

## Indications for Caesarean Section Among the Antenatal Cases Admitted In a Tertiary Care Hospital of Kollam, Kerala

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### ABSTRACT

**Objectives:** A rising trend in caesarean section in modern India is a matter of concern for the health system. WHO recommends an ideal caesarean section rate of 10-15%. But in a literate state like Kerala the trend stands out in alarming rates. Hence this study is done to find out the factors leading to Caesarean section in our state.

**Methods:** This is a retrospective cross sectional study done in a tertiary care hospital of Kerala. A total of 739 deliveries happened in the year January 1<sup>st</sup> 2015 to Dec 31<sup>st</sup> 2015, of which 441 (59.68%) were caesarean delivery. Data was collected from the medical records department (secondary data). Study was done using a pre structured questionnaire which included questions to estimate Incidence rate of caesarean section, Rate of various indications, Role of maternal age, parity, extreme weight of the baby. Secondary data from the medical records were filled into the questionnaire by the investigator itself. Data was entered into Microsoft excel sheet and was analysed using SPSS 16.

**Results:** Major indication for a Caesarean delivery was previous history of CS (41.7%). This could be avoided through vaginal birth after caesarean (VBAC). Other reasons for indications were failed induction (20.2%), foetal distress and cord prolapse (14.3%) and maternal GDM (13.2%) and PIH (10.9%) and cephalopelvic disproportion 12%.

**Conclusion:** The major indication was previous caesarean section, as we see in almost all studies across India. This

vicious cycle needs to be put to a stop which is possible only if Caesarian section is undertaken only after careful consideration and when the obstetric risks outweigh those of the procedure itself.

**Keywords:** Caesarean, South India, Indications.

### Abbreviations:

CS: Caesarean Section; GDM: Gestational Diabetes Mellitus; PIH: Pregnancy Induced Hypertension; CPD: Cephalopelvic Disproportion; IUGR: Intrauterine Growth Retardation; PPROM: Preterm Premature Rupture of Membranes; MSAF: Meconium Stained Amniotic Fluid; VBAC: Vaginal Birth after Caesarean; BOH: Bad Obstetric History; PET: Pre-eclamptic Toxaemia


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### INTRODUCTION

Caesarean section is defined as delivery of a viable foetus through an incision in the abdominal wall and intact uterus. . In most countries, the rates range between 15-20%. It is the most common operation performed worldwide.<sup>1</sup> The WHO recommends an ideal caesarean section rate of 10-15%. Primary caesarean is the first caesarean section done on a patient, while secondary caesarean is a repeat procedure. Caesarean section is one of the most commonly performed surgeries in the obstetrical care.<sup>2</sup>

It can be lifesaving and is highly effective procedure for preventing complications such as dystocia. WHO global survey found that caesarean section without medical indication increased the risk of

adverse short term outcomes. The key factors for rapid rise in caesarean section include maternal influences of high education and age provided preference of using caesarean section, over diagnosis of foetal or maternal risk and demographic characteristic such as health insurance coverage. According to the latest data from 150 countries, currently 18.6% of all births occur by Caesarean section ranging from 6% to 27.2% in the least and most developed regions, respectively.<sup>3</sup> In Asian it was 19.5%. But in the last decade or so, the numbers have escalated in many parts of the country—reaching as high as 41% of deliveries in Kerala, and 58% in Tamil Nadu, says a report by the ICMR School of Public Health.<sup>4</sup>

Caesarean section rates have increased worldwide dramatically and are a matter of major concern. There are numerous reasons for this. The increase in repeat caesareans and hesitation of obstetricians to consider vaginal birth after a previous caesarean section is one. Decline in instrumental deliveries and vaginal breech delivery is another cause. Increased diagnosis of prolonged labour and intrapartum foetal distress (due to increased use of electronic foetal monitoring) has also contributed. Increasing rates of labour induction may be another cause.<sup>5</sup> The prevalence of obesity has risen dramatically in most countries. In addition, a large number of older women and women with medical problems are having children. The increasing trend of CS rates may indicate a trend towards a more costly medical delivery systems and lowered threshold of abnormality detection among the health care providers.<sup>6</sup> In a developing country an increase in the CS rate has major implications on the limited health care resources.

Furthermore, current available data from developed countries reveals that morbidity and mortality for both mother and baby arising from CS are higher when compared with vaginal delivery.<sup>7</sup> In this study we are trying to find the factors leading to caesarean section in Kerala so that we can reduce the caesarean rates in our state.

## AIMS AND OBJECTIVES

To identify factors leading to caesarean section among antenatal women admitted in Travancore Medical College through medical records during the year 2015-2016.

## MATERIALS AND METHODS

This was a hospital based cross sectional study done in a tertiary care hospital of southern Kerala during the year 2015 (January 1<sup>st</sup> 2015 to 31<sup>st</sup> Dec 2015). All the details of patients who underwent caesarean section retrospectively during this time period was taken as study subjects. Data was collected from the medical records department (secondary data). Total number of deliveries during the year 2015 was 739, out of which 298 were normal deliveries and 441 cases had caesarean section. Study was done using a pre structured questionnaire which included questions to estimate Incidence rate of caesarean section, Rate of various indications, Role of maternal age, parity, extreme weight of the baby. Secondary data from the medical records were filled into the questionnaire by the investigator itself. Data was entered into Microsoft excel sheet and was analysed using SPSS 16. Descriptive statistics such as mean, standard deviation and percentage was used and to find association chi square test was used.

**Table 1: Socio-demographic profile**

		Frequency	Percentage
Age group	18-24	134	30.4
	25-30	234	53.1
	>30	73	16.6
Birth weight	1-1.5kg	15	3.4
	1.5-2.5 kg	77	17.5
	2.5-4 kg	342	77.6
	>4 kg	7	1.6
No of CS	APRIL	40	9.1
	AUG	45	10.2
	DEC	31	7.0
	FEB	18	4.1
	JAN	29	6.6
	JULY	46	10.4
	JUN	53	12.0
	MAR	46	10.4
	MAY	21	4.8
	NOV	35	7.9
	OCT	40	9.1
	SEPT	37	8.4

## RESULTS

A total number of 441 Caesarean sections performed during the year January 1<sup>st</sup> 2015 to 31<sup>st</sup> Dec 2015 at Travancore Medical College and Hospital, Kollam, Kerala were analyzed. Total number of deliveries during our study period was 739. Out of these 739 patients, 298 had normal vaginal delivery and 441 patients had Caesarean delivery. Among the caesarean deliveries majority 234 (53.1%) of the mothers belonged to the age group of 25-30 years. 342 (77.5%) of the babies were having birth weight between 2.5kg to 4kg. Major indication for caesarean delivery was history of previous caesarean section 184 (41.7%). Second major

indication for a CS section was failed induction constituting for about 89 (20.2%) cases. Among the total caesarean deliveries 63 (14.3%) of the cases were having foetal distress and cord prolapse which led to the caesarean delivery. 58 (13.2%) of mothers had GDM and 48 (10.9%) were having PIH. In this study it is observed that there is a association between previous CS and failed induction and it was statistically found to be significant ( $p=0.001$ ). In this study it is observed that there is significant association between GDM and PIH. Antenatal mothers with GDM have more chances to develop PIH towards the end of pregnancy and it was statically found to be significant. ( $p=0.001$ )

**Table 2: Indications for LSCS**

		Frequency	%			Frequency	%
Previous CS	Yes	184	41.7	IUGR	Yes	28	6.3
	No	257	58.3		No	413	93.7
CPD	Yes	53	12.0	Multiple pregnancy	Yes	10	2.3
	No	388	88.0		No	431	97.7
Tumours complicating pregnancy	Yes	12	2.7	PIH	Yes	48	10.9
	No	429	97.3		No	393	89.1
Fetal Macrosomia	Yes	3	.7	Polyhydramnios	Yes	24	5.4
	No	438	99.3		No	417	94.6
Malpresentation	Yes	4	.9	PPROM	Yes	30	6.8
	No	437	99.1		No	411	93.2
Threatened rupture	Yes	4	.9	MSAF	Yes	11	2.5
	No	437	99.1		No	430	97.5
Floating head	Yes	11	2.5	Abnormal Doppler	Yes	7	1.6
	No	430	97.5		No	434	98.4
Failed induction	Yes	89	20.2	PET	Yes	5	1.1
	No	352	79.8		No	436	98.9
Fetal distress	Yes	63	14.3	Hypothyroidism	Yes	1	.2
	No	378	85.7		No	440	99.8
Breech presentation	Yes	15	3.4	Non-reactive NST	Yes	2	.5
	No	426	96.6		No	439	99.5
Placenta praevia	Yes	1	.2	Leaking PV	Yes	2	.5
	No	440	99.8		No	439	99.5
Abruptio placenta	Yes	5	1.1	Disc prolapse	Yes	1	.2
	No	436	98.9		No	440	99.8
Elderly nullipara	Yes	4	.9	Premature contraction	Yes	2	.5
	No	437	99.1		No	439	99.5
Prolonged infertility	Yes	6	1.4	Decreased fetal movements	Yes	5	1.1
	No	435	98.6		No	436	98.9
BOH	Yes	8	1.8	Maternal hyperpyrexia	Yes	3	.7
	No	433	98.2		No	438	99.3
Anaemia complicating pregnancy	Yes	4	.9	Cervical encirclage	Yes	1	.2
	No	437	99.1		No	440	99.8
GDM	Yes	58	13.2	Obstetric cholestasis	Yes	1	.2
	No	383	86.8		No	440	99.8
Overt DM	Yes	1	.2	Heart diseases	Yes	2	.5
	No	440	99.8		No	439	99.5
Preeclampsia	Yes	9	2.0	DVT	Yes	1	.2
	No	432	98.0		No	440	99.8

**Table 3: Association between previous CS with failed induction**

Previous CS	Failed induction		Total	Chi square value	p value
	Yes	No			
Yes	1(0.5%)	183(99.5%)	184(100%)	75.589	0.001
No	88(34.2%)	169(65.8%)	257(100%)		
Total	89(20.2%)	352(79.8%)	441(100%)		

**Table 4: Association between GDM with PIH**

GDM	PIH		Total	Chi square value	p value
	Yes	No			
Yes	15(31.2%)	43(10.9%)	58(13.2%)	15.4	0.001
No	33(68.8%)	350(89.1%)	383(86.8%)		
Total	48(100%)	393(100%)	441(100%)		

**Table 5: Association between age with fetal distress and cord prolapse**

Age group	Fetal Distress & Cord Prolapse		Total	Chi square value	p value
	Yes	No			
18-24	26(41.3%)	108(28.6%)	134(30.4%)	8.375	0.01
25-30	34(54%)	200(52.9%)	234(53.1%)		
> 30	3(4.8%)	70(18.5%)	73(16.6%)		
<b>Total</b>	63(100%)	378(100%)	441(100%)		

## DISCUSSION

The present study was carried out as a hospital based cross sectional study, retrospectively over a period of one year from January 1st 2015 –December 31, 2015 in Travancore medical college hospital, a tertiary care which cares for over 441 of all caesarean cases (59.68%).

According to WHO, the caesarean section should be within 10-15%,but our studies showed a higher rate which is four times more than upper norm of WHO. However, being a tertiary care hospital, Travancore Medical College and hospital receives most of complicated cases.

In our study, the most common indication for Caesarean was previous caesarean section 184 (41.7%).The most common overall indication for Caesarean section (CS) worldwide<sup>8</sup> and in our set up was found to be previous CS. This can be minimized by routine practice of a trial of labour of Vaginal Birth after Caesarean (VBAC). The decision of primary caesarean section is important. The implementation of a trial of vaginal delivery after previous caesarean section should be done in order to control the increasing caesarean section. A successful vaginal birth after a caesarean in the grand multiparous population has not been associated with a higher risk of maternal complication in comparison with repeated caesarean sections. Some studies have reported 35% success of trial of scar in previous more than one caesarean sections.<sup>7,9</sup> In our setup no trial was given to previous two or more scars due to presumed risk of maternal/foetal complication.

In our study the second most common indication is failed induction 89 (20.2%). The third most frequent indication was foetal distress and cord prolapse. It accounts for 63 (14.3%) of CS. Foetal distress was diagnosed by foetal heart rate and presence of meconium. Maternal problems like Pregnancy Induced Hypertension (PIH) and Gestational Diabetes Mellitus (GDM) accounts for 48 (10.9%) and 58 (13.2%) of caesarean in the study respectively, which differs very much with the indications caesarean section in sub-Saharan Africa where the most common indication for CS was obstructed labour and poor presentation.<sup>10</sup> Cephalo pelvic disproportion (CPD) is an absolute indication of CS. In our study it accounts for about 12% of CS. High proportion of caesarean section for CPD diagnosed before the onset of labour suggests a more aggressive approach, thus causing an increase in CS rate. Other indications in the decreasing order of frequency include Preterm premature rupture of membranes PPRM (6.8%), polyhydramnios and oligohydramnios (5.4%), hypothyroidism (3.9%) breech presentation 3.4% tumour complicating pregnancy 2.4% floating head 2.5% Meconium stained amniotic fluid (MSAF) 2.5%

Maternal age, parity and foetal weight are the factors over which obstetrician has little or no control but they have been shown to be crucial determinants of caesarean rate.

Most of our patients were in between 25-30 years of age (53 %). It is seen that majority of the children born by CS belong to birth weight interval of 2.5 kg to 4kg.

From our study it is observed that there is a significant association between Previous CS and Failed induction. It is also observed that there is a significant association between GDM and PIH. It is observed that there is a significant association between Age group of mother and foetal distress and Cord Prolapse.

Our study had a prevalence of caesarean section where as in a study done in Pakistan in 2014<sup>4</sup>, the prevalence was 21.6%. In another study by Haidar G et al from Hyderabad Pakistan and Shamshad from Abotabad reported caesarean section rate as high as 67.7% and 45.1% in 2007 respectively.<sup>11,12</sup>

Most common indication for caesarean section was history of previous caesarean, in our study it was – where as in another study done in Pakistan it was 22.7%<sup>4</sup>, where as in another study in Lubna Ali from Karachi Pakistan reported repeat caesarean section the commonest indication for caesarean section.<sup>13,14</sup>

The second most frequent indication observed in a study done in Pakistan was failed progress 18.29% where as in our study foetal distress & cord prolapsed 63 (14.3%) lead as indications for CS, where as in another study done in southern India by Unnikrishnan et al<sup>6</sup> it was 19.6%.Breech presentation accounted for a significant percentage of the non-absolute indications for CS (3.4%). Failed Induction contributed for 20.2% of the total caesarean sections. Gestational diabetes mothers (13.2%) have undergone Caesarean and Pregnancy induced Hypertension constituted 10.9% as indications for CS.CPD contributed 12% of deliveries leading to CS. In a study done in Peshawar<sup>12</sup> they found that nutritional factors of mothers have a great role in influencing the pelvic size and shape, malnutrition in childhood can result in pelvic contraction and growth stunting.

## CONCLUSION

The caesarean section prevalence in our study showed an increase when compared to national standards this may be, tertiary care set up most of them were referred cases from the peripheral where they would have given a trial for a normal delivery and failed. The major indication was previous caesarean section, as we see in almost all studies across India. This vicious cycle needs to be put to a stop which is possible only if Caesarian section is undertaken only after careful consideration and when the obstetric risks outweigh those of the procedure itself. In other cases, a supervised vaginal delivery after CS needs to be encouraged by promoting the trial of labour.

Recommendations to reduce caesarean section are as follows:

- Proper diagnosis of labour and counseling for the patient to know about the advantages of normal delivery.
- Partogram should be maintained for good monitoring of progress of labour especially in patients with previous one.

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