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Original Research Article

Study frequency of the first time C-section and its medical indications in Ardabil city, 2021

Zahra Ghavami¹, Firouz Amani^{2*}, Marzieh Hosseindust³

¹Department of Obstetrics and Gynecology, ²Department of Community Medicine, ³School of Medicine, School of Medicine, Alavi Hospital, Ardabil University of Medical Sciences, Ardabil, Iran

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***Correspondence:**

Dr. Firouz Amani,

E-mail: firouzamani2019@gmail.com

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ABSTRACT

Background: Caesarean section is a surgical intervention to prevent or treat life-threatening maternal or perinatal complications but unnecessary caesarean section can put mothers and babies at serious risks. World Health Organization (WHO) recommends a caesarean section rate of about 15 percent or less. Although most countries are trying to stop the increase in caesarean section rates to achieve to the rate proposed by the WHO but in many countries, including Iran, has been much higher. The rate of C-section in Iran has increased from 19.5% in 1976 to about 48% in 2010. This figure has reached 60% in 2013. As repeat caesarean is the most common indication of c-section in Iran, the most practical way to reduce the rate of c-section will be reduction of first-time c-section. Obviously, it is necessary to know indications of first-time c-section to reduce the rate of c section in our country. For this purpose, designing a study to recognize the indications of first-time c-section seems useful. Evaluation of frequency of the first time C-section and its medical indications in Alavi Hospital, in Ardabil, 2021.

Methods: In this cross-sectional study, all data of caesarean sections performed in Alavi medical center in 2021 were studied. Among the performed c-sections, all the first caesarean sections were selected and their information and indications were collected. The collected data were entered into Statistical package for social sciences (SPSS) software and analyzed by using tables, graphs, numbers and percentages to evaluate the frequency and indications of first-time c-section.

Results: Among all CS performed (2075 patients), 940 mothers, underwent caesarean section for the first time, were included in the study. The frequency of caesarean section for the first time was 45.3%. The mean age of the samples was 27.9 years with a standard deviation of 6.94 years. The minimum age was 14 and the maximum age was 47 years. The number of maternal pregnancies ranged from 1 to 8.

Conclusions: The most medical indications for first-time caesarean section with 587 cases (65.7%) and 156 cases (17.5%) were related to fetal distress and lack of labor progression, respectively.

Keywords: Caesarean, First-time caesarean, Medical indication of caesarean

INTRODUCTION

Childbirth is one of the divine gifts for the production of the human race on earth, which has always continued since the birth of man. The mechanism of labor is a spontaneous process without any intervention, which has been done

with its natural for many years.¹ C-section can be an important and saving operation for the life of mother and baby, but unnecessary C-section can put the mother and baby at serious risk.^{2,3} C-section without indication exposes mothers to risks such as maternal death, infection, hemorrhage, adhesions, bleeding, laceration, increased

risk of bleeding in subsequent deliveries, extended hospital stay and drug reactions.⁴⁻⁶ The mortality rate from C-section delivery is 26 times more than normal delivery.⁷ Babies born by C-section are at higher risk for respiratory problems and respiratory distress, low Apgar scores, fetal injury, allergic rhinitis, food allergies, childhood asthma and type 1 diabetes.⁸⁻¹¹ In addition, unnecessary caesarean section puts a lot of money on the health care system.¹² The World Health Organization (WHO) recommends a caesarean section rate of about 15% or less to maintain a balance between the benefits and losses of this surgery.³ Caesarean rates vary around the world.^{13,14} Many countries are trying to stop or at least reduce the rate of C-section in order to get closer to the recommended rate proposed by WHO, but the rate of C-section in some countries is still clearly higher than the rate recommended by the WHO.^{3,15,16} For example, in Turkey 50%, Mexico 45% and in the United States 36% of all births are done by C-section. In contrast, in some countries such as Iceland with 15%, Sweden with 16% and Norway with 17%, caesarean deliveries are low.¹⁵ Today, definitive indications for caesarean section include misalignment of the head with the pelvis, transverse or oblique placement of the fetus, placenta previa, premature placental abruption, umbilical cord prolapse and severe preeclampsia.¹⁷ Relative indications for caesarean section include fetal distress, developmental delay, multi-parity, very small and very large infants, breech delivery, history of caesarean section, general conditions in which the life of the mother or fetus is endangered if surgery is not performed and also other reasons which the rate of these causes for total births are estimated between 5.8% to 8.5%.^{17,18} The results of a survey study in the Netherlands showed that women who want to have a caesarean section can find gynecologists who can give birth allow to them for non-medical reasons.¹⁹ Even some societies have gradually become luxurious and the real reason for these decisions is not completely clear. Causes such as fear of litigation and convictions, fear of labor pain and poor experience of previous vaginal delivery, increasing maternal age during the first pregnancy, recommending caesarean section in cases of breech delivery, reducing the use of forceps and vacuum, increasing induction of labor, concern about pelvic floor muscle damage and reduced risk of fetal injury, use of fetal heart monitoring, increasing prevalence of obesity and decreasing vaginal delivery after caesarean section are possible causes of this increase for CS.^{20,21} In many societies, including Iran the rate of caesarean section is high. In many cases, scientific indications for caesarean section is not responsible for determining the type of delivery, but ignorance, unreliable and wrong beliefs, behaviors and attitudes have determined the type of delivery.²² The rate of CS in Iran has increased from 19.5% in 1977 to 40.2% in 2006 and about 48% in 2011. This rate has reached to 60% in 2014.²³ Studies show that the rate of caesarean section in Iran is much higher than European countries and this is due to the interaction of several factors that have created an increase effect over more than 4 decades, which is much higher than the acceptable range declared by the WHO.²³ In examining

the causes of CS, recurrence of caesarean section according to the history of previous caesarean section (39%), dystocia (28%), fetal distress (14%), breech delivery (9%) and other causes (10%) were included in all caesarean sections (24,25). In a meta-analysis study in Iran, previous caesarean section (36%), fetal distress (19%), delayed delivery (13%), elective caesarean section (11%) and other causes each accounted for less than (10%) are the main reasons for CS.²⁶ The results of another systemic study in Iran have shown that recurrence of caesarean section (42.55%) and fetal distress (22.11%) are the most common medical causes of CS.²⁷ Since the recurrence of caesarean section is the most common indication for caesarean section in Iranian studies, the most practical way to reduce the rate of caesarean section in the country is to reduce the rate of caesarean section for the first time. Obviously, in order to reduce the rate of caesarean section for the first time, it is necessary to know the indications for caesarean section for the first time. For this purpose, designing a study to recognizing the indications for caesarean section for the first time seems useful and appropriate.

METHODS

This descriptive cross-sectional study was performed on all women candidates for caesarean section at Alavi medical center in Ardabil city. Information on all archived files related to all first time CS from the beginning of April 2020 to the end of March 2021 has been reviewed by the researcher and according to the information in the file and the history taken from the patients, the prepared checklist including age, place of residence, level of education, occupation, history of pregnancy, history of childbirth, history of abortion, number of children, single and multifetal birth, mother's weight at birth, newborn weight at delivery, Apgar score and medical indication of caesarean section were completed for the first time CS and in case of incomplete information, patients were contacted to complete the information. Women with the first time caesarean section were included in the study and women with a history of previous CS were excluded from the study. This study was approved by the ethics committee of the Ardabil University of Medical Sciences and registered with the ethics code. The collected data were analyzed by using descriptive statistical methods such as number, percentage, table and figure and using Chi-square or Fisher statistical tests to examine the relationship between qualitative variables in Statistical package for social sciences (SPSS) version 23.

RESULTS

In this study, 940 mothers with the first time caesarean section were included in the study. The frequency of this rate among all mothers who had a caesarean section (2075 people) was 45.3%. The average age of all mothers was 27.9±6.94 years (Range: 14-47). The number of maternal pregnancies varied from 1 to 8 (Table 1).

The most common medical indications were fetal distress with 587 cases (62.4%) and lack of labor progression with 156 cases (16.6%) in the first and second ranks (Figure 1).

Table 1: Descriptive characteristics of sample.

Variables	Min	Max	Mean	SD
Baby weight (g)	700	4700	3021	575
Mother weight (kg)	57	105	80.4	7.8
Parity	0	5	0.52	0.81
Abortion number	0	5	0.28	0.64
Child number	0	5	0.51	0.81
Gravity	1	8	1.8	1.1
Age of mother	14	47	27.9	6.9

Table 2: Relation between type of medical indications and number of pregnancy.

Number of pregnancy medical indications	Singleton		Multiple birth	
	n	%	n	%
Fetal distress	351	58.1	236	70.2
Lack of progress in childbirth	129	21.4	27	8
Twins and multiples	33	5.5	14	4.2
Abnormal presentation	41	6.8	27	8
Incompatibility of the fetal head with the mother's pelvis	17	2.8	11	3.3
Severe preeclampsia	4	0.7	10	3
Concentrated secretion of meconium away from labor	21	3.5	9	2.7
History of eye surgery	1	0.2	0	0
Fetal teratoma	0	0	1	0.3
History of myomectomy	1	0.2	1	0.3
Placental abruption	6	1	0	0

Most of mothers had primary education with 440 cases (46.8%) and also 19 (2%) were illiterate. Most of mothers with 844 cases (89.8%) were housewives. 95% of them were singleton and 5% were multipar. 580 (61.7%) mothers are from Ardabil area. 64.4% of mothers gave

birth to their first child and 35.2% had 1 to 3 deliveries. 79.7% of mothers had no history of abortion. Among primiparous women, the most medical indications with 351 cases (58.1%) and 129 cases (21.4%) were related to fetal distress and lack of labor progression. By using chi-square test, it was found that there was a statistically significant relationship between the type of medical indication and the number of deliveries of pregnant mothers (p=0.023).

DISCUSSION

Caesarean section has played an important role in reducing maternal and fetal mortality and complications in the last century, but in recent years, it has been accompanied by increasing growth. According to the WHO, the expected rate of caesarean section is 10%-15% and higher rates had risks to the mother and fetus.²⁸ Now in our country, fear of natural childbirth and lack of proper culture for natural childbirth preparation, fear of fetal complications, fear of physical effects on the vagina and perineum, unnecessary interventions in the beginning of labor pains, ultrasound estimation of fetal weight especially high weights and the possibility of difficult delivery, fear of legal issues for high risk deliveries such as multiple births and breeches, enough skill to use assistive devices such as vacuums, lack of non-educated midwives in their real position, lack of access to physiological and painless childbirth training in the community especially rural women, who have the highest pregnancy and childbirth training in this area and finally, insufficient supervision over the scientific nature of caesarean section indications has led to an increase in caesarean section versus normal and despite the concerns of the relevant authorities, the necessary measures had not been taken to reduce caesarean section. Of course, in many medical centers using relaxation methods and natural childbirth counseling, accompanying use during childbirth, anesthesia and painless childbirth, aromatherapy and several other methods are used to reduce pain and encourage natural childbirth are still used.

However, it seems that the implementation of the health system transformation plan has accelerated the reduction of caesarean section.²⁹ The results of Alimohammadzade et al 's study on the causes of caesarean section in an educational and medical center in Rasht showed that the most common causes recorded by a physician for caesarean section were fetal distress, recurrent caesarean section, mismatch of fetal head with mother pelvis, meconium excretion, show Breech and developmental delay which was similar to our study.³⁰ In the study of Mubarakhi et al, fetal head mismatch with the mother's pelvis, non-cephalic presentation and maternal diseases were the most common causes of caesarean section, while in the present study conducted in Alavi Hospital,, head pelvic mismatch was the sixth cause and abnormal presentation was the third most common cause.³¹ Shakarian in Chaharmahal Bakhtiari province considered the most common cause of caesarean section as fetal distress and previous caesarean section, which is similar to

the statistics of Alavi Hospital in 2021.³² Asanafi et al in a study in Babol reported that the most common causes of caesarean section were fetal distress and recurrent

caesarean section respectively which is similar to the results of our study.³³

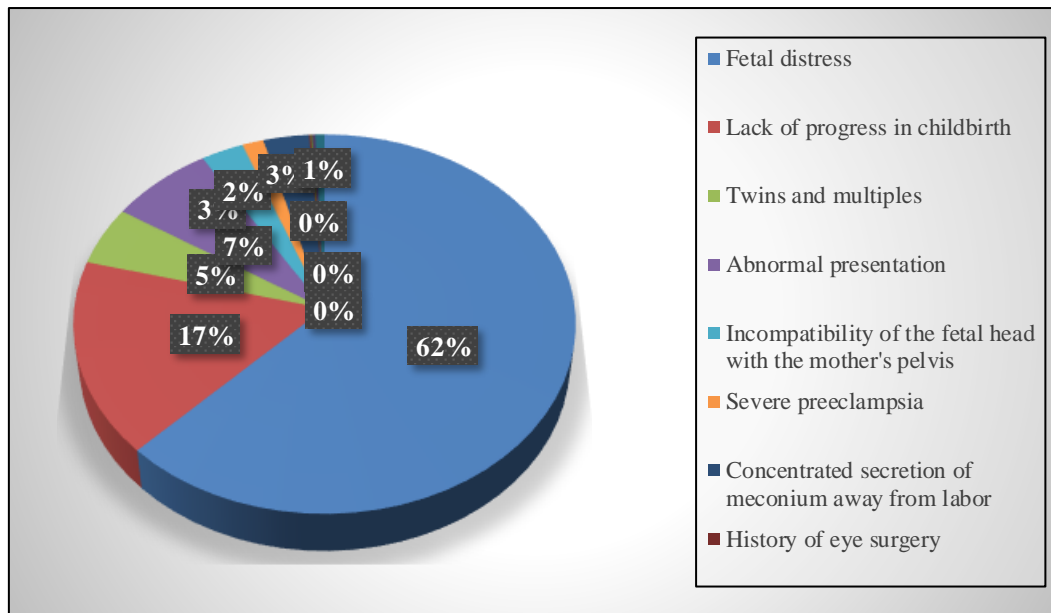


Figure 1: Frequency of FCP medical indications among mothers.

According to Kashanizadeh et al., the most important reason for choosing caesarean section as a delivery method were repeated caesarean section, pelvic stenosis and lack of progress.³⁴ In the study conducted by Ghasemi in Yazd, the most common causes of caesarean section were previous caesarean section, fetal distress and lack of development of labor, which was similar to Alavi Hospital.³⁵ In a study by Shakibzadeh et al., the most common causes of first time caesarean section were prolonged labor, meconium excretion and fetal distress.⁷ In Alavi Hospital, fetal distress was the most common cause of caesarean section. Due to the fact that in most studies, repeated caesarean section is the most common cause of caesarean section it can be concluded that pregnant women of the first abdomen are one of the main and important group in caesarean section reduction interventions and modifying the intention to choose the type of delivery among this group can have a significant effect on reducing caesarean section. Ye et al designed a cross-sectional study that collected data on 200 first time caesarean sections and examined the indications for caesarean section. The most common indications include fetal distress (27.5%), delayed delivery (22.5%), breech presentation (18%) and failure at the beginning of labor (4.5%).³⁶ In our study, the most common cause of caesarean section was fetal distress and lack of labor progression. Oya et al in a study found that 38484 of all deliveries were performed by caesarean section for the first time. In this study, the most common indications for performing a first time caesarean section were lack of progress in delivery (35.4%), fetal heart rate abnormalities (27.3%) and malpreservation (18.5%). In primiparous

women, the most common cause of caesarean section was the lack of progression of labor (42.6%) but in multiparous women who have undergone caesarean section for the first time, embryonic malpreservation (25.8%) has been the most common indication.³⁷ It seems that the reasons for the higher frequency of first time caesarean section compared to international statistics are due to factors such as maternal hospitalization in the latent phase of labor, prolonged stimulation with oxytocin, failure to apply the correct diagnostic criteria for CPD, failure to apply the correct diagnostic criteria for CPD, misdiagnosis of non-progressive labor due to routine care during labor, failure to apply the correct diagnostic criteria for fetal distress and in summary unnecessary medical interventions during labor.³⁴

In our study, the first common cause of caesarean section was fetal distress. In our hospital, continuous monitoring and supervision is an important part of the admission process for women and part of the management of high risk pregnancies. This may lead to over diagnose of fetal distress and unnecessary caesarean section indicating fetal distress. Postpartum hypoxia occurs in about 1% of deliveries, resulting in fetal death in 0.5 per 1000 cases and fetal cerebral palsy in 1 in 1000 pregnancies.³⁸ Processes such as uterine vascular disease, decreased uterine perfusion, fetal sepsis, and umbilical cord pressure are among the causes of fetal hypoxia.^{39,40} Screening methods and diagnosis of fetal distress have limitations. Therefore, when this condition is clinically diagnosed as fetal distress, physicians should expedite delivery because they do not have a clear understanding of the severity of hypoxia.⁴⁰

The second cause of caesarean section for the first time in our study was the lack of progression of labor. Although caesarean delivery is an indication for caesarean section, it is sometimes misdiagnosed. During the studies, it is possible for the fetal head to fall into the pelvis until the patient is in the active phase of labor and with more powerful induction and stimulation of cases of lack of progress, the rate of caesarean section can be reduced and the selection of items such as lack of progress in delivery while the patient is not yet in the active phase of delivery as a reason for caesarean section is one of the cases mentioned in reference books as a rare reason for performing caesarean section.⁴¹

Considering the most common cause of first caesarean section, namely fetal distress, it is better to try to reduce the cause by improving the level of hospital facilities, reducing unnecessary interventions in induction of labor and a more comprehensive study of the cause of fetal distress. Because maternal health during pregnancy depends on pre pregnancy health, it seems necessary to consider pre-pregnancy care as a complement to prenatal care.

Organizing childbirth preparation workshops including exercises to relax muscles, how the mother breathes, correcting the position and ... to reduce the fear and anxiety of mothers in all medical centers, providing organized prenatal care including: physical examination, pregnancy tests timely and accurate screening, including diabetes screening to reduce the birth of macrosomic neonates, nutrition education and pregnancy risks and correct measurement of pelvic diameter and its clinical estimation and correct interpretation of the obtained information, heart sound control with electronic devices and advanced care by using more advanced features such as serum pH meter to check fetal acidosis in cases of suspected hypoxia, strict control of labor induction to prevent uterine hypertension and fetal distress and raising mothers' awareness of caesarean section and its complications are recommended.

CONCLUSION

The results show that the frequency of first caesarean section (FCS) is still high in Ardabil city. Adequate following of programs to diminish the percentage of FCS and increase the number of VB, would significantly reduce the prevalence of caesarean section.

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