

Delivery Time of Elective Cesarean Section

Ding Zhiwei, Meng Wenying

Tongzhou Maternal & Child Health Hospital of Beijing, Beijing 101100, China

Email: 13701222998@163.com

Abstract: Objective: To investigate the delivery time of elective cesarean section and the desirability of early-term delivery. **Method:** From January, 2013 to December, 2013, 1233 cases of patients were collected from Tongzhou Maternal & Child Health Hospital of Beijing. All the female patients were giving mature single birth, excluded the cases that have premature rupture of membranes, gestational hypertension, fetal distress, placenta previa, placental abruption, gestational diabetes that need insulin poor glycemic control and emergency cesarean section. The cases were divided into early-term delivery group that between 37 and 38+6 weeks of gestation and full-term delivery group that more than 39 weeks of gestation. And compare the newborn outcomes of different groups. **Result:** The compare of the neonatal complications and newborns transfer to pediatrics between the early-term delivery group and the full-term delivery group was statistical significant. After adjusting age and parity, the Neonatal complication and OR (95%CI) of the early-term delivery was 1.601 (1.139-2.250), and the newborns transfer to pediatrics and OR (95%CI) of the early-term delivery was 2.160 (1.481-3.150). Conclusion: the elective cesarean section should be implemented after the 39 weeks of gestation.

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1. Introduction

Currently, domestic and overseas studies about the proper time of termination of pregnancy according to the elective cesarean section are different. Thus, there is no consensus about when to intervene. This study analyzed 1233 cases of patients chosen from Tongzhou Maternal & Child Health Hospital of Beijing, from January, 2013 to December, 2013, who given mature single birth; and investigated about whether elective cesarean section is fit for early-term delivery.

2. Date and Method

Study Subject

From January, 2013 to December, 2013, 1233 cases of patients were collected from Tongzhou Maternal & Child Health Hospital of Beijing. All the cases of female patients have given mature single birth, and excluded the cases that have premature rupture of membranes, gestational hypertension, fetal distress, placenta previa, placental abruption, gestational diabetes need insulin poor glycemic control and emergency cesarean section.

Grouping

The cases were divided into early-term delivery group that between 37 and 38⁺⁶ weeks of gestation and full-term delivery group that more than 39 weeks of gestation.

Outcome Evaluation

Evaluate the outcomes of the neonates from different gestational weeks' caesarean section.

Statistical Method

SPSS 1.4 was used to analyze the data; and the measurement data was expressed by $X \pm s$; enumeration data was expressed by percentage; compare between two groups used Chi-square test. $P < 0.05$ is statistical significant. Multivariate analysis used Logistic regression analysis.

3. Result

General Condition

The general condition differences of different groups at different weeks of gestation including age, gravidity and parity history, and neonatal weight are statistical significant ($p < 0.05$).

Table 1. General conditions of different groups at different weeks of gestation

		Early-term delivery group (%)	Full-term delivery group (%)	X ²	P
Age	<35 years	188(71.2)	770(79.5)	8.151	0.004
	≥ 35 years	7628.8(0)	199(20.5)		
Gravidity	1	105(39.8)	465(48.0)	5.633	0.018
	>1	159(60.2)	504(52.0)		
Parity	1	193(73.1)	870(89.8)	48.546	<0.001
	>1	71(26.9)	99(10.2)		
neonatal weight		3210.66 ± 440.073	3459.39 ± 408.436		<0.001

Delivery Outcome Evaluation

The compares of the neonatal complications and newborns transfer to pediatrics between the early-term delivery group and the full-term delivery group were statistical significant as table 2 shows.

After adjusting age and parity, the Neonatal complication and OR (95%CI) of the early-term delivery was 1.601 (1.139-2.250), and the newborns transfer to pediatrics and OR (95%CI) of the early-term delivery was 2.160 (1.481-3.150).

Table 2. Compare of the neonatal outcomes at different gestational weeks.

	early-term delivery group(%)	full- term delivery group(%)	X ²	P
Neonatal jaundice	28(10.6)	77(7.9)	1.884	0.170
Neonatal infection	24(9.1)	89(9.2)	0.002	0.963
Neonatal complication	61(23.1)	160(16.5)	6.133	0.013
Newborn transfer to pediatrics	51(19.3)	100(10.3)	15.632	<0.001

4. Discussion

Early-term Delivery's Suitability

The American College of Obstetrician and Gynecologists Committee and the Society for Maternal-Fetal Medicine recommend^[1]: currently, the evidence regarding timing of indicated delivery for most conditions is limited; therefore, these recommendations are based largely on expert consensus and relevant observational studies, and management should be individualized. There are several significant principles to consider in the timing of delivery. First, the decision making regarding timing of delivery is complex and must take into account relative maternal and newborn risks, practice environment, and patient preference. Second, late preterm (between 34 and 36⁺ weeks of gestation) and early-term delivery (between 37 and 38⁺ weeks of gestation) may be warranted for either maternal or newborn benefit or both can be selected, but early-term delivery without indication is not recommended.

Early-term Delivery's Harm to the Newborn

The result of this study shows that the compare of the neonatal complications and newborns transfer to pediatrics between the early-term delivery group and the full-term delivery group were statistical significant. The newborns' adverse outcome risk of the early-term delivery is higher than that of the 39 weeks of gestation. Compared with the newborns that delivery in the 39 weeks of gestation, the newborns of the late preterm and early-term delivery have higher incidence of respiratory^[2], and higher rate of respiratory failure, ventilator usage, NRDS, pneumonia, etc^[3]. Planned delivery cohort study, participated by 27 American hospitals, mentioned that the NICU hospitalization rates after 37 weeks of gestation, 38 weeks of gestation and 39 weeks of gestation were 17.8%, 8%, and 4.6%, respectively (p<0.001)^[4]. Some study confirmed^[5-7] prevention of the early-term delivery that without medical indication can improve the newborn outcome. Some other study confirmed^[8] the last 4-5 weeks of gestation are very important to brain development. In this period, brain matures rapidly, brain weight adds about 1/3, and gyri and sulci add dramatically. In the

study of Yang S, among 13824 healthy Belarus children aged 6, the IQ of the children born in 39-40 weeks of gestation were higher than that of the children born in 37-38 weeks of gestation. American scholar Noble KG^[10] mentioned, 128050 children participated study, the math and reading performances of the children born in 37-38 weeks of gestation were significantly lower than that of children born in 39-41 weeks of gestation. In Rose and others' study^[11], all participants were healthy, full-term (37-41 weeks) vaginal delivery infants who weighed 3 kg or more at birth, and controlled the rest variables in the model; as the gestational week adds one, the mental development indexes of the children born after 12 months add 0.8 (95%, CI 0.2-1.4), the psychomotor development indexes add 1.4 (95%, CI 0.6-2.1). Thus we concluded that delivery after 39 weeks of gestation is beneficial to the fetus.

Delivery Timing of elective Cesarean Section

In 2013, American College of Obstetrician and Gynecologists Committee^[12] recommended: (1) for the pregnant woman who asked for caesarean section without maternal and fetal indications planned vaginal delivery is safety and appropriate, thus should be recommended to pregnant woman. (2) for the pregnant woman who asked for caesarean section should be recommended: the caesarean section should not be implement before 39 weeks of gestation; the reason why the pregnant woman choose caesarean section should not be lacking of effective pain management during delivery; considering that every cesarean section increases the risk of placenta previa, placenta implantation, and pregnancy hysterectomy, caesarean sections, especially, should not be recommended to the pregnant woman who wants more than one child.

Similarly, the RCT study from seven centers in Denmark^[13] found that among the pregnant women who choose planned elective cesarean section, 13.9% newborns (88/635) that delivered in the 38⁺ weeks of gestation hospitalized NICU, 11.9% newborns (76/637) that delivered in the 39⁺ weeks of gestation hospitalized NICU (RR0.86 95% CI 0.65-1.15). Newborns treated by continuous oxygen therapy more than one day (RR 0.31; 95% CI 0.10-0.94), and

maternal hemorrhage more than 500ml (RR 0.79; 95% CI 0.63-0.99) happen less in 39 weeks of gestation delivery, but have no statistical significant difference. In these both intervention groups, adverse outcome risks of newborns and puerperae are similar to maternal complications (RR 1.1; 95% CI 0.79-1.53). In January, 2009, *New England Journal of Medicine* published a multicenter, prospective clinical research result [14]. It analyzed the clinical case data of repeated cesarean section of the singleton pregnancy in 19 American clinical centers from 1999 to 2002. There were totally 24,077 cases of full-term repeated cesarean section, including 13,258 cases of elective cesarean section, and excluded the cases of multiple pregnancies and termination of pregnancy due to complications. The gestational weeks' distribution of elective cesarean section were 37 weeks of gestation accounted for 6.3%, 38 weeks of gestation accounted for 29.5%, 39 weeks of gestation accounted for 49.1%. With the passage of pregnancy time, the incidence rates of neonatal adverse outcomes were significantly reduced (37 weeks of gestation was 15.3%, 39 weeks of gestation was 8.0%). The study shows that in the condition of absence of special maternal and fetal indications, elective cesarean section should not be performed in 39 weeks of gestation unless have evidence of fetal lung maturity. The study of Peking Union Medical College Hospital [15] retrospectively analyzed 8716 cases of full term cesarean section (primipara 93%) from 2002 to 2009, excluded those cases that accepted first cesarean section and repeated cesarean cesarean 4565 cases and 409 cases respectively, due to serious medical complications. The result showed that no matter the first cesarean section and repeated cesarean, in the 39 weeks of gestation implementing of cesarean section can reduce the neonatal perinatal morbidity and fatality rate. The study also showed that along with the increase of weeks of gestation, maternal morbidity and bleeding amount did not increase significantly. This study shows that the neonatal complications and newborns transfer risk were increased for early full-term intervention, so we recommend elective cesarean section should be performed after 39 weeks of gestation.

5. Conclusion

Above all, this study indicates that early-term selective cesarean delivery is not suitable. Studies about the timing of selective cesarean delivery in our country are relatively few. This study is a single-center retrospective study, and only studied the neonatal complications part during the hospital stay, thus the study samples are not big enough, lack follow-up to the newborn long-term complications. This study also did not evaluate the natimortality, and there are some limitations, so multi-center RCT researches are needed in the future.

6. References

- [1] ACOG committee opinion no. 560: Medically indicated late-preterm and early-term deliveries. *Obstet Gynecol.* 2013. 121(4): 908-10.
- [2] ACOG committee opinion no. 561: Nonmedically indicated early-term deliveries. *Obstet Gynecol.* 2013. 121(4): 911-5.
- [3] Hibbard JU, Wilkins I, Sun L, et al. Respiratory morbidity in late preterm births. *JAMA.* 2010. 304(4): 419-25.
- [4] Clark SL, Miller DD, Belfort MA, Dildy GA, Frye DK, Meyers JA. Neonatal and maternal outcomes associated with elective term delivery. *Am J Obstet Gynecol.* 2009. 200(2): 156.e1-4.
- [5] Clark SL, Frye DR, Meyers JA, et al. Reduction in elective delivery at <39 weeks of gestation: comparative effectiveness of 3 approaches to change and the impact on neonatal intensive care admission and stillbirth. *Am J Obstet Gynecol.* 2010. 203(5): 449.e1-6.
- [6] Donovan EF, Lannon C, Bailit J, Rose B, Iams JD, Byczkowski T. A statewide initiative to reduce inappropriate scheduled births at 36(0/7)-38(6/7) weeks' gestation. *Am J Obstet Gynecol.* 2010. 202(3): 243.e1-8.
- [7] Ehrenthal DB, Hoffman MK, Jiang X, Ostrum G. Neonatal outcomes after implementation of guidelines limiting elective delivery before 39 weeks of gestation. *Obstet Gynecol.* 2011. 118(5): 1047-55.
- [8] Zacharia A, Zimine S, Lovblad KO, et al. Early assessment of brain maturation by MR imaging segmentation in neonates and premature infants. *AJNR Am J Neuroradiol.* 2006. 27(5): 972-7.
- [9] Yang S, Platt RW, Kramer MS. Variation in child cognitive ability by week of gestation among healthy term births. *Am J Epidemiol.* 2010. 171(4): 399-406.
- [10] Noble KG, Fifer WP, Rauh VA, Nomura Y, Andrews HF. Academic achievement varies with gestational age among children born at term. *Pediatrics.* 2012. 130(2): e257-64.
- [11] Rose O, Blanco E, Martinez SM, et al. Developmental scores at 1 year with increasing gestational age, 37-41 weeks. *Pediatrics.* 2013. 131(5): e1475-81.
- [12] ACOG committee opinion no. 559: Cesarean delivery on maternal request. *Obstet Gynecol.* 2013. 121(4): 904-7.
- [13] Glavind J, Kindberg SF, Uldbjerg N, et al. Elective cesarean section at 38 weeks versus 39 weeks: neonatal and maternal outcomes in a randomised controlled trial. *BJOG.* 2013. 120(9): 1123-32.
- [14] Tita AT, Landon MB, Spong CY, et al. Timing of elective repeat cesarean delivery at term and neonatal outcomes. *N Engl J Med Overseas Ed.* 2009. 360(2): 111-20.
- [15] Qi Guo, Lei Li, Xuming Bian. Analysis of timing of elective cesarean delivery at full-term and neonatal outcomes. *Chinese Journal of Perinatal Medicine.* 2011. 14(1): 12-18.

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