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Is The Pediatrician Attendance During Cesarean Section Necessary?

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The need for the presence of the pediatrician during cesarean section is often questioned, although he is a member of the obstetrical interdisciplinary team. The pediatrician has to be informed in advance about any expected obstetrical problems and about the indications for planned or emergency Cesarean Sections. No one can predict if a low risk pregnancy will deteriorate during labor to situation which will requires intervention, and the term "normal delivery" can be used only retrospectively. The participation of the pediatrician with the operative team adds value to the procedure and his knowledge about essential surgical steps and possible intra-operative difficulties is essential.

Keywords: Cesarean section; Pediatrician; Neonatologist; Bonding**Background**

The caesarean section rate increases constantly all over the world, mainly in pregnancies considered as low risk. In the last years many Cesarean Sections are done due to the demand of the parturient in middle and high income countries [1].

Cesarean Section should be performed only where reasonable facilities are available, a specialized nursing staff, skill surgeons, anesthesiologists and qualified neonatologists or pediatricians, and certainly in high risk pregnancies where complications might occur, such as in pregnancies diagnosed with placenta previa or accrete, where hemorrhage and consumption coagulopathy might occur [2].

Once in a while, even in low risk pregnancies undergoing Cesarean Section the newborn needs mask ventilation, intubation and eventually resuscitation. Although 2,1% babies born in

repeated Cesarean Sections and 1,6% in operations done after non-progressive deliveries, without previous fetal heart decelerations needs resuscitation, it is recommended that Cesarean Sections performed under epidurals do not need a pediatrician in the operation room [3].

The unadjusted neonatal mortality rate for cesarean deliveries is 2.4 times higher than in planned vaginal deliveries. In the most conservative model, the adjusted odds ratio for neonatal mortality is 1.69 (95% CI 1.35-2.11) for cesareans compared to vaginal deliveries [4].

Once in a while technical difficulty to extract the baby occurs, this might be due to abdominal adhesions, overweight parturient, overweight baby or too small abdominal incision. Unexpected

complications might result, such as fractures of the clavicle which happens in 0.05% of Cesarean deliveries [5]. Early diagnosis followed by immediate measurements are important.

The presence of the pediatrician in delivery of a premature baby is certainly essential. Most of the expected complications are respiratory ones, which might happen also in term deliveries. The prevalence of respiratory problems halves at each week of gestation from 34 to 38 pregnancy weeks [6].

Resuscitation is needed in 16% of fetal malposition, 30% of placental dysfunction, and in 25% of fetal distress [7]. Obviously, the presence of the pediatrician is essential in these cases.

The evaluation of Apgar scores after 1 and 5 min are measures which should optimally be evaluated by the attending pediatrician, and certainly his presence is needed for unpredicted complications, respiratory problems and eventually difficulties during the delivery of the baby, and still, different authors claims that the pediatrician does not need to be present at elective caesarean sections under regional anesthesia provided there are no foreseen additional risk factors [8], except for operations under general anesthesia where significantly higher incidence of respiratory depression occurs [9].

It seems that the need for a skilled pediatrician to attend Caesarean section is not defined and is still an unsolved question, and there are opinions that a health personnel who is familiar with basic resuscitation principles is sufficient [10]. In our opinion the presence of the pediatrician during the surgery is essential for the well-being of the newborn.

Cesarean Long-Term Effects

Long term impacts of Cesarean Section on the newborn are well known.

There is evidence that abdominal born babies show various hormonal, bacterial and immunological phenomena which might influence the newborn's physiology such as allergy or asthma. Babies born abdominally are deprived of the necessary and normal bacterial colonization by maternal vaginal and rectal flora [11]. It was shown that there is an increased long-term respiratory morbidity in children born by Cesareans [12]. There is an increased prevalence of either skin flora or potentially pathogenic microbial communities as *Klebsiella*, *Enterococcus*, and *Clostridium* in Cesarean born babies [13].

It was shown that the cognitive performance of abdominally born children were significantly lower than vaginally-born children, up to a tenth of a standard deviation in numeracy test scores at the age of 8-9, maybe due to lower rates of breastfeeding and other mechanisms such as disturbed gut microbiota [14]. It is believed that vaginal delivery contaminating the newborn with mother's microbiome and breast feeding influences the immune system and its disorders [15].

Therefore, it seems important that pediatricians should be aware of different aspects of cesarean section outcome and be involved in discussions concerning the indications, as these might influence the future well-being of the newborn.

Prerequisites for an Optimal Cesarean Section

An optimal Cesarean Section is expected to enable delivery without any additional risks. The skin incision should be wide enough to avoid mechanical difficulties when delivering the baby and the time between skin incision to delivery should be short as possible, certainly when the operation is done under general anesthesia. The blood loss should be minimal, and the operation should be done in a way that early complications such as post-operative febrile morbidity will be low, post-operative need for analgesics reduced and quick mobility possible, so that the mother will be able to take care of the newborn.

Every non-emergency Cesarean Section should be discussed in presence of the pediatrician in order to evaluate possible risk factors and when necessary to be ready with the needed equipment.

As some newborn need immediate breathing assistance, the pediatrician should advise if delayed cord clamping should be done as long as there is no gas exchange through the lungs [16].

Recently many hospitals enable the partner of the mother to attend the operation room [17]. It seems that the first assessment of the newborn in the operation room in presence of the partner will assist in optimal bonding and will prevent the separation between the parents and the newborn.

As skin to skin contact due to its benefits becomes frequent these days [18], the evaluation of the newborn by the pediatrician in the operation room will encourage it. Skin to skin contact is considered also as a quality measurement of the hospital [19].

Technical Aspects

The way to perform Cesarean Section vary from hospital to hospital and even among obstetricians working in the same department. Certainly, there is no way to compare the outcome among the different modes of operation unless the operation is standardized [20].

An evidence based standardized Cesarean Section was introduced therefore in 1994 and is now in use in all continents [21]. It is different than the traditional Pfannenstiel-Kerr Cesarean. The key points of this method ("Misgav Ladach" or "Stark Cesarean") are an abdominal cut using a modified Joel Cohen high transverse incision, higher than the Pfannenstiel, where the fascia is not attached to the abdominal muscles. The peritoneum is opened by stretching rather than by cutting. The uterus is opened in the lower segment after pushing the bladder plica down, the uterus is exteriorized after the delivery and the uterus is sutured in one continuous layer rather than in two layers. Both peritoneal

layers are left open instead of suturing them, the fascia is closed continuously, and the skin is adapted with just few sutures [22].

Using this method, the mean duration of the operation was 26.24 min compared to 39.41 min with the conventional operation ($p < 0.001$) [23], the febrile morbidity significantly reduced [24] and the neonatal outcome showed statistically significant differences when using the method [25]. There is a significant less need for post-operative analgesia [26] and the follow-up reveals lower rate of intra-abdominal adhesions [27] and favorable late outcome regarding pain, neuropathic and chronic pain and the level of satisfaction concerning cosmetic appearance of the abdominal incision [28].

In the pre-antibiotic era, the extra-peritoneal Cesarean Section was used in order to prevent post-operative infections [29]. It was abandoned for many years but recently introduced again and was compared with the Misgav Ladach- Stark's method. Although the authors claim lower pain score and faster mobility the main difficulties reported were significantly longer fetal extraction time and longer operative time, next to 0.3% bladder injuries [30]. Therefore, it seems that our proposed method is the preferred one and should be used universally [31], but at the same time the Cesarean Sections rate should be controlled, not just due to the adverse effects on the newborn, but also to prevent late adverse effects on the uterus [32].

Conclusion

Despite opinions that the presence of a pediatrician is not necessary during so-called low-risk Cesarean Section we argue that his presence is important, adding value to the operative team. His judgment should be heard when the indication for the operation is discussed and the first assessment of the newborn should be done by him/her, including the assessment of the Apgar Score. The pediatrician presence should promote the immediate bonding and eventually the skin to skin contact of the newborn with his mother.

The knowledge concerning the surgical method is essential as it is important for him/her to be aware about possible difficulties which might occur during the operation and this knowledge will help to do the needed preparations accordingly.

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Conflict of Interest

None.

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