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ORIGINAL ARTICLE

Analysis of indications of caesarean section : A retrospective study in a tertiary care hospital, to curb the rising caesarean section rate

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Abstract

OBJECTIVE: To examine the indications leading to the overall escalation of CS (Caesarean Section) rate in our population and to put forward strategies/interventions where possible practically to curb the escalating rates of CS in a tertiary care hospital.

MATERIAL AND METHODS: This study was conducted in obstetrics department of Lady Reading Hospital Peshawar for a period of 1 year from January 2021 till December 2021. The data was collected from hospital's clinical records of the women who had CS delivery during the study period. Required information was entered into a preformed Performa. Data analyzed on SPSS version 21.

RESULTS: During the study period n=7376 women delivered in the obstetrics unit A, of Lady Reading Hospital. Out of these n=1679(22.76%) were Caesarean Sections. The number of Primary CS were n=1021(60.81%) while n=658(39.18%) were repeat CS. It was found that most of the CS n=1066(63.49%) were Emergency CS while n=613(36.51%) were Elective CS. The most common indication for CS was Repeat CS in women with history of previous CS deliveries n=658 (39.19%).The 2nd most common indication was fetal distress n=302(18.04%) followed by Labour progress disorders n=235(13.99%).

CONCLUSION: Majority of the women who underwent CS had the history of previous CS deliveries. It is the need of the day to educate the obstetricians and counsel/encourage women in antenatal period regarding the safety of procedures like ECV, TOLAC and VBAC if we want to reduce repeat CS in our setup. Moreover, CTG should be used only in high risk pregnancies/labours. Furthermore, adherence to WHO Labour Care Guide and skills and drills for reviving instrumental delivery in carefully selected cases may curb the escalating rate of CS.

KEY WORDS: Caesarean section, Trail Of Labour After CS, Vaginal Birth after CS, Fetal distress, Labour progress disorders.

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Introduction

The escalating rates of caesarean section deliveries is one of the major causes of concern across all geographical regions[1].Evidence shows that this rapid rise in CSR is directly proportional to maternal &/or neonatal morbidity and mortality, showing that perhaps CS delivery is conducted where it is not really needed[2].

According to World Health Organization guidelines, caesarean delivery is essential only for those women who need it and no additional health benefits have been observed in countries where caesarean section rate is above 10-15 %3, [4]. On one hand, timely access to a caesarean delivery of women who require it is one of the main requirements for safe child birth[5].On the other hand, maternal mortality and morbidity after caesarean delivery is nearly five times that of vaginal delivery[6]. Furthermore, "Women with previous caesarean deliveries are at higher risk of placenta previa, placenta accrete spectrum, injury to the adjacent pelvic organs, blood transfusions and

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peripartum hysterectomy"[7].

Latest research has shown that babies born by caesarean section have slightly changed neonatal physiological functions, such as altered immune development, an increased risk of childhood asthma and decreased intestinal gut flora activity[8]. According to a systematic review, children born by caesarean section were found to be at higher risk of repeated respiratory tract infections and obesity[9].Similarly; these babies had a 95% higher risk of neonatal respiratory complications as compared to those having spontaneous vaginal delivery[10]. Furthermore, "the unjustified use of CS is a cause of concern as some women who need CS delivery do not have access to it and in others it is un- necessarily used. This may lead to: inequalities in the access to this essential health intervention in the population"[11, 12].

Keeping in view, the associated long- and short-term risks for the women and children and substantial health costs, it is of utmost importance to examine in detail the indications contributing to escalating CS rates and to device protocols/interventions to curb escalating caesarean section rates.

The objective of the study was to examine the indications contributing to the overall rise in CS rate in our hospital, and to put forward strategies/interventions where possible practically to curb the escalating rates of CS.

Material and Method

The current study has been conducted in the obstetrics department of Lady Reading Hospital, Peshawar for a period of one year from 1st January 2021 – 31st December 2021.

The data was collected retrospectively from hospital's clinical records of the women who had CS delivery during the study period, fulfilling the inclusion criteria. Approval was taken from the hospital Ethical committee.

Details of individual cases were entered into a structured Performa. It included demographic details, age, period of gestation in weeks and previous obstetric history including mode of deliveries of previous children (normal vaginal delivery/CS) and the urgency of CS (elective/emergency) and type of CS (primary/repeat).

INCLUSION CRITERIA:

It included all women having gestational amenorrhea between 28-41+weeks with live fetus/es, who had undergone caesarean section (elective/ emergency and primary / repeat) during the study period.

EXCLUSION CRITERIA:

It included women with history of uterine myomectomy, previous classic CS, T and J shaped incisions on uterus and cases of ruptured uterus in index pregnancy confirmed on laparotomy.

Data was entered into SPSS version 21. Overall CS rate (total number of women undergoing CSx100/total number of women having deliveries in the time period of study) was calculated. Frequency and percentages calculated for categorical data like each indication contributing to the overall CS rate. Results presented in the form of graphs and tables. By examining the relative contribution of each indication to the overall CS rate, strategies/interventions were put forward where practically possible. So that by adopting these strategies CS rates can be curbed.

Results

The characteristics of the study population have been shown in Table 1.

A total of n=7376 women delivered during the study period. Out of these deliveries=1679(22.76%) were Caesarean Sections (CS) and n=5697(77.24%) were vaginal deliveries. Of the total CS performed n=1021(60.81%) were primary CS. While n=658(39.18%) were repeat CS. Moreover, our results showed n=672(65.82%) primary CS were performed on prim parous women and n=349(34.18%) were on multiparous women.

Regarding urgency of CS, we found that most of the CS n=1066(63.49%) were Emergency CS while n=613(36.51%) were Elective CS.

Total number of women admitted with history of previous 1 CS were n=655.Of these n=415(63.54%) underwent repeat CS for different indications and n=240(36.64%) had vaginal birth. Hence, VBAC rate was 36.64% in the study population. Women admitted with ≥ 2 CS were n=243 all of them underwent CS deliveries. Furthermore, the instrumental delivery rate was found to be n=198(2.67%). Indications for the total Caesarean sections performed during the study period have been shown in table 2. The indications for repeat Caesarean deliveries in women with history of previous 1 CS have been shown in Figure 1.

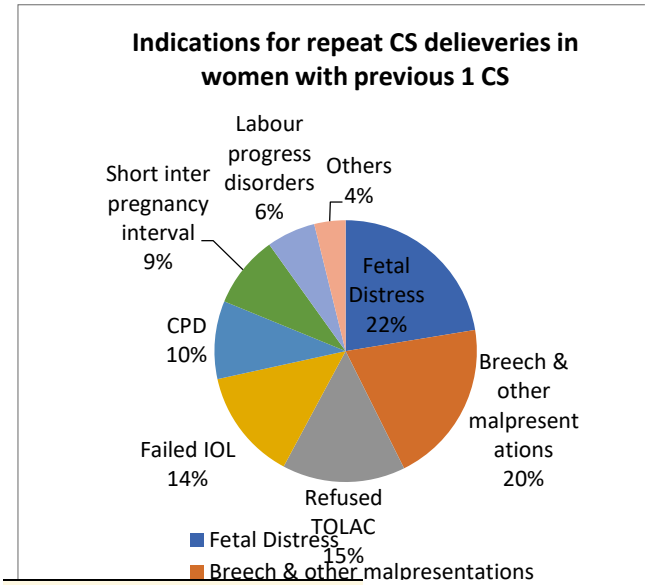
Table 1: Characteristics of the study population

Characteristics	Frequency (n)	Percentage %

Age (years)		
17-20	163	9.76
21-35	1232	73.82
≥ 36	284	16.42
Parity		
P0	672	40.26
P 1-4	615	36.55
P 5 or >	392	23.18
Gestational age		
< 37 weeks	186	11.14
≥ 37 weeks	1493	88.86
Fetal presentation/lie		
Cephalic	1529	91.01
Transverse (including neglected transverse lie with hand prolapsed	76	4.54
Breech	66	3.95
Face	4	0.24
Compound	4	0.24
Number of fetus/es		
Singleton	1608	95.77
Multiple	71	4.23

Table 2: Indications for CS in study population

Indications for CS	Frequency(n)	Percentage (%)
Repeat CS in women with history of previous 1 CS	415	24.72
Presumed Fetal distress	302	18.04
Repeat CS in women with history of previous ≥2 CS deliveries	243	14.47
Arrest of labour dilatation or descent disorders	235	13.99
Obstetric indications (placenta previa/accreta, placental abruption, cord prolapsed)	177	10.18
Fetal Malpresentation	103	6.13
Failed Induction of Labour	91	5.42
Fetal indications (intra uterine growth restriction, decreased fetal movements)	41	2.44
Multiple gestation	41	2.44
Maternal medical indications (maternal cardiac disease, Eclempsia/severe pre-eclempsia)	37	2.20



Discussion

The overall CS rate in our study population was 22.76% which was higher than the national average of Pakistan (19.6%) 13and even higher than the WHO global recommendation of 10-15%4.

However, according to the WHO recent strategic document more emphasis is on monitoring indications of CS for appropriateness14, 15. Moreover, in order to understand the degree to which CS deliveries may be preventable, it is important to know why CS is performed13.

In the present study the most common indication for CS delivery was history of previous CS/s which contributed for more than one third of CS (39.18%). Various studies conducted in Pakistan have also shown Repeat CS as the most common contributing indication to the overall CS rate. Jabeen J, et al (40.3%) and Bano S, et al (64.7%) have reported that the largest group of women contributing to repeat CS is that with history of previous Caesarean delivery [4,16], and [17]. Another study by Karim F, et al has shown Repeat CS as the most common indication (47.17%) 18. Several international studies have also found out "previous history of CS as the most common indication contributing to the increased CS rate". A cohort study conducted in Brazil showed Repeat CS as the most common contributor to the overall CS rate[19].

It is clear from the results that if we want to reduce overall CS rate, we have to reduce the rate of first CS in women, which accounted for 60.81% CSs in this study. Moreover, evidence-based steps should be taken to encourage women having previous one CS to deliver vaginally. National institute of clinical excellence (NICE) and American College of Obstetricians and Gynecologists (ACOG) recommend that women with history of one CS should be given trail of labour and previous CS should not be the absolute indication for CS delivery in the index pregnancy[20,21]. Researchers have shown different approaches that should be adopted in carefully selected

cases such as External Cephalic Version (ECV) for breech presentation and promotion Trail of Labour after Caesarean delivery (TOLAC) and Vaginal Birth after Caesarean section (VBAC)[22]. According to the Royal College of Obstetricians and Gynecologists, VBAC should be considered a safe choice for the majority of women with a single previous lower segment caesarean delivery willing for vaginal delivery [23]. Studies have shown a higher success rate of about 80% and much lower complication rate in women who underwent VBAC than those with repeat CS[24,25].

We found that the 2nd most common contributor to the overall CS and the most common contributing indication to the primary CS, at our institute were fetal distress/non reassuring fetal heart tracing (18.01%).

Several other studies have shown fetal distress as a common cause of emergency CS delivery with the global prevalence of about 20%11. A study done by Gulfareen H et al, mentioned the same results as ours. Similarly, Studies conducted in India also found fetal distress to be the most common contributing indication [26, 27]. Study conducted by Barber EL shows non reassuring fetal heart tracing (NRFHT) to be the most frequent cause (32%) adding to the burden of primary CS.

The subjective variability in interpreting fetal heart tracing is a well-known fact [28, 29, 30]. In our institution, we have protocol in place that we routinely do CTG on all women admitting in active Labour. Furthermore, there is lack of facilities for fetal scalp blood sampling which further adds to the subjectivity of CTG tracing. On the other hand, NICE guideline on intrapartum care clearly states: "reserve CTG for high-risk pregnancies/Labour". The guideline further stresses that to avoid unnecessary CS deliveries for presumed fetal distress, the facility of fetal blood sampling to measure p H /Lactate should readily be available so that CTG results can be interpreted properly[31].

Labour progress disorders (including failure of cervical dilation/decent of presenting part during active Labour) were the 3rd most common (14%) contributing cause to the overall burden of CS in the present study. Literature review has shown Labour progress disorder as one of the most common indications leading to emergency CS delivery[10,11]. Research conducted in a university hospital Karachi reveals Labour progress disorder as the 2nd most common cause contributing to the overall CS [31].

Literature review shows that the diagnosis of Labour progress disorder is relatively subjective and large variability exists among obstetricians.

According to the WHO Labour care guide and ACOG, the more recent standards of normal Labour progress, from the Consortium on safe Labour should be practiced rather than traditional standards, if we want to prevent Primary caesarean delivery[33, 34]. According to consortium on safe Labour both Nulliparous and multiparous women dilate at same rate from 4-6 cm, and more slowly than described by Friedman. However, multiparous women dilate more rapidly beyond 6cm. Similarly, according to new standards, the active phase of Labour starts at 6 cm of cervical dilatation [33,34]. Thus in the first stage, slow but progressive Labour should not be an indication for CS. Hence, Caesarean delivery for active phase arrest of Labour, should be reserved for women at or beyond 6 cm dilatation with ruptured membranes, who fail to progress despite 4 hours of effective uterine contractions in the first stage of Labour/or at least 6 hours of oxytocin administration with ineffective uterine contractions and no cervical change[34].

Furthermore, before diagnosing arrest of Labour in the second stage, if mother and fetus both doing well, at least 2 hours of pushing in multiparous and 3 hours in Nulliparous women should be allowed. Instrumental vaginal delivery in the second stage of Labour by well trained and experienced obstetrician should be considered a safe alternative approach to caesarean delivery34.

In our institute the instrumental delivery rate was 2.97%. ACOG has shown concerns regarding the significant decrease in instrumental vaginal deliveries during the past few years and recommends performing instrumental deliveries, so that the risk of CS in the second stage of Labour can safely be avoided. However, the trend of obstetricians is less towards instrumental delivery and more towards CS in the present environment of litigation. Hence, the number of healthcare providers who are adequately trained to conduct instrumental vaginal deliveries is decreasing. To curb this situation, skills and drills training related to instrumental vaginal delivery should be encouraged in tertiary care institutions[34, 35].

The second most important indication for repeat CS was breech and other Malpresentations. In our institute we do offer ECV to women with non-scarred uterus, but reluctance is seen from the side of obstetricians to offer ECV to women with previous uterine scar. According to ACOG, ECV after one CS has no greater risk of uterine scar rupture than with unscarred uterus [22].

In the current study it has been noticed that the 3rd most common cause of repeat CS in women with history of Previous 1 CS is refused trail of Labour accounted for 15% of Repeat CS. Literature review shows wide variations in TOLAC uptake rates in different region of the world e.g. it is 20% in the US36 and 70% in the Netherlands [37]. Similarly, in Europe, TOLAC uptake rates differ considerably i.e. 14.8% to 52.2% [38]. A Cochrane review established that counseling of women by obstetricians regarding TOLAC is the most important part of the informed decision-making process and has to be evidence based and according to the individual patient's need[39].

Similarly, Induction of Labour (IOL) in women with history of CS, is a controversial intervention mainly because of the fear of uterine rupture which has been shown to be as

high as 1.4% [40]. Furthermore, there is uncertainty regarding efficacy/dosage of the different agents used for IOL in this special scenario. Till date, no agreed international/national protocol for IOL is women with Previous CS birth is available and hospitals are using their own individually designed protocols[40]. We are also using protocol designed locally for IOL in women with scarred uterus and this may be the reason for failed induction in our setup.

Conclusion

Majority of the women who underwent CS had the history of prior CS deliveries. It is the need of the day to educate the obstetricians and counsel/encourage pregnant women in antenatal period regarding the safety of procedures like ECV, TOLAC and VBAC if we want to reduce repeat CS in our setup. Moreover, CTG should be used in high-risk pregnancies/labor and standardized terms/definitions should be used to avoid subjective variability in interpreting the CTG traces. Furthermore, adherence to 'WHO Labour care guide' regarding care/ monitoring of laboring women should be encouraged. Similarly, reviving the art of instrumental delivery by training obstetricians may curb the escalating rate of CS.

Further research work is needed both at national and international levels to find out the most safe and effective method for Induction of Labour on scarred uterus.

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