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# CURRENT DATA ON THE RISK OF CESAREAN SECTION ON THE NEWBORN

Maria SABA-APOSTOL[1] and Dimitrie NANU[2]

[1] PhD. Spitalul Județean de Urgență Slobozia, OG Department, Slobozia, Str. Decebal nr. 3 saba_iman78@yahoo.com
[2] Prof. Dr. Universitatea de Medicină și Farmacie „Carol Davila", Bulevardul Eroii Sanitari nr. 8, Sector 5, Bucuresti, Romania, dimitrie_nanu@yahoo.com

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This article brings up to date the latest studies on cesarean section and possible complications over time. The article summarizes some of the risks associated with cesarean section for the newborn such as those related to immune diseases, asthma, anesthetic risks, risks related to the mother-child relationship, risks of injuring the newborn, risk of allergies and obesity.

*Keywords:* cesarean section, newborn by cesarean section, allergy and cesarean section, asthma and cesarean section, obesity and cesarean section.

The risk to the baby is low in the case of a planned and uncomplicated cesarean section. Statistically, the risk of injury at birth, hypoxia, etc. it is even lower than for natural birth. The closer the cesarean section is to the calculated term, the better the baby is developed and the risk of problems is very low.

But this does not mean that a caesarean section is the best solution for giving birth to a baby. Newborns suffer more often from respiratory problems, the syndrome of respiratory distress. The following theory tries to explain this fact: contrary to vaginal birth, the amniotic fluid is not expelled from the lungs due to the strong pressure suffered during the passage through the canal. On the other hand, the release of stress hormones triggered by contractions and the passage through the narrow canal is a natural and positive phenomenon of birth. The presence of catecholamines stops the release of fluid into the fetus' lungs and increases the release of surfactant, which helps the baby to start breathing after birth. According to this theory, seeing the light of day through the surgically open uterus can effectively take the baby's breath away[1].

Children born by cesarean section would suffer three times more often from asthma than those born naturally[2].

On the other hand, new studies show that after a cesarean section, children may develop allergies and infectious diseases in greater numbers than those born naturally[3]. There are also indications that cesarean section increases the risk of 1. The causes of these birth-related effects have not yet been fully elucidated. cesarean section. These bacteria also play a role in the development of allergic diseases, infections and diabetes[5].

Most cesarean sections are performed under epidural anesthesia. So the mother is awake and can see her baby and take it in her arms immediately after birth. Doctors try to prevent blood pressure drops, which are common in epidural anesthesia, by proper positioning and, if necessary, medication. Indeed, a strong and especially long-lasting decrease in blood pressure also reduces the irrigation of the uterus and therefore the supply of oxygen to the baby. the necessary amount of anesthetics should be administered strictly and to prevent the newborn from suffering from or experiencing problems with adaptation to the environment[6,7].

On the other hand, a hypotrophic child may have complications as a result of a vaginal birth due to an acute lack of oxygen. In this case, a caesarean section is often indicated. Likewise, in the case of placental distress, partial detachment of the placenta and other complications that endanger the baby's oxygen supply, such as ineffective contractions, by stopping the birth[8].

When dangerous changes in cardiotocographs (CTG) are observed, the baby should be born as

soon as possible, using forceps, a suction cup or a caesarean section. Thus, if the baby is overweight (over 4.5 kg), it is more likely to suffer nerve or bone injuries (eg to the collarbone) than vaginal birth[9].

## CESAREAN SECTION, RISK FACTOR

The number of allergic diseases is increasing in many countries. At the same time, more and more children are born by cesarean section. Several studies have suggested that there may be a link here. A major Danish study has shown that a caesarean section may well be considered a risk factor for immune diseases.

Cesarean section increases the risk of asthma (by 23%), connective tissue disorders (by 11%), juvenile arthritis (10%), inflammatory bowel disease (20%), immunodeficiency (46%) and leukemia (17%). In contrast, there has been no increase in cases of type 1 diabetes, psoriasis and celiac disease[10].

Newborn's contact with the vaginal environment (vaginal seeding): during a low-birth birth, newborns absorb certain maternal bacteria, beneficial for the development of the immune system. This is not the case with a cesarean section. "Vaginal Seeding" is the contact of the whole body of the newborn, including the eyes and mouth, with bacteria from the mother's vagina. After the first positive results, long-term studies are confirming the vaginal seeding effect. But skeptics are critical: the risk of contamination of the child with germs such as streptococci, herpes viruses or *Chlamydia* should not be assumed, for an effect that has not been scientifically proven[11].

In fact, a child born vaginally is subjected for several hours to contractions which are a kind of energetic massage which, it seems, have the role of helping to mature the lungs. Then, the passage into the pelvis and into the mother's vagina will "dry" the baby's lungs, which until now were filled with amniotic fluid, and will allow him to take his first breath. These are the physical mechanisms involved at the beginning of air life[12].

## RISKS OF RESPIRATORY DISTRESS (TRD) AND MECONIUM INHALATION

Transient respiratory distress (TRD) is the difficulty of the baby to evacuate the fluid that was in his lungs after birth, during the intrauterine life.

This complication is usually treated with rapid oxygen therapy.

This disorder is more common in scheduled cesarean sections for two reasons: the baby's lungs are not compressed by the passage through the mother's pelvis and vagina (which facilitates the expulsion of the fluid they contain) and if the cesarean section is performed outside of labor, the baby does not benefit from the hormonal mechanisms that facilitate pulmonary maturation. If, on the other hand, the fluid is stained (meconium, for example due to fetal distress), there is a risk that the newborn will breathe meconium, which may, in some cases, justify a stay in neonatology[13].

Respiratory distress occurs in 35.5 per thousand deliveries by cesarean section outside of labor compared to 12.2 per thousand cesarean deliveries during labor and only 5.3 per thousand births naturally[14].

The earlier the caesarean section is performed, the higher the risk: for example, two publications have a 2.4 times higher risk for one for a caesarean section between 38 week of amenorrhea(WA) + 0 and 38 WA + 6 than between 39 WA + 0 and 39 WA + 6 and for the other a risk 12.2 times higher between 37 WA + 0 and 38 WA + 6 than after 39 WA + 0. After 39 WA the risk remains multiplied by 1.9 between a planned cesarean section and birth naturally[15,16].

These publications agree with the recommendation to perform planned caesareans only after 39 WA + 0[15,16].

## USE OF ANESTHESIA PRODUCTS

When the mother is anesthetized, the baby will receive a small part of the anesthesia. This can affect the tone and ability to suck immediately after birth.

This statement is especially true in the case of long labor under the epidural (the product has time to spread in the blood) but it is less true in the case of a caesarean section without a previous epidural: indeed the baby is removed from the womb very quickly receives only a minimal dose of the substance.

However, if the mother is breastfeeding and the epidural catheter remains attached or the mother is undergoing morphine infusion, the baby will receive some of the anesthetic[17].

## MORE INTENSIVE CARE AFTER BIRTH

In the case of a natural birth, the umbilical cord is usually cut, which has not yet stopped beating.

Some studies point to the need to cut the umbilical cord later. This is possible in the case of a natural birth but more difficult in the case of a cesarean section.

Newborn aspiration is generally useless if the birth was natural but is useful, quite often, in the case of cesarean section (but in this case you have to wait a few minutes to see if the newborn breathes well). Mothers should not hesitate to talk to the gynecologist, if necessary, designing a birth plan in detail[18].

## MOTHER-CHILD OR FATHER-CHILD CONNECTION

It is generally accepted more and more that in the case of natural birth, it should be facilitated to establish a mother-child bond by leaving the newborn in contact with the mother. In the case of a caesarean section, this has not yet become routine. For example, the immediate presentation of the mother's child is not done systematically. Or, the newborn is often placed in an incubator to keep him warm, after a care battery that, according to some, may be delayed. Thus, direct contact with his mother's skin (under a survival blanket while the medical team closes the incision) or with the father would be welcome.

In fact, the newborn's first contact with his mother in the case of a cesarean section is often more difficult. The cause is especially the meeting place of a cold operating room in the best case, ie if the mother is aware.

From the testimonies, it happened that the father present at the caesarean section could himself cut the umbilical cord, the baby being removed with the placenta; however, this is not a common practice.

If the child's reception is altered by circumstances, in the case of a cesarean section, the real, long-term impact is difficult to assess because:

- on the one hand, the mother-child relationship can also be disrupted in the event of a natural birth, due to hospital protocols, such as placing the child in the incubator.
- on the other hand, the child's personality is built over several years: the mother's style, social and family environment, will also contribute to this construction, which complicates the assessment of the impact of the isolated cesarean factor[19].

There is virtually no research on the consequences of a cesarean delivery on an adult's personality or behavior.

## RISKS OF INJURY OF THE CHILD

It happens that the incision is too deep and touches the child who may have a cut on the body. This complication can occur in 1% of cesarean sections:

- we can talk about a rate of 0.7% cuts, as well as other types of wounds (fractures for example) with values less than 1 in 1000. This study notes that the transverse segmental incision of the uterus causes the fewest accidents and emphasizes that the degree Caesarean section also has an influence on the level of cuts.
- we can also talk about 3% light cuts, and 0.1% medium or severe cuts, and these are depending on the degree of urgency of the cesarean section.
- it is found that these cuts are more common when the child is not positioned cephalic. Recent techniques of cesarean section in which the uterus is not incised, preferring to tear the tissue by hand, undoubtedly limit this problem[20].

We repeat that these cases are rare, but we must remember that a cesarean section is never "absolutely without any risk to the child."

## LONG TERM: ASTHMA RISK

The risk of asthma increases with a cesarean section. The exact over-risk seems difficult to assess because the publications give quite variable values. We cite for example:

- A meta-analysis of 23 studies gives a 1.2-fold risk of asthma in children born by cesarean section.
- Diagnosis of asthma at 8 years, risk 1.79 times in case of cesarean section, the over-risk being even more important 2.91, if both parents are allergic.

However, it seems that this is mainly an association between respiratory distress and the risk of asthma: respiratory distress is more common in cesarean section, which could explain why children born by cesarean section are more frequently asthmatic. Indeed, children with a diagnosis of respiratory distress or tachypnea (whether they are born naturally or by cesarean section) are 1.7 times more likely to be hospitalized for asthma. Analyzing the characteristics of a population of preschool children diagnosed as asthmatic we find the same connection with respiratory difficulties at birth. These corroborate the conclusion that there is a lower risk of asthma for full-term babies compared to those born prematurely and who have a higher

risk in case of scheduled cesarean section (×1.59) than in case of cesarean section during labor (×1.42)[21].

## LONG TERM: RISK OF ALLERGY

The link between cesarean section and allergies seems to depend on the type of allergy:

• Allergic rhinitis: – we find a risk of 1.23 (meta-analysis on 7 studies)[22].

• Atopic dermatitis (eczema) – we do not find an over-risk related to cesarean section (meta-analysis on 6 studies)[22].

• Respiratory allergies – no caesarean section risk-finding (meta-analysis of 4 studies)[24].

• Food allergies

– we find a risk ×1.32 (meta-analysis on 6 studies), but the association is uncertain.

– we find a risk ×4 for food allergies to eggs at 2 and a half years.

– we find a risk ×2 of sensitization to food allergies

– we find a risk ×1.18 of cow's milk allergy[25].

One explanation is that in the case of a natural birth, the bacteria present in the vaginal flora (especially lactobacilli) colonize the baby's intestines, which quickly provides better protection. The intestinal flora of children born by cesarean section is not really the same as that of children born naturally. This could explain the effect on food allergies and the absence of an effect on respiratory allergies.

It should be noted that breastfeeding may help to counterbalance this effect as breastfeeding has a protective effect on the development of allergies in children under 2 years of age.

## LONG TERM: RISK OF CHILDHOOD OBESITY

Obesity values at the age of 3 are twice as high in children born by cesarean section (15.7%) compared to those born naturally (7.5%). A study in China also cites cesarean section as one of the risk factors for childhood obesity, while a study in Brazil found a value of obesity in adulthood multiplied by 1.5 in individuals born by cesarean section.

This is due to the fact that the acquisition and composition of the intestinal flora at the beginning of life differs depending on whether the baby was in contact with the maternal flora when passing through the genitals or if it was born by cesarean section which counteracted its "colonization" with maternal germs. Or, today, many studies point to the involvement of the intestinal flora in overweight. In particular, it has been shown that the intestines of obese individuals contain more firm-type bacteria and fewer bacteroids than in normal-weight individuals. We can see here a possible link between this way of giving birth and childhood obesity[26,27].

In contrast, cesarean delivery does not appear to be a risk factor for obesity in adulthood. In a study focusing on biometric data (weight, height, body mass index and abdominal circumference) of 21-year-old individuals and how they were born, no relationship could be found between the way birth weight, body mass index and abdominal circumference[28].

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