УДК 618.5-089.888.61
DOI: https://doi.org/10.17816/JOWD119829

Эволюция взглядов на оперативное родоразрешение

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В статье прослежена история оперативного акушерства до настоящего времени. Обсуждены проблемы высокой частоты кесарева сечения и ее влияния на перинатальную смертность, а также репродуктивное здоровье женского населения, психическое здоровье будущего поколения (детей, извлеченных оперативным путем), квалификация акушеров-гинекологов. В статье отмечено отсутствие прямой корреляции между частотой кесарева сечения и показателями перинатальной смертности, так как в структуре последней основное место занимает антенатальная гибель плода, не зависящая от метода родоразрешения.

Ключевые слова: кесарево сечение; перинатальная смертность; акушерский профессионализм; осложнения кесарева сечения; акушерские щипцы; вакуум-экстракция.

Как цитировать:
Айламазян Э.К., Кузьминых Т.У. Эволюция взглядов на оперативное родоразрешение // Журнал акушерства и женских болезней. 2022. Т. 71. № 6. С. 97–105. DOI: https://doi.org/10.17816/JOWD119829

Рукопись получена: 01.12.2022 **Рукопись одобрена:** 20.12.2022 **Опубликована:** 30.12.2022

DOI: https://doi.org/10.17816/JOWD119829

Evolution of views on operative delivery

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This article traces the historical path of operative obstetrics up to the present time. The issues of the high frequency of cesarean section, its impact on perinatal mortality, reproductive health of the female population, mental health of the future generation (children by operation), and qualification of obstetricians and gynecologists are raised. The authors point out that there is no direct correlation between the frequency of cesarean section and perinatal mortality rates, since antenatal fetal death dominates its structure, which does not depend on the method of delivery.

Keywords: caesarean section; perinatal mortality; obstetric professionalism; complications of cesarean section; obstetric forceps; vacuum extraction.

To cite this article:
Ailamazyan EK, Kuzminykh TU. Evolution of views on operative delivery. *Journal of Obstetrics and Women's Diseases.* 2022;71(6):97–105. DOI: https://doi.org/10.17816/JOWD119829

Received: 01.12.2022 **Accepted:** 20.12.2022 **Published:** 30.12.2022

Save a mother to her child and a child to its mother
(a motto of the Congress of Obstetricians and Gynecologists of the Russian Federation, 1919)

Given the epidemic increase in the frequency of cesarean sections in modern obstetrics, this surgical intervention should be considered as a purely medical and social phenomenon, and its positive or negative impact on the existence of the modern population remains to be assessed. Cesarean section is the most common operation in obstetrics and surgery worldwide, accounting for 12%–15% of all surgical interventions.

Over the past 30 years, obstetrics has changed and become more aggressive while changing the mentality of obstetricians and gynecologists. This situation has raised a number of concerns for the obstetric society, the main one being the role and position of the cesarean section in modern obstetrics. Currently, operative delivery is an integral part of obstetric practice, and an increase in the frequency of such interventions has been observed worldwide. In Western Europe, the number of operative vaginal deliveries (fetal vacuum extractions and obstetric forceps) increases with an increase in the frequency of cesarean sections. However, most obstetricians in Russia associate operative deliveries only with cesarean section.

The introduction of methods of operative obstetrics and gynecological surgery in clinical practice in Russia is inextricably linked with the name of A.Y. Krassovsky, the founder of scientific obstetrics and gynecology [1–3].

In 1889–1895, the incidence of obstetrical forceps in the Nadezhdinsky Maternity Home (St. Petersburg) was 3%–4%, whereas that of cesarean sections was 0.02%–0.09%, with a total of up to 4000 deliveries per year (Fig. 1) [4–7].

A.Y. Krassovsky formulated conditions, indications, and contraindications for obstetrical forceps and cesarean sections in the 19th century [8–10].

The increase in the number of cesarean sections followed the widespread introduction of sulfonamide and antibacterial drugs in clinical practice. However, even in the 1950s and 1960s, attitudes toward abdominal delivery remained highly restrained owing to the large number of serious complications. Thus, the frequency of cesarean sections averaged only 1% in the Union of Soviet Socialist Republics (USSR) from 1940 to 1960. This occurrence was caused by historically established conservative traditions inherent in obstetrics in general. During the same period, the cesarean section rate was 3.49% in the United States, 3.17% in the German Democratic Republic, 2.83% in France, 2.76% in China, 2.36% in Spain, 2.94% in Switzerland, 4.37% in Italy, and 4.15% in Poland (Fig. 2).

The emergence of a new medical discipline — perinatology — and the new legal status of the fetus as an equal patient led to more frequent decisions on operative delivery in the interests of the fetus [11]. The dramatic increase in the frequency of cesarean sections dates back to the 1980s. Thus, the incidence of cesarean sections increased 3–4 times in all countries worldwide by the mid-1980s, reaching 3% in the USSR (Fig. 3), 14.5% in Europe, 18.7% in Canada, and 20.4% in the United States [12].

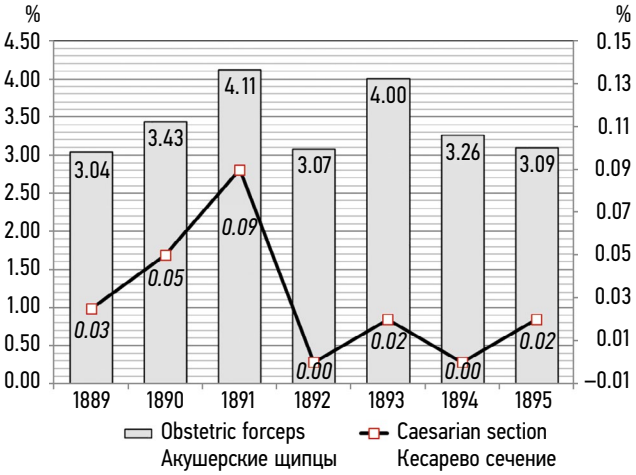

Fig. 1. The frequency of caesarean section and obstetric forceps (data from the St. Petersburg obstetric institution, 1889–1895)

Рис. 1. Частота кесарева сечения и наложения акушерских щипцов (данные Санкт-Петербургского родовспомогательного учреждения, 1889–1895 гг.)

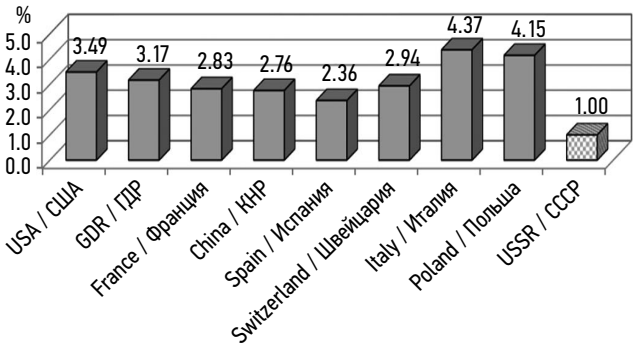

Fig. 2. The frequency of caesarean sections (1940–1960)

Рис. 2. Частота кесарева сечения (1940–1960 гг.)

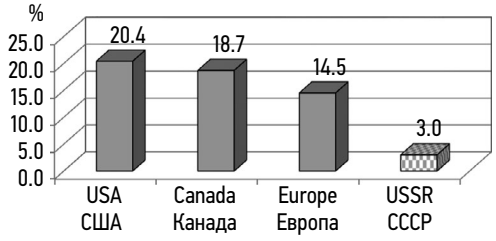

Fig. 3. The frequency of caesarean section (mid-1980s)

Рис. 3. Частота кесарева сечения (середина 1980-х годов)

DOI: https://doi.org/10.17816/JOWD119829

Currently, the frequency of cesarean sections in the Russian Federation, which reached 30.4% in 2021, is comparable to that in Western Europe, Asia, and the United States [13]. This condition was primarily attributable to the increased number of primiparous women of older age and pregnant women with severe extragenital pathologies who fulfilled their reproductive function through modern advances in various areas of medicine and reproductive technologies [14]. In addition, a large number of surgeries were performed for fetal indications based on the interpretation of data on the functional intrauterine state of the fetus after Dopplerometry and cardiotocography during pregnancy and labor. However, the visual assessment of examination data frequently unreasonably determined indications for operative delivery.

In 2022, the world's population reached 8 billion. In the Russian Federation, the mortality rate currently exceeds the birth rate, with the total fertility rate being 1.5 [13]. The demographic crisis had led to significant structural changes in families and a decreased number of children. Consequently, the responsibility for the life of each newborn has increased sharply regardless of transcendent factors. One of the evident risks associated with natural childbirth from a perinatal perspective is the expansion of indications for cesarean section and thereby an increase in the frequency of such interventions. However, any doubts about successful birth outcomes have been interpreted in favor of cesarean section.

Currently, ~160 indications are recorded for cesarean sections. Advocates of abdominal delivery argue for a reduction in perinatal mortality. However, these claims cannot be accepted while not being true.

Statistics show that the incidence in cesarean sections has almost quadrupled in 30 years, and perinatal mortality has decreased by 2.5 times (Figs. 4 and 5, respectively). Meanwhile, newborn morbidity has increased year by year. The values reached 373.7, 383.5, 385.7, 575.2, and 545.0 in 2013, 2014, 2015, 2016, and 2017, respectively, per 1000 live births [13]. Moreover, antenatal mortality, which is 4–5 times higher compared with intrapartum mortality, dominates in the structure of perinatal mortality and is independent of the method of delivery. A total of 316 cases of antenatal deaths, 29 cases of intrapartum deaths, and 25 cases of early neonatal fetal deaths were reported in St. Petersburg in 2021. Consequently, the antenatal mortality rate was six times higher compared with that of intrapartum and early neonatal mortality. Logic and statistics confirmed the need to focus on the gestational period.

The increase in the frequency of cesarean sections affects the qualifications of obstetricians and gynecologists. This condition fully applies to the knowledge of obstetricians regarding the fundamental features of the biomechanism of labor, assessment of the degree of readiness for labor, and intrapartum state of the fetus. Statistics have shown that among the numerous indications for cesarean section in institutions of various levels, inability to correct abnormal uterine contractions and fetal intrauterine hypoxia dominates. The interdependent relationship between the clinical factors of obstetrical abnormalities and impaired fetal function is regulated empirically using a standard set of medications, which frequently leads to polypragmasy and complicates the initially difficult obstetrical situation.

Labor induction is ineffective in some cases and leads to impaired contractile activity of the myometrium, birth trauma, and increased perinatal morbidity and mortality. Therefore, despite the very limited range of uterotonic agents

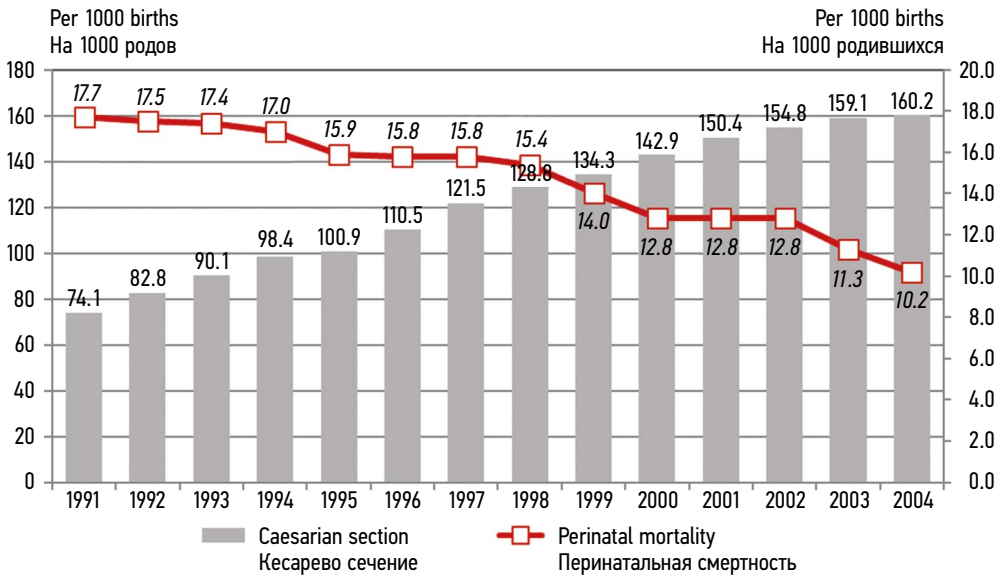

Fig. 4. The frequency of caesarean section and perinatal mortality in the Russian Federation (1991–2004)
Рис. 4. Частота кесарева сечения и перинатальная смертность в Российской Федерации (1991–2004)

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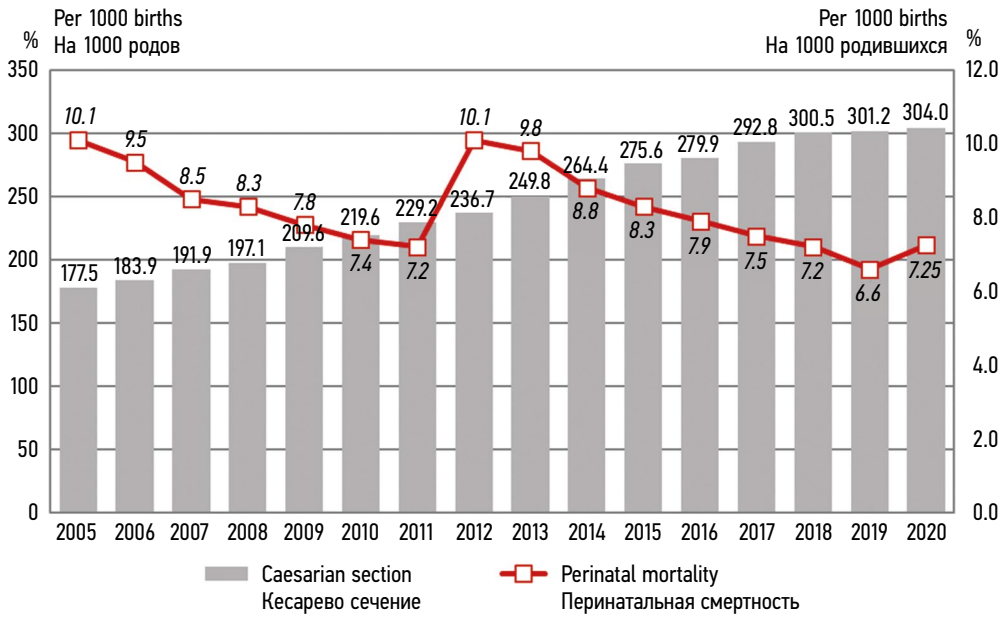

Fig. 5. The frequency of caesarean section and perinatal mortality in the Russian Federation (2005–2020)
Рис. 5. Частота кесарева сечения и перинатальная смертность в Российской Федерация (2005–2020)

(including oxytocin), the best option is to create conditions for the development of spontaneous labor. The degree of cervical maturity, readiness of the lower segment, and sensitivity of the myometrium to contractile agents are important for the onset of labor and its proper regulation together with the general preparation of a pregnant woman for labor. Cervical maturity is now undeniable in the tactics of labor management, especially in labor induction. Comprehensive, timely, and adequate preparation for labor with a complicated course of pregnancy, especially in the presence of extragenital pathologies, promotes cervix maturation, which creates favorable conditions for labor development or, if it is caused by the obstetric situation, for labor induction. The use of various (drug and nondrug) methods to prepare pregnant women for labor reduces the likelihood of labor abnormalities and fetal hypoxia and accordingly decreases the number of operative deliveries. Currently, among the tactical solutions for decreasing the incidence of operative delivery, the most important ones comprise pregnancy planning, skilled management of pregnancy in outpatient settings with regard to individual characteristics of patients, early diagnosis and timely correction of pregnancy complications, and psychological and preventive preparation for childbirth to achieve a high level of labor dominance by the time of delivery.

The optimal frequency of cesarean sections, according to the World Health Organization experts, is 15% of the total number of births. We believe that with well-organized perinatal care and fully functioning perinatal centers, the frequency of abdominal deliveries will differ significantly among obstetric hospitals, with the numbers reaching 10%–12% in level II obstetric facilities and 30%–35% in perinatal centers. In this case, the cumulative cesarean section rate in a large metropolitan area or region will be 15%–17%, which should be considered as the optimal value to ensure effective prevention of perinatal losses.

Numerous obstetric and perinatal forums currently feature the opinion of renowned experts that classical obstetrics has "fallen into oblivion" since it has come into conflict with perinatal obstetrics and is based on the unconditional priority of the mother and secondary interests of the fetus and the newborn. This opinion may be disregarded. Early in the 20th century, Professor N.N. Phenomenov highlighted in his book *Operative Obstetrics* the position of the Society of Obstetricians and Gynecologists of Russia on the equality of the rights of the mother and the fetus [15]. In 1919, when Russia was experiencing a wave of congresses in various areas of medicine, the Congress of Obstetricians and Gynecologists was organized under the humanistic motto, "Save the child's mother and the mother's child."

No guidelines or recommendations have been established for prioritizing the mother and ignoring the interests of the fetus. The predominance of indications for cesarean section on the part of the mother is not owing to neglect of the interests of the fetus but to the practical absence of diagnostic equipment, which will allow for an objective assessment of the intrauterine functional state of the fetus and for determining further actions. Ultrasound and cardiotocography devices appeared in Russian hospitals only by the end of the 1980s.

The harmlessness of cesarean sections is a myth, which is very difficult to dispel because everything is done to ensure

that the components of this surgery comply with the principle of doing no harm to both the mother and the child. Each surgical intervention may lead to serious complications in the early postoperative period (bleeding, pulmonary embolism, and sepsis) and subsequent pregnancy (scar failure, placenta ingrowth, adhesions in the abdominal cavity, and other diseases of the operated uterus) [14]. Cesarean section, as any surgical intervention, should be considered an extreme situation with iatrogenic danger to the health of the mother and fetus and, most importantly, to the quality of the subsequent life of the child.

In relation to transpersonal psychology, numerous studies on the presence of perinatal memory in humans have appeared recently. The famous psychiatrist S. Grof hypothesized that functional structures organized in the perinatal period — the four perinatal matrices — play a crucial role in the formation of human mental and consciousness peculiarities [16]. The first forms at the end of pregnancy, the second at the beginning of labor and intensification of contractions, the third in the expulsion period, and the fourth at the time of birth. Each matrix is characterized by peculiarities of mental and somatic reactions that are realized within a person's life. By skipping the natural childbirth route, i.e., the third and fourth matrices, the newborn is deprived of the benefits of spontaneous childbirth. Children who are extracted by cesarean section have so-called perinatal psychotrauma due to the unexpectedness and unpreparedness of the child for the transition to extrauterine existence. By replacing the physiological process of childbirth, the obstetrician causes irreparable trauma to the mother, completely depriving her of the opportunity to consciously and actively experience the most important stage of pregnancy, i.e., childbirth, whereas the child is prevented from attaining triumphant gradual physiological adaptation to extrauterine conditions, which complicates the formation of psyche, consciousness, and other life-support systems with all the ensuing consequences [17]. For this reason, experienced obstetricians (in the absence of fetal hypoxia) restrain the rapid extraction of the newborn when performing cesarean section, which to some extent reconstructs the formation of the fourth matrix and contributes to the activation of the respiratory system through reticular formation.

The global increase in abdominal deliveries has raised serious concerns about the possible complete substitution of natural childbirth. The low frequency of operative vaginal deliveries in our country is associated with the opinion of the high frequency of trauma to both the mother and the fetus. Studies conducted by Russian authors using modern techniques have shown the safety of the use of obstetric forceps for the anatomical and functional state of the pelvic floor muscles [18]. An important factor in decreasing vaginal surgeries is the qualification of doctors who lack expertise in the operation technique. In Russia, the application of obstetric forceps is minimized. Over the past 15 years, a change in priorities has occurred among the methods of operative delivery through the natural birth canal [19]. The frequency of fetal vacuum extraction has increased by 20 times and that of obstetric forceps has decreased by 4 times (Figs. 6 and 7, respectively). With the appearance of vacuum extraction machines equipped with plastic cups and a hand device for creating vacuum and traction, the "second birth" of the operation has been observed in the last quarter of the 20th century, which surpassed obstetric forceps in terms of popularity in the 21st century and took the leading place among the methods of operative delivery through the natural birth canal.

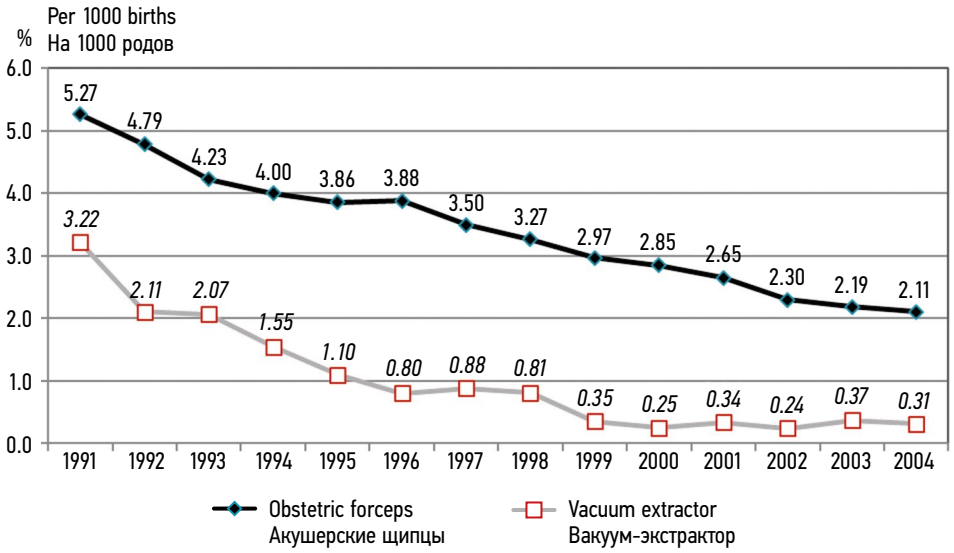

Fig. 6. The frequency of vaginal instrumental delivery in the Russian Federation (1991–2004)

Рис. 6. Частота влагалищных инструментальных родоразрешений в Российской Федерации (1991–2004)

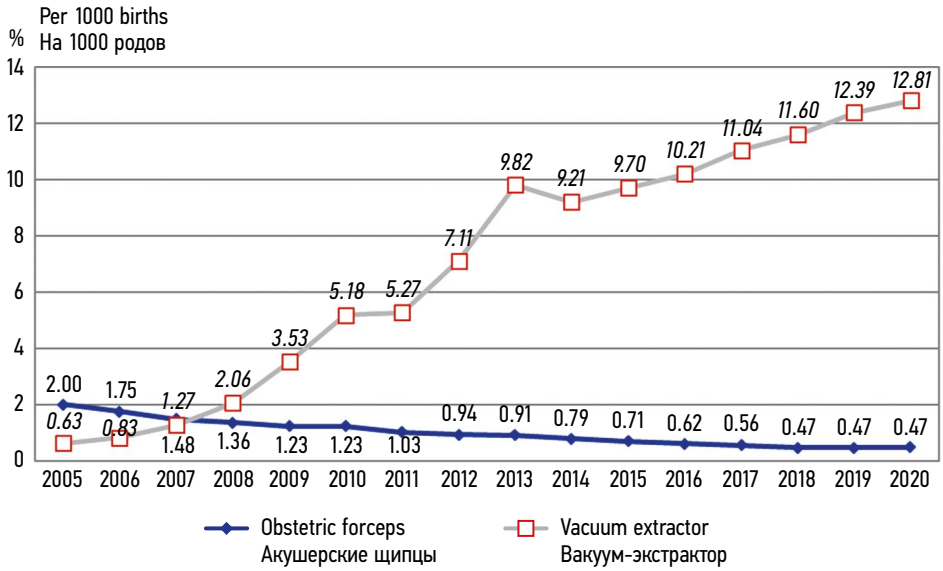

Fig. 7. The frequency of vaginal instrumental delivery in the Russian Federation (2005–2020)
Рис. 7. Частота влагалищных инструментальных родоразрешений в Российской Федерации (2005–2020)

Evidently, excessive enthusiasm for cesarean section damages general medical and special erudition and reduces the practical skills of obstetricians and gynecologists. While giving credit to the perinatal direction and the place of cesarean section in modern obstetrics, the reserves of its reduction — the planned use of obstetric forceps and vacuum extraction — should be considered.

The conclusions of allied specialists, dictating many indications for any extragenital disease, must be treated critically. Currently, the topic of performing cesarean section upon a woman's request is widely discussed. Formally, the patient may insist on a surgery "of her own free will" as it does not contradict Russian law. However, all clinical guidelines in our country do not recommend abdominal delivery upon a woman's request alone. In our opinion, despite the approaches to this problem and numerous arguments of the proponents of the cesarean section, such a procedure is not a cosmetic operation and must be performed under strict indications, that is, only in the interests of the health of the mother and the newborn. The responsibility for the safe outcome of pregnancy and childbirth in any case lies entirely with the obstetrician and gynecologist.

The fundamental principles of classical obstetrics are based on the notion that human pregnancy and childbirth are physiological and evolutionary factors adapted to the basic needs of life in the human population. Not without reason, the concept of "classical" in the public consciousness for centuries means "eternal and immutable."

The modern perinatal focus of obstetrics defines the strategic goal of improving the outcomes of pregnancy and childbirth for the mother and the fetus. Obstetrics currently has a significant range of diagnostic and therapeutic technologies, and cesarean section should be given a proper position in this list but not as a means of solving most obstetric and perinatal problems.

ADDITIONAL INFORMATION

Funding. The study was carried out without the use of sponsorship and financial support.

Conflict of interest. The authors declare no conflict of interest.

Author contributions. *E.K. Ailamazyan* — conceived and designed the article, editing; *T.U. Kuzminykh* — conceived and designed the article, collection and processing of the material, article writing.

All authors made a significant contribution to the study and preparation of the article, read and approved the final version before its publication.

ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ

Источник финансирования. Исследование выполнено без использования спонсорских средств и финансового обеспечения.

Конфликт интересов. Авторы заявляют об отсутствии конфликта интересов.

Вклад авторов. *Э.К. Айламазян* — концепция и дизайн статьи, редактирование; *Т.У. Кузьминых* — концепция и дизайн статьи, сбор и обработка материала, написание текста.

Все авторы внесли существенный вклад в проведение исследования и подготовку статьи, прочли и одобрили финальную версию перед публикацией.

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