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## Delivery Timing and Cesarean Delivery Risk in Women with Mild Gestational Diabetes

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### Abstract

**OBJECTIVE**—To evaluate the relationship between gestational age (GA) and induction of labor (IOL) and the rate of cesarean delivery (CD) in women with mild gestational diabetes (GDM).

**STUDY DESIGN**—Secondary analysis of data from a multi-center RCT of mild GDM treatment. CD rate of women delivering at term (≥ 37 weeks) was evaluated using two complementary approaches: 1) IOL vs. spontaneous labor: women induced at each GA compared with those who spontaneously labored at the same GA, and 2) IOL vs. expectant management: women delivered after IOL at each GA compared with those delivering after spontaneous labor at the same GA or subsequently after spontaneous or induced labor (outcome at each week compared with expectant management at that week). Logistic regression adjusted for potential confounders.

**RESULTS**—The overall CD rate was 13%. When compared to 39 weeks (either IOL or spontaneous labor) as the referent, there was no significant difference in the CD rate in women delivered at 37, 38, or 40 weeks. However, IOL was associated with a 3-fold increase in CD rate

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at 41 weeks and beyond as compared with IOL at 39 weeks. Similarly, there was a 3-fold increase in CD rate in women who were induced when compared to those managed expectantly at 40 completed weeks.

**CONCLUSIONS**—Induction of labor in women with mild gestational diabetes mellitus (GDM) does not increase the rate of cesarean delivery prior to 40 weeks gestation.

### Keywords

cesarean delivery; gestational diabetes; induction of labor

## INTRODUCTION

The cesarean delivery rate has continued to rise to a recent high of 32%, increasing more than 50% in the last decade<sup>1</sup>. Similarly, the rates of IOL have increased, now affecting 23% of all births<sup>1</sup>. Previous observational studies have suggested that induction predisposes women to CD. Specifically, when comparing women undergoing IOL to those experiencing spontaneous labor, an increased rate of CD has been observed.<sup>2, 3</sup> However, when compared to expectant management, elective induction of labor at or beyond 41 weeks is associated with a decreased rate of cesarean section.<sup>4, 5</sup> A recent Cochrane metaanalysis suggests that elective induction of labor at term, when compared with expectant management, is associated with a decreased rate of cesarean section as well as other adverse perinatal outcomes.<sup>6</sup>

The discrepancies in the findings of these are partially explained by differences in comparison groups. While initial studies compared induced with spontaneous labor, more recent studies have used an expectant management comparison group, which includes patients who spontaneously delivered as well as those who were induced at later gestational ages. This comparison is more appropriate in clinical decision-making since expectant management, not spontaneous labor, at a particular gestational age is the only alternative.

The MFMU Network randomized controlled trial (RCT) for the treatment of mild GDM demonstrated that treatment of mild gestational diabetes (GDM) is associated with a lower rate of cesarean delivery (26.9% vs. 33.8%,  $p = 0.02$ ).<sup>7</sup> This reduced risk was apparent even after excluding cesarean indications such as malpresentation, placenta previa, oligohydramnios, and previous cesarean. A high proportion (27%) of patients underwent induction in each group.

The primary aim of this study was to compare the rate of CD by gestational age and by IOL vs. expectant management in women with GDM. As a secondary aim, we compared perinatal outcomes among the study groups.

## METHODS AND MATERIALS

We performed a secondary analysis of a multicenter randomized trial evaluating the effect of treatment in women with mild GDM.<sup>7</sup> In the original trial, women at 24–30 weeks gestation with blood glucose levels of 135–199 mg/dL following a 50 gram glucose loading test were invited to enroll. Eligible women underwent a blinded 3-hour 100 gram oral glucose

tolerance test. Mild GDM was defined as fasting glucose levels of less than 95 mg/dL and at least two abnormal timed measurements (>180 mg/dL at 1 hour, >155 mg/dL at 2 hours, and >140 mg/dL at 3 hours). Women with mild GDM were randomized to usual prenatal care or treatment with dietary modifications, glucose monitoring, and insulin, if indicated. Providers and patients were blinded to GDM diagnosis in the standard care group. The original study was approved by the institutional review boards of all participating clinical centers, and all enrolled women gave informed consent.

Women in both the treatment and standard care group were included in this secondary analysis if they delivered at term (≥ 37 weeks), underwent induced or spontaneous labor, and had cephalic presentations. Patients were excluded from analysis if they had an elective scheduled CD, had one or more previous CDs, had a non-cephalic presentation, or a major fetal anomaly. The primary outcome was CD. The CD rate was assessed by two approaches: 1) patients delivered at a specific GA (in completed weeks) and type of labor were compared to those who delivered at 39 weeks; 2) patients undergoing IOL at a specific GA were compared with those “expectantly managed”, which included patients who delivered at the same GA following spontaneous labor and patients who delivered at subsequent GA following spontaneous or induced labor. We examined several secondary outcomes. First, the composite perinatal outcome, included any one of the following: hypoglycemia, hyperbilirubinemia, RDS, and birth trauma which have been associated with GDM. We also assessed the frequency of admission of the infant to the neonatal intensive care unit (NICU), of birthweight >4000g, and of large-for-gestational age (LGA) infants, defined as birthweight > 90<sup>th</sup> percentile.<sup>8</sup>

Categorical variables were analyzed using the chi square or Fisher’s exact test. Continuous variables were analyzed using the Wilcoxon rank sum or the Kruskal-Wallis test. Study outcomes by completed GA week were calculated by type of labor for the two comparison methods. Multivariable logistic regression analysis was used to adjust for potential confounders for most outcomes including maternal age, race/ethnicity, pre-pregnancy body mass index (BMI), parity, smoking status, Cesarean delivery (for neonatal outcomes), infant sex (for neonatal outcomes), timing of dating ultrasound (trimester), SGA, and treatment group. No adjustments were made for the outcome of NICU admissions due to small numbers. Adjusted odds ratios (OR) and 95% confidence intervals (CI) were estimated relative to the IOL group at 39 weeks in method 1 and the expectant management group at each GA in method 2.

Statistical analyses were conducted using SAS software (SAS Institute, Cary, NC). A nominal two-sided p-value < 0.05 was considered for statistical significance with no adjustments made for multiple comparisons.

## RESULTS

Of the 958 women enrolled in the original RCT, 679 met inclusion and exclusion criteria for this secondary analysis. Baseline characteristics of the study population are shown in Table I. Reflective of the original study population, over half of the women were Hispanic, and the

mean BMI at enrollment was approximately  $30 (\pm 5.0) \text{ kg/m}^2$ . Race/ethnicity and GDM screen results differed by completed GA at delivery.

The overall rate of CD was 13%. The indications for cesarean section were: failed induction (69.3%), non-reassuring fetal tracing (26.1%), cord prolapse (3.4%), and chorioamnionitis (1.2%). The crude and adjusted results for CD are presented in Table II. Of note, the results were adjusted for maternal age, ethnicity, BMI, parity, smoking, timing of dating ultrasound, SGA status, and assigned control vs. treatment group. The CD incidence increased from 10.3% to 22.7% as gestational age at delivery increased from 37 to 41 completed weeks. This pattern was primarily restricted to the IOL group. When comparing the rate of CD at each GA with 39 completed weeks as the referent (method 1), there was no significant difference in the adjusted CD delivery rate at 37, 38, and 40 completed weeks. However, at 41 weeks, IOL was associated with a 3-fold increase in CD as compared with IOL at 39 weeks. Likewise, when comparing women undergoing IOL vs. those expectantly managed (method 2), IOL was not associated with an increased adjusted rate of CD at 37, 38, or 39 completed weeks. At 40 completed weeks, IOL was associated with a 3-fold increased in CD rate. There was a similar increase in CD rate at 41 completed weeks and greater, but this association was not statistically significant. The CD risks when stratified by treatment group are shown in Tables IIIA and IIIB. In the treated group, based on small numbers, there was a trend toward a reduction in CD risk associated with IOL prior to 39 weeks the OR (95% CI) with IOL when compared to those expectantly managed was 1.97 (0.39, 9.95) at 40 and 3.94(0.10, 158.6) at 41 weeks (Table IIIB). However, these comparisons were not statistically significant. In the standard care group, the OR (95% CI) for IOL compared to the expectant management group was 3.07 (1.05, 8.96) at 40 weeks and 3.76 (0.69, 20.58) at 41 weeks; there were no increases at 37, 38 or 39 weeks (Table IIIA).

The frequency and adjusted odds of the composite perinatal outcome were not different in the IOL group when compared to either the spontaneous labor (method 1) or expectant management group (method 2) at all GAs (Table IV). There were no cases of stillbirth or neonatal deaths in this study. Furthermore, there were no significant differences in the unadjusted frequency of NICU admissions between the groups with the exception of an increase in NICU admissions in the IOL group at 41 weeks (there were no NICU admissions in the 41 week expectant management group; data not shown). There was a significant increase in the frequency of infants with birthweight  $> 4000\text{g}$  at 41 weeks when compared to 39 weeks (OR of 2.83 with 95% CI of 1.31–6.14) in all deliveries (data not shown). However, there were no significant differences in the frequency of either infants with birthweight  $> 4000\text{g}$  or LGA neonates in the IOL vs. expectant management groups at all gestational ages (data not shown).

## COMMENT

We found an increasing trend in cesarean delivery risk with increasing gestational age at term. When compared to expectant management, IOL in patients with mild GDM was not associated with an increase in CD rate until 40 weeks. When stratified for treatment group (standard care and treated groups), results (limited by numbers), were similar to the overall findings; the increase in CD risk from 40 weeks appeared to be more prominent among

those who were not treated. Furthermore, we found no significant differences in perinatal outcomes between patients undergoing IOL compared to either those spontaneously laboring or those expectantly managed. No significant differences were also observed for NICU admissions, birthweight > 4000, or LGA neonates.

A recent study indicates that IOL at 39 in women with GDM confers a decrease in perinatal mortality.<sup>9</sup> Our results are mostly consistent with a previous cohort study of term deliveries that showed no difference in CD rate when IOL was compared to expectant management at all gestational ages. Similarly, a randomized controlled trial by Boulvain and colleagues showed no increase in CD rate in non-diabetic women undergoing IOL with suspected fetal macrosomia.<sup>10</sup>

Our findings are in line with meta-analyses that showed no increase in the CD rate in women undergoing elective IOL at term.<sup>5, 6</sup> In our study, there were no differences in CD rates in women undergoing IOL vs. expectant management prior to 40 weeks. However, IOL was associated with an increase in CD rate from 40 weeks. As the population in the current study was restricted to women with mild GDM and included women undergoing both elective and indicated IOL, our findings could potentially be attributed to the higher risk of macrosomia, labor dystocia, and fetal heart rate abnormalities in gestational diabetics leading to higher CD rate with advancing gestation.

Previous studies have differed in the composition of the expectant management group. For example, Caughey *et al.* defined the expectant management group as women delivering, after either spontaneous or induced labor, during the week following the induction group.<sup>11</sup> This approach may favor the induction group because it excludes women who spontaneously labor in the same week from the expectant management group. In contrast, Glantz included women who delivered following spontaneous labor the same week as the induction group in the expectant management group.<sup>12</sup> In contrast to the current study, that analysis demonstrated a small but significant increased risk of CD associated with labor induction.<sup>12</sup> We chose to define the expectant management group as women who delivered at the same GA following spontaneous labor and patients who delivered at subsequent GA following spontaneous or induced labor. These differences may account for some of the variations in findings among these studies. Additionally, given the limitations of the precision of dating, some of these differences may be affected by variability in the assignment of gestational age.

Although we simulate IOL vs. expectant management, prospective management regarding timing of delivery was not a focus of the primary trial. Therefore, this secondary analysis does not fully capture prospective management intent. Additionally, while adjustment for confounders such as parity did not alter the results, we do not have data on other factors, such as cervical status, that may affect these findings. We also did not take into account the type of gestational diabetes given that few women required medication. Our population is made up of only women with mild GDM, limiting the generalizability of findings to all patients with GDM.

The overall CD rate in this selected population was relatively low at 13%. The CD rate in original trial was 30%, and the population selected for the current study excluded women with scheduled CDs, prior CDs, and non-cephalic presentations. It is not clear how a more liberal use of CD in this population would affect our findings. Over half of the patients in this study were Hispanic, reflective of the increased risk of GDM associated with Hispanic ethnicity. Finally, as this was a retrospective analysis of an existing trial, our sample size likely did not provide sufficient power to account for all possible differences in comparison groups.

As gestation progresses, particularly in pregnancies complicated by diabetes or other comorbidities, the risks of adverse perinatal outcomes such as stillbirth, fetal heart rate abnormalities, macrosomia, and labor dystocia increases.<sup>13, 14</sup> The current study was limited in that there were no stillbirths in this group, which is explained by the relatively small sample size of women with only mild GDM.

Taken together, these data support the hypothesis that a policy of induction prior to 40 weeks in women with GDM may not increase the rate of cesarean delivery. Considered collectively with the studies associating decreasing adverse pregnancy outcomes with increasing gestational age, our findings suggest that delivery prior to 40 weeks, perhaps as early as 38 weeks, may improve CD risk in women with mild GDM. This should be weighed against the impact on other important perinatal outcomes. Therefore, a large, randomized controlled trial is warranted to further evaluate the maternal and neonatal risks and benefits of IOL at term and, thus, to determine the optimal gestational age of delivery in women with GDM.

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## Appendix

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**CLINICAL IMPLICATIONS**

- Induction of labor, compared to expectant management, prior to 40 weeks does not increase cesarean delivery risk in women with mild gestational diabetes mellitus (GDM).
- Large randomized controlled trials are warranted to fully evaluate the maternal and neonatal risks associated with induction of labor and to determine the optimal gestational age of delivery in women with mild GDM.

Table 1

Characteristics of the study population\*

Gestational Age (completed weeks)	37 (n=78)	38 (n=145)	39 (n=205)	40 (n=176)	41 (n=75)	p-value
Characteristic						
Age—yr	27.9 ± 5.5	28.9 ± 5.5	28.4 ± 6.0	28.9 ± 5.0	29.0 ± 5.3	0.46
Primigravida – no. %	20 (25.6%)	38 (26.2%)	54 (26.3%)	45 (25.6%)	16 (21.3%)	0.94
Race/Ethnic group <sup>†</sup>						
Black	9 (11.5 %)	18 (12.4%)	28 (13.7%)	13 (7.4%)	8 (10.7%)	0.002
White	20 (25.6 %)	52 (35.9%)	56 (27.3%)	33 (18.8%)	13 (17.3%)	
Hispanic	43 (55.1 %)	64 (44.1%)	105 (51.2%)	119 (67.6%)	53 (70.7%)	
Other	6 (7.7 %)	11 (7.6%)	16 (7.8%)	11 (6.3%)	1 (1.3%)	
Smoking – no. (%)	8 (10.3 %)	17 (11.7%)	17 (8.3%)	9 (5.1%)	2 (2.7%)	0.08
Alcohol use – no. (%)	3 (3.9 %)	8 (4.1%)	9 (4.4%)	5 (2.8%)	2 (2.7%)	0.92
BMI at entry <sup>#</sup>	30.0 ± 5.4	29.7 ± 5.3	30.0 ± 4.8	29.9 ± 4.8	30.3 ± 4.7	0.85
Glucose level after 50-g glucose loading test – mg/dl <sup>§</sup>	157.7 ± 15.7	159.7 ± 14.7	161.2 ± 15.9	156.7 ± 15.6	161.6 ± 14.8	0.008
Glucose levels in 3-hr OGTT – mg/dl						
Fasting	86.3 ± 5.6	86.1 ± 5.6	86.1 ± 5.8	86.4 ± 5.5	85.9 ± 5.7	0.97
1-hr	196.8 ± 20.0	191.5 ± 20.5	193.2 ± 20.2	191.4 ± 19.5	194.7 ± 23.5	0.39
2-hr	171.7 ± 22.7	172.7 ± 18.8	174.2 ± 21.3	174.8 ± 20.2	171.4 ± 21.8	0.79
3-hr	134.4 ± 27.8	135.7 ± 31.4	135.0 ± 31.0	136.7 ± 32.0	132.7 ± 30.5	0.79
Treatment Group						
GDM Treatment	34 (43.6%)	83 (57.2%)	115 (56.1%)	90 (51.1%)	34 (45.3%)	0.16
Usual Care Group	44 (56.4%)	62 (42.8%)	90 (43.9%)	86 (48.9%)	41 (54.5%)	
Spontaneous labor or Induction						
Induced	24 (30.8%)	48 (33.1%)	64 (31.2%)	54 (30.7%)	30 (40.0%)	0.65
Spontaneous	54 (69.2%)	97 (66.9%)	141 (68.8%)	122 (69.3%)	45 (60.0%)	

\* Plus-minus values are means + SD.

<sup>†</sup> Race or ethnic group was self-reported.<sup>#</sup> The body-mass index (BMI) is the weight in kilograms divided by the square of the height in meters.

**Table II**

CD rates according to GA for IOL or spontaneous labor compared to 39 weeks or induction vs. expectant management.

	Gestational Age														
	37 (n=78)			38 (n=145)			39 (n=205)			40 (n=176)			41 (n=75)		
	No. (%)	aOR*	95%CI	No. (%)	aOR	95%CI	No. (%)	aOR	95%CI	No. (%)	aOR	95%CI	No. (%)	aOR	95%CI
<b>Method 1<sup>†</sup></b>															
All Deliveries	8/78 (10.3)	0.83	(0.34,2.02)	14/145 (9.7)	0.76	(0.37, 1.57)	25/205 (12.2)	Ref	Ref	24/176 (13.6)	1.26	(0.67, 2.38)	17/75 (22.7)	<b>2.36</b>	<b>(1.13,4.94)</b>
IOL	3/24 (12.5)	0.43	(0.09, 2.08)	3/48 (6.3)	0.27	(0.06,1.23)	10/64 (15.6)	Ref	Ref	16/54 (29.6)	2.58	(0.93, 7.15)	13/30 (43.3) <sup>§</sup>	<b>3.72</b>	<b>(1.23,11.24)</b>
Spontaneous	5/54 (9.3)	1.02	(0.33, 3.12)	11/97 (11.3)	1.04	(0.44,2.48)	15/141 (10.6)	Ref	Ref	8/122 (6.6)	0.57	(0.22, 1.44)	4/45 (8.9)	0.99	(0.29, 3.37)
<b>Method 2<sup>#</sup></b>															
IOL	12.5	0.61	(0.16, 2.27)	6.3	0.37	(0.11,1.30)	15.6	0.95	(0.42,2.14)	29.6	<b>3.11</b>	<b>(1.33,7.28)</b>	41.7 <sup>§</sup>	3.73	(0.97,14.3)
Expectant	13.0		Ref	13.9		Ref	14.3		Ref	12.7		Ref	13.7		Ref

\* aOR = adjusted odds ratio, adjusted for maternal age, ethnicity, BMI, parity, smoking, timing of dating ultrasound, SGA status, assigned control vs. treatment group.

<sup>†</sup> Method 1: Patients delivering at a specific GA (in completed weeks) and type of labor were compared to those who delivered at 39 weeks.

<sup>#</sup> Method 2: Patients undergoing IOL at a specific GA were compared with those “expectantly managed”, which included patients who delivered at the same GA following spontaneous labor and patients who delivered at subsequent GA following spontaneous or induced labor.

<sup>§</sup> The IOL group in method 1 included patients induced at or beyond 41 weeks, and the IOL group in method 2 included only patients induced at 41 weeks.

**Table IIIA**

CD rates according to GA for IOL or spontaneous labor compared to 39 weeks or induction vs. expectant management in the standard care group.

	Gestational Age														
	37 (n=34)			38 (n=83)			39 (n=115)			40 (n=90)			41 (n=34)		
	No. (%)	aOR*	95%CI	No. (%)	aOR	95%CI	No. (%)	aOR	95%CI	No. (%)	aOR	95%CI	No. (%)	aOR	95%CI
<b>Method 1<sup>†</sup></b>															
All Deliveries	8/44 (18.2)	1.61	(0.56, 4.63)	6/62 (9.7)	0.75	(0.25, 2.25)	11/90 (12.2)	Ref	Ref	16/86 (18.6)	1.82	(0.76, 4.37)	11/41 (26.8)	<b>3.02</b>	<b>(1.12, 8.10)</b>
IOL	3/14 (21.4)	1.83	(0.20, 16.39)	2/19 (10.5)	2.28	(0.23, 22.99)	2/29 (6.9)	Ref	Ref	10/26 (38.5)	<b>12.08</b>	<b>(1.80, 81.26)</b>	8/18 (44.4)	<b>13.18</b>	<b>(1.92, 90.63)</b>
Spontaneous	5/30 (16.7)	1.23	(0.34, 4.43)	4/43 (9.3)	0.51	(0.14, 1.90)	9/61 (14.8)	Ref	Ref	6/60 (10.0)	0.58	(0.18, 1.85)	3/23 (13.0)	0.91	(0.21, 3.93)
<b>Method 2<sup>#</sup></b>															
IOL	21.4	1.05	(0.26, 4.22)	10.5	0.80	(0.17, 3.76)	6.9	0.27	(0.06, 1.32)	38.5	<b>3.07</b>	<b>(1.05, 8.96)</b>	42.9	3.76	(0.69, 20.58)
Expectant	15.9	Ref	Ref	16.2	Ref	Ref	19.2	Ref	Ref	16.8	Ref	Ref	18.5	Ref	Ref

\* aOR = adjusted odds ratio, adjusted for maternal age, ethnicity, BMI, parity, smoking, timing of dating ultrasound, SGA status, assigned control vs. treatment group.

<sup>†</sup> Method 1: Patients delivering at a specific GA (in completed weeks) and type of labor were compared to those who delivered at 39 weeks.

<sup>#</sup> Method 2: Patients undergoing IOL at a specific GA were compared with those “expectantly managed”, which included patients who delivered at the same GA following spontaneous labor and patients who delivered at subsequent GA following spontaneous or induced labor.

**Table IIIB**

CD rates according to GA for IOL or spontaneous labor compared to 39 weeks or induction vs. expectant management in the treated group.

	Gestational Age														
	37 (n=34)			38 (n=83)			39 (n=115)			40 (n=90)			41 (n=34)		
	No. (%)	aOR*	95%CI	No. (%)	aOR	95%CI	No. (%)	aOR	95%CI	No. (%)	aOR	95%CI	No. (%)	aOR	95%CI
<b>Method 1<sup>†</sup></b>															
All Deliveries	0/34 (0.0)			8/83 (9.6)	0.51	(0.19, 1.36)	14/115 (12.2)	Ref	Ref	8/90 (8.9)	0.81	(0.29, 2.27)	6/34 (17.7)	2.48	(0.74, 8.28)
IOL	0/10 (0.0)			1/29 (3.5)	<b>0.07</b>	<b>(0.007, 0.65)</b>	8/35 (22.9)	Ref	Ref	6/28 (21.4)	0.92	(0.22, 3.88)	5/12 (41.7)	2.12	(0.43, 10.51)
Spontaneous	0/24 (0.0)			7/54 (13.0)	1.36	(0.40, 4.67)	6/80 (7.5)	Ref	Ref	2/62 (3.2)	0.44	(0.08, 2.52)	1/22 (4.6)	1.85	(0.17, 19.87)
<b>Method 2<sup>#</sup></b>															
IOL	0			3.5	0.11	(0.01, 1.07)	22.9	2.01	(0.65, 6.17)	21.4	1.97	(0.39, 9.95)	40.0	3.94	(0.10, 158.6)
Expectant	10.4	Ref		12.0		Ref	9.8		Ref	8.3		Ref	8.3		Ref

\* aOR = adjusted odds ratio, adjusted for maternal age, ethnicity, BMI, parity, smoking, timing of dating ultrasound, SGA status, assigned control vs. treatment group.

<sup>†</sup> Method 1: Patients delivering at a specific GA (in completed weeks) and type of labor were compared to those who delivered at 39 weeks.

<sup>#</sup> Method 2: Patients undergoing IOL at a specific GA were compared with those “expectantly managed”, which included patients who delivered at the same GA following spontaneous labor and patients who delivered at subsequent GA following spontaneous or induced labor.

Table IV

Composite perinatal outcome\* according to GA for induction or spontaneous labor compared to 39 weeks or induction vs. expectant management.

	Gestational Age														
	37 (n=78)			38 (n=145)			39 (n=205)			40 (n=176)			41 (n=75)		
	%	aOR <sup>§</sup>	95%CI	%	aOR	95%CI	%	aOR	95%CI	%	aOR	95%CI	%	aOR	95%CI
<b>Method 1<sup>†</sup></b>															
All Deliveries	28.2	1.13	(0.60, 2.10)	20.7	0.81	(0.48, 1.37)	24.9	Ref	Ref	20.7	0.80	(0.49, 1.32)	37.1	1.85	(1.007, 3.38)
IOL	21.7	0.86	(0.25, 2.92)	29.8	1.14	(0.47, 2.74)	27.0	Ref	Ref	13.2	0.41	(0.15, 1.16)	44.8	2.21	(0.80, 6.11)
Spontaneous	31.3	1.50	(0.71, 3.19)	16.1	0.63	(0.32, 1.27)	23.9	Ref	Ref	24.1	1.08	(0.59, 1.96)	31.7	1.58	(0.71, 3.52)
<b>Method 2<sup>#</sup></b>															
IOL	21.7	0.78	(0.28, 2.19)	29.8	1.39	(0.71, 2.74)	27.0	1.10	(0.58, 2.07)	13.2	0.26	(0.10, 0.67)	47.8	1.70	(0.38, 7.63)
Expectant	24.7	Ref	Ref	23.6	Ref	Ref	24.9	Ref	Ref	29.0	Ref	Ref	31.9	Ref	Ref

\* The composite perinatal outcome included hypoglycemia, hyperbilirubinemia, RDS, and birth trauma.

<sup>§</sup> aOR = adjusted odds ratio, adjusted for maternal age, ethnicity, BMI, parity, smoking, infant sex, SGA status, Cesarean delivery, timing of dating ultrasound, and assigned control vs. treatment group.

<sup>†</sup> Method 1: Patients delivering at a specific GA (in completed weeks) and type of labor were compared to those who delivered at 39 weeks.

<sup>#</sup> Method 2: Patients undergoing IOL at a specific GA were compared with those "expectantly managed", which included patients who delivered at the same GA following spontaneous labor and patients who delivered at subsequent GA following spontaneous or induced labor.