309 Uterine rupture in women with previous cesarean for dystocia in second stage of labor

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OBJECTIVE: To evaluate the risk of uterine rupture in women undergoing a trial of labor (TOL) after a previous cesarean for dystocia in second stage of labor.

STUDY DESIGN: A retrospective cohort study of women with a single previous low-transverse cesarean undergoing a first TOL was performed. Women with a previous cesarean for dystocia in second stage were compared to those with previous dystocia in first stage and those with previous cesarean for non-recurrent reasons. Chi-square and Fishers exact were used when appropriate.

RESULTS: Out of 1950 women, those with previous dystocia in second stage of labor (n=220) had a similar risk of uterine rupture than women with previous dystocia in the first stage (n=639) and women with previous cesarean for non-recurrent indication (1.8%, 1.7%, and 1.5%, respectively, p=0.88). However, we found that all (100%) uterine ruptures in the former group occurred in the second stage of labor ($p<0.05$) compared to 18% and 25% in the two other groups ($p<0.05$). The median length of the second stage of labor before uterine rupture was 2.5 hours (interquartile: 1.5 3.2 hours) for those cases.

CONCLUSION: Previous cesarean for dystocia in the second stage of labor is associated with uterine rupture in the second stage of the subsequent delivery. This may be related to a lower location of the uterine scar, which may be more prone to rupture at an advanced cervical dilatation during the next delivery. Prolonged second stage should be avoided in these women.

310 Induction of labor after a prior cesarean delivery lessons from a population based study

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OBJECTIVE: Trial of labor (TOL) after a previous cesarean section (CS) is one of the tools to reduce the increasing CS rate. The safety and efficacy of induction of labor (IOL) in these patients is still controversial. The aims of the study were: 1) to determine the success rate of IOL in women with a prior low-transverse CS; 2) to compare the perinatal outcome of a TOL in women with one prior CS who had an IOL, spontaneous TOL, or an elective repeat CS (RECS).

STUDY DESIGN: A retrospective cohort study, including all patients with a prior low-transverse CS in their subsequent delivery of a vertex singleton in our medical center from 1988 until 2005 (n=7755). The maternal and neonatal demographical and medical data were obtained from a computerized database. The patients were classified into three groups: 1) women who underwent RECS (n= 1916); 2) women who had a spontaneous TOL (n= 4263); and 3) women who underwent IOL (n=1576).

RESULTS: 1) the rate of IOL in the study cohort was 20.3%, and 67.4% of those who had IOL had a VBAC; 2) patient in the spontaneous TOL had a VBAC rate of 72.9% which is higher than that of the IOL group ($p<0.001$); 3) repeated CS due to labor dystocia were more prevalent in women in the IOL group than in the spontaneous TOL group (22.5% vs. 9.95%, OR 2.62, 95% CI 2.24-3.06); 4) the rate of uterine rupture was comparable among all study groups; 5) post partum infectious morbidity was higher among patients in the IOL group than in those who had a spontaneous TOL or an RECS ($p<0.001$); 7) in a multivariable analysis, labor dystocia at previous pregnancy, maternal illness, and IOL, were all independent risk factors for repeated CS.

CONCLUSION: 1) IOL in patients with a previous CS is successful in about 2/3 of the cases; 2) nevertheless, in comparison to spontaneous onset of labor, IOL is an independent risk factor for repeated CS; 2) the rate of labor dystocia is higher among patients who had an IOL than those delivering spontaneously; and 3) a risk assessment model for the success of TOL by an IOL after a CS is needed.

311 The physician factor in inductions of labor and cesarean delivery rates

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OBJECTIVE: To investigate if a physicians time in practice and type of practice (group vs. solo) has any impact on cesarean delivery (CD) rates for induced labors and if physicians with high induction rates have higher CD rates.

STUDY DESIGN: We performed a retrospective study of 1243 singleton, cephalic, term (> 37 wks) inductions delivered by 43 obstetricians over 2 years in a tertiary center. Physicians with more than 50 deliveries per year were studied. Physician experience was measured by the number of years in practice since residency. There were 27 physicians in group practice and 16 physicians in solo practice. Patient characteristics, rates of induction and CD rates were studied in relationship to the experience of physician. Patients with previous CD were excluded. The primary outcome variable was the percent of each physicians induced labors that resulted in a CD. Analysis was performed by using Pearson correlation and logistic regression. Regression analysis was performed using physician and patient characteristics as explanatory variables for CD among the patients who were induced. Induction rates and total inductions were dichotomized based on 75th percentile (20%) and t- tests were performed.

RESULTS: Of the 1243 induced patients, 364 [29 %] had a CD. Nulliparity (25.1% vs. multiparity 3.62%, p 20%, p=0.52). Physicians in group practice had lower CD rates compared to solo practitioners (p=0.04).

CONCLUSION: Our data shows that, experience and induction rates of the physician do not influence CD rates. Group practice may reduce the CD rates.

312 Differential mRNA expression in myometrial tissue of obese gravidas

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OBJECTIVE: This study investigates differential expression of genes in myometrial tissue of obese women undergoing cesarean section. Obese women have an increased risk of dysfunctional labor, with higher rates of induction, failed induction, and cesarean section. Understanding the differences in gene expression patterns may provide a foundation by which to understand the mechanisms of dysfunctional labor in obese women.

STUDY DESIGN: We recruited women presenting for term cesarean delivery. They were divided into four groups: Group 1, primary cesarean, BMI 25-34.9 (n=2); Group 2, primary cesarean, BMI 35-44.9 (n=3); Group 3 primary cesarean, BMI ≥ 45 (n=3); Group 4, repeat cesarean, BMI ≥ 45 (n=4). At delivery, a full thickness myometrial biopsy was acquired. For each group, the pooled mRNA was analyzed with an Affymetrix GeneChip Human Gene 1.0 ST Array (Affymetrix, Santa Clara, CA). Trends were evaluated across the strata of BMI in a

pair wise fashion; ie, Group 1 to 2, 1 to 3, etc. Target gene products were identified by magnitude of fold-change across groups as well as analysis for trend on the following scales: linear, logarithmic, squared, square root. Gene products of interest were identified by a P-value < 0.001 being deemed statistically significant.

RESULTS: We identified 33 candidate genes that were found to be significantly different between patient groups. These genes are primarily involved in muscle contraction, cell proliferation, cell cycle control, transcription/translation, immunity, intracellular maintenance, and extracellular communication. TMEM127 (trans-membrane protein involved in protein transport and inhibition of cell proliferation) was significantly down regulated with increasing obesity. Other genes (PAK7, LTK, EIF5A, GLUL) involved in initiation of cell proliferation were significantly up regulated.

CONCLUSION: These results suggest obesity is associated with differential expression of genes within the myometrial tissue of obese women. Further exploration of these genes may provide insight into the dysfunctional labor patterns of overweight and obese women.

TABLE 1
Differential gene expression in myometrial tissue of obese gravidas

Gene symbol	Function	Expression
LTK	Cell proliferation, Cellular apoptosis	Upregulated
ADAMTS17	Proteolysis, Metalloendopeptidase activity	Upregulated
SGCA	Muscle contraction, Calcium ion binding	Upregulated
GJA9	Extracellular communication	Downregulated
R3HDM2	Nucleic acid binding, Metal ion binding	Downregulated
SNORD115-3	RNA modification	Downregulated
TMEM127	Protein transport, Inhibition of cell proliferation	Downregulated
CECR1	Growth factor activity, Nucleoside metabolism	Downregulated

313 Defining uterine tachysystole: how much is too much?

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OBJECTIVE: There is a paucity of data on how much uterine activity is excessive when measured against clinical outcomes. Our purpose was to determine if uterine tachysystole as defined by the American Congress of Obstetricians and Gynecologists, 6 or more contractions per 10 minutes, is associated with adverse fetal outcomes.

STUDY DESIGN: This is a prospective cohort study of 584 women undergoing induction of labor with 100 micrograms of oral misoprostol. Fetal heart rate tracings were analyzed for contractions per 10 minutes during the initial 4 hours after misoprostol administration. Patients were divided into 4 groups: ≤4, 5, 6, ≥7 contractions per 10 minutes. Infant condition at birth was assessed using 5- minute Apgar ≤3, umbilical artery blood pH ≤7.1, intubation in the delivery room, neonatal seizures, NICU admission, or perinatal death. Cesarean delivery for FHR indications was also analyzed.

RESULTS: Infant outcome and cesarean birth for FHR indications showed no associations with the number of contractions per 10 minutes (Table). However, 6 or more contractions in 10 minutes were significantly associated with FHR decelerations (p=<0.001); this was true for variable, late, and prolonged decelerations (p=<0.001, p=0.02, p=0.017 respectively). Analysis was also performed using the maximum number of contractions per 30 minutes and the results were similar to those for 10- minute intervals.

CONCLUSION: Uterine activity quantified as the maximum number of contractions per ten minutes or per 30 minutes was not found to be associated with cesarean delivery or any measure of infant condition at birth that could serve to define excessive uterine contractions. However, 6 or more contractions per ten minutes was associated with increased fetal heart rate decelerations. We conclude that the current recommended definition of uterine tachysystole by the American Congress of Obstetricians and Gynecologists as 6 or more contractions per ten minutes is an appropriate definition.

Table 1. Selected outcomes in relation to uterine contractions per 10 minutes during the first 4 hours of induced labor.

	Maximum contractions per 10 minutes				
	≤4	5	6	≥7	
Outcome	N=152	N=179	N=134	N=119	P-value
5- minute Apgar ≤3	0 (0)	1 (1)	0 (0)	0 (0)	0.62
Umbilical artery pH ≤7.1	26 (17)	30 (17)	17 (13)	23 (19)	0.89
Seizures	0 (0)	0 (0)	0 (0)	0 (0)	–
Intubation at delivery	1 (1)	0 (0)	0 (0)	0 (0)	0.42
NICU admission	5 (3)	3 (2)	0 (0)	1 (1)	0.14
Perinatal death	0 (0)	0 (0)	0 (0)	0 (0)	–
Cesarean for FHR	16 (11)	17 (9)	11 (8)	8 (7)	0.72

All data shown as N (%).

314 Obese women have longer duration of the first stage of labor

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OBJECTIVE: While many studies have identified maternal obesity as a risk factor for cesarean delivery, the effect of obesity on the progress of labor is less clear. We aimed to estimate the effects of obesity on the duration and progression of the first stage of labor.

STUDY DESIGN: We performed a retrospective cohort study of labor progression among 5204 consecutive parturients with singleton term pregnancies (≥ 37 weeks) and vertex presentation who completed the first stage of labor. Two comparison groups were defined by body mass index (BMI) 4000g, and prior cesarean.

RESULTS: The labor curves indicate longer duration and slower progression of the first stage of labor among women with BMI>30, both overall and when stratified by parity (Figure). Multivariable interval-censored regression analysis confirmed significantly longer duration (4 to 10cm: 4.6 versus 4.0 hours, p<0.001) and slower progression of cervical dilation from 4 to 6cm (2.4 versus 1.9 hours, p<0.001, with a range of 0.5-10.7 hours) among women with BMI ≥30 after adjusting for confounders (Table).

CONCLUSION: The overall duration is longer and progression of the early part of the first stage of labor is slower in obese women. This suggests that obesity should be considered in defining norms for management of labor particularly in the early part of the first stage.