American Journal of Medicine and Medical Sciences 2024, 14(3): 592-596
DOI: 10.5923/j.ajmms.20241403.11

Method for Analyzing Caesarean Sections Using Robson Classification

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Abstract The authors note that the indications for CS surgery in perinatal centers of Uzbekistan have increased in 2017-2020. The structure of indications for cesarean section in all perinatal centers of the country is dominated by a scar on the uterus, then: preeclampsia, pelvic-cephalic disproportion, premature placental abruption was an indication, the threatening condition of the fetus, breech presentation, multiple births, high myopia, cardiovascular diseases. Testimony from the mother is reliable in 5.5. times more likely to be an indication for CS than fetal indications (p=0.000004). Among the indications from the mother, obstetric conditions (uterine scar, PONRP, pelvic-cephalic disproportion, abnormal fetal position, preeclampsia, weakness of labor, generally narrowed pelvis, etc.) were significantly more indications for CS (p = 0.000004) than somatic diseases of the mother.

Keywords Cesarean section, Cesarean section structure, Cesarean section frequency, Indications for cesarean section, Perinatal centers

1. Introduction

The problem of preserving a woman's reproductive function is of great medical and social importance. Since the main organ of the reproductive system in women is the uterus, this problem is especially acute in patients who have undergone surgical interventions on this organ for gynecological diseases, or after surgical delivery [1-4]. Caesarean section (CS), performed for medical reasons, is an effective method for reducing maternal (MM) and perinatal mortality (PM). However, in recent decades there has been a steady increase in the frequency of CS in both economically developed and developing countries, which is of concern to the international community. The desire to solve all obstetric issues with the help of operations turned out to be untenable [5-8]. The current rate of CS of 30% has long ago exhausted all possible reserves of its influence on the levels of MS and PS, increasing the risk of complications of the operation itself for the pregnant woman and the fetus [9-10]. In addition, like any surgical intervention, CS is associated with the possibility of complications both in the short and long term, which has adverse consequences. The main way to preserve fertility is to prevent septic postpartum complications. Such prevention implies a reasonable reduction in the number of CS [11]. In economically developed countries, the increase in CS was accompanied by a decrease in maternal, but most importantly, perinatal mortality, therefore, in 1985. WHO, based on reports from countries that at that time had the lowest perinatal mortality rates, recommended 10–15% as the optimal rate of CS at the national level. According to WHO (2017), a total of 6.2 million CS are performed worldwide without medical indications annually, the cost of which is estimated at approximately 2.32 billion US dollars. New research shows that if the caesarean section rate increases to 10% at the population level, maternal and neonatal mortality rates decrease, but if the caesarean section rate exceeds 10%, the available evidence does not show an improvement in mortality rates. Despite the high transaction rate in Sri Lanka of 33.5% in 2010, Goonewardene M. et al. [12] found no significant changes in perinatal mortality rates, but an increase in the number of mothers requiring intensive monitoring and therapy. J. Villar et al studied the outcomes of CS for mother and fetus in 8 countries of Latin America, covering 24 geographic regions, 120 institutions of various types and about 100 thousand births, of which every third, and every second in private clinics, ended in surgery. To find out the reasons that determine the frequency of CS and search for effective mechanisms for its optimization, a set of measures is necessary, among which one of the primary places belongs to the identification (classification) of groups of pregnant women who are delivered by CS. A systematic analysis conducted by WHO experts showed that the classification developed by M. Robson, which includes 10 main groups, is most suitable for this purpose [13-15]. The introduction of this classification allows obstetric hospitals to carry out the following [16]. identify and analyze groups of pregnant women that make the largest and smallest contribution to the overall frequency of CS;

Received: Feb. 8, 2024; Accepted: Feb. 28, 2024; Published: Mar. 6, 2024
Published online at http://journal.sapub.org/ajmms

- compare the practice of providing care in these groups in institutions that have the best indicators, to implement their experience;
- evaluate the effectiveness of measures aimed at optimizing the use of CS;
- assess the quality of medical care by analyzing the results of delivery in these groups;
- improve the quality of data recording and staff awareness of its importance, the need for use and interpretation.

As a result, disappointing conclusions were drawn: perinatal outcomes have not improved following the example of developed countries; on the contrary, stillbirths have increased, especially in cases of CS in the absence of medical indications [17]. These data indicate that an increase in the incidence of CS in the population and an increase in unnecessary CS procedures do not improve perinatal outcomes and may increase complications and lead to additional financial costs. In Uzbekistan, the frequency of CS operations also tends to increase. The increase in the number of abdominal methods of delivery is directly related to the expansion of indications for performing such an operation in the interests of preserving the health of the mother and child [18-20]. In connection with the reform of the obstetric care system, the country currently has a 3-level system of perinatal care, where 15 perinatal centers (PCs) are recognized as 3rd level institutions. The purpose of our study was to determine the frequency and structure of indications for cesarean section in perinatal centers of Uzbekistan.

2. Materials and Methods of Research

Report forms were studied and analyzed in accordance with Appendix No. 5 of the order of the Ministry of Health of the Republic of Uzbekistan. No. 151 dated June 28. 2021 "On the regionalization of perinatal care in the Republic of Uzbekistan" 15 perinatal centers of the country (Republican Perinatal Center (RPC), 12 regional perinatal centers (OPC), Republican Perinatal Center of the Republic of Karakalpakstan (RPC KR), Tashkent City Perinatal Center (GPC) for 2017-2020, submitted to the organizational and methodological department of the Russian Orthodox Church. Based on reports from the studied health care institutions, an analysis was made of the number of births, the frequency of cesarean sections and indications for CS surgery. To assess reliability, Student's test (t) and significance of differences (p) were calculated.

3. Research Results and Discussion

During 2017-2020, there was an increase in the number of births in all 15 perinatal centers (PCs) of the country: in 2017. In 15 perinatal centers of the country, 94,065 births took place, in 2018 - 101,972 births, in 2019 - 101,623, in 2020 - 106,727 births. The increase in the number of births in the PC is associated with the regionalization of perinatal care and the referral of pregnant women with severe somatic pathology and severe obstetric complications for delivery in the PC from all areas of the region/region. The proportion of women delivered by cesarean section in the PC is growing: in the Andijan PC in 2017, the CS rate was 29.6%, in 2018 - 32.8%, in 2019 - 35%, in 2020 - 39.5%. In the Bukhara OPC in 2017, the frequency of CS was 33.2%, in 2018 - 32.4%, in 2019 - 37.1%, in 2020 - 39.1%. In the Jizzakh OPC in 2017, the frequency of CS was 24.3%, in 2018 - 32.4%, in 2019 - 35.7%, in 2020 - 34.3%. In the Kashkadarya OPC in 2017, the frequency of CS was 19.2%, in 2018 - 31.3%, in 2019 - 31.1%, in 2020 - 34.1%. IN In the Navoi OPC in 2017, the CS rate was 31.2%, in 2018 - 33.7%, in 2019 - 35.3%, in 2020 - 35.1%. In the Namangan OPC in 2017, the frequency of CS was 21.6%, in 2018 - 25.0%, in 2019 - 23.0%, in 2020 - 21%. In the Samarkand OPC in 2017, the frequency of CS was 31.6%, in 2018 - 33%, in 2019 - 36.8%, in 2020 - 33%. In the Syrdarya OPC in 2017, the frequency of CS was 28.9%, in 2018 - 28.5%, in 2019 - 31.8%, in 2020 - 34.5%. In the Surkhandarya OPC in 2017, the frequency of CS was 31.8%, in 2018 - 51.2%, in 2019 - 49.5%, in 2020 - 53.5%. In the Tashkent OPC in 2017, the CS rate was 31.6%, in 2018 - 33.9%, in 2019 - 37.2%, in 2020 - 41.4%. In the Fergana OPC in 2017, the frequency of CS was 25.3%, in 2018 - 26.1%, in 2019 - 26.1%, in 2020 - 28.5%. In the Khorezm OPC in 2017, the frequency of CS was 27.2%, in 2018 - 25.8%, in 2019 - 33.5%, in 2020 - 37.9%. In the Russian Orthodox Church in 2017, the CS rate was 35.4%, in 2018 - 36.4%, in 2019 - 36.7%, in 2020 - 36.8%. In the Russian Orthodox Church of the Republic of Karakalpakstan in 2017, the frequency of CS was 35.7%, in 2018 - 37.7%, in 2019 - 32.5%, in 2020 - 32.4%. In the GPC of Tashkent in 2017, the frequency of CS was 30.2%, in 2018 - 30.9%, in 2019 - 30.2%, in 2020 - 30%. The average CS rate in 15 perinatal centers in the country in 2017 was 29.1%, in 2018 - 32.74%, in 2019. – 34.1% and in 2020 – 34.4%. For 2017 the number of CS in 15 perinatal centers of the country amounted to 28,705, in 2018 - 32,721 CS operations, in 2019 - 36,697, and in 2020 - 37,262 CS operations. Frequency of CS operations in perinatal centers in 2017. amounted to 29.5%, in 2018 - 33.2%, in 2019 - 34.5% and in 2020 - 34.3%, which shows a steady increase in the frequency of surgical abdominal delivery in perinatal centers of our country. These data coincide with the data of foreign researchers, who note that in high-risk hospitals for obstetric and perinatal pathology, the rate of CS reaches 28.0-40.0% or more. [12]. We studied the indications for CS surgery in 15 perinatal centers for 2017-2020. and got the following results. When studying the ratio of the frequency of emergency and planned CS operations in 15 PCs, it was revealed that the share of emergency CS operations is greater than planned ones in Andijan, Jizzakh, Surkhandarya OPC, ROC RK, Navoi OPC, GPC, Fergana, Bukhara OPC. For example, in the Andijan OPC, the share of emergency operations is 89%, and planned operations - 11%. If the proportion of emergency operations in the CS structure is greater, this indicates that the perinatal risk strategy, as a basic method of prognosis and the basis for regionalization, has not been widely used at all stages of obstetric care. The share of planned CS is slightly higher in

the Samarkand OPT and is 63%, emergency - 39%. In the Russian Orthodox Church, Khorezm OPC, Tashkent OPC, Syrdarya OPC, Kashkadarya OPC, the frequency of planned and emergency cases is approximately equal. Obviously, there cannot be a standard in these ratios, but we consider it optimal if cesarean sections in perinatal centers are performed routinely up to 60%-70% for various indications, since high-risk pregnant women who are still in antenatal care are hospitalized in perinatal centers. period, they must develop obstetric tactics for managing pregnancy and childbirth, taking into account the timing and method of delivery. In the structure of indications for cesarean section, in all perinatal centers of the country, the uterine scar predominates and averages 36.2% (from 29.7% to 44.1%). In 2019, the American College of Obstetricians and Gynecologists introduced Practice Bulletin 205, Vaginal Birth After Cesarean Section, which focuses on the potential for successful clinical outcome of vaginal birth after a previous cesarean section [1]. At the same time, S. Bartolo et al. (2016) showed that out of 1584 women with a uterine scar after a previous CS, where 74.4% of women had indicators in favor of vaginal delivery, but of these 41.6% of women underwent elective CS for such indications from the mother, such as the increased age of the mother, increased her body mass index and the risk of fetal macrosomia [5], which shows that the problem of delivery of women with a uterine scar remains acute and debatable. Preeclampsia as an indication for CS surgery averaged -13.7% (from 5.8% to 22.3%). Preeclampsia is not an absolute indication for CS; according to clinical recommendations, preference is given to programmed labor with labor induction and regional anesthesia during labor, but a combination of factors such as unstable maternal hemodynamics and fetal growth retardation syndrome with severe impairment of utero-fetal blood flow, as well as taking into account the woman's medical history, expands the indications for CS. Cephalopelvic disproportion (CPD) was an indication for CS on average -9.1% (from 4.9% to 15.6%). Premature placental abruption was an indication for CS in an average of 7.7% (range 4.7% to 9.9%). The threatening condition of the fetus (fetal distress) was an indication for CS in an average of 5.1% (from 1.8% to 14.5%). The number of cases of TGD and premature placental abruption is relatively objective in nature and cannot have a natural dynamics due to the admission of patients with certain conditions. Regarding the indications for CS in case of a threatening condition of the fetus, there are questions regarding the diagnosis of acute fetal distress, i.e., whether it was possible to use CTG, fetal Doppler, as well as determination of fetal PH. On average, in 7.8% (from 4.4% to 14.2%) of cases, the indication for CS was breech presentation. In recent decades, in our country, breech presentation is more often an indication for CS surgery than for vaginal birth. The PREMODA study, which included data from 8105 women from 174 centers in France and Belgium, did not show any significant excess of perinatal mortality and neonatal morbidity in the vaginal delivery group compared with the CS group. The recommendations of Canada, Great Britain, the Royal College of Obstetricians and Gynecologists of Australia and New Zealand contain criteria for including women with breech presentation in the group of planned vaginal births, i.e. If any conditions are excluded in the woman or fetus, the woman in labor is offered vaginal delivery. At the same time, Berhan Y et all (2016), having conducted a meta-analysis of 27 studies, convincingly showed that the relative risk of perinatal mortality and morbidity is approximately two to five times higher in the planned vaginal birth than in the group of planned cesarean section [9], these data justify the practice of individual decision-making in breech presentation, taking into account many factors. Multiple pregnancy was an indication for CS in an average of 2.5% (range 0.9% to 3.3%). To date, there is very little clear scientific evidence to provide recommendations regarding mode of delivery in twin pregnancies. Transverse position of the fetus was an indication for CS in 2.4% (from 0.9% to 5.5%) of cases. High myopia was an indication for CS in 3% (from 1.8% to 3.2%), cardiovascular diseases - 1.3% (from 0.5% to 4.3%). When choosing a method of delivery with somatic pathology, you need to remember that many indications for CS for somatic diseases, which seemed indisputable 10-15 years ago, are now not so due to the appearance of many studies that have shown the safety of delivery through the birth canal, therefore, more attention needs to be paid to the integration of related specialties in obstetrics, such as ophthalmology, cardiology, endocrinology, neurology, etc. Comparing the proportion of CS in between perinatal centers and drawing conclusions that this PC has a very high CS rate or asserting that this PC works well and therefore low CS rates is inappropriate, because the proportion of CS depends on the number of patients with high perinatal risk who are Medical indications recommend CS and the number of low perinatal risk pregnant women who are eligible for vaginal delivery. For example, if a large number of women with a physiological pregnancy are admitted to the PC, then naturally, in this institution the proportion of CS should be low, but if a large number of pregnant women with severe pathology are admitted to the PC, then the proportion of CS in this PC will be high. What is important is not the percentage of cesarean sections itself, but the percentage of unjustified CS, when it was possible to deliver through the birth canal without increasing the risk for the mother and fetus, when the CS was performed for medical reasons that were not clearly justified. Our study showed that the use of a single average indicator to estimate the rate of cesarean section is insufficient due to the different indications for surgery and the heterogeneous distribution of patients between different perinatal centers. To determine the reserves for reducing the frequency of CS surgery in each perinatal center, it is necessary to study not only the percentage of indications for CS surgery by nosology, but also the total number of patients admitted with a given pathology or condition, as well as the number of CS surgeries and vaginal births among this group, and this is only possible when analyzing labor and CS using the Robson classification [21]. In 2001, British obstetrician Michael Robson first published an innovative classification system

for CS. He divided all postpartum women (including natural vaginal birth and those who gave birth by CS) into ten mutually exclusive groups based on routinely recorded objective obstetric parameters. For each group, the number of participants is recorded, as well as the number of CS, which makes it possible to determine groups with a high CS indicator and their contribution to the overall CS indicators. The classification is simple, reliable, reproducible, clinically relevant and promising. The Robson classification allows you to compare CS rates within a group and between these groups of women, and you can also compare these groups between maternity institutions, between regions and countries. Thus, our study showed that in the perinatal centers of our country there is a gradual increase in the number and proportion of surgical births by cesarean section; Testimony from the mother's side is reliable in 5.5. times more likely to be an indication for CS than fetal indications (p=0.000004). Among the indications from the mother, obstetric conditions (uterine scar, PONRP, pelvic-cephalic disproportion, abnormal fetal position, preeclampsia, weakness of labor, uniformly narrowed pelvis, etc.) were significantly more often (71.9%) an indication for CS (p= 0.000004 and p=0.000007) than (extragenital) somatic diseases of the mother (9.79%). At the same time, we identified a significant increase in indications for CS for extragenital diseases in recent years (p = 0.004). When compared with previous years, fetal readings also have a statistically significant upward trend (p=0.000395). To obtain a more objective idea of the effectiveness of established practices and identify reserves for reducing the frequency of CS, it is recommended to analyze childbirth using the Robson classification, which is the goal of our further research.

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