

OBSTETRICS

Maternal and newborn outcomes with elective induction of labor at term



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Background

A growing body of evidence supports improved or not worsened birth outcomes with nonmedically indicated induction of labor at 39 weeks gestation compared with expectant management. This evidence includes 2 recent randomized control trials. However, concern has been raised as to whether these studies are applicable to a broader US pregnant population.

Objective

Our goal was to compare outcomes for electively induced births at ≥ 39 weeks gestation with those that were not electively induced.

Study Design

We conducted a retrospective cohort study using chart-abstracted data on births from January 1, 2012, to December 31, 2017, at 21 hospitals in the Northwest United States. The study was restricted to singleton cephalic hospital births at 39^{+0} – 42^{+6} weeks gestation. Exclusions included previous cesarean birth, missing data for delivery type or gestational week at birth, antepartum stillbirth, cesarean birth without any attempt at vaginal birth, fetal anomaly, gestational diabetes mellitus, prepregnancy diabetes mellitus, and

prepregnancy hypertension. The rate of cesarean birth for elective inductions at both 39 and 40 weeks gestation was compared with the rate in all other on-going pregnancies in the same gestational week. Maternal outcomes (operative vaginal birth, shoulder dystocia, 3rd- or 4th-degree perineal laceration, pregnancy-related hypertension, and postpartum hemorrhage) and newborn infant outcomes (macrosomia, 5-minute Apgar <7 , resuscitation at delivery, intubation, respiratory complications, and neonatal intensive care unit admission) were also compared between elective inductions and on-going pregnancies at 39 and 40 weeks gestation. Logistic regression modeling was used to produce odds ratios for outcomes with adjustment for maternal age and body mass index. Results were stratified by parity and gestational week at birth. Duration of hospital stay (admission to delivery, delivery to discharge, and total stay) were compared between elective inductions and on-going pregnancies.

Results

A total of 55,694 births were included in the study cohort: 4002 elective inductions at $\geq 39^{+0}$ weeks gestation and 51,692 births at 39^{+0} – 42^{+6} weeks gestation that were not electively induced. In nulliparous women, elective induction at 39 weeks gestation was associated with a decreased likelihood of cesarean birth (14.7% vs 23.2%; adjusted odds

ratio, 0.61; 95% confidence interval, 0.41–0.89) and an increased rate of operative vaginal birth (18.5% vs 10.8%; adjusted odds ratio, 1.8; 95% confidence interval, 1.28–2.54) compared with on-going pregnancies (Table). In multiparous women, cesarean birth rates were similar in the elective inductions and on-going pregnancies. Elective induction at 39 weeks gestation was associated with a decreased likelihood of pregnancy-related hypertension in nulliparous (2.2% vs 7.3%; adjusted odds ratio, 0.28; 95% confidence interval, 0.11–0.68) and multiparous women (0.9% vs 3.5%; adjusted odds ratio, 0.24; 95% confidence interval, 0.15–0.38). Term elective induction was not associated with any statistically significant increase in adverse newborn infant outcomes. Elective induction of labor at 39 weeks gestation was associated with increased time from admission to delivery for both nulliparous (1.3 hours; 95% confidence interval, 0.2–2.3) and multiparous women (3.4 hours; 95% confidence interval, 3.2–3.6).

Conclusion

Elective induction of labor at 39 weeks gestation is associated with a decrease in cesarean birth in nulliparous women, decreased pregnancy-related hypertension in multiparous and nulliparous women, and increased time in labor and delivery. How to use this information remains the challenge.

Cite this article as: Souter V, Painter I, Sitcov K, et al. Maternal and newborn outcomes with elective induction of labor at term. *Am J Obstet Gynecol* 2019;220:273.e1-11.

0002-9378/free
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<https://doi.org/10.1016/j.ajog.2019.01.223>

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TABLE

Cesarean birth rates in elective inductions and on-going pregnancies

Cesarean birth	Week at birth	Elective inductions,% (n)	On-going pregnancies, ^a % (n)	Adjusted odds ratio ^b	95% Confidence interval	P value
Nulliparous	39	14.7 (218)	23.2 (27,533)	0.61	0.41–0.89	.011
	40	24.0 (342)	26.4 (17,765)	0.90	0.70–1.17	.443
Multiparous	39	2.8 (2100)	3.4 (25,843)	0.83	0.64–1.09	.190
	40	4.3 (1342)	3.9 (12,950)	1.13	0.85–1.51	.394

^a The referent group is “on-going pregnancies” and includes all pregnancies that were not elective inductions in the same gestational week; ^b Adjusted for maternal age and body mass index. Souter et al. *Elective induction at term. Am J Obstet Gynecol* 2019.

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The Foundation for Health Care Quality is a 501(c)(3) non-profit organization supported by membership dues from the participants in its programs.

The authors report no conflict of interest.