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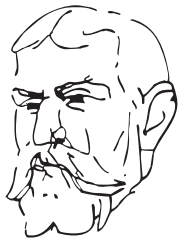

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ORIGINAL ARTICLE

OPTIMIZATION OF THE FREQUENCY AND STRUCTURE OF CESAREAN SECTIONS BASED ON ROBSON'S QUALIFICATION SYSTEM

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ABSTRACT

The aim: Analyze the frequency and structure of indications for cesarean section in municipal non-profit enterprise "Uzhgorod city maternity hospital" of Uzhgorod city council to determine promising ways to optimize the tactics of childbirth.

Materials and methods: A comparative clinical and statistical analysis of the frequency and indications for caesarean section for 2011-2015 (first group) and 2016-2020 (second group) years according to the Robson system classification was conducted.

Results: The increase in caesarean section had no effect on overall perinatal mortality. The main reserve for reducing the incidence of cesarean section is the primi- and secundipara women with full-term singleton pregnancy, the cephalic presentation of the fetus. Increasing the proportion of vaginal births in women with a scar on the uterus is possible through careful selection of patients for vaginal birth. The high frequency of cesarean section in groups of women with premature births, multiple pregnancies, pelvic preterm births or abnormal preterm births is justified by modern obstetric approaches and does not significantly affect the overall frequency of cesarean section due to the small number of these groups.

Conclusions: The reserve for reducing the frequency of cesarean sections is the standardization of medical care in obstetrics and also in social and legal protection of an obstetrician and gynecologist.

KEY WORDS: cesarean section, Robson qualification system

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INTRODUCTION

Cesarean section (CS) is done in case of maternal and fetal indications, that not always alows to conduct an appropriate analyses concerning the evaluation of factors, that objectively influence the indicence of performing CS. [1]. It is now veryfied that C-section, performed in the absence of medical indications, is a more dangerous method of delivery for both mother and fetus than delivery through the natural birth canal. The role of C-section in reducing perinatal morbidity and mortality remains unresolved [2]. Due to cesarean section, the reproductive potential, both individual and population, is reduced. Doctors lose obstetric professionalism. A generation with a lack of perinatal memory is formed. In addition, the incidence of distant complications after one or more C-section incfreases, it includes pathology of placenta attachment, retained placenta and uterine rupture with possible subsequent hysterectomy [3]. According to the WHO, it is almost impossible to statistically determine and analyze the reasons for the increase in the proportion of C-section. The determinants of this phenomenon in each region, in each obstetric team – are different. To identify a reserve for improving the quality of obstetric care in 2014, the WHO recommended that the C-section incidence should be analyzed using the method proposed by Robson [4]. This is an easy-to-perform method that divides all births into 10 groups and calculates the C-section incidence in each group separately and provides factual material for working out a strategy to reduce the frequency of cesarean sections [5,6,7]. The ratio of groups in different institutions may differ, but the frequency of C-section within groups is comparable.

THE AIM

The aim of this work was to analyse the structure and incidence of indications for CS municipal non-profit enterprise "Uzhhorod city maternity hospital" of Uzhhorod city council for determination of perspective ways of optimizing labour management.

MATERIALS AND METHODS

This work was based on a comparative clinical and statistical analysis of the incidence and indications for C-section surgery for 2011-2015 (first group) and 2016-2020 (second group) from the standpoint of the ICD 10 classification and the Robson system was conducted. Statistical analysis of the results of the study was performed using the computer

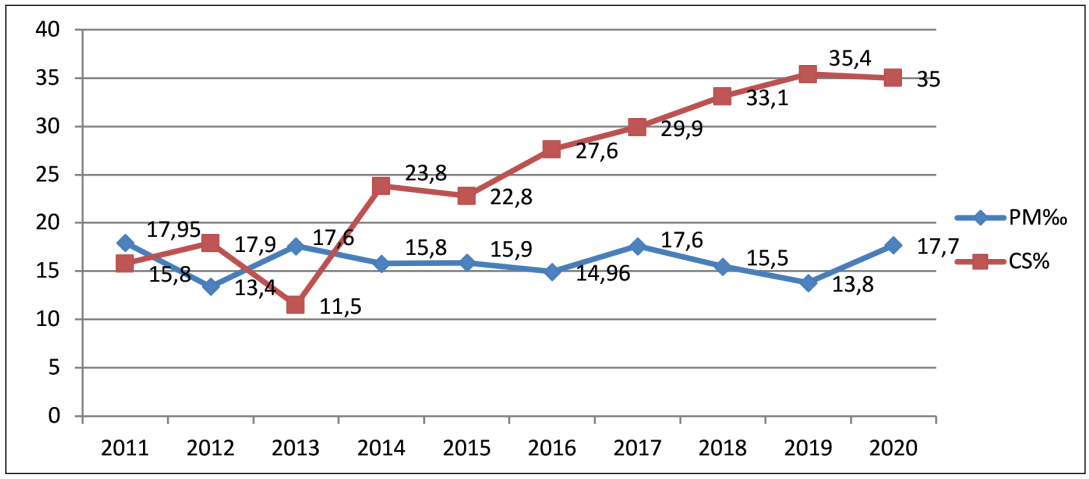

Fig. 1. Dynamics of cesarean section frequency and perinatal mortality rates 2011-2020
*PM – perinatal mortality, CS – cesarean section

program Statistica 6.0 (StatSoft, USA) and the method of t- Student's test.

RESULTS

During 2011-2015 there were 19307, 3551 of which were completed by caesarean section, which amounted to 18.4%. In the period 2016-2020 there were 18,378, 5,897 of which were completed by caesarean section, which amounted to 32.1%. The increase in C-section frequency did not affect the overall perinatal mortality rate (p> 0.05), as illustrated in Fig 1.

At the same time, adaptability disorders and the incidence of children morbidity after C-section are three times higher than those born through the natural birth canal (p <0.05). Analysis of the structure of indications for caesarean section in the first and second groups on the basis of the classification of ICD 10 showed that the following were dominant: scar on the uterus – 25.1% vs. 23.6%; fetal distress – 19.7% vs. 20.6%; anomalies of labour activity – 15.9% against 17.1%; extragenital pathology in the mother – 4.5% vs. 5.3%; pelvic presentation of the fetus – 3.5% vs. 5.2%, but this difference was not statistically significant (p> 0.05). Among the factors contributing to the increase in the frequency of C-section, we should highlight, above all, the increase in the average age of pregnant women and the growth of extragenital pathology. Analyzing the structure of C-section, it is noteworthy to increase the number of elective and decrease the number of urgent operations (p <0.05). The most important indications for elective C-section are scar on uterus, pelvic presentation, multiple pregnancy and abnormal fetal presentation, and for emergency cesarean section – fetal distress in the absence of conditions for rapid delivery through natural birth canal, albour actuvuty abnormalities, failure of labour indcution.

The general structure of childbirth was dominated by primipara women with full-term singleton pregnancy, cephlalic presentation of the fetus, spontaneous labor activity (28.0% in group I and 29.8% in group II, p> 0.05). In 2.9% of women of group I and in 16.8% of group II childbirth occurred by C-section due to urgent indications (p <0.05), which further required primary resuscitation of newborns and subsequent observation or treatment in intensive care unit. The analysis of the peculiarities of the course of pregnancy in women of group II allowed to identify factors that could contribute to the increase in the frequency of C-section: increase in the average age of mothers; obesity and other somatic and gynecological pathology; fetal distress; anomalies of labor activity that are not amenable to drug correction and obstructied labor. We noticed a certain arbitrariness of different physicians' approaches to determining the indications and contraindications to these manipulations, oxytocin doses, evaluating the effectiveness and deciding on the need for C-section in case of failure of delivery or interpretation of cardiotocography.

A significant share in the overall structure of childbirth was made by primipara patients with a full-term singletone pregnancy and the cephalic presentation of the fetus, in which induction of labor or planned C-section was planned (12.5% in group I and 15.5% in group II, p. > 0.05). 22.3% of births in group I and 53.6% of births in group II ended in cesarean section either in accordance with the planned delivery or due to their unsuccessful induction (p <0.05). Multipara patients, singleton pregnancy, cephalic presentation, at ≥37 weeks, spontaneous delivery accounted for 27.4% of the total birth structure in group I and 25.5% in group II (p> 0.005). 1.4% of women in group I and 3.9% in group II gave birth by caesarean section due to emergency indications (p <0.05), which is probably due to problems in complying with the protocols of preterm rupture of amniotic membranes, induction of labour and physicians' skills to evaluate the results of cardiotocography, etc. Multipara patients with singleton pregnancies, cephalic presentation of the fetus at ≥37 weeks, in which induction of labor or elective caesarean section was planned were 9.4% in group I and 71% in group II (p> 0.05). 10.0% of births in group I and 31.0% of births in group II ended with a C-section either in accordance with the planned delivery, or due to their unsuccessful induction (p <0.05). The main contingent of pregnant women who were scheduled to give birth or planned C-section, regardless of whether they were primi- or multipara, were pregnant women with diabetes mellitus,

Table I. Distribution of the frequency of childbirth and cesarean section in the first and second groups.

Groups of women according to the Robson qualification system		The number of C-sections in the group / total number of births in the group		The relative size of the group from the total number of births,%		Frequency of C-section relative to group size,%		Frequency of C-section in relation to all genera,%		Frequency of C-section in relation to all C-section,%	
		I	II	I	II	I	II	I	II	I	II
1	Newborn women, singleton pregnancy, main presentation, ≥37 weeks, spontaneous delivery	159/5406	919/5476	28,0	29,8	2,9	16,8	0,8	5,0	4,5	15,6
2	Newborn women, singleton pregnancy, main presentation, ≥37 weeks A. Induced childbirth B. C-section before childbirth	538/2413	1199/2849	12,5	15,5	22,3	53,6	2,8	8,3	15,2	20,3
3	Reborn, singleton pregnancy, main presentation, ≥37 weeks, spontaneous delivery	74/5290	183/4685	27,4	25,5	1,4	3,9	0,4	1,0	2,1	3,1
4	Reborn, singleton pregnancy, main presentation, ≥37 weeks A. Induced childbirth B. C-section before childbirth	181/1816	405/1305	9,4	7,1	10,0	31,0	0,9	2,2	5,1	6,9
5	Previous C-section, singleton pregnancy, main presentation, ≥37 weeks *	1878/2433	1965/2040	12,6	11,1	77,2	96,3	9,7	10,7	52,8	33,4
6	All newborns, pelvic presentation *	320/637	341/400	3,3	2,5	50,2	85,3	1,7	1,9	9,0	5,9
7	All reborn, pelvic presentation (including previous C-section) *	117/309	203/276	1,6	1,5	38,0	73,5	0,6	1,1	3,3	3,4
8	All multiple pregnancies (including previous C-section) *	160/367	333/404	1,9	2,2	44,0	82,5	0,8	1,8	4,5	5,6
9	All abnormal presentation (except pelvic, including previous C-section) *	37/37	55/55	0,2	0,3	100	100	0,2	0,3	1,0	0,9
10	All singleton pregnancies, main presentation, ≤36 weeks *	87/599	294/827	3,1	4,5	14,5	35,5	0,5	1,6	2,5	4,9

* this category includes: a. spontaneous childbirth, b. induced childbirth, c. C-section before childbirth

including gestational diabetes; hypertensive disorders; intrauterine growth retardation, as well as other high-risk conditions that required delivery after full-term pregnancy. In our opinion, the increase in the share of C-section in group II is due to problems in the implementation of labor protocols, skills to assess the maturity of the cervix according to the Bishop scale, cardiotocography data and more. Analysis of C-section incidence in these groups should be performed continuously together with the assessment and review of protocols for complications that require planned delivery or labour induction.

The main contribution to the structure of cesarean section is made by women with a history of C-section (every 10th woman in the sample), with a singleton pregnancy, cephalic presentation of the fetus at ≥37 weeks (12.6% in group I and 11.1% in group II group, $p > 0.05$). 77.2% of women of group I and 96.3% of women of group II ($p < 0.05$) gave birth by caesarean section. The incidence of CS in relation to all surgical interventions in group I was 52.8%, and in group II – 33.4% ($p < 0.05$). We analyzed the type of delivery with one scar on the uterus and found that 32.8% of women in group I gave birth through the

natural birth canal, while in group II such women were only 6.2% (p <0.05), which, in our opinion, may be due to active implementation since 2011 in practice of obstetric protocol on vaginal delivery after C-section and the gradual loss of obstetricians practical skills in managing delivery of women with a scar on uterus, which requires sufficient diagnostic capabilities and highly qualified doctors from the medical institution. Increasing the proportion of vaginal births in women with uterine scar is possible through careful selection of patients taking into account the state of the lower segment, indications for previous C-section surgery, age, estimated fetal weight, body mass index, etc. Thus, approaches to the delivery of women with a scar on the uterus after a single caesarean section are discussed, but everyone agrees that the main direction in the prevention of C-section is the prevention of the first surgery.

One of the indications for C-section is a disagreement of patient from vaginal delivery in case of breeh presentation. Pregnant women recently use this right actively that doesn't allow obstetricians and gynecologists choose the tactics of vagiinal delivery in case of breech presenttion even in case of presence of conditions for natural delivery, thus the dynamics of this index is explained by medical and legal causes. All primipara patients in breech presentation made up in the overall structure of delivery 3.3% in I group and 2.5% in II group (p>0,005). 50,2% of deliveries in I group and 85,3% in II group were conducted my means of C-section (p<0,05). All multipara patients, in breech presentation (including previous C-section) made up 1.6% in the overall structure of I group and 1.5% in II group (p> 0,05). 38,0% deliveries in I group and 73.5% of deliveries in II group were conducted by means of Cesarean section (p<0,05). Number patients in groups with breech presentation can be decreased by exterenal cephalic version and by transfering patients to groups with cephalic presentation, where much higher probability of successful outcome of labour by vaginal delivery is observed. It's also, in our opinion, may be some reserve of decresing the incidence of abdominal deliveries.

All multiple pregnancies (inclulding previous C-section) made up 44.0% ni I group and 82.5% in II group in overall structure (p <0,05).

Of course, for modern maternal hospitals 100% C-sections in case of abnormal presentations (excluding breech, including previous CS) is a standart of providing health care for partutient. In structure of all deliveries in both groups of these women it was 0.2% relatively.

All singletone pregnancies with cephalic presentaion in gestational term of ≤36 weeks made up 3.1% in I group and 4.5% in II group (p>0,05). Operative delivery was conducted in 14.5% of women in of I group and in 35.5% of patients of II group (p<0,05), that is first of all due to modern resources of neonatal health care.

High incidence of C-section in group of patients with preterm deliveries, breech presentation , multiple pregnancies or abnormal presentations justified by modern obstetric approaches and does not significantly affect the overall frequency of cesarean section due to the small number of patients of these groups (total 10.1% in general structure, in I group with incidence of CS concerning CS 20.3% in all operative intervensions – 20.3%, in II group relatively 11.0% and 20.7% (p>0,05). Though, it must be remembered that in pretern neonates the incidence of morbidity and mortality is much higher. It is possible to decrease the incidence of CS in these patients, but not always expedient, due to extra increase of incidence of fetal and maternal complication risks in case of vaginal delivery especially in case of presence of extra risks. Natural delivery in these patients requires extra technical measures, that are not always justifies and available in practical medicine.

The main reserve in order to decrease the incidence of CS are primi- and miltipara patients with at term pregnancy, cephalic presentation, proportion of which is in the general structure of l;abour in I group is 77.3% total, the incidence of CS relatively to all surgeries 27.2%, in II group 77.9% and 45.9% relatively (p<0,05).

In majority of cases C-section was conducted in patients due to complications of labour or new data of delivery compication risks. Quite frequent indication for and urgent CS in these patients were abnormalities of labour activity or fetal distress. This contingent of women requires special attention. On the one hand, it is a reserve for decreasing the incidence of CS, on the other hand – in some cases CS is done too late, that cases deplesion of parturient, total depression of uterine contractile activity with absence of oxytocin sensivity and severe hypoxic-ischemic complications of fetus. We consider, this is a real contingent to work with in order to improve quality of maternal health case and for self-realization of a specialist

DISSCUSSION

The research topic is relevant and has a certain scientific novelty. The set goal was fully achieved and appropriate conclusions were drawn. The results of the work are reliable and original. Factors that objectively affect the frequency of cesarean sections remain undefined [1]. The question of the role of cesarean section in reducing perinatal morbidity and mortality remains unresolved [2]. In addition, we agree with the opinion of many authors that today it is practically impossible to statistically determine and analyze the reasons for the increase of incidence of cesarean sections [3, 4]. Nevertheless, we are sure that the main direction in the prevention of cesarean section is the prevention of the first surgery. Further research will be devoted to ways of reducing the rate of caesarean sections in Transcarpathian region.

CONCLUSIONS

The main reserve for reducing the incidence of cesarean section is the first and second birth of women with full-term singleton pregnancy and the cephalic presentation of the fetus. The way to reduce the frequency of cesarean sections is to plan the optimal tactics of childbirth in these women based on the identification of risk factors

and determine the contingent of women in whom a set of preventive and curative measures is appropriate. The reserve for reducing the frequency of cesarean sections is the standardization of medical care in obstetrics, as well as the social and legal protection of obstetricians and gynecologists.

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Conflict of interest:

The Authors declare no conflict of interest.

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