

**CHANGING TRENDS IN CAESAREAN DELIVERY - A CLINICAL STUDY**Annappa Shetty<sup>1</sup><sup>1</sup>Assistant Professor, Department of Obstetrics and Gynaecology, Karwar Institute of Medical Science, Karwar, Karnataka.**ABSTRACT****BACKGROUND**

Today, there is a concern over the rising caesarean delivery both in the developed and developing countries across the world. It has been observed that both primary and repeat caesarean deliveries have been increasing at an alarming rate. Indications for caesarean deliveries also shows changing trends in the present scenario. The main aim of this study is to compare the caesarean delivery rates over the last one decade. The objective behind the study is to understand the contributing factors for the new trends.

**MATERIALS AND METHODS**

For this study, the data was collected in a retrospective manner from all the deliveries that occurred between July 1, 2005, to June 30, 2006, and July 2015 to June 30, 2016, in the Department of Obstetrics and Gynaecology, Karwar Institute of Medical Science, Karwar. A cohort of 2752 delivered women were studied. Among the caesarean births, the indications for both the primary and repeat caesarean sections were studied. After analysing the caesarean births from total live births, the rate for both primary and repeat caesarean were calculated.

**RESULTS**

The caesarean delivery rate is increased from 167 to 263 for 1000 live births with increase in primary caesarean delivery rate from 101 (10.1%) to 187 (18.7%) per 1000 live births in last one decade. Foetal distress, cephalopelvic disproportion, arrest of descent, multiple gestations, breech presentation contributed to this increase.

**CONCLUSION**

There is an increase in the total caesarean rate with significant rise in the primary caesarean rate in the last one decade.

**KEYWORDS**

Caesarean Rate, Primary Caesarean Birth, Repeat Caesarean Birth.

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**BACKGROUND**

Caesarean section is not the panacea for the obstetrics problems, but is the excellent procedure when needed and is certainly one of the oldest operation in surgery. In 1916, Dr. Edwin Cragin gave the famous statement, "Once caesarean always a caesarean." The most dramatic features of the modern Obstetrics is the constant increase in the caesarean rate both in the developed and developing countries. With the advent of lower segment caesarean section, modern anaesthesia, antibiotics, blood transfusion, better suture material, the operation which was primarily done to overcome difficult labour was seen liberalised to include foetal distress and other indicates so as to lower the perinatal mortality. There is an increase in trends both primary and repeat caesarean rates.

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The reasons for increase are multifaceted. Foetal distress and its early detection by electronic foetal monitoring, more liberal use of caesarean for breech presentation, intrauterine growth retardation, delayed child bearing, increased maternal body mass, multiple gestation, prematurity are most common causes found. This study is done to compare the rate of primary and repeat caesarean delivery and to evaluate the relative contribution of various indications.

**MATERIALS AND METHODS**

For the purpose of this study, the data were collected in a retrospective manner from all the deliveries that occurred between July 1, 2005, to June 30, 2006, and July 1, 2015, to June 30, 2016, in the Department of Obstetrics, Karnataka Institute of Medical Sciences, Karwar, a large tertiary care District Hospital. The data on all births were collected including the type of delivery and the indication was recorded, if caesarean section was done. Total primary and repeat caesarean section rates were calculated for each year. Caesarean rate was estimated as the number of caesarean births divided by total live births. Each indication for caesarean delivery was categorised and rate for individual indication was calculated annually as the number of caesarean performed per 1000 live births.

The different categories of indications for caesarean births includes:

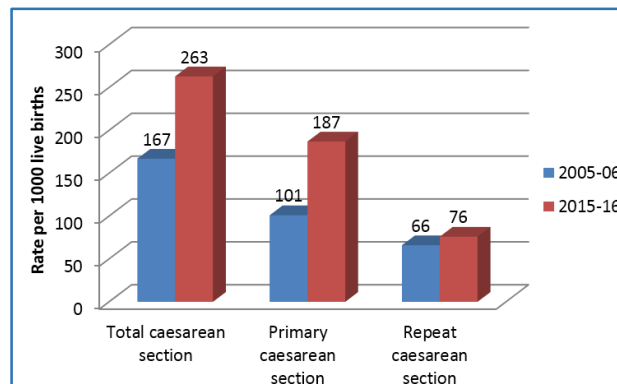
- Foetal Distress.
- Malpresentation and Malposition.
- Arrest of Labour Either Due to Arrest of Dilatation or Arrest of Descent.
- Cephalopelvic Disproportion.
- Foetal Indication.
- Maternal Indications, and
- Obstetric Indications.

The foetal indications for caesarean delivery includes intrauterine growth retardation, prematurity and congenital anomalies in which vaginal delivery can lead to maternal morbidity. Obstetrics indications are the problems connected to the present pregnancy like cord prolapse, placenta previa, placenta accreta and abruptio placentae. Maternal indications for caesarean births include the maternal conditions present before pregnancy that may cause problems with maternal or foetal well-being. In case of repeat caesarean sections, vaginal delivery was not tried if there was history of two or more previous caesarean sections or with cephalopelvic disproportion or for those patients who presented with scar tenderness or with impending danger of uterine rupture.

**RESULTS**

During the study period, i.e. between July 1, 2005, to June 30, 2006, a total 1240 live births occurred and between July 1, 2015, to June 30, 2016, there were 1512 live births occurred. In the above period, the overall caesarean delivery rate and the changing trends in caesarean delivery were crosschecked in relation to the total number of live births. It was found that the annual caesarean delivery rate had increased from 167 per 1000 live births in 2005-06 (16.7%) to 263 per 1000 live births in 2015-16 (26.32%). Compare to 2005-06, in 2015-16, there was rise in both repeat and primary caesarean section rate (Figure 1). The primary caesarean rate in 2015-16 was 18.7% and it was 10.1% in 2005-06. It was also found that the repeat caesarean section rate was increased from 66 per 1000 live births in 2005-06 (6.65%) to 76 per 1000 live births in 2015-16 (7.6%).

The main reason for this increased primary caesarean section rate was found to be foetal distress. Otherwise, no significant changes seen with other indications for this changing trends in caesarean deliveries.



**Figure 1. Showing Total Caesarean Section, Primary Section, Repeat Caesarean Sections in 2005-06 and 2015-16 per 1000 Live Births Graphically**

	2005-2006	2015-2016
Foetal Distress	56.72	11
Arrest of Labour	12.46	20.5
Arrest of Dilatation	10.05	18
Arrest of Descent	2.41	2.5
Malpresentation	22.5	28
Multiple Gestation	2	5.24
Obstetric Indication	8.4	10
Maternal Indication	1.82	1.70
Foetal Indication	3.4	7.5
Cephalopelvic Disproportion	8	12.95

**Table 1. Indications Contributing to the Increase in Primary Caesarean Rate (Per 1000 Live Births)**

The repeat caesarean section rate also found to be increased during this study period and the reasons included (Table - 2).

- Foetal distress.
- Arrest of progress of labour either due to arrest of dilatation or arrest of descent, and
- Cephalopelvic disproportion.

It was also found that there was liberal use of caesarean section delivery for those patients with history of two or more previous caesarean sections and for those patients who refused vaginal delivery after one previous caesarean birth.

	2005-2006	2015-2016
Foetal Distress	12.5	18
Arrest of Labour	4.8	7.5
Arrest of Dilatation	4.3	6.5
Arrest of Descent	0.5	1.0
Malpresentation	4.56	6.4
Multiple Gestation	3	2.8
Obstetric Indication	1.05	1.95
Maternal Indication	0.35	0.45
Foetal Indication	0.96	2.38

Cephalopelvic Disproportion	14.65	18.26
History of $\geq 2$ Caesarean Sections	7.6	13.6
Scar Tenderness	4.48	7.56
Refusal of Vaginal Delivery	0.3	2.67
<b>Table 2. Showing its Specific Indications Contributing to the Increase in Repeat Caesarean Rate (Per 1000 Live Births)</b>		

## DISCUSSION

In the present day, there is a concern over the rising trend in caesarean delivery rates in both developed and developing countries across the world. The rise is due to increase in both primary and repeat caesarean rates.<sup>[1]</sup> In this study also, there is increase in annual average caesarean rate from 16.7% in 2005-06 to 20.6% in 2015-16 and the findings were consistent with that of other studies. Barber et al<sup>[2]</sup> showed increase in caesarean rate from 26% to 35% between 2003 and 2009. Ba'aqueel et al<sup>[3]</sup> found the rate increased from 10.6% in 1997 to 19.1% in 2006. Stavron et al<sup>[4]</sup> conducted a study in New South Wales, Australia, and showed the caesarean rate increased from 19.1 to 29.5 per 1000 live births from 1998 to 2008. Chang et al<sup>[5]</sup> in their study found in caesarean rate increased from 19.9 to 29.6 per 1000 live births in 2001-2010. In Tanzania, Litrop et al<sup>[6]</sup> reported higher caesarean rate and the rate increased from 19% in 2000 to 49% in 2011. As per the OECD health data 2011, the caesarean rate in countries like Brazil, Mexico, and Turkey have exceeded 40%. In India Mehtha et al<sup>[7]</sup> reported rising rate of caesarean from 9 to 19% in less than a decade (1987-1997). In Kolkata, Sahas et al<sup>[8]</sup> conducted a study and found that the caesarean rate increased to 29% in 2007.

In the present study, there is rise in primary and repeat caesarean rate. Primary caesarean rate increased from 10.15 in 2005-06 to 18.7% in 2015-16 and the repeat caesarean rate increased from 6.6% in 2005-06 to 7.6% in 2015-16. Stavron et al<sup>[4]</sup> also found the similar findings. The largest contribution to the rise in caesarean rate is foetal distress similar to the other reports.<sup>[2,9,10]</sup> The present study also shows an increase in the labour arrest disorders mainly due to arrest of dilatation or arrest of descent. This finding of failure in labour progress is because of decrease in difficult instrumental delivery over a period of time.

The increase in foetal indications for increased caesarean rate is comparable with the study of Barber et al<sup>[2]</sup> because of good antenatal care and good-sized fetuses. The higher contributions by foetal indications to increased caesarean rate also reflects better neonatal care with improved survival rate in intrauterine growth retarded babies. There were more patients with age  $\geq 35$  in 2015-16 compared to 2005-06 reflective of increased maternal age with time. Liu et al<sup>[9]</sup> in their study found approximately 15% of the increase in caesarean delivery rate was explained by increase in maternal age. Bayrampur et al<sup>[11]</sup> in their study found women with increased maternal age are at a higher risk of caesarean delivery. In the present study, there is increase in multiple pregnancy rate, a finding also reported by Choudhary et al.<sup>[12]</sup>

The findings of increased maternal age and multiple pregnancy rates maybe because of increasing use of ovulation inducing drugs. In the present study, for repeated caesareans, the number of cases with  $\geq 2$  caesarean sections has increased. There is an increase in the number of cases with arrest of dilatation and scar tenderness for the increase in repeat caesareans, which is similar to earlier reported studies Abu-Heija et al.<sup>[13]</sup>

Studies shows countries with higher caesarean section rate paradoxically have increased neonatal mortality and morbidity. Caesarean sections conducted for late preterm pregnancies and early term pregnancies carry a higher risk of neonatal pulmonary complications especially for those patients who were not at labour. In our study, also iatrogenic prematurity remains a significant cause of neonatal morbidity and mortality.

## CONCLUSIONS

The rate of caesarean sections delivery has increased from 2005-06 to 2015-16 dramatically. There was significant rise in both the primary and repeat caesarean section rate. For primary caesarean section, foetal distress was found to be the major indication for the rising trends compared to other objective indications like malpresentation. Both rise in primary and repeat caesarean delivery has contributed to the rapid increase in annual rate of caesarean section rate.

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