

Optimal Elective Cesarean Section Schedule For Uncomplicated Twin Pregnancy

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Abstract

Objective: To assess the optimal elective cesarean section schedule for uncomplicated twin pregnancy, we examined the incidence of intrapartum cesarean delivery before the scheduled date in twin pregnancy.

Methods: We reviewed the obstetric records of 184 uncomplicated dichorionic twin pregnancies planned elective cesarean delivery beyond 37 weeks of gestation due to maternal request at Japanese Red Cross Katsushika Maternity Hospital from 2002 through 2017. In this study, we examined the changes in the incidence of intrapartum cesarean delivery before scheduled date and the incidence of neonatal respiratory disorders.

Results: the incidence of neonatal respiratory disorders was decreased beyond 37+3 weeks of gestation ($p = 0.03$), while the incidence of the intrapartum cesarean delivery was increased beyond 37+6 weeks of gestation ($p < 0.01$).

Conclusion: The optimal timing of scheduled cesarean delivery for uncomplicated twin pregnancy was estimated to be 37+3-37+5 weeks.

INTRODUCTION

Recently, a dramatic increase in the overall cesarean delivery rate of twin pregnancies has been observed based on the physician counseling and maternal request for elective cesarean delivery to avoid perinatal asphyxia especially in the second twin and/or combined vaginal-cesarean delivery [1-4]. Although cesarean delivery at early term without labor is associated with an increased risk of neonatal respiratory disorders [4-6], the optimal timing of elective cesarean delivery for twin pregnancies may be earlier than that for singleton pregnancies [7]. Because, we have experienced undergoing intrapartum cesarean section prior to the scheduled date as a result of spontaneous labor or premature rupture of the membranes (PROM) in twin pregnancies more than single pregnancies.

To assess the optimal elective cesarean section schedule for uncomplicated twin pregnancy in 37 weeks of gestation, we examined the incidence of intrapartum cesarean delivery before the scheduled date in twin pregnancy.

METHODS

The protocol for this analysis was approved by the Ethics Committee of the Japanese Red Cross Katsushika Maternity Hospital. In addition, informed consent for analysis from a retrospective database was obtained from each subject during the hospital visit.

At our institute, elective caesarean section for twin pregnancy is performed on Monday or Thursday of 37 weeks of gestation. The schedule is decided mainly by patients' request at 35-36 weeks of gestation.

We reviewed the obstetric records of 184 uncomplicated dichorionic twin deliveries which planned elective cesarean delivery beyond 37 weeks of gestation due to maternal request at Japanese Red Cross Katsushika Maternity Hospital from 2002 through 2017. The number of nulliparous women and average maternal age were 124 (67%) and 34 years old (range: 22-42 years old), respectively. Demographic information and the characteristics of labor were extracted from patient charts. The gestational age of the pregnancies were established by

embryo transfer dates when pregnancy was achieved by in vitro fertilization (n = 79: 43%), ovulation day during infertility treatment (n = 25, 13%) and ultrasonographic examination of the fetal crown-rump length at 9-11 weeks of gestation in cases of spontaneous conception (n = 80: 44%).

In this study, intrapartum cesarean section was defined as a cesarean section performed before the scheduled date as a result of spontaneous labor or PROM. We examined the incidence of the intrapartum cesarean delivery and the incidence of neonatal respiratory disorders; respiratory distress syndrome (RDS) and transient tachypnea of the newborn (TTN) by each gestational age beyond 37 weeks. The diagnosis of RDS and TTN were made by neonatologists with clinical and radiology data.

Data are presented as number (percentage, %). Significant differences of $p < 0.05$ were determined by 1-way analysis of variance.

RESULTS

During the study period, elective cesarean section was planned at 37+0-37+2, 37+3-37+5 and 37+6-38+2 weeks of gestation in 80 (43%), 70 (38%) and 34 (18%) women, respectively. Of these, intrapartum cesarean delivery before scheduled date was performed in 34 cases (18%). Table 1 shows the relation between gestational age for planned cesarean delivery and the incidence of the intrapartum cesarean delivery and incidence of neonatal respiratory disorders. There were no cases of perinatal death. The rate of the intrapartum cesarean delivery was increased in cases of cesarean delivery planned at $\geq 37+6$ weeks of gestation ($p < 0.01$), while the incidence of neonatal respiratory disorders was decreased in cases of cesarean delivery planned at $\geq 37+3$ weeks of gestation ($p = 0.03$).

Table 1

Relation between gestational age for planned cesarean delivery and the incidence of intrapartum cesarean delivery before scheduled date and the incidence of neonatal respiratory disorders in dichorionic twin pregnancies (n = 184).

Gestational age for planned cesarean delivery	Total	Caesarean before scheduled	Caesarean as planned	Neonates born by planned caesarean		
				Total	Respiratory disorders	
					No	Yes
37+0 - 37+2	80	8 (10)	72 (90)	160	131 (82)	29 (18)
37+3 - 37+5	70	10 (14)	60 (86)	140	127 (91)**	13 (9)**
37+6 - 38+2	34	16 (47)*	18 (53)*	68	65 (91)**	3 (9)**
Total	184	34 (18)	150 (82)	368	330 (95)	38 (5)

Data are presented as number (percentage).

* $P < 0.01$ vs. those at 37+3-37+5 weeks of gestation.

** $P = 0.03$ vs. those at 37+0-37+2 weeks of gestation.

DISCUSSION

Based on the current results, the incidence of neonatal respiratory disorders was decreased beyond 37+3 weeks of gestation, while the incidence of the intrapartum cesarean delivery was increased beyond 37+6 weeks of gestation. Therefore, the optimal timing of scheduled cesarean delivery for uncomplicated twin pregnancy may be 37+3–37+5 weeks of gestation.

Cesarean delivery before labor onset at early term is associated with an increased risk of neonatal respiratory disorders as TTN [4-6]. Neonatal respiratory disorders have been reported to occur frequently in both cases following cesarean delivery before labor onset and cases with perinatal asphyxia irrespective of delivery modes [5]. Delayed resorption of pulmonary fluid has been accepted as the central problem of TTN. The condition associated with asphyxia has been suggested to be due to dysfunctional catecholamine regulation, mild pulmonary capillary leak syndrome and myocardial dysfunction with elevated filling pressure [5,6,8]. We have understood that reducing of the rate of unscheduled (emergency) cesarean section for twins is also very important considering of the possibility of the delivery of 2 low-birth-weight infants; therefore, the optimal timing of cesarean section should be examined to reduce the incidence of adverse perinatal outcomes in twins.

Recently, a dramatic increase in the overall cesarean delivery rate of twin pregnancies has been observed [1-4]. Twin pregnancy of 39-40 weeks of gestation has been

considered post-term based on the data of neonatal/fetal mortality and morbidity [9,10]. Although twins seem to be at higher risk of suboptimal neonatal outcomes than singletons, it may be better when delivered at early term rather than term or late term [11-13]. To date, however, the optimal timing of twin delivery had been still controversial [11-13]. Based on the current results, the optimal timing of scheduled cesarean delivery for uncomplicated twin pregnancy was estimated to be 37+3-37+5 weeks of gestation.

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