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To study the incidence and feto-maternal indications for primary caesarean section: an observational study

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Abstract
Aim: Study the incidence and indications for primary caesarean section in the Indian scenario
Methods: Descriptive cross-sectional study entitled was conducted in the Department of Obstetrics and Gynecology. The study includes 178 subjects planned for primary cesarean section. Descriptive statistics included computation of percentages, means and standard deviations were calculated using SPSS version 20.
Results: The incidence of primary cesarean section calculated was 29.7%. , Mean age of the patients was 27.16±2.11years. Foetal indications comprises Non-reassuring or Abnormal CTG (53.7%) followed by Malpresentation (23.1%). Under maternal indications for primary caesarean; maternal request (caesarian delivery on maternal request) CDMR (45.8%) and Abnormal placentation (25.0%) were the major reason.
Conclusions: The most common fetal indication was Non-reassuring or Abnormal CTG and Malpresentation. Under maternal indication CDMR and Abnormal placentation was the major reasons for the primary caesarean.

Keywords: Abnormal CTG, Cesarean section, CDMR, Incidence

Introduction
Caesarean section (CS or C-section) is a surgical intervention which is carried out to ensure safety of mother and child when vaginal delivery is not possible (emergency CS) or when the doctors consider that the danger to the mother and baby would be greater with a vaginal delivery (planned CS). Proportion of CS to the total births is considered as one of the important indicators of emergency obstetric care [1]. Various indications of caesarean section [2]: Maternal absolute indications are - abnormal placentation, prior full thickness myomectomy, genital tract obstructive mass, invasive cervical cancer, prior trachellectomy, permanent cerclage, prior pelvic reconstructive surgery, pelvic deformity, active HSV or HIV infection near term, cardiac or pulmonary disease, cerebral aneurysm or arteriovenous malformation. Maternal-Fetal relative indications are–cephalopelvic disproportion, failed operative vaginal delivery, placenta previa minor degree or abruptio placenta. Fetal indications are-nonreassuring fetal status, malpresentation, macrosomia, congenital anomaly, abnormal color doppler study, thrombocytopenia. It is a well-established that caesarean section (CS) rates have risen in both developed and developing world over the past three decades [3, 4]. Developed countries have seen a drastic rise in C- Sections from 1996 to-2011 [5]. 4 The developing world too has seen a similar rise. Countries in south east Asia and sub Saharan Africa have recorded increases in C-Section rates though they vary widely from one country to the other. In order to understand what is driving this trend the present study was conducted with the aim to study the incidence and indications for primary caesarean section in the India scenario [6, 7].

Materials and method
The present descriptive cross-sectional study entitled **"**study the incidence and indications for primary caesarean section in the India scenario.**"** was conducted in the Department of Obstetrics and Gynecology. The study includes 178 subjects planned for primary cesarean section.

Exclusion criteria
- Previous Cesarean Section
- Gestational age less than 28 weeks
- Prior history of hysterotomy and myomectomy

Ethical approval and Informed consent
The study protocol was reviewed by the Ethical Committee of the Hospital and granted ethical clearance. After explaining the purpose and details of the study, a written informed consent was obtained.

Methodology
Patients were followed up in the ward till they are admitted and thereafter till 6 weeks for any complications. Neonatal status was followed up in the ward or Neonatal ICU and later on till 6 weeks of neonatal life.

Statistical analysis
The recorded data was compiled and entered in a spreadsheet computer program (Microsoft Excel 2010) and then exported to data editor page of SPSS version 20 (SPSS Inc., Chicago, Illinois, USA). Descriptive statistics included computation of percentages, means and standard deviations were calculated.

Table 1: Incidence of primary cesarean section

Delivery Type	N (598)	%
Vaginal	420	70.3
Primary cesarean	178	29.7

Table 1: Out total 598 institutional deliveries the incidence of primary cesarean section calculated was 29.7%

Table 2: Age distribution in the study population

Age	N (178)	%
20-25 yr	102	57.3
26-30 yr	42	23.6
31-35 yr	26	14.6
>35 yr	8	4.5
Mean±SD	27.16±2.11	

In the present study, mean age of the patients was 27.16±2.11. Majority of the subjects belonged to 20-25 year age (57.3%) followed by 26-30 year age (23.6%), 31-35 years age (14.6%) and >35 years age (4.5%).

Table 3: distribution of fetal indications

Fetal Indications	N (108)	%
Non-reassuring or Abnormal CTG	58	53.7
Malpresentation (MP)	25	23.1
Abnormal umbilical artery color doppler (AUCD)	17	15.7
Macrosomia (MS)	8	7.4

Table3: Fetal indications comprises Non-reassuring or Abnormal CTG (53.7%) followed by Malpresentation (23.1%), Abnormal umbilical artery colour Doppler (15.7%), Macrosomia (7.4%).

Table 4: distribution of maternal indications

Maternal Indications	N (48)	%
CDMR	22	45.8
Abnormal Placentation (AP)	12	25.0
Genital Tract Obstructive Mass (GTOM)	4	8.3
Maternal Cardiac Disease (MCD)	4	8.3
Pelvic Deformity (PD)	3	6.3
Failed Operative Vaginal Delivery (FOVD)	3	6.3

Table 4: Under maternal indications for primary caesarean; maternal request CDMR (45.8%), Abnormal placentation (25.0%), Maternal cardiac disease (4%), Genital tract obstructive mass (4%), Pelvic deformity (6.3%), Failed operative vaginal delivery (6.3%).

Table 5: distribution of other l indications

Other Indications	N (22)	%
Cephalo-pelvic disproportion (CPD)	13	59.2
Arrest disorders (AD)	7	31.8

Table 5: Under the category of other indications the most common was Cephalo-pelvic disproportion (59.2%) followed by Arrest disorders (31.8%).

Discussion
Primary caesarean section usually determines the future obstetric course of any woman and therefore should be avoided wherever possible. The rising caesarean section rate is a worldwide phenomenon although WHO states that there is no additional benefit associated with rising caesarean section rate of above 15% [8].
In the present study the incidence of primary caesarean section calculated was found 29.7%. High caesarean section in our institute can be explained by the fact that our institute is the biggest referral centre in the region and receives several referrals from centres not well equipped. When compared to other countries our rates were lower than those of the USA (31.1%) and Australia (30%), higher than that of Norway (13.9%) and almost same as that of the Asian countries (27.3%) [9-12].
In the present study, mean age of the patients was 27.16±2.11. Majority of the subjects belonged to 20-25 year age (57.3%) followed by 26-30 year age (23.6%), 31-35 years age (14.6%) and >35 years age (4.5%). Similarly, in a study conducted by AyanoMoges [13] on prevalence and outcome of caesarean section reported that the age of the patients ranged between 16-45 years with a mean age of 28.12 years with SD ± 5.14. 84% of the patient's were between 20-35 years, 9.6% were younger than 20 years and 6.4% were older than 35 years. Sethi P *et al.* [14] in their study of primary caesarean section observed that 41% of cases were between 25-29 years of age.
In the present investigation fetal indications comprised of; Non-reassuring or Abnormal CTG (53.7%) followed by Malpresentation (23.1%), Abnormal umbilical artery colour Doppler (15.7%), Macrosomia (7.4%). Suspected fetal distress detected by cardiotocography (CTG) has been the most common indication for caesarean section for the past few decades. A Hospital based study from Jordan reported the CTG as the major fetal indication [15]. A study from Bangladesh found fetal distress as the second leading cause of Primary cesearen [16].
Under maternal indications for primary caesarean; CDMR comprises (45.8%), Abnormal placentation was the reason for (25.0%), Maternal cardiac disease (4%), Genital tract obstructive mass (4%), Pelvic deformity (6.3%), Failed operative vaginal delivery (6.3%). Batieha AM *et al* [17]. on caesarean section, they concluded that CDMR was one of the main reasons for planned caesarean section accounting for 5.6% of all planned caesarean section. The reason provided by participating women for preference of caesarean section was simply to avoid pain of vaginal delivery. On the other hand, in a previous study of maternal morbidity in Jordan (2007-2008), mother desire accounted for less than 1% of caesarean deliveries [15].

Conclusion
Even though the cesarean is of the most commonly performed surgical procedures today; it is not without risks. Our study

confirmed the cesarean section rate of 29.7% and it is above the 15% recommended by World Health Organization (WHO) for developing countries. The most common fetal indication was Non-reassuring or Abnormal CTG and Malpresentation. Under maternal indication CDMR and Abnormal placentation was the major reasons for the primary caesarean.

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