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Analysis of primary caesarean section in a tertiary care hospital MGMGH, Trichy, Tamil Nadu, South India

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Abstract
Background: One of the commonest surgery performed worldwide is caesarean Section (CS). The World Health Organization (WHO) has recommended an ideal caesarean section (CS) rate as 10-15%. In recent times the proportion of delivery conducted by caesarean section has increased.In this view we have started our study to analyse the primary caesarean section rate in a tertiary care centre at MGMGH, Trichy, Tamil Nadu, India
Methods: This is a retrospective study of all the caesarean deliveries performed between 1st January 2018 to 30 th Novemer 2018 in the Department of Obstetrics and Gynaecology in Govt K.A.P.V Medical College, MGMGH, Trichy, Tamil Nadu, India. The caesarean rate was calculated as: (total number of primary caesarean deliveries/ total number of deliveries) × 100. The indications for primary CS included foetal distress, failed induction of labour, failed progression of labour, cephalopelvic disproportion, nonreactive CTG, other obstetric and foetal indications.
Results: During the study period a total number of deliveries were 8184. 3759 patients had undergone CS with the CS rate being around 45.93%. Primary caesarean section rate is 22.45%. Majority of the primary caesarean section (90.53%) were performed as emergency procedure. Elective primary caesarean section rate 9.47%.Maximum number of patients were between 21-25 years (55%) and 79.65% were primipara. Cephalopelvic disproportion (36%) was the commonest indication followed by Non-reactive CTG (21%), fetal distress (20.5%).
Conclusions: The rate of caesarean section is increasing with time. As primary caesarean section usually determines the lady's future obstetric course, it is of prime importance to give effort for safe reduction of primary caesarean section. Individualization of the indication and careful evaluation, following standardized guidelines and practice of evidenced-based obstetrics followed by audits in the institution, can help us to limit the caesarean rates.

Keywords: primary caesarean section, indications, caesarean section rate, complications, vaginal deliveries

Introduction

"Every effort should be made to provide caesarean sections to women in need rather than striving to achieve a specific rate" WHO Statement (2015).
"Caesarean section rates should no longer be thought of as being too high or too low, but rather whether they are appropriate or not, after taking into consideration all the relevant information." Dr Michael Robson.
Caesarean delivery is defined as an operative procedure to deliver the fetus or foetuses after the period of viaility through an incision on the adominal wall and uterine wall in an intact uterus. The word caesarean is derived from "lex caesarea" (the king's law) of the time of Numa Pompilius 716 C, which said that before the burial of mother, child is to removed from womb. The term "caesarean section "was first used by James Guillimeau in 1958. In 1882, German gynaecologist Max sanger introduced classical caesarean section and he was called as father of modern caesarean section.
One of the commonest surgery performed worldwide is caesarean section (CS). The surgery should be performed only when there is a valid reasons to do so. The World Health Organization (WHO) has identified an ideal caesarean section (CS) rate for a nation of around 10-15% [1].The overall rate of caesarean section

delivery in 2015-2016 is around 17.2% in India, increased from 8.5% in 2005-2006. 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. In the united states the caesarean section rates increased by 53% from 1996 to 2007 reaching 32% [2]. 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 [3, 4].

The common indications of primary caesarean section are contracted pelvis, cephalopelvic disproportion, failure to progress, non-reassuring fetal heart rate pattern, malpresentations like transverse lie, breech, malpositions like mentoposterior position, Brow presentation, face presentation, placenta previa, abruptio placenta with live fetus, maternal conditions like cardiac diseases such as Eisenmenger syndrome, severe aortic stenosis, marfans syndrome with dilated aortic root, uncorrected coarctation of aorta, history of recent myocardial infarction, cor pulmonale, cord prolapse, multiple gestation. In a 7 year analysis (2003-2009) of deliveries at yale university, USA, the rate of primary caesarean sections increased by 50%.The relative contributions of each indication to the total increase in the primary caesarean section rate were non reassuring fetal heart rate pattern (32%), labor arrest disorders (18%), multiple gestation (16%), CPD and dystocia (25 to 30%), fetal distress (10 to 15%),breech presentation(10 to 15%) [5].

The increasing trend of Caesarean section rates may indicate a trend towards a costlier medical delivery systems and lowered threshold of abnormality detection among the health care providers [6]. Studies have shown that there is no evidence of benefit for the health of mothers and babies in populations with Caesarean section rate above 15% [7, 8]. In fact, caesarean deliveries are associated with increased risk of maternal and perinatal morbidity as compared to vaginal deliveries even in low risk cases [9]. This study is aimed to find the rate of caesarean deliveries and various indications of the procedure. This analysis may help to find out various ways to reduce the incidence of caesarean rate in the institute in future.

Methods

This is a retrospective study of all the primary caesarean deliveries that occurred in the period between 1st January 2018 to 30 th November 2018 in the Department of Obstetrics and Gynaecology in K.A.P.V Govt Medical College, Trichy, Tamilnadu, India

Study setting

The study was conducted at Govt K.A.P.V Govt Medical College, MGMGH, Trichy, Tamilnadu, India. It is a tertiary care centre that provides tertiary health care services. It also acts as a major referral centre for high-risk obstetric cases from health institutions located within and outside Trichy District. This is a tertiary care hospital receiving referred patients from nearby rural sub divisional hospitals, primary health centres, Headquarters Government hospital and also from private nursing homes.

Study design

This is a hospital based Retrospective study carried out over a period of 11months (January 2018, to November 2018).

Data were analysed from the hospital records.

Maternal data collected included the age, parity, type of CS and indication of CS.

The primary caesarean section rate was calculated as:

(Total number of primary caesarean deliveries / Total number of deliveries) × 100.

The indications for primary caesarean section included fetal distress, malpresentation, failed induction, failed progression, cephalopelvic disproportion, maternal indications, obstetric indications and foetal indications.

In the present study, foetal indications includes foetal distress during labour, and abnormal umbilical artery Doppler study, malpresentations. Maternal indications include the maternal conditions predating the pregnancy that could complicate delivery like medical causes, post myomectomy etc. Obstetric indications were placenta previa, abruptio placentae, cord prolapse etc. Foetal indications included intrauterine growth restriction, prematurity, and non reassuring fetal heart rate pattern.

Results

During the study period(January 2018, to November 2018) a total of 8184 patients were delivered and 3759 patients had undergone caesarean section and 1838 patients had undergone primary caesarean section.

Figure 1: Incidence of mode of delivery at MGMGH during the study period (January 2018, to November 2018)

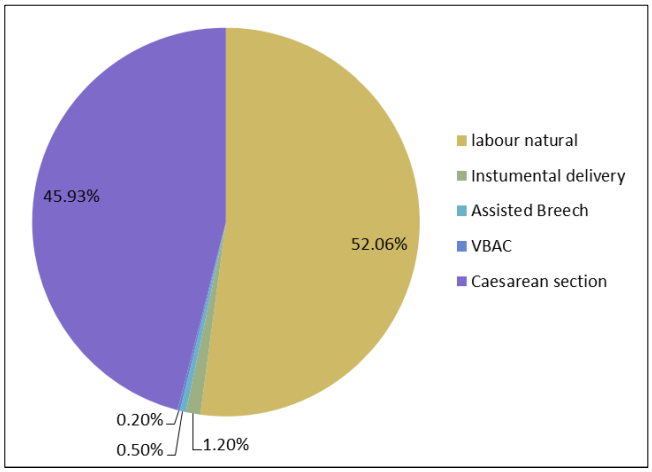

Fig 1: Shows incidence of mode of delivery at MGMGH during the study period (January 2018, to November 2018)

Table 1: Rate of vaginal delivery and Caesarean section rates at MGMGH, Trichy, Tamil Nadu, India (January 2018, to November 2018)

Mode Of Delivery	No Of Cases	Percentage
Total vaginal delivery	4425	54.06%
Labour natural	4261	52.06%
Instrumental delivery	105	1.2%
Outlet forceps	98	1.1%
Vacuum delivery	7	0.08%
Assisted Breech delivery	42	0.5%
VBAC	17	0.2%
Total no of caesarean section	3759	45.93%
Primary caesarean section	1838	22.45%
Elective	174	9.47%
Emergency	1664	90.53%
Repeat caesarean	1921	23.61%
section	227	11.8%
Elective Emergency	1694	88.18%
Total	8184	

Table 1 shows that rate of vaginal delivery and Caesarean section rates at MGMGH Trichy, Tamil Nadu, India, (January 2018, to November 2018): the total deliveries were 8184, vaginal delivery rate was 54.06% whereas the caesarean section rate at the institution comes to be around 45.93%. primary caesarean section rate was 22.45%. Majority of the primary CS (90.53%) were done as emergency procedure as patients mostly came to this hospital when there was emergency or were referred. Only 9.47% cases had elective primary caesarean section.

Figure 2: Primary caesarean section rate at MGMGH Trichy, Tamil Nadu, India

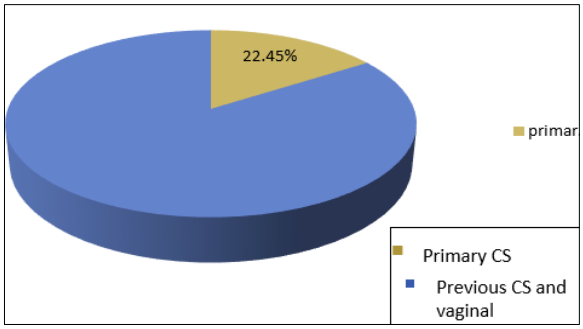

Fig 2: Shows that at MGMGH Trichy, Tamil Nadu, India, (January 2018, to November 2018) total no of caesarean section was 3759 (45.93%), primary caesarean section rate was 1838(22.45%).

Figure 3: Age group analysis of patients who underwent primary caesarean section

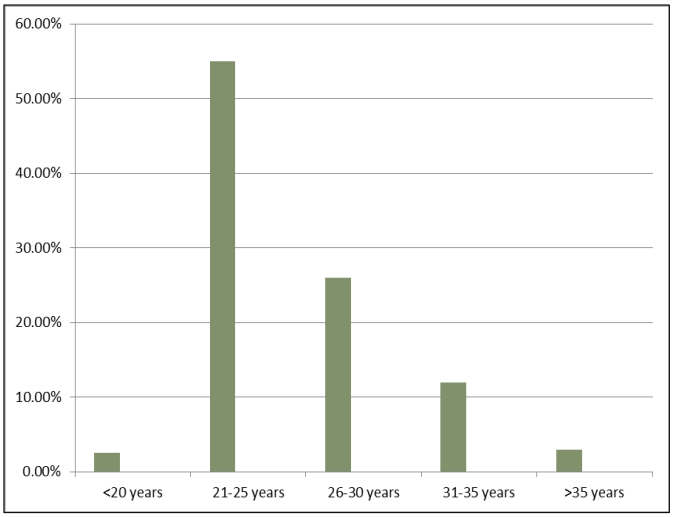

Fig 3: Shows maximum number of patients to be between 21-25years (55%) followed by 26-30 years (26%), 3-35(12%). Those of <20 years (2.5%) and >35 years were (3%).

Figure 4: Parity wise distribution of patients who underwent primary caesarean section

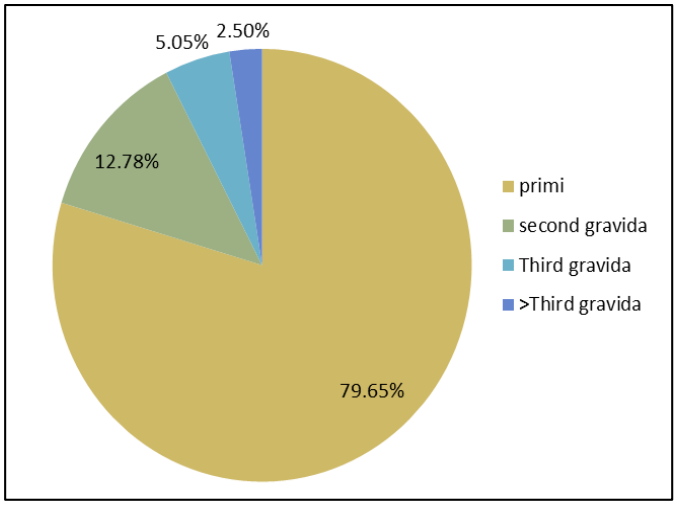

Fig 4: shows that 1464 (79.65%) patients were primipara and 235(12.78%) cases were Second gravida, 93(5.05%)were Third gravida, 46(2.5%) were >Third gravida who underwent primary caesarean section.

Table 2: Gestational age of patients who underwent primary caesarean section

Geatational Age	No Of Cases	Percentage
<34 weeks	73	4%
34 -37 Weeks	257	14%
>37 weeks	1507	82%

Table 2 shows gestational age of the of patients who underwent primary caesarean section 4% of the patients were <34 weeks, 14%were34-37 weeks,82% were >37 weeks.

Table 3: Presentation of fetus who underwent primary caesarean section

Presentation	No of cases	Percentage
cephalic	1663	90.5%
Breech	165	9%
Transverse	9	0.5%

Table 3 shows presentation of fetus who underwent caesarean section 90.5% had cephalic presentation, breech (9%), transverse lie (0.5%).

Figure 5: Indications of patients who underwent primary caesarean section

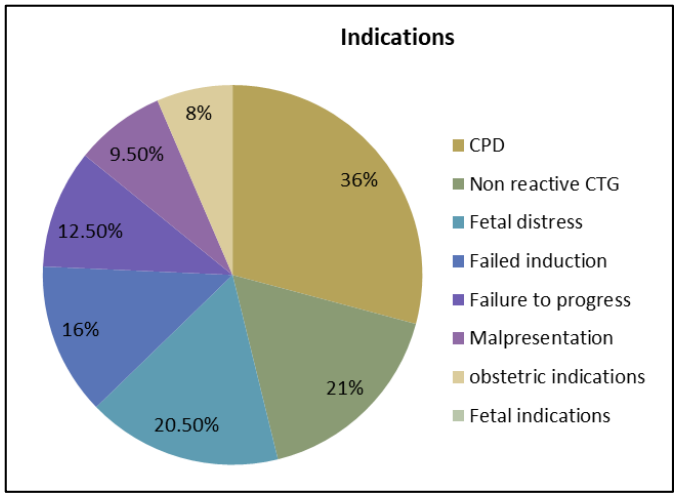

Fig 5: shows common Indications of patients who underwent caesarean section at MGMGH, Trichy, Tamil Nadu, and India. From the figure it is evident that cephalopelvic disproportion were 661 (36%), Non-reactive CTG were385(21%), Fetal distress were 376(20.5%), Failed induction were 294 (16%), Failure to progress were 230(12.5%), Malpresentation were 174(9.5%), other obstetric indications were 147(8%) and other Fetal indications were 73(4%).

Table 4: Intraoperative complications

Complications	No Of Cases	Percentage
PPH	220	12%
Adherent placenta	55	3%

Table 4 shows Intraoperative complications of patients who underwent caesarean section atonic postpartum hemorrhage (12%), adherent placenta (3%).

Table 5: Postoperative Complications

Complications	No Of Cases	Percentage
PPH	147	8%
Fever	176	9.5%
Sub involution	2	0.1%
sepsis	4	0.2%
Wound infection	64	3.4%

Table 5 shows postoperative complications of patients who underwent primary caesarean section. Out of this PPH were (8%), Fever were (9.5%)Sub involution (0.1%),sepsis (0.2%) and Wound infection(3.4%).

Table 6: Fetal outcome after primary caesarean section

Outcome	No of Cases	Percentage
Low birthweight	220	12%
Low Apgar score	275	15%
Still birth	12	0.6%
NICU admission	294	16%

Table 6 shows Fetal outcome after primary caesarean section Low birthweight were (12%), low Apgar score were (15%), Still birth were (0.6%) and NICU admission (16%).

Discussion

Although the CS rate is said to vary from region to region and from one country to another, worldwide there has been an increasing trend of caesarean section deliveries. Manjulatha B *et al.* found the CS rates to increase from 16.6% in 2002 to 22.4% in 2012 [10]. Present study also showed an increase in CS rates from 45.64% in 2014to 49.67% in 2017. In the present study we found the CS rate of the institution to be 45.93% which is similar to the findings of Bhasin SK *et al.* [11]. Santhanalakshmi C *et al.* found CS rate to be comparatively lower (12.5%) whereas G Singh *et al.* and Haidar G *et al.* (Pakistan) reported CS rate as high as 51.1% and 67.7% respectively [12-14].

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, multiple geastation (first twin-nonvertex), 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 care centre with large number of complicated pregnancies as well as patients referred from elsewhere in critical stage which makes it difficult to keep the CS rates low.

In the present study majority of the CS (88 to 90%) were performed as emergency cases which is comparable with findings of Gupta M *et al.* who found emergency cases to be 80% [15]. Demographic data analysis of the present study showed that 55.24% cases belonged to 21-25 years which is similar to the findings of Jawa A [16]. The location of the institution and the type of health care facility available in nearby areas play a vital role in this matter.

In the present study, Cephalopelvic disproportion followed by non-reactive CTG and fetal distress was the commonest indication of CS. Studies by Barber EL *et al.* and Liu S *et al.* also showed similar results [17, 18]. The most accurate method for

establishment of foetal distress is to perform foetal scalp blood pH estimation but in our setup this was not performed.

Failed progression of labour constituted 12.5% of the indications in our study which is similar to the findings of the study done by Gupta M. Judicious use of oxytocics and maintenance of a partogram in cases of failure to progress will help reduce the rate of CS in such cases. Obstetric indications constituted 8% of the indications. Being a referral centre our hospital has to deal with more number of such cases.

Conclusion

With passing time, the rate of caesarean section is increasing. As primary caesarean section usually determines the future obstetric course of a lady, it is of prime importance to give effort for safe reduction of caesarean. Individualization of the indication and careful evaluation, following standardized guidelines and practice of evidenced-based obstetrics followed by audits in the institution, can help us limit the caesarean rates.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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