

317 Neonatal and infant morbidity and mortality among women with a failed trial of labor after cesarean

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OBJECTIVE: Despite the increased maternal risks associated with failed trial of labor after cesarean (TOLAC), it remains unknown whether failed TOLAC is also associated with increased morbidity and mortality in infants. The purpose of this study was to determine rates of early (EMR), late (LMR), post-neonatal (PMR) and infant (IMR) mortality in those with failed TOLAC as compared to those with successful TOLAC, specifically among women at 34-41 weeks who had induction or stimulation of labor. Secondary measures of neonatal morbidity (5-min Apgar score <4 and neonatal seizures) were also compared.

STUDY DESIGN: Linked birth and infant death cohort data, between 2000 and 2004, from the US were used to identify women with a prior cesarean who were between 34-41 weeks, delivered non-anomalous singletons, and underwent either labor induction or stimulation. Multivariable log-binomial regression models were fitted to estimate the risk ratio (RR) for infant morbidity and mortality in relation to TOLAC following adjustments for several confounders.

RESULTS: During the study period, the rate of successful TOLAC among the 164,113 women who met the inclusion criteria declined from 62% in 2000 to 52% in 2004 ($P < 0.001$). The rates of EMR, LMR, PNMR, and IMR for the overall cohort were 0.3, 0.3, 1.6 and 2.2/1,000 live births, respectively. A failed TOLAC was significantly associated with a higher risk of neonatal and infant mortality, as well as immediate neonatal morbidity (Table).

CONCLUSION: Among women undergoing labor induction or stimulation, failed TOLAC is associated with a significantly higher rate of neonatal morbidity, as well as neonatal and infant mortality.

	Successful TOLAC	Failed TOLAC	Adjusted RR (95% CI)
Mortality*	N=97,111	N=67,002	
EMR (0-6 days)	0.1 (14)	0.5 (32)	3.4 (1.8, 6.4)
LMR (8-27 days)	0.2 (18)	0.4 (28)	2.3 (1.3, 4.2)
PMR (28-365 days)	1.5 (148)	1.7 (116)	1.1 (0.9, 1.4)
IMR (0-365 days)	1.9 (180)	2.6 (176)	1.4 (1.1, 1.7)
Morbidity*	N=97,043	N=66,943	
5 min Apgar score < 4	0.8 (80)	2.4 (162)	2.9 (2.2, 3.8)
Neonatal seizure	0.5 (53)	0.9 (60)	1.6 (1.1, 2.3)

*Per 1,000 live births

318 The association between induction of labor and primary cesarean delivery in the Northeastern U.S. between 1996 and 2004

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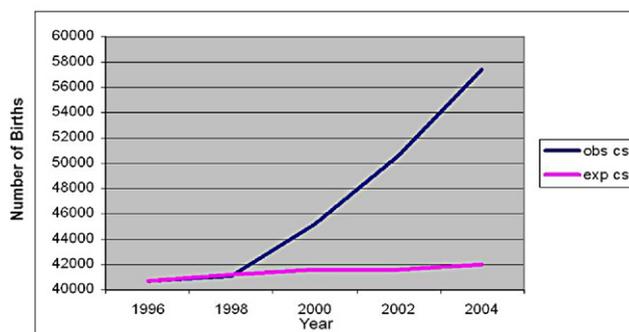
OBJECTIVE: The annual incidence rates of labor induction and cesarean delivery have increased dramatically over the past decade. We aim to examine the association between induction of labor and cesarean delivery among low risk nulliparous women in the northeastern U.S. over time.

STUDY DESIGN: This was a retrospective cohort study of non-anomalous, singleton, term, vertex live births by nulliparous women in the northeastern U.S. states between 1996 and 2004 using the U.S. Natality birth data. We excluded medical and obstetric conditions, yielding a low-risk population. The association between labor induction and cesarean delivery was examined by time trend in 2-year intervals using chi-square test and multivariable logistic regression. Population-based expected and observed numbers of cesareans over time were estimated using baseline cesarean risk and adjusted odds ratio based on induction of labor.

RESULTS: There were 1,300,393 live births meeting study criteria; of these, 21.4% had cesarean delivery. Compared to women without induction of labor, those induced had about 1.5 times the adjusted odds of cesarean: 1.58 for 1996 and 1998, 1.55 for 2000, 1.54 for 2002, and 1.55 for 2004. Of note, these odds ratios remained stable over the study period. However, the difference between observed and expected numbers of cesarean sections increased over time (Figure).

CONCLUSION: While nulliparous women who had induction of labor had higher odds of cesarean, this effect estimates were stable over time. However, the actual number of cesarean deliveries increasingly deviated from the expected amounts, suggesting that increase in labor induction only provides partial explanation for the current cesarean epidemic.

Number of observed vs. expected cesarean in the Northeast* US, over 1996-2004



*Northeast: CT, MA, ME, NH, NJ, NY, PA, RI, VT

319 Influence of oxytocin acceleration of nulliparous labor on perinatal outcome

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OBJECTIVE: Oxytocin augmentation successfully corrects dystocia in most slowly-progressing first labors, although its use has been sug-

gested as a cause of increased perinatal morbidity. We examined this potential relationship in a large series of first labors.

STUDY DESIGN: Three aspects of perinatal outcome asphyxial neonatal death, asphyxial seizures and abnormal neonatal neurological behaviour, were analyzed in a consecutive cohort of 23889 spontaneous singleton cephalic nulliparous labors at term (≥ 37 weeks) from 1998 to 2008, in respect of oxytocin acceleration in a dosage range of 6-40 mU/min.

RESULTS: In total, 13242 (55%) nulliparas received oxytocin augmentation and 10647 did not. There were no significant differences in respect of any of the three outcome measures between the oxytocin-treated and untreated cohorts; in addition, the incidences of low Apgar (<7 at 1 min) and low cord blood pH (where sampled) did not differ. Mean birthweight and epidural usage did not differ between the oxytocin and non-oxytocin-accelerated groups, although mean spontaneous labor duration was different (oxytocin: 8.5 hours; no oxytocin 5.4 hours). No case of uterine rupture occurred.

CONCLUSION: In this cohort of spontaneous singleton cephalic first labours at term, correction of slow progress with oxytocin augmentation as part of an Active Management of Labor protocol conferred no discernible extra maternal or perinatal morbidity. Reference: Clark SL, Simpson KR, Knox GE, Garite TJ. Oxytocin: new perspectives on an old drug. *am J Obstet Gynecol* 2009;35.e1-6.

320 Maternal seizure disorder is not associated with adverse pregnancy outcomes

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OBJECTIVE: Prior studies are conflicting regarding whether a maternal seizure disorder is associated with adverse pregnancy outcomes, such as intrauterine growth restriction (IUGR) or intrauterine fetal demise (IUID). Many positive studies are based on birth certificate data, which may be flawed and prone to misclassification. We sought to estimate the association between maternal seizure disorder and IUGR.

STUDY DESIGN: A retrospective cohort study of all consecutive singleton pregnancies undergoing routine anatomic survey between 15 and 22 weeks at a tertiary medical center. Pregnancy outcomes in women with a self reported history of seizure disorder were compared with women who reported no medical problems. Pregnancies complicated by other co-morbidities, including diabetes and hypertension, and fetal anomalies were excluded. Importantly, dedicated research nurses identified outcomes in a prospective manner. The primary outcome was IUGR at >24 weeks gestation, defined as a birth weight <10 th percentile for gestational age based on the Alexander growth standard. Secondary outcomes included IUID, preeclampsia, and preterm delivery <37 weeks. Univariate and multivariate analyses were performed.

RESULTS: Of 63,561 subjects, 47,495 were included in the analysis, of which 445 had a seizure disorder. After controlling for smoking and black race, women with a seizure disorder had a similar risk of having a baby with IUGR compared to women without a seizure disorder (10% vs 8%, adjusted odds ratio (AOR) 1.2, 95% confidence interval [CI] 0.94-1.65). The risk of IUID was similar in both groups (0.7% vs 0.7%, RR 1.0, 95% CI 0.32-3.07) as was the risk of preeclampsia (7.6% vs 6.9%, AOR 1.1, 95% CI 0.79-1.53). In subanalysis of only women reporting use of antiepileptic medication, the risks for IUGR and IUID remained similar to the no seizure disorder group.

CONCLUSION: Our data suggest no increased risk of IUGR or IUID for pregnancies complicated by maternal seizure disorder. In the absence of other risk factors, serial ultrasounds and antenatal testing may not be indicated in this population of patients.

	Seizure Disorder (n= 445)	No Seizure Disorder (n= 47,050)	RR	AOR
IUGR $<5\%$	25 (5.7%)	2,899 (6.2%)	0.9 (0.62-1.34)	0.88 (0.59-1.32)*
IUGR $<10\%$	44 (10.0%)	3,749 (8.0%)	1.3 (0.94-1.65)	1.2 (0.90-1.69)*
IUID	3 (0.7%)	321 (0.7%)	1.0 (0.32-3.07)	-
Preterm Delivery (<37 wks)	51 (11.5%)	5,080 (10%)	1.1 (0.82-1.38)	1.1 (0.77-1.44)†
Pre Eclampsia	33 (7.6%)	3,131 (6.9%)	1.1 (0.79-1.53)	1.1 (0.79-1.62)†

*Adjusted for black race, smoking
†Adjusted for black race, smoking, alcohol exposure during pregnancy

321 Efficacy of chlorhexidine gluconate versus povidone iodine for skin disinfection at cesarean section: a randomized controlled trial

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OBJECTIVE: Chlorhexidine gluconate (CG) and povidone iodine (PI) are the two most commonly used skin disinfectants. Currently there are no published studies comparing the efficacy of these two agents for cesarean section (C/S). The objective of this study was to compare the incidence of positive bacterial cultures post C/S after preoperative application of CG versus PI.

STUDY DESIGN: Gravida undergoing scheduled C/S at term were randomly assigned to receive CG or PI. A culture swab was taken of the incisional site at 3 minutes and 18 hours after application of the disinfectant, and were placed on mammalian blood-enriched agar with 10² size loop (Agar A) and 10³ loop (Agar B) for semiquantitative cultures. The main outcome of interest was the presence of positive bacterial culture. Continuous variables were compared using Mann-Whitney; categorical variables were compared using Chi-Square or Fishers exact tests.

RESULTS: The two groups were similar in age, BMI, and past medical history. Of the 30 patients, 13 were randomized to CG and 17 to PI. No differences in positive bacterial culture rates were detected between the two groups at 3 minutes. At 18 hours, positive bacterial cultures were identified in 15% (2/13) in the CG group versus 59% (10/17) in the PI group (p=.016) in Agar A, and 0% (0/13) in the CG group versus 41% (7/17) in the PI group (p=0.008) in Agar B.

CONCLUSION: The rate of incisional site positive bacterial cultures obtained 18 hours after cesarean section was significantly less in the CG group compared to the PI group. Further study is required to assess if the preoperative use of CG results in a decreased rate of C/S wound infections.

322 Pregnancy outcomes after bariatric surgery compared with body mass index matched controls

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OBJECTIVE: To compare pregnancy outcomes of women after bariatric surgery to controls matched for pre-surgery body mass index (BMI), and also to determine whether the outcomes are similar to those of patients starting pregnancy at the same BMI without surgery.

STUDY DESIGN: The study was a retrospective chart review. Seventy patients who had undergone bariatric surgery and had a subsequent