



Dystocia as a cause of untimely cesarean section

Distocija kao uzrok nepravovremenog carskog reza

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Abstract

Background/Aim. One of the most frequent indications for cesarean section is dystocia. It is impossible to predict, difficult to identify and coincident with the rapid expiry of the expected time, so it is important to point out some mistakes in expecting vaginal delivery. The aim of this study was to examine the frequency and the length of dystocia-related cesarean delivery, as well as the vitality of the newborn immediately after birth. **Methods.** A prospective 3-year study was conducted including a total number of 6,470 deliveries regardless of whether they were completed using cesarean section after an unsuccessful attempt of spontaneous vaginal delivery or not. The Apgar score, a proved useful tool for the assessment of the vitality of newborn children in the first minute, was used. **Results.** On the basis of the established indications, 653 (10.10%) of deliveries were completed using cesarean section. Dystocia was the third most common indication for cesarean section (16.38%). Deliveries in which dystocia was established as a diagnosis lasted much longer ($p = 0.030$) which resulted in weaker vitality of newborn children ($p = 0.000$) compared to the deliveries ended by spontaneous vaginal delivery. **Conclusion.** This study shows that deliveries caused by dystocia last much longer and newborn children are of weaker vitality compared to other deliveries caused not by dystocia. Decisions concerning cesarean section must be made in a timely fashion.

Key words:

dystocia; cesarean section; risk assessment; infant newborn; apgar score.

Apstrakt

Uvod/Cilj. Distocija je jedna od najčešćih indikacija za carski rez. Distociju je nemoguće predvideti, teško se identifikuje, a istovremeno, očekivano vreme za porođaj brzo ističe, zbog čega je važno da se ukaže na neke propuste u očekivanom vaginalnom porođaju. Cilj ovog rada bio je da se utvrdi učestalost distocije kao indikacije za carski rez i trajanje takvog carskog reza, kao i vitalnost novorođene dece. **Metode.** Ispitivanjem, koje je sprovedeno kao prospektivna 3-godišnja studija, obuhvaćeno je ukupno 6 470 porođaja. Istraživanjem su obuhvaćeni svi porođaji, bez obzira na to da li su bili završeni carskim rezom posle neuspešnog pokušaja spontanog vaginalnog porođaja ili su prethodno bili planirani. Vitalnost novorođenčadi merena je Apgar skorom u prvom minutu. **Rezultati.** Na osnovu ustanovljenih indikacija, 653 porođaja (10,10%) bilo je završeno carskim rezom. Među svim porođajima završenim carskim rezom, distocija je bila treća najčešća indikacija (16,38%). Porođaji koji su bili završeni carskim rezom trajali su značajno duže od spontanog vaginalnih porođaja ($p = 0,030$). Utvrđena je značajno bolja vitalnost novorođenčadi posle spontanog vaginalnog porođaja u odnosu na carski rez ($p = 0,000$). **Zaključak.** Porođaji čiji uzrok je distocija traju duže, a novorođenčad iz takvih porođaja imaju slabiju vitalnost u poređenju sa ostalom novorođenčadi. Odluka o primeni carskog reza mora biti doneta pravovremeno.

Ključne reči:

distocija; carski rez; rizik, procena; novorođenče; apgar skala.

Introduction

Dystocia is a dysfunctional delivery which in clinical practice often means delivery that does not progress as well as cephalopelvic disproportion. In a broader sense, dystocia represents fetal position disturbances (oblique and transverse

position), rotational anomalies (occipito-posterior position, fetal head high straight and fetal head down transverse position), primary uterine inertia and a series of other conditions. Dystocia is the second most common indication for cesarean section in the United States¹, United Kingdom (UK)², Sweden³ and Slovenia⁴. Abnormal uterine contractility is the

cause of functional (dynamic) dystocia. Delivery success depends on the delivery object (neonate), birth canal and delivery forces. It is clear that conditions for a normal delivery are as follows: appropriate size and shape of the pelvis as well as proper size of the child. However, good contractions at a normal frequency are also important. Proper contractions can overcome mild or borderline fetopelvic disproportion while weak contractions often lead to a prolonged delivery or even to cessation of delivery even if there is an optimal ratio between the pelvis and the fetus.

The efficacy of delivery forces and delivery progress are estimated according to: the opening of the internal orifice of the uterus and the lowering of the fetal head.

There are three types of dysfunctional deliveries, which are as follows: delivery with a prolonged latent phase, i.e., the phase lasts longer than 20 h in primipara or more than 14

Two parameters were used, which were as follows: the first-minute Apgar score and the length of delivery. The obtained data were methodologically classified and statistically processed by Bonferroni and Dunet T_3 .

Results

A total of 6,470 deliveries occurred during a 3-year study period in the Clinic of Gynecology and Obstetrics, Clinical Center Kragujevac. The total rate of operatively completed deliveries using cesarean section was 10.10%.

The most common indications for cesarean sections as well as cesarean delivery rates are shown in Table 1. Because the definition of dystocia also includes cephalopelvic disproportion, the most common indication for cesarean section is dysfunctional delivery.

Table 1
The most common indications and rates of cesarean section in the examined 3-year-period

Indication	The rate of cesarean section (%)
Total distress-birth asphyxia	19.44
Previous Cesarean section	18.52
Dystocia	16.38
Pelvic presentation	11.02
Placenta previa and placental abruption	9.80
Disproportion	9.80

h in pluripara; prolonged active delivery when dilatation in the primipara is slower than 1.2 cm/h and slower than 1.5 cm/h in the pluripara, and secondary stoppage that occurs when cervical dilatation in the active phase does not progress for more than two hours.

Dystocia, in addition to therapy, represents one of the leading indications for cesarean section⁵⁻⁹. Controversial attitudes toward the timely diagnosis and administration of therapy, as a possible genetic reason for dystocia¹⁰ are still a major problem for obstetricians, especially in the primipara. Overcoming this obstacle would require a safe means by which to decrease the number of Cesarean sections^{11,12}.

The aim of this study was to examine the frequency and duration of dystocia-related cesarean delivery, as well as the vitality of the newborn immediately after birth.

Methods

This investigation was performed as a prospective study of a population of women that had delivered babies *via* cesarean section at the Maternity Hospital of Clinical Center Kragujevac during a 3-year period. There were 6,470 deliveries in the examined period, and on the basis of the established indications 653 deliveries were completed using surgery-cesarean sections.

By analyzing the indications that caused deliveries to be completed by cesarean sections, it was determined that the most common indications were as follows: fetal distress (asphyxia), previous cesarean section, dystocia, and pelvic presentation.

The mean values of delivery length, as expressed in minutes, in deliveries completed by cesarean sections and in vaginal deliveries are shown in Figure 1.

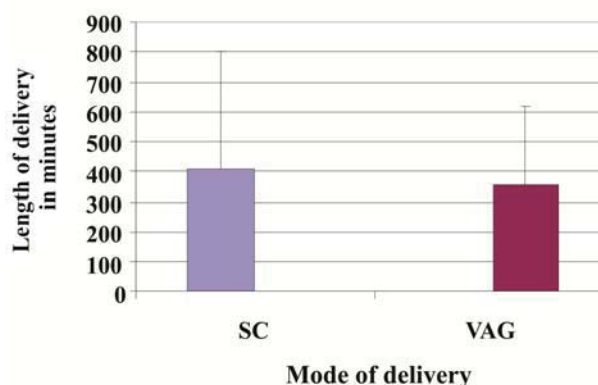


Fig. 1 – Delivery length based on the mode of delivery

CS – cesarean section; VAG – vaginal delivery

Deliveries completed by cesarean section lasted longer than spontaneous vaginal deliveries ($p = 0.030$). There was sufficient time for patients from the control group (vaginal delivery) to give birth from the beginning of a delivery to the decision to complete it operatively.

It is absurd that deliveries completed by cesarean section last longer than vaginal deliveries, which indicates the lack of timely decision-making to complete delivery operatively.

The mean values of the first-minute Apgar score in vaginal deliveries and in deliveries completed by cesarean section are shown in Figure 2.

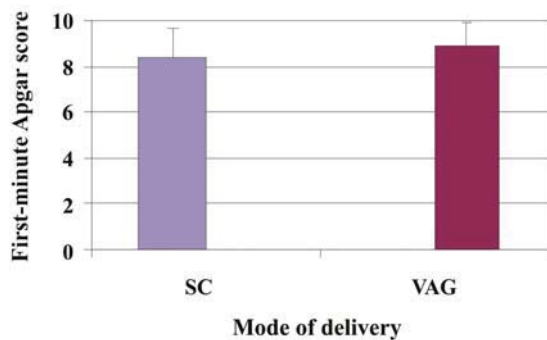


Fig. 2 – The Apgar score based on the mode of delivery
CS – cesarean section; VAG – vaginal delivery

The Apgar score as a proven useful tool for the assessment of the vitality of newborn children in the first-minute, was significantly better in vaginal deliveries ($p = 0.000$) than in newborn children from deliveries completed by cesarean section. The lack of a timely decision to complete the delivery by cesarean section may have resulted in the weaker vitality of the fetus.

The basic explanation for the results shown here, could be seen and understood best when we compare three most common indications for cesarean section: fetal distress (as-

phyxia), dystocia and pelvic presentation with vaginal delivery with head presentation, vaginal delivery with pelvic presentation and vaginal delivery after previous cesarean section.

The arithmetic means and standard deviations of delivery length expressed in minutes based on the delivery mode are shown in Table 2.

The analysis of variances showed a statistically significant difference in delivery length based on the delivery mode ($p = 0.000$) (Table 3).

Table 3 shows that delivery completed by cesarean section secondary to dystocia lasts significantly longer as compared to the other modes of delivery presented in this study. It is clear that the lack of timely recognition of dysfunctional delivery resulted in a statistically significant difference in the duration of delivery for each of the examined modes of delivery.

Table 4 shows the means and standard deviations of the Apgar scores of newborn children for the examined modes of delivery.

The analysis of variances showed that there was a statistically significant difference in the Apgar score of children based on the mode of delivery ($p = 0.003$).

Table 5 shows a highly significant difference in the Apgar score between vaginal delivery with head presentation and delivery by cesarean section due to dystocia ($p = 0.000$). The lack of timely recognition of dystocia and the significant prolongation of delivery resulted in the weaker vitality of a fetus and statistically significantly lower the Apgar score.

Table 2

Delivery length based on the mode of completion	
Indications	Length of delivery – minutes ($\bar{x} \pm SD$)
Vaginal – head presentation	341 \pm 251
Vaginal – pelvic presentation	386 \pm 295
Vaginal, after cesarean section	407 \pm 271
Cesarean section, pelvic	286 \pm 268
Cesarean section, dystocia	617 \pm 495
Cesarean section, asphyxia	298 \pm 265

Table 3

Comparison of delivery length based on the delivery mode		
Mode of delivery	Mode of delivery	(Bonferroni)
Vaginal – head presentation	CS dystocia	0.000
Vaginal – pelvic presentation	CS dystocia	0.001
Vaginal, after CS	CS dystocia	0.007
CS pelvic presentation	CS dystocia	0.000
CS asphyxia	CS dystocia	0.000

CS – cesarean section

Table 4

The Apgar score based on the mode of delivery	
Mode of delivery	Apgar score ($\bar{x} \pm SD$)
Vaginal – head presentation	9.03 \pm 0.79
Vaginal – pelvic presentation	8.41 \pm 1.20
Vaginal after CS	8.75 \pm 1.34
CS pelvic presentation	8.68 \pm 1.06
CS dystocia	8.44 \pm 1.14
CS section asphyxia	8.14 \pm 1.34

CS – cesarean section

Table 5

Comparison of the Apgar score based on the mode of delivery

Mode of delivery	Mode of delivery	(Dunnet T3)
Vaginal – head presentation	Vaginal – pelvic presentation	0.001
Vaginal – head presentation	CS dystocia	0.000
Vaginal – head presentation	CS asphyxia	0.000
CS pelvic presentation	CS asphyxia	0.027

CS – cesarean section

Discussion

The experience and ability of obstetricians to recognize dysfunctional delivery in a timely fashion are a key to solving the problem with adequate therapy, and the decision to complete the delivery using cesarean section should not be postponed. It is very difficult to determine the moment at which this decision should be made, as it is not always clear how long one should wait. Because the definition of dystocia is broad, it is impossible to obtain uniformity in decision-making regarding this condition. It is relatively easy to make the decision to do cesarean section in clear cases of cephalopelvic disproportions or dysfunction in the fetal position. The biggest problem occurs in deliveries that do not progress, such deliveries can mislead the practitioner into believing that something will eventually happen. As a result, precious time is lost, the delivery is postponed, the vitality of the newborn is lost, and at the end, money is also lost. The experience of the obstetrician in the recognition of such situations is of immense importance.

Worldwide, dystocia is the second most common indication for cesarean section based on frequency¹⁻⁴, while it was the third most common indication in this study.

The four most common indications for cesarean section in the United States include the following: previous cesarean section, dystocia, fetal distress and pelvic presentation¹. There have been certain changes in the indications for cesarean section during the last 30 years. Previous cesarean section, as an indication, is present in about 50% of pregnancies, where a previous pregnancy has also been completed using cesarean section. The number of cesarean sections due to intrapartum fetal distress has been doubled while those due to dystocia has been tripled. With respect to pelvic presentation, the number of cesarean sections has increased from 30% to 88%, and in twin pregnancies, it has increased from 13% to 47%. Cesarean section, at the mother's request, has increased

to 23%¹³. Similar results exist in most countries with small variations. In 2001, 25.10% of cesarean sections were performed in Singapore, the most common indication was dystocia (5.41%), followed by previous cesarean section and placenta previa¹⁴. Of the total number in the United States, previous cesarean sections account for 8%, dystocia for 7%, pelvic presentation for 4%, and fetal distress for 2%–3%¹⁵.

The most common indications for cesarean section in Serbia are as follows: complications during the delivery, previous cesarean section, risky pregnancy, fetopelvic disproportion and pathological fetal presentation¹⁶. At our clinic, the three most common indications are fetal distress, previous cesarean section and dystocia. The decision concerning operative completion of delivery is restrictive, thus the rate is slightly above 10% which is far from the world average.

Deliveries completed by cesarean section last longer than deliveries completed *via* spontaneous vaginal delivery, resulting in the weaker vitality of newborn children, which is known to result in the lower Apgar scores. In our study, we have similar results when we compare individual indications for cesarean section.

The difference in the price of elective cesarean section and vaginal delivery is not larger than 10%¹⁷. The most expensive delivery is the delivery that is completed by cesarean section after an unsuccessful, lengthy vaginal delivery. Unnecessary delays in decision-making regarding operative completion of delivery in deliveries that are already recognized to be pathological based on their prolonged times, make postoperative care significantly more expensive.

Conclusion

This study shows that deliveries in which dystocia has been established as a diagnosis last longer and that newborn children are of the weaker vitality when compared to children from deliveries in which there is no dystocia.

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