (1)	26.02 (1)	39.81 (1)
Pelvic abnormalities	4.74	8.4 (2)	5.52	9.35 (3)
Fetal distress	32.03 (1)	5.58	10.39 (3)	---
Precious pregnancy	4.85	2.92	2.53	4.40
Big baby	11.22 (3)	5.58	4.14	9.54 (2)
Mal presentations	3.88	7.88 (3)	6.91	3.31
Scar tenderness	---	---	13.13 (2)	---
IUGR	4.31	5.05	7.37	7.70

**Table – 11:** Pattern of Age distribution.

Age group	No. of cases	%
19 years ad below	93	4.46
21-25 years	1029	49.38
26-30 years	868	41.65
31-35 years	88	4.22
35 years ad above	6	0.28

**Table – 12:** Pattern of Economic status.

Economic status	No. of cases	%
Low income group	1896	90.97
Middle income group	106	5.08
High income group	82	3.95

**Table – 13:** Pattern of Residential status.

Residential status	No. of cases	%
Urban	1243	59.64
Rural	841	40.36

**Table – 14:** Pattern of registration status.

Registration status	No. of cases	%
booked	1794	86.09
Un booked	290	13.91

**Table – 15:** Status of Gravida.

Gravida	No. of cases	%
Primi Gravida	776	37.25
II Gravida	952	45.68
III Gravida	270	12.95
IV Gravida	70	3.36
IV Gravida and above	16	0.76

**Table – 16:** Status of gestational age.

Gestational age (Weeks)	No. of cases	%
32-34	21	1.43
35-36	102	4.89
>37	1549	74.32
>40	412	19.76

CS rates in June 2010. Their official statement read as there is no empirical evidence for an optimum percentage. What matters most is that all women who need caesarean sections receive them. Goals for achieving an optimal Cesarean delivery rate should be based on maximizing the best possible maternal and neonatal outcomes, taking into account available medical and health resources and maternal preferences. This



opinion is based on the idea that if left unchallenged, optimal Cesarean delivery rates will vary over time and across different populations according to individual and societal circumstances.

As in our study, the largest contributor to the primary CS rate was fetal distress, similar to other reports [2, 3, 4] as per **Table – 17**. Indian national survey report is also showed fetal distress as the largest contributor to CS rate. The increase in fetal indication in our study both big baby and IUGR was also similar to the study by Barber, et al. probably because of good ante natal care. The higher contribution by fetal indications reflects better neo natal care with improved survival of IUGR babies. For the repeat Cesarean, there is an increase in the number of cases with CPD and scar tenderness [9].

**Table - 17:** Comparing the rates of CS with other studies.

Various study	Rate of CS	
	Present study	16.14 (2004)
Mittal Sibha, et al. [1]	17.15 (2001)	28.93 (2011)
Barbar, et al. [4]	26 (2003)	36.5 (2009)
Baaquel [5]	10.6 (1997)	19.1 (2006)
Stavrou, et al. [6]	19.1 (1998)	29.5 (2008)
Chong, et al. [7]	19.9 (2001)	29.6 (2010)
Litorp, et al. [8]	19 (2000)	49 (2011)

### Conclusion

Greatest emphasis attached to fetal welfare in today's small family norm has changed the delivery practices in favor of Cesarean section. This attitude has led to the emergence of a new set of indications for adopting Cesarean section as a preferred mode of delivery. Reasons for rising rates of Cesarean section are due to frequent diagnosis of fetal distress on electronic

fetal heart rate monitoring, identification of high risk mothers and frequent resort to elective section in high risk situation and precious pregnancies, avoiding difficult manipulative or instrumental vaginal deliveries.

The rate of Cesarean section has increased from 2004 to 2011 with primary and repeat Cesarean equally contributing to this rise. In the primary Cesarean section rate, indications like CPD and fetal distress show an increase and in repeat Cesarean sections, scar tenderness and CPD associated with medical disorders i.e. PIH, GDM, Hypothyroidism, Rh negative pregnancy, Epilepsy and Asthma and previous obstetric outcome contributed more than the fetal distress.

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**Source of support:** Nil

**Conflict of interest:** None declared.