

Planned elective cesarean section at term: Indications and neonatal prognosis

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Abstract

Introduction: The practice of planned elective cesarean sections (ECS) in the near-term pregnant woman is often perceived as an act ensuring maximum safety for the mother and her child. However, in terms of morbidity and maternal-fetal mortality, Cesarean section is worse than a vaginal delivery.

Materials and methods: Our work is a prospective, comparative study of planned elective cesarean sections performed in our institution.

Results: The prevalence of neonatal hospital admissions was 24.6% in the case of a planned elective cesarean section and 17.8% in the case of an emergency caesarean section, compared to 19.9% in the case of vaginal delivery. The transfer to neonatology department for respiratory distress syndrome (RDS) concerns 21.8% of births per planned cesarean section, 12.3% of emergency cesarean births, and 11.5% of vaginal delivery.

Conclusion: The rate of respiratory distress syndrome due to alveolar fluid resorption disorder is greater when the child is born by elective cesarean section than when he was born by emergent cesarean section or through vaginal delivery. While the rate of perinatal asphyxia is reduced in the event of an elective cesarean section.

Keywords: Cesarean; Delivery; Fetal; Neonates; Pregnancy.

1. Introduction

The rate of cesarean section is increasing in the world. In France, they represented 20.2% of births in 2009, a rate that has almost doubled in twenty years. Of these cesarean births, half are planned and half are emergency.

The increase is partly related to the practice of cesarean sections in women with risk factors that contraindicate the woman to undergo labor, such as a previous cesarean section. The practice of planned cesarean sections in near-term pregnant women is often perceived as a procedure that ensures maximum safety for the mother and her child.

In 2000, the national college of obstetrician-gynecologists of France recognized that in terms of maternal-fetal morbidity and mortality, cesarean section has a poorer prognosis than natural childbirth. It has indeed a role on the adaptation to the extra-uterine life of the newborn. Birth by caesarean section, especially by caesarean section before labor, deprives the newborn of the physiological processes necessary for the good start of its vital functions.

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2. Materials and methods

Our work is a prospective and comparative study on cesarean sections performed in the Souissi maternity ward, during a period from January 1, 2014 to June 30, 2014, and whose babies are taken care of by the neonatology team.

2.1. Inclusion criteria

were included all women who gave birth by planned cesarean section, of a newborn at term, whatever the indication in comparison with those who gave birth by vaginal route, or by emergency cesarean section.

2.2. Exclusion criteria

we excluded in utero fetal deaths, medical terminations of pregnancy, premature deliveries, newborns hospitalized for maternal-fetal infection and newborns with congenital malformations diagnosed at birth.

Primary endpoint: the occurrence of transient respiratory distress.

Information for this study was obtained from neonatologists' registries and included maternal age, parity, indications for cesarean section, term, Apgar at birth, birth weight, and immediate neonatal prognosis.

2.3. Definition of terms

The definition of planned cesarean section, retained in the recommendations of the high health authority, is cesarean section performed at term (> 37 weeks), not related to an emergency situation occurring outside of labor or during labor. It is usually scheduled around 39 weeks' gestation for a monofetal pregnancy.

2.3.1. Scarred uterus

A uterus is said to be scarred when it has one or more myometrial scars anywhere on the isthmus or body. This definition excludes cervical scars, purely mucosal scars and purely serous scars.

2.3.2. Breech presentation

Breech presentation refers to the fetus in the longitudinal lie with the buttocks or lower extremity entering the pelvis first.

Fetal macrosomia is generally defined by a birth weight greater than 4000g or by a birth weight greater than the 90th percentile of a given population reference curve.

Neonatal respiratory distress is defined by a Silverman score greater than 1/10.

Perinatal asphyxia is defined by a 5-minute apgar score less than 7.

2.4. Statistical Analysis

Statistical analysis was performed using SPSS version 13.0 software.

Quantitative variables were expressed as mean standard deviation, and qualitative variables as number and percentage.

Student's t test and chi 2 or Fisher's exact test were used for comparison of quantitative and categorical variables, respectively, with significance level $p < 0.05$.

3. Result

During our study period, we collected 1864 caesarean sections out of a total of 5460 deliveries as a frequency of 34%. During the same period, 472 patients had an indication for prophylactic cesarean section corresponding to 25% of all cesarean sections.

The average age of the women was 28.47 ± 4.8 years with extremes between 19 and 38 years. A total of 39.6% of the mothers were primiparous.

The indications for planned cesarean section were: bony dystocia in 28.8% of cases, multi-cicatrical uterus in 11.9% of cases, macrosomia in 15% of cases, preeclampsia in 11.9%, placenta previa in 11.4%, dystocic presentation in 5.7% of cases, maternal pathology in 4.2% of cases, twin pregnancy in 3.8% of cases, intrauterine growth retardation in 3.4% of cases, previous uterine rupture in 2.3% of cases.

94.7% of the newborns had cephalic presentation, 5.3% had a planned cesarean section indication for dystocic presentation.

The average birth weight was 3286.86 g ± 639.8, 57.2% of newborns were female, and 42.8% were male.

The prevalence of hospitalization in neonatology was 24.6% for planned cesarean section and 17.8% for emergency cesarean section, compared with 19.9% for vaginal delivery.

Table 1 Group characteristics: planned cesarean group, emergency cesarean group, and vaginal delivery group

	Planned Caesarean		emergency cesarean		vaginal delivery group		P
	n =472	%	n =472	%	n =472	%	
Maternal age	28.47± 4.8		29.05± 4.3		28.38±4.03		0.04
Parity :							0.68
Primipare	187	39.6%	290	61.4%	174	36.9%	
Multiparous	285	60.4%	182	38.6%	298	63.1%	
Apgar at 5 min							0.02
10	429	90.7%	411	87.1%	425	90%	
between 7 and 9	27	5.7%	37	7.8%	18	3.8%	
<7	16	3.4%	24	5.1%	29	6.1%	
Gender							0.07
Male	270	57.2%	228	48.3%	235	49.8%	
Female	202	42.8%	244	51.7%	237	50.2%	
Weight	3286.86±639.8		3348.73 ± 422.3		3297.78 ± 422.8		0.13
Presentation							0.001
Cephalic	447	94.7%	406	86.1%	466	98.7%	
Dystocic	45	5.3%	66	13.9%	6	1.3%	
Transfer to Neonatology	116	24.6%	84	17.8%	94	19.9%	0.03
Reason for Transfer							0.001
Respiratory distress syndrome (RDS)	103	21.8%	58	12.3%	54	11.5%	
Perinatal asphyxia	13	2.8%	26	5.5%	40	8.4%	

Transfer to neonatology for respiratory distress concerned 21.8% of planned cesarean births, 12.3% of emergency cesarean births, and 11.5% of vaginal deliveries.

The hospitalization rate for neonatal distress defined by the 5-min low Apgar score of <7, was 2.8% for newborns by planned cesarean section, 5.5% for emergency cesarean sections, and 8.4% for vaginal deliveries.

We note that from 39 weeks, there is no hospitalization in neonatology or neonatal intensive care and the 5-minute Apgar scores are always higher than 7. We also compare our 3 populations: planned cesarean section, emergency cesarean section and vaginal delivery. Taking into account the term of the pregnancy we observe that with the newborns of term 37weeks to 37 weeks +6 days and 38 weeks to 38 weeks +6 days, there are more disorders of resorption and hospitalization in neonatology for the programmed caesarean section and emergency caesarean section population, than for the vaginal route. On the other hand, no significant difference was observed from 39 weeks after birth (table 2).

Table 2 Influence of the term of pregnancy on the transfer to neonatology.

Term of pregnancy	Planned Caesarean		emergency cesarean		vaginal delivery		P
	N=	%	N=	%	N=	%	
Between 37W and 37W+6 days	78		54	55.6%	21	19.7%	0.002
Respiratory distress syndrome	70	89.7%	45	84.2%	12	57.1%	
perinatal asphyxia	8		9	15.8	9	42.9%	
Between 38W and 38W+6 days	38	10.3%	18	23.7%	30	32.9%	0
Respiratory distress syndrome	33	86.5%	11	63.2%	18	60%	
perinatal asphyxia	5		7	36.8%	12	40%	
Beyond 39W	0	13.5%	12	22.6%	43	47.2%	0.016
Respiratory distress syndrome	0		2	16.7%	24	55.8%	
perinatal asphyxia			10	83.3%	19	44.2%	

4. Discussion

The objective of our study was to highlight the influence of the mode of delivery, planned or elective cesarean section or vaginal delivery, on the adaptation of the newborn to extrauterine life.

The practice of elective cesarean section varies according to the health institutions and the protocols of the services set up, it is often carried out when the vital prognosis of the woman or her child is put at risk by a vaginal delivery.

The indications for cesarean section must be evaluated based on the clinical and para-clinical data collected.

The High Health Authority publishes recommendations to specify the medical indications of elective cesarean section at the end of the pregnancy. The following are excluded from the scope of these recommendations - indications for a scheduled cesarean section before term (< 37 weeks); - indications for a cesarean section related to an emergency situation arising before labor or during labor. It should be noted that a scheduled cesarean section can be performed as an emergency prior to the initially planned term [1]. The indications for scheduled cesarean section are: scarred uterus; the increase in recent years in the rate of cesarean sections in industrialized countries has been accompanied by an increase in the number of pregnant women with a scarred uterus. In these countries, cesarean section is the main etiology of uterine scarring. Twin pregnancy; compared to singleton pregnancy, twin pregnancy is associated with greater risks of prematurity before 37 weeks (sevenfold increase in risk) and low birth weight (approximately ninefold increase in risk of birth weight below 2500 g). The rate of cesarean section before labor is three times higher for twin pregnancies than for single-fetal pregnancies. French obstetrical practices are characterized by active management of the birth of the second twin (directed delivery on day 2) in order to reduce the time interval between the two births.

Breech presentation: The rate of breech presentations during a full-term delivery of an only child is around 3 to 5% of deliveries. Macrosomia: The evaluation of fetal weight remains difficult to determine accurately despite the evolution of prenatal examinations: ultrasound, clinical method (Leopold's maneuver), maternal method (based on maternal experience in case of multiparous pregnancy). The reported frequency is variable according to the thresholds chosen and the populations studied and is between 5 and 10% of births. For the purposes of these recommendations, macrosomia corresponds to an estimate of fetal weight from 4000 g, taking into account the difficulties of assessing fetal weight. Fetal macrosomia is one of the complications of maternal diabetes (essentially gestational diabetes). Complete or partial placenta previa (grade 3 or 4) is an absolute indication for scheduled cesarean section.

Mother-to-child transmission of maternal infections; in this context, scheduled cesarean section is intended to reduce the risk of vertical transmission of viral infections from mother to child (mother-to-child transmission). Other interventions used in this context, such as drug treatments, are not within the scope of these recommendations. Mother-to-child transmission of human immunodeficiency virus (HIV) most often occurs at the time of delivery. It follows uterine contractions and rupture of the membranes, by direct exposure of the fetus to maternal blood and cervicovaginal secretions. The herpes virus, Herpes simplex virus type 1 (HSV-1) or type 2 (HSV-2), can be transmitted from mother to child in most cases during delivery from genital lesions. Neonatal herpes causes significant morbidity and mortality, including neurodevelopmental abnormalities.

There are also various rare situations where a planned cesarean section should be discussed on a case-by-case basis. These situations are the following in particular; placental defect (placenta accreta or placenta previa), fetal malformations and fetopathies (hydrops, diaphragmatic hernia, fetal thrombocytopenia, omphalocele or laparoschisis), intercurrent maternal history and pathologies (stroke) or perineal problems (history of complicated complete perineum, cure of prolapse and/or urinary incontinence). [1]

Cesarean section on maternal request without medical and/or obstetrical indication is not a clinical situation that can be perfectly identified from coding activities or in observational studies. Its incidence is difficult to estimate. Cesarean section on maternal request could be the result of multiple factors including internal factors (personal experience, perception of birth), external factors (information obtained from family, friends, the media, health professionals) but also more specific factors (impression of safety for the child and for the mother, notion of control and preservation).

According to the literature, the main causes associated with a maternal request for cesarean section are fear of birth, particularly in primiparous women, and bad experiences during a previous pregnancy. The current debates and controversies surrounding cesarean section on demand are also related to new issues: the increased demand by women for active participation in the choice of mode of delivery (patient autonomy of decision) and the possible increase in the risk of legal proceedings against the physician regarding the choice of mode of delivery in the event of complications [1].

In our study, the rate of perinatal asphyxia was lower in the scheduled cesarean population compared with the two populations of emergency cesarean and vaginal delivery, whereas the rate of hospitalization for respiratory distress was higher in scheduled cesarean births. Scheduled cesarean section therefore represents a risk factor for transfer to neonatal intensive care, and a large part of the neonatal morbidity is due to difficulties encountered during this respiratory adaptation and the establishment of gas exchanges. [2,3]

Indeed, the newborn can present respiratory distress at birth if the elimination of pulmonary fluid is not done correctly, we speak of pulmonary resorption disorder, certain circumstances alter the resorption of pulmonary fluid or allow its presence in excess in the lungs after birth. During a cesarean birth, the thoracic compression is lacking, 30% of the pulmonary liquid is not eliminated normally by the mouth. A child born by cesarean section at term is therefore more likely to have a lung resorption disorder than a child born by vaginal delivery. J. Morrison showed in a study that the rate of respiratory distress after cesarean section was significantly higher than after vaginal delivery [10]. Studies show that the rate of admission to intensive care units is greater for children born at term by cesarean section before labor than for children who have gone into labor.

Cesarean section is therefore the main risk factor for pulmonary fluid resorption disorders, especially if it is performed before labour and at terms < 38 weeks. [5,6,7]

The reception of the newborn from a cesarean section is very different from that from a vaginal delivery; the child born by vaginal delivery is often placed on the mother's stomach skin to skin the child born by cesarean section is presented to the mother in a diaper the woman can hardly touch and kiss her child because of the supine position and the presence of sterile drapes the child is quickly taken out of the operating room to be examined.

This hinders the mother-child relationship and early breastfeeding, and consequently represents an obstacle to breastfeeding.

Some obstetrical teams, including the maternity ward of the University Hospital of Rouen, administer corticosteroids before all cesarean sections at less than 39 weeks gestation. The interest of preventive corticosteroid therapy is to reduce the rate of transient respiratory distress and hospitalizations in intensive care unit and resuscitation. [8,9,10]

5. Conclusion

Currently in France, more than one birth out of five is performed by cesarean section. Of these, half are planned. This is a worrying development because these cesarean sections are associated with an increase in neonatal and maternal morbidity and mortality. Thus, the aim of our study was to analyze the consequences that a scheduled cesarean section can have on the newborn, in the first hours of life and during its stay in the maternity hospital.

It was concluded that the rate of respiratory distress due to alveolar fluid resorption disorder is greater when the child is born by scheduled cesarean section than when born by emergency cesarean section or vaginal delivery. While the rate of perinatal asphyxia is reduced in scheduled cesarean sections.

Certain precautions should be taken during a scheduled cesarean section, whenever possible the term of 39 weeks should be reached, as the rate of hospitalizations decreases considerably after this term. It is important to emphasize the importance of receiving and monitoring newborns by scheduled cesarean section, particularly in terms of respiratory health. Breastfeeding should also be encouraged by early initiation of breastfeeding.

Compliance with ethical standards

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Disclosure of conflict of interest

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